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Cross River Rail

Environmental Impact Statement

Technical Report No. 3 – Land use and tenure

July 2011

Cross River Rail

TECHNICAL REPORT NO.3
LAND USE AND TENURE

JULY 2011

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Appendix A District, Local and Neighbourhood Plans

1 Introduction

This technical report addresses Part B, Section 3.3.3 of the ToR. The State, regional and local planning framework relevant to the study corridor is to be described as well as existing and likely future land uses. The ToR also require land tenure in the study corridor to be identified as well as areas covered by applications for native title claims or determinations.

Potential benefits and impacts for current and likely future land use and planning are to be assessed, including potential changes around proposed new and upgraded rail stations and ability to achieve the desired intent of local and regional planning strategies.

The ToR also require an assessment of land use impacts from Project infrastructure, including land requirements of the Project, changes to property access, and constraints from the Project on future development. The EIS is also required to describe changes to property impacts from those identified in the Inner City Rail Capacity Study.

Opportunities for future development due to changed public transport infrastructure are also to be assessed.

1.1 Study area

The study corridor is located wholly within the Brisbane local government area within South East Queensland (refer to **Figure 4-1** in **Chapter 4 Project Description**). The study corridor is 19 km in length and extends from just north of Wooloowin Station and generally follows the existing rail corridor south including the Albion, Bowen Hills and Exhibition stations.

After the Exhibition Station, the corridor widens to encompass the suburbs of Spring Hill and Brisbane, including the Brisbane CBD and Roma Street Station, Goprint and Land Centre State Government sites at Woolloongabba and Park Road Station.

After Park Road Station, the study corridor generally follows the alignment of the existing rail corridor to just south of Salisbury Station and includes the stations of Dutton Park, Fairfield, Yeronga, Yeerongpilly, Moorooka, Rocklea and Salisbury.

1.2 Methodology

Assessment of the existing planning and land use environment involved:

- review of the legislative framework relevant to land use and development within the study corridor, including for both state and local government
- review of strategic planning policies and strategies relevant to the study corridor, including the South East Queensland Regional Plan 2009-2031 (SEQ Regional Plan), state government planning strategies and Brisbane City Council Neighbourhood Plans and Local Plans
- review of the *Brisbane City Plan 2000* (City Plan) Area Classification mapping, to identify areas within the study corridor identified for particular land use and development (eg residential, commercial, industrial)
- survey of existing land uses within the study corridor
- identification of land tenure and native title within the study corridor.

This assessment includes an appraisal of desktop information, including the City Plan area classifications. A survey was undertaken of the study corridor to gather information on existing land use and development. This involved an initial desktop review of aerial photography covering the study corridor, followed by a field survey of key locations likely to accommodate project infrastructure.

Information collected during the field survey related to the type of land use, building structure (for example storeys, construction), and business use (where relevant).

Assessment of the potential impacts of the Project on planning and land use involved:

- appraisal of how the Project supports state, regional and local planning frameworks
- consideration of necessary land use requirements (surface and volumetric), proposed tenure and land use implications
- identification of any specific post-construction land use restoration proposals for land proposed to be occupied by construction activities
- review of arrangements for property access and associated street closures or widening
- appraisal of potential indirect land use, property or amenity impacts arising from project mitigation measures
- investigation into constraints to potential developments and possibilities of rezoning adjacent to the Project
- investigation into opportunities for future development due to changed public transport accessibility
- appraisal of potential issues involved in proximity and/or co-location of other current or proposed infrastructure services
- investigation into constraints caused by the Project on future building heights, basement dimensions or locations and building foundation configurations or types over the tunnel and/or adjacent to Project structures
- review of Native Title rights and interests likely to be impacted by the Project.

2 Planning framework

Land use and development in the study corridor is guided by both state and local government legislation. At a state level, land use and development is directed by:

- the *Sustainable Planning Act 2009* (SP Act), which provides the legislative framework for planning and development within Queensland
- State Planning Policies, which protect matters of State interest
- *South East Queensland Regional Plan 2009 – 2031* (SEQ Regional Plan), which identifies the regional planning context for South East Queensland, including areas of growth and development
- *South East Queensland Infrastructure Plan and Program 2010-2031* (SEQIPP), which outlines the future infrastructure requirements to meet the population and growth targets identified in the SEQ Regional Plan
- Draft *Connecting SEQ 2031: An Integrated Regional Transport Plan for South East Queensland* (Connecting SEQ 2031), which guides the planning and framework development for transport projects in line with the desired outcomes of the SEQ Regional Plan
- *Urban Land Development Authority Act 2007* (ULDA Act), identifies key development sites and is the overarching legislation that guides the Urban Land Development Authority (ULDA), the authority responsible for the development of these sites, priority infrastructure and development assessment.
- a range of regional planning strategies that manage development and growth within specific local areas such as *City West Strategy* and *River City Blueprint.*

At a local level, land use and development within the study corridor is guided by:

- City Plan, which guides and controls land use and development within the Brisbane City local government area (LGA). This establishes strategic planning direction for the LGA as well as localised development direction through local and neighbourhood plans.
- Brisbane City Council local laws, which govern and regulate certain activities within the local government area such as parking, noise and vegetation.

2.1 State planning framework

2.1.1 Sustainable Planning Act 2009

The SP Act is the primary statutory planning instrument guiding planning and development within Queensland. The purpose of the SP Act is to manage development processes and implications of development on the environment and coordinate the integration of local, regional and state planning.

The State planning instruments that have effect under the SP Act, relevant to Cross River Rail include:

- a State planning regulatory provision
- SEQ Regional Plan
- State planning policies (SPPs)
- City Plan.

The SP Act and the *Sustainable Planning Regulation 2009* (SP Regulation) provide the overarching approvals requirements and exemptions for development within Queensland. Schedule 4 of the SP Regulation includes provisions that exempt the Project in its current form from assessment against the City Plan. The development approval requirements for the Project are discussed further in **Chapter 4 Project Description** and are outlined in **Appendix G**.

2.1.2 State planning policies

The provisions of the SP Act enable the State Government to implement SPPs. SPPs establish the State Government's position in regard to planning matters of State significance. SPPs are applicable to development assessment, designation of community infrastructure and the making and amending of planning schemes across the State. A SPP prevails over a local planning instrument to the extent of any inconsistency. As these processes are not applicable to the Project (refer to **Chapter 4 Project Description**), application of these SPPs is limited. However, to ensure that relevant environmental matters have been addressed, the Project has been considered against the desired outcomes of each relevant SPP.

SPPs relevant to the Project are:

- SPP 2/02 Planning and Managing Development Involving Acid Sulfate Soils
- SPP 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide
- SPP 4/10 Healthy Waterways
- SPP 5/10 Air Noise and Hazardous Materials.

SPP 2/02 Planning and Managing Development Involving Acid Sulfate Soils

SPP 2/02 has been produced to manage development involving acid sulphate soils in low-lying coastal areas. The SPP applies to all land, soil or sediment at, or below 5 m Australian Height Datum (AHD) and where natural ground level is less than 20 m AHD.

Within this area, the SPP relates to development involving:

- excavating or otherwise removing 100 m³ or more of soil or sediment
- filling of land involving 500 m³ or more of material with an average depth of 0.5 m or greater.

There are a number of areas within the study corridor that are located at, or below, 5 m AHD and where natural ground level is less than 20 m AHD. These are generally located in areas close to the Brisbane River (ie Brisbane City) and Breakfast Creek (ie Bowen Hills and north to Albion) as well as areas to the west of the study corridor in the southern section near to Moolabin Creek and Stable Swamp Creek (Yeronga, Rocklea and Salisbury). Further discussion on areas of potential acid sulphate soils (PASS) and acid sulphate soils (ASS) is provided in **Chapter 7 Topography, Geomorphology, Geology and Soils**.

The SPP is relevant on the basis that components of the Project would be located within areas identified as either having PASS or ASS. When development applications are being assessed against this SPP regard must be had to Outcome 1, as addressed in **Table 2-1**.

Table 2-1 SPP 2/02 Planning and Managing Development Involving Acid Sulfate Soils

State Planning Policy Outcomes	Comment
Outcome 1: When undertaking development to which this SPP applies, the release of acid and associated metal contaminants into the environment is avoided by: • not disturbing acid sulfate soils when excavating or otherwise removing soil or sediment, extracting groundwater or filling land; or • treating and, if required, undertaking ongoing management of any disturbed acid sulfate soils and drainage waters.	In the event that activities for the construction of the Project would disturb PASS or ASS, an Acid Sulfate Soil Management Plan (ASSMP) would be prepared. The ASSMP would provide information on the treatment and ongoing management of the PASS or ASS to ensure that potential environmental implications are appropriately managed.

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

SPP 1/03 has been prepared to minimise the potential impact of natural hazards such as flood, bushfire and landslide on people, property, economic activity and the environment. The SPP is supported by *Guideline for SPP 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide* which provides advice and information on interpreting and implementing the SPP.

The SPP is relevant to areas across Queensland for flood as well as areas with steep slopes and containing predominant vegetation types within the Brisbane LGA for landslide and bushfire respectively. Areas susceptible to flooding are located near to waterways, including the Brisbane River, Breakfast Creek, Enoggera Creek and Oxley Creek.

Of relevance to Cross River Rail, the SPP is applicable where development:

- is likely to result in an increase in the number of people living or working in the natural hazard management area including those uses on a short-term or intermittent basis (eg by construction/maintenance workers)
- involving institutional uses where evacuating people may be particularly difficult (eg hospitals, education establishments)
- involves the manufacture or storage of hazardous materials in bulk
- is located in natural hazard management areas for flood, to building or other work that involves any physical alteration to a watercourse or floodway including vegetation clearing, or involves net filling exceeding 50 m³
- is located in natural hazard management areas for landslide, to building or other work that involves
  - involves earthworks exceeding 50 m³ (other than the placement of topsoil)
  - involves vegetation clearing
  - involves redirecting the existing flow of surface or groundwater in a natural hazard management area (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 the development must meet Outcomes 1, 2 and 3 of the policy, as addressed in **Table 2-2**.

Table 2-2 SPP 1/03 Mitigating the Adverse Impacts of Flood, Bushfire and Landslide

State Planning Policy Outcomes	Comment
Outcome 1: Within natural hazard management areas, development to which this SPP applies is compatible with the nature of the natural hazard, except where: • the development proposal is a development commitment; or • there is an overriding need for the development in the public interest and no other site is suitable and reasonably available for the proposal.	The Brisbane City Council area is listed as an area with potential for landslides, bushfires and flooding. Landslides and bushfires are not likely to be risks in the study corridor and Cross River Rail is not likely to increase the extent or severity of hazards of this nature. Areas of the study corridor have been identified as being susceptible to flooding impacts. Flooding Impacts have been assessed in a separate technical report and discussed in **Chapter 14 Flooding** . 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 hazard in the project locality.
Outcome 2: Development that is not compatible with the nature of the natural hazard but is otherwise consistent with Outcome 1:	As stated above, the Project is considered compatible with Outcome 1. Consequently, Outcome 2 is not a requirement.

State Planning Policy Outcomes	Comment
• minimises as far as practicable the adverse impacts from natural hazards; and • does not result in an unacceptable risk to people or property.	
Outcome 3: Wherever practicable, community infrastructure to which this SPP applies is located and designed to function effectively during and immediately after natural hazard events commensurate with a specified level of risk.	The Project is community infrastructure and has been designed to function effectively during and after natural hazard events. Flooding Impacts have been assessed in a separate technical report and discussed in **Chapter 14 Flooding .**

SPP 4/10: Healthy Waters

This SPP seeks to ensure development for urban purposes, including community infrastructure, is planned, designed, constructed and operated to manage stormwater and waste water in ways to help protect the environmental values specified in the *Environmental Protection (Water) Policy 2009* (EP (Water) Policy).

The SPP is consistent with and reflects the SEQ Regional Plan. The SEQ Regional Plan provide for the adoption of water sensitive design for achieving water quality objectives as set out in the EP (Water) Policy.

Of relevance to the Project, the SPP is applicable where development is:

- for stormwater management
  - a material change of use for urban purposes that involves greater than 2500 m²
  - reconfiguring a lot for urban purposes that involves greater than 2500 m² of land and results in an increased number of lots or is associated with operational works
  - operational works for urban purposes that involves disturbing greater than 2500 m² of land.
- for waste water management for industrial or commercial development
  - material change of use for urban purposes involving waste water discharge
  - reconfiguring a lot for urban purposes involving waste water discharge
  - operational works for urban purposes involving waste water discharge
- land proposed to be designated for community infrastructure involving any development described above.

The SPP does not apply to development that involves:

- making a material change of use of premises for an environmentally relevant activity under the *Environmental Protection Act 1994*
- making a material change of use or operational works made assessable by Schedule 3 of the *Sustainable Planning Act 2009*
- building work that is assessable only against the *Building Act 1975.*

As the Project would be exempt from assessment against local government planning provisions, the application of this SPP would be limited. Development approval requirements for the Project are outlined in **Appendix G**. This SPP may apply to a number of these development requirements.

SPP 5/10: Air Noise and Hazardous Materials

The SPP for Air, Noise and Hazardous Materials, which took effect on 2 May 2011, plans for and manages the appropriate assessment of any potential impacts of industrial air and noise emissions on human health and well-being.

Under the SPP, the planning process involves consideration of a range of local environmental and land use factors as well as impacts of industrial emissions and air quality or noise modelling studies. This process aims to determine appropriate separation distances between land zoned for industrial uses and land zoned for sensitive uses (for example residential development).

The SPP is potentially relevant to the Project on the basis of potential air and noise emissions and the storage of hazard materials associated with the Project's worksites. The SPP document outlines that the principles for the SPP would be implemented through local planning instruments and the development assessment process.

If assessment against this SPP is required for any component of the Project, the relevant component would need to consider its proximity, orientation and design in order to protect the environmental values and human safety from industrial air and noise emissions and impacts from hazardous materials.

2.2 Regional planning framework

2.2.1 South East Queensland Regional Plan 2009-2031

The SEQ Regional Plan is the pre-eminent regional planning document for South East Queensland. The SEQ Regional Plan carries statutory weight, in accordance with the SP Act. The SEQ Regional Plan provides a strategic planning framework for the sustainable management of growth and development for South East Queensland to 2031 and beyond.

The SEQ Regional Plan outlines a vision for the region which is supported by nine strategic directions to achieve the preferred pattern of development. The strategic directions relevant to Cross River Rail include:

- creating a more sustainable future
- accommodating future residential and employment growth
- regional accessibility
- building a series of strong, identifiable communities
- providing infrastructure and services
- supporting strong healthy communities.

Supporting the regional vision, the SEQ Regional Plan identifies a regional land use pattern, which identifies land within the urban footprint, regional landscape and rural production and rural living.

The regional land use pattern provides a spatial context for both the strategic direction and the regulatory provision of the Plan. The study corridor is located entirely within the urban footprint area which identifies land to be developed for urban purposes to meet the land requirements for development in the region to 2031. The proposal is consistent with the intent of the urban footprint designation.

The SEQ Regional Plan contains regulatory provisions to ensure that the strategic directions are implemented through the planning and decision making processes. The regulatory provisions for the SEQ Regional Plan primarily relate to controlling development outside of the urban footprint area.

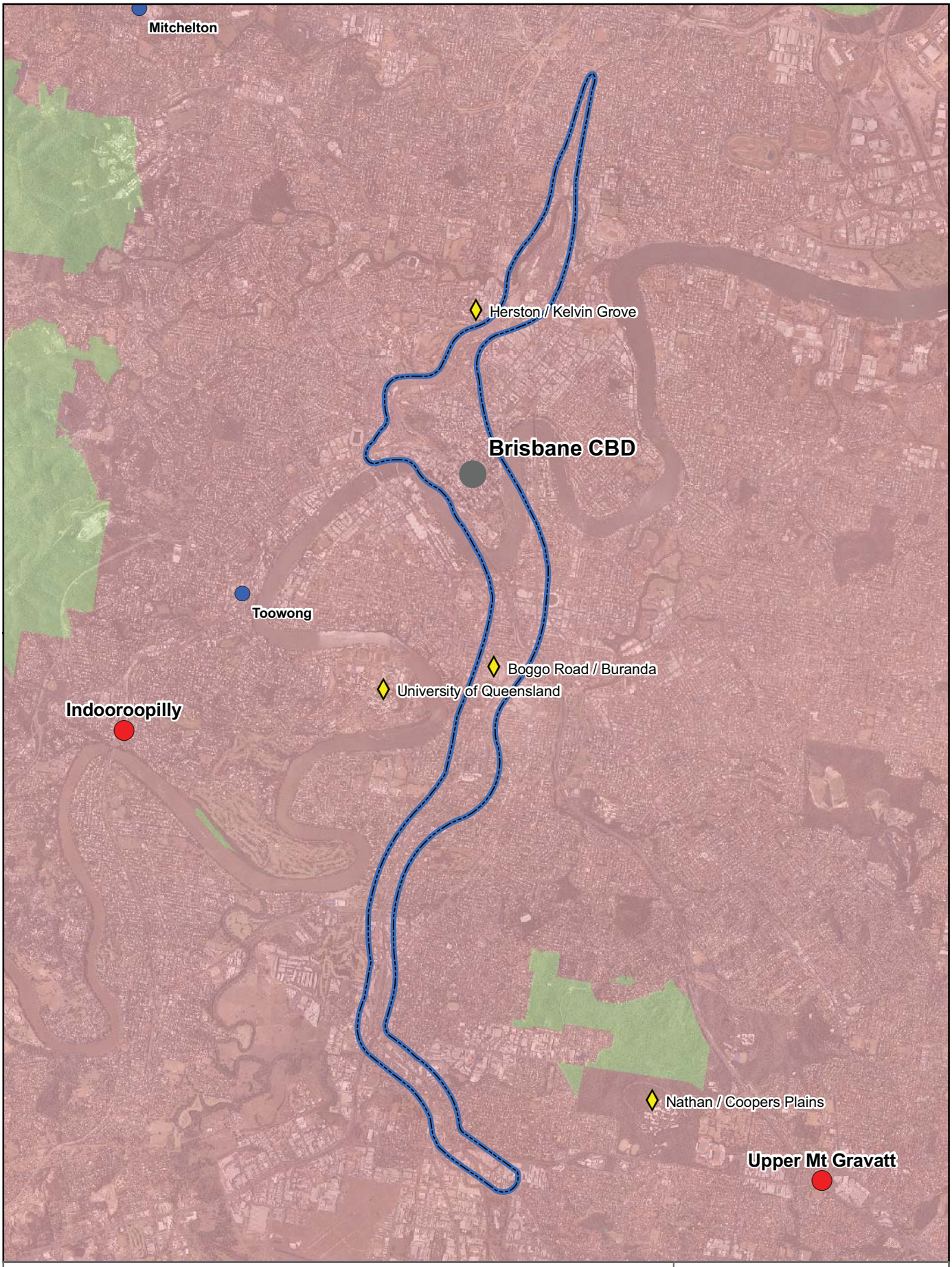
Generally, the Project supports the desired regional outcomes of the SEQ Regional Plan through the provision of new public transport opportunities that would improve movement and accessibility to identified high growth areas. The relevant desired regional outcomes to the Project are described in further detail in **Table 2-3**.

Table 2-3 Relevant Desired Regional Outcomes

Regional Policy	Desired Regional Outcome	Project benefits
Sustainability and Climate Change	The region grows and changes in a sustainable manner-generating prosperity, maintaining and enhancing quality of life, minimising the use of resources, providing high levels of environmental protection, reducing greenhouse gas emissions and becoming resilient to natural hazards including the projected effects of climate change and oil supply vulnerability.	The Project would result in an improved public transport network, as a result of additional stations, capacity and collocation with high intensity uses, therefore reducing the demand for private vehicle transport. Cross River Rail would support the sustainable growth of South East Queensland by reducing greenhouse gas emissions.
Natural Environment	A healthy and resilient natural environment is protected, maintained and restored to sustainably support the region's rich biodiversity and ecosystem services including clean air and water, outdoor lifestyles and other community needs that critically underpin economic and social development.	The Project minimises impacts on the natural environment and where possible, seeks to enhance the natural environment through design. Spoil placement is proposed in areas that have been subjected to intensive mining activities and therefore limit the potential for disturbance of areas of natural significance.
Regional Landscape	Key environmental, economic, social and cultural values of the regional landscape are identified and secured to meet community needs and achieve ecological sustainability.	The Project would provide opportunities for consolidated living along the corridor. Increases in density would assist the protection of regional landscape values and ensuring resilience from pressures such as population growth and infrastructure development.
Natural Resources	Regional natural resources and rural production areas are protected, managed, enhanced and used sustainably.	The Project would not impact on natural economic resource areas. Spoil is proposed to be disposed within mine sites that have ceased operations or are proposed to be decommissioned and would therefore not result in the decline of available mining land within South East Queensland. Where suitable, spoil would be re-used for construction of the Project.
Compact Settlement	A compact urban structure of well-planned communities, supported by a network of accessible and convenient centres and transit corridors linking residential areas to employment locations establishes the context for achieving a consolidated urban settlement pattern.	The Project is located within the urban footprint and would integrate with a number of high growth residential and employment areas and high trip generating land uses, including Urban Development Areas and the Brisbane CBD.
	Regional Activity Centres The SEQ Regional Plan establishes a number of regionally significant employment services and community uses that form a network of regional centres. There are a number of regional activity centres located in the vicinity of the study corridor that would potentially benefit from the project, these activity centres have been shown in **Figure 2-1** and include: • Brisbane Central Business District (CBD), the Primary Activity Centre for the SEQ region. The Brisbane CBD has the highest employment mix and density in the state and allows for in-centre	The Project would support a number of regionally significant employment services and community uses that form the planned network of regional centres. These areas include Bowen Hills and the Royal Brisbane and Women's Hospital, Brisbane CBD, QUT Gardens Point, Woolloongabba, Princess Alexandra Hospital, Boggo Road Ecosciences Precinct and Queensland Tennis Centre. The Project would provide improved transport connectivity to these uses, thereby supporting a more sustainable land use pattern.

Regional Policy	Desired Regional Outcome	Project benefits
	residential uses. The Brisbane CBD over time has expanded to include city frame areas. The Brisbane CBD also has potential to benefit from the project, specifically the frame areas of Bowen Hills, Albion, Woolloongabba and Spring Hill. • Boggo Road/Buranda is a Specialist Activity Centre which has regional economic significance and provides a primary focus as a health and Ecosciences Precinct. • Herston/Kelvin Grove is a Specialist Activity Centre which has regional economic significance and provides a primary focus as a health (Royal Brisbane and Women's Hospital), economic and education precinct.	
	Integrated Transport and Land Use Planning The SEQ Regional Plan encourages transport and land use integration to assist in reducing the need for travel, thereby resulting in shorter journeys and increasing accessibility to employment, education and services. The application of transit oriented development (TOD) principles is important to achieving a sustainable land use pattern. TOD development is proposed for activity centres and areas located along priority transit corridors. Specifically for Cross River Rail, the following transit oriented developments are supported: • Specialist activity centres such as Boggo Road/Buranda and Herston/Kelvin Grove will generate high levels of trips and have greater potential to develop a full mix of uses. Densities in these centres are proposed to be 40-120 dw/ha. • Urban centres such as Woolloongabba, Spring Hill and Bowen Hills are well connected to employment hubs and key destinations. Urban precincts can accommodate high-density residential and commercial uses, as well as shops and services to support the large local population.	Intensification of uses within key areas along is encourages by the project within areas located along the study corridor, specifically Brisbane City, Woolloongabba, Boggo Road and Bowen Hills. Intensification of land uses within these areas would require frequent and efficient public transport connections. Cross River Rail is to provide integrated public transport opportunities along the study corridor, with specific focus on key growth areas identified. New stations are proposed in all these locations, improving the accessibility to and from these areas by public transport, thereby facilitating a more efficient urban form.
Strong Communities	Cohesive, inclusive and healthy communities have a strong sense of identity and place, and access to a full range of services and facilities that meet diverse community needs.	The Project would provide improved transport access for communities in South East Queensland. The Project considers the values of the community throughout the feasibility stage of the project and through to construction and operation. Community consultation was undertaken at key phases throughout the Project to capture community feedback and values and inform the reference design, The Project design and construction seeks to protect local, State and Commonwealth heritage places and places of cultural significance.

Regional Policy	Desired Regional Outcome	Project benefits
Engaging Aboriginal and Torres Strait Islander Peoples	Aboriginal and Torres Strait Islander peoples are actively involved in community planning and decision-making processes, and Aboriginal traditional owners are engaged in business about their country.	The Jagera and Turrbal people are recognised as the traditional owners of the land associated with the study corridor and have been consulted as part of the Project.
Employment Location	Plan for employment to support a strong, resilient and diversified economy that grows prosperity in the region by using its competitive advantages to deliver exports, investment and sustainable and accessible jobs.	The Project would facilitate public transport linkages to regionally significant employment areas including Brisbane CBD, key health facilities (Princess Alexandra Hospital and Royal Brisbane and Women's Hospital), education and training areas (for example QUT Gardens Point) and enterprise opportunity areas. The project would also increase the viability of rail freight and improve freight movement throughout Brisbane. The project would have a positive impact on the economic development of the region by supporting a number of regionally significant employment services and community uses that form the planned network of regional centres and by improving movement of people and goods.
Infrastructure	Plan, coordinate and deliver regional infrastructure and services in a timely manner to support the regional settlement pattern and desired community outcomes.	The Project would assist manage capacity issues associated with the inner city rail network. Increased capacity would assist build the viability of rail within South East Queensland as well as facilitating the continued growth and development of the region.
Integrated Transport	A connected and accessible region based on an integrated transport system that is planned and managed to support more compact urban growth and efficient travel; connect people, places, goods and services; and promote public transport use, walking and cycling.	The Project would be integrated at key locations with a range of transport modes including other public transport such as bus and active transport networks. Additionally, rail would be integrated with the existing and proposed land use within the study corridor, with station locations being coordinated with major growth areas and high density precincts.
		The Project would support mode shift through increasing capacity on the inner city rail network and supporting increased densities within inner city areas. This would effectively encourage a transport network that allows equitable access to the region for the community.
Water Management	Water in the region is managed on a sustainable and total water cycle basis to provide sufficient quantity and quality of water for human uses and to protect ecosystem health.	The Environmental Management Plan for the Project seeks to minimise water use and manage potential run-off that may be associated with the Project. Refer to **Chapter 24 draft outline EMP .**



LEGEND

Study Corridor

Activity Centres

- Brisbane CBD
- Principal
- Major
- Specialist

Regional Land Use Categories

- Regional Landscape and Rural Production Area
- Rural Living Area
- Urban Footprint

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 2-1

Regional Activity Centres

0 0.5 1 1.5 2 2.5 km

1:75,000 at A4

N

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2.2.2 SEQ Regional Plan regulatory provisions

As the Project has been declared a significant project under section 26(1)(a) of the *State Development and Public Works Organisation Act 1971,* the State planning regulatory provisions of the SEQ Regional Plan do not apply.

2.2.3 South East Queensland Infrastructure Plan and Program 2010-2031

The SEQ Regional Plan is supported by the South East Queensland Infrastructure Plan and Program (SEQIPP). SEQIPP provides a statement of the State Government's proposed investment commitments and timing for major infrastructure and identifies the infrastructure required to 2031 to realise the preferred pattern of development projected by the SEQ Regional Plan.

The key principles supporting investment in transport infrastructure under SEQIPP are:

- land use and planning – reducing the need for travel through integrated planning
- pricing and travel demand – applying travel demand management measures to reduce private vehicle transport
- travel options – creating a public transport and active transport network that is accessible, frequent and reliable
- efficiency – maximising the efficiency of existing transport infrastructure
- capacity – building on existing infrastructure investment through upgrades and extensions.

SEQIPP seeks to build on additional infrastructure investment by providing more public transport such as rail upgrades and extensions and station upgrades. Priority infrastructure projects indicated in the SEQIPP also include provision for improved rail capacity and reliability including new rolling stock and a program of station and line upgrades.

The SEQIPP is proposed to be replaced by the Queensland Infrastructure Plan in 2011. This new infrastructure planning document will coordinate the planning and delivery across Queensland and will integrate the SEQIPP, Queensland Roads Investment Program and a number of other State infrastructure planning documents.

The initial studies and the Project are identified in the SEQIPP as key public transport network projects for the Greater Brisbane area. The Cross River Rail study is identified as a $25 million investigation/study project that is to be undertaken from 2010-11 to 2011-12. The Project is identified in SEQIPP as an $8,200 million project that would be undertaken from 2012-13. Both projects are subject to federal funding.

2.2.4 Draft Connecting SEQ 2031

The draft Connecting SEQ 2031 guides the planning and framework development in line with the desired outcomes of SEQ Regional Plan. The purpose of the document is to deliver:

- a master plan to address the critical issue of transport for the region's ongoing success
- a response to the Queensland Growth Summit providing a framework for providing for the growth within the region
- a central document that consolidates the transport-related actions from many of the Queensland Government's studies and policies
- a basis for prioritising funding to support the numerous transport and land use plans that have been developed within government.

The draft Connecting SEQ 2031 is a long term planning document that will assist in the delivery of a sustainable, multi-modal transport network within South East Queensland. This plan guides the prioritisation of available funds for transport projects and will inform the development and annual revisions of the Queensland Infrastructure Plan (due for release in 2011).

Rail is a key element of the draft Connecting SEQ 2031 and is identified as the backbone of the region's transport network. Cross River Rail is identified as a key feature of the rail strategy proposed by draft Connecting SEQ 2031, and is identified as a catalyst for the transformation of the South East Queensland rail network.

2.2.5 Smart Cities: Rethinking the City Centre

Smart Cities: Rethinking the City Centre report was released by the State Government in 2007 and identifies more than 30 current and prospective urban renewal and transport projects within Brisbane's inner suburbs that were prepared independently of each other. The aim of the study is to provide an integrated approach to development of these sites to ensure the integrated management of these various projects.

The report also provides high order strategies to develop a city that is well connected, integrated and innovative using four super precincts including:

- Woolloongabba
- Bowen Hills
- City West
- South Brisbane.

A number of key centres have also been identified through the strategy, including:

- educational facilities such as the University of Queensland, and Queensland University of Technology
- health facilities such as the Princess Alexandra Hospital and Royal Brisbane and Women's Hospital
- residential (major development areas across the corridor including Bowen Hills/Albion, Woolloongabba, and Kangaroo Point)
- cultural (South Bank, CBD and Kelvin Grove)
- entertainment facilities (South Bank, Fortitude Valley, CBD).

The Smart Cities document recognises the importance of a number of key locations within the study corridor, including:

- Woolloongabba and Bowen Hills urban renewal areas
- Royal Brisbane and Women's Hospital, Mater Hospital and Princess Alexandra Hospital as key health facilities
- Queensland University of Technology Gardens Point Campus and Boggo Road Ecosciences Precinct as knowledge and education locations
- City West and the Brisbane CBD as areas accommodating services and economic growth and development.

The Smart Cities: Rethinking the City Centre report outlines the projected growth that is going to occur within areas along the study corridor and the importance of efficient connections between these areas. Key growth areas will form major drivers for growth within the inner city area, with specific focus in Woolloongabba, Bowen Hills, South Bank and Fortitude Valley/Teneriffe.

The study seeks to increase the level of connectivity within the inner city and between these growth areas though a number of transport modes. A strong pedestrian network is planned through existing and new infrastructure (e.g. river crossings). Bus and rail improvements were noted to be assessed through the *Inner City Rail Capacity Study* and the *Bus Access Capacity Study*, with additional connectivity projected to occur through a light rail network connecting CBD fringe areas to the CBD.

2.2.6 River City Blueprint

River City Blueprint is currently being developed by Brisbane City Council, in partnership with the Queensland Government to guide the future development of the inner city of Brisbane to 2031 and beyond. The *River City Blueprint* is an outcome of the *Smart Cities: Rethinking the City Centre* report, and provides consideration to recommendations contained within the Smart Cities report and alternative strategies.

The *River City Blueprint* was originally scheduled for release in early 2011. However due to the January 2011 flood event, the release of the document has been postponed. Whilst flood mitigation is already a consideration of existing planning regulations, the recent flood event may provide improved knowledge regarding how large-scale flooding affects the city thereby informing future planning.

River City Blueprint will form a strategic and integrated plan that will consider existing plans, major developments and strategies for the area contained within the 5 km radius of the CBD, for example:

- local planning
- Woolloongabba and Bowen Hills Urban Development Areas (UDAs)
- major infrastructure developments such as Clem Jones tunnel, Airport Link, Kurilpa Bridge, Northern Link, Eastern Busway.

The *River City Blueprint* will address a number of issues, such as:

- provision of new housing and commercial development
- design of the inner city to support sustainable subtropical lifestyles
- new public transport systems and river crossings
- encouragement of knowledge-based industries and collocation with existing research and cultural facilities
- provision of social infrastructure.

Key linkages throughout the inner city area will also be identified within the plan for public transport and active transport connectivity.

Through the provision of new public transport networks, the Project would support densification and consolidation of land uses within the inner city. Specifically areas within close proximity to Woolloongabba UDA, Bowen Hills UDA and development associated with local planning in inner city (within 5 km ring) areas such as Spring Hills, Bowen Hills, Woolloongabba, and Kangaroo Point.

2.2.7 Urban Land Development Authority Act 2007

The ULDA Act provides for particular parts of the State to be declared as UDAs and establishes the ULDA to manage and carry out development within defined UDAs.

The ULDA was established in September 2007 to manage the planning and development of UDAs across Queensland.

The ULDA functions as an independent statutory body which operates under the ULDA Act. The role of the ULDA is to manage the planning and development of UDAs. Development that occurs within a UDA is assessed by the ULDA, allowing streamlining of the development assessment processes.

Currently, there are 14 sites across Queensland that have either been declared as UDAs of which Bowen Hills and Woolloongabba are located within the study corridor. Bowen Hills and Woolloongabba UDAs are shown on **Figure 2-2**.

2.2.8 Bowen Hills Urban Development Scheme

To facilitate a coordinated approach to the development of the area, the ULDA has developed the Bowen Hills Urban Development Scheme (approved by the State Government April 2010). All development to occur within the UDA is to be assessed against the Scheme. The aim of the Scheme is to facilitate a development outcome that is consistent with surrounding land uses and activities and ensure that development occurs in an orderly fashion.

Development within the UDA has been earmarked as an inner city transit oriented development. Development is likely to occur within a 10-15 year development horizon, with some developments occurring within five years.

Bowen Hills Urban Development Scheme outlines the future pattern of development for the UDA. Development within the UDA is to provide for a range and mix of uses, including residential, commercial, retail and community/recreational uses. The future pattern of development of the site includes:

- high intensity development within core areas to capitalise on the location of development with regards to key transport nodes
- lower intensity residential uses will also be located on site, in the vicinity of Abbotsford Road residential opportunities adjacent the RNA Showgrounds
- a number of mixed use precincts located across the ULDA, including
  - O'Connell Terrace and Bowen Bridge Road
  - high intensity areas between Gregory Terrace and Wall Street
  - moderate intensity areas between Perry Park and the Inner City Bypass
  - maintain the existing function of RNA Showgrounds for major events, supported by new mixed use development activities
  - retention of existing open space areas located at Bowen Park and Perry Park.

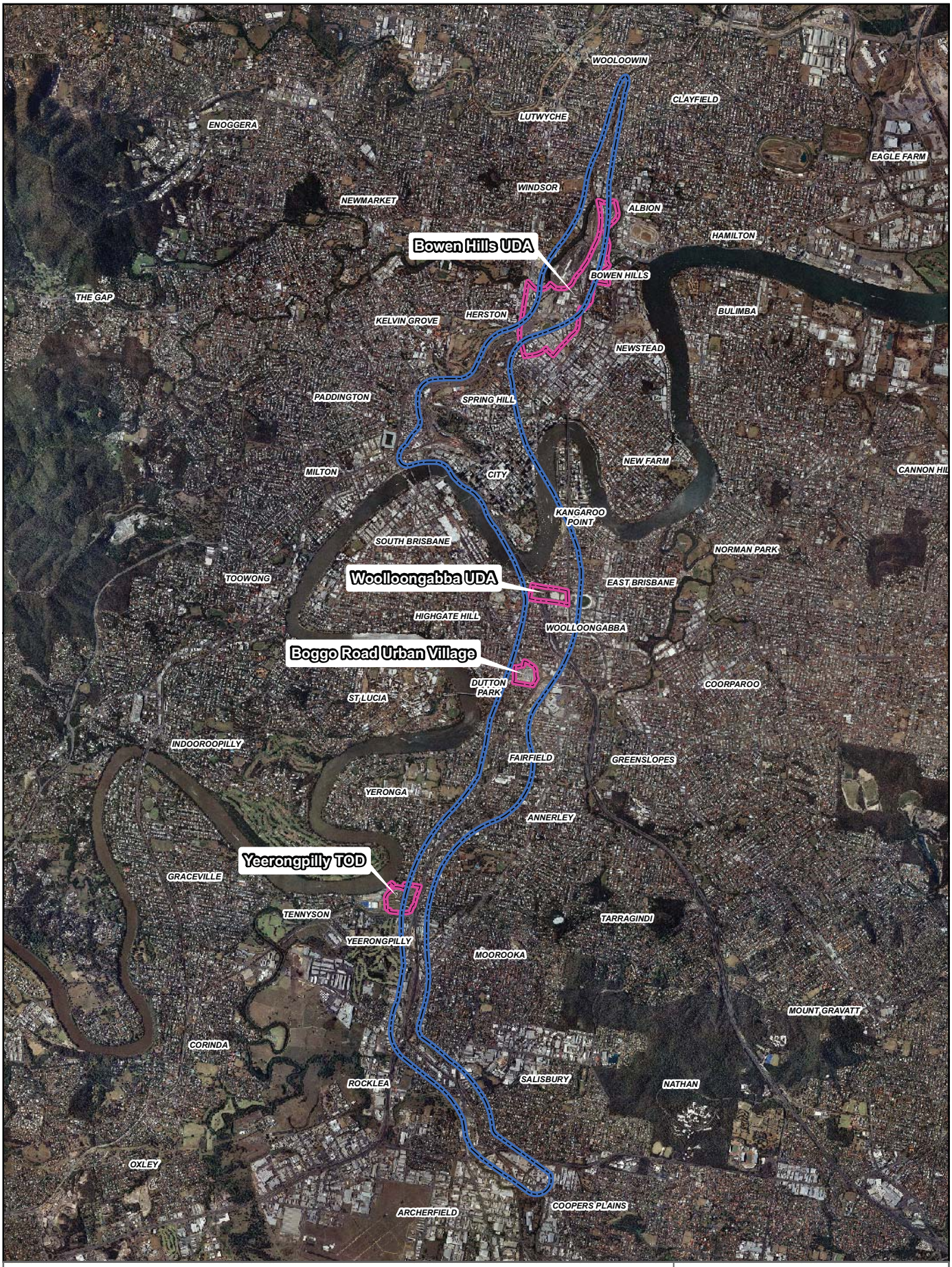
The Bowen Hills Station is a focal element of the UDA, providing both a transport and land use focus. The rail station forms an intermodal transit hub through its collocation with bus facilities. Development surrounding the rail station is to reflect transit oriented development principles and integrate with the existing and proposed public transport facilities.

The station is located within the 'Bowen Hills Heart' precinct (Precinct 1) of the development scheme. This precinct forms the 'Centre' of the UDA and is characterised by active and vibrant streetscapes and high intensity residential, commercial and retail uses.

A range of land use opportunities have been identified for this area such as development of buildings spanning across the railway corridor. Development in this location provides potential for additional development, public plazas and new access to the station.

The Development Scheme does not document any proposals for redevelopment of Exhibition Station. However, development setbacks are addressed to allow for future rail requirements and consideration is given to the heritage values of the existing station.

Development located in close proximity to the station is to establish new uses with the intent of activating the area and generating activity all year round. This area will include residential, retail and entertainment uses.



LEGEND

- Study Corridor
- Key Development Sites

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 2-2

Key Development Sites

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The Project would allow integration with the proposed development to be located within the Bowen Hills UDA. Whilst not specifically travelling through the UDA, the Project would provide increased rail services to Exhibition station which is located within close proximity to the proposed development.

The Bowen Hills site is to be developed with a strong focus on key transport nodes, with higher density areas to be located within close proximity to public transport facilities. Development of Exhibition station would allow for intermodal transport connectivity for this precinct, as well as additional route choice for residents and workers.

The Bowen Hills Development Scheme does not document any proposals for redevelopment of Exhibition Station, although setbacks have been addressed in the Development Scheme for future development of the station. Development located in close proximity to the station is to establish new uses with the intent of activating the area and generating activity all year round. This area will include residential, retail and entertainment uses.

RNA Showground

RNA Showgrounds forms part of the Bowen Hills UDA, including Exhibition Station. The Royal National Association (RNA) in conjunction with Lend Lease, have undertaken master planning for future development and redevelopment of existing areas in conjunction with the ULDA.

Redevelopment on the site is occurring in line with the RNA Development Scheme, prepared for the area containing the RNA Showgrounds. The objectives of the development are to support the development of a major Transit-Oriented Development (TOD) precinct at Bowen Hills.

Key objectives of the Development Scheme include:

- preserve the inherent character of the Ekka and its experiences, particularly that of “the city meets country”
- identify where redevelopment may occur, without detraction from the RNA Showgrounds, that would provide funds to improve the exhibition facilities
- conceptualise what those improvements need to be, particularly with regard to exhibition facilities in poor condition for which replacement is a better option than upgrading
- retain those buildings and spaces which are of high heritage value, either in their own right or as an integral part of the Ekka experience
- identify new revenue-generating opportunities for the site particularly outside the Ekka period
- take account of the influences of a range of major changes in the RNA Showgrounds context associated with transport and traffic infrastructure, and with urban development.

A development application has been conditionally approved for the proposed development, which is consistent with the overall planning intent of the Development Scheme. The proposed development of the existing land and facilities at RNA Showgrounds would involve demolition of some existing buildings and the addition of between 310,000 to 340,000 m^2 of Gross Floor Area (GFA) of mixed use development

Development of the precinct would include a new street network to facilitate improved access through the site, including creation of Grand Parade forming a north-south linking St Pauls Terrace to Gregory Terrace and Ekka Plaza creating a lank between Gregory Terrace and the Ekka Station, south of Show Ring 1.

The proposed development offers a range of mixed use precincts around the street edges of the RNA Showgrounds, specifically O’Connell Terrace, Exhibition Street, newly formed Grand Parade, Costin Street and Constance Street. The proposed development is intended to be implemented with staged construction from 2012 to 2020. Specifically proposed development and indicative timeframes are indicated in **Table 2-4**.

Table 2-4 RNA proposed development

Location	Land use type	Timeframe
Grand Parade/Gregory Terrace	Market	2012
Gregory Terrace	Industrial pavilion	2012
O'Connell Terrace (adjacent Show Ring 1)	Cattle Pavilion	2012
Main Street	Retail	2012
Constance Street /Grand Parade (proposed new road)	Residential	2012-2013
Grand Parade/Main Street (proposed new road)	Commercial	2012-2017
Grand Parade/Gregory Terrace	Hotel etc.	2014
Sutton Street (proposed new road linking Grand Parade and Gregory Terrace)	Residential	2015-2018
O'Connell Terrace (western end)	Medical	2019-2020
O'Connell Terrace/Gregory Terrace (eastern end of O'Connell Terrace in front of the proposed Cattle Pavilions and Exhibition Buildings)	Residential	2019-2021

Source: The Royal National Agricultural and Industrial Association of Queensland and Lend Lease (2010), RNA Showgrounds Development Application, Volume 3

As indicated by the proposed development schedule in **Table 2-4** a large proportion of the site would be developed prior to the commencement of construction of the Project in 2015. Consultation with RNA and Lend Lease would be required manage development to minimise potential development conflicts.

Areas containing heritage buildings and structures are likely to be impacted as a result of the proposal. However the development proposal seeks to retain elements of heritage to mitigate significant loss of heritage value of the precinct. Cumulative impacts resulting from loss of heritage is addressed in **Chapter 23 Cumulative Impacts**.

2.2.9 Woolloongabba Submitted Urban Development Scheme

The Woolloongabba UDA has been earmarked as a future urban TOD, containing a range and mix of residential, community, recreation and commercial uses. The site will be well connected with existing and planned transport infrastructure.

The Woolloongabba UDA Development Scheme indicates the importance of coordinating the development of the UDA with the Project, specifically integration of the Gabba Station within the UDA.

Planning for the Woolloongabba UDA and the Gabba Station have been undertaken concurrently to maximise opportunities for transport and land use integration. The Woolloongabba UDA has been identified as a future urban transit oriented precinct, containing a range and mix of residential, community, recreation and commercial uses. The proposed location of the Gabba Station would allow for transit oriented principles to be effectively applied to this development.

Planning that has been undertaken for the station and UDA also seeks to maximise collocation with the existing Woolloongabba Busway Station to support intermodal connectivity at this location.

Key aspects of the development scheme include:

- major public transport interchange incorporating the Cross River Rail station and bus interchange
- a centre core of parkland and urban plaza areas accommodating a range of community and recreational areas
- 20-30 storey development to support the investment in public transport infrastructure

- higher density development to be located in areas easily accessible from the station
- landmark building elements to identify main entry points and approaches.

Development of the UDA is likely to commence prior to the construction of the Gabba Station. Ongoing consultation with the ULDA is required to manage the coordinated development of the station and development associated with the UDA.

2.2.10 Yeerongpilly TOD

The proposed Yeerongpilly TOD is to be located on 14 ha of land, previously occupied by the Department of Primary Industries Animal Research Institute (refer to **Figure 2-2**). The site is located east of Fairfield Road, north of King Arthur Terrace, south of Ortive Street and adjacent Queensland Tennis Centre and Tennyson Reach development to the west.

A Concept Plan of Development has been developed for the site and identifies the proposed development to occur on the site over the next five to ten years. Specifically, the following development is indicated for the precinct:

- Fairfield Road pedestrian overpass (completed) linking the precinct with Yeerongpilly Station
- new 'Main Street' from King Arthur Terrace, traversing the centre of the site to Queensland Tennis Centre
- realignment of King Arthur Terrace and relocation of Mooney Street to improve local connectivity and traffic flow
- retention of existing heritage buildings for potential reuse for community activities
- commercial and retail development primarily located to the eastern side of the site, in close proximity to the Fairfield Road pedestrian overpass, providing good access to Yeerongpilly Station. Buildings in this location have been planned to be between six to nine storeys.

Residential development would be more densely developed to the south of the site along the southern site boundary. Building height would scale down toward the north of the site, specifically:

- high density residential development (nine to12 storeys) is projected for the southern boundary of the site
- medium-high density residential development (six to nine storeys) is projected to develop to the north of the high density residential area
- medium density residential development (four to six storeys) is the be located along the new 'Main Street'
- low-medium density residential development (two to four storeys) is to be located to the north of the site along King Arthur Terrace.

The first release of land has been released to the market for development and development applications lodged with Brisbane City Council for several sites. It was anticipated that a portion of the site would be developed prior to construction of the Project. However, the effects of the January 2011 flooding in the Brisbane River has caused the development scope and programme to be revised.

The increased capability in conjunction with new development associated with the Cross River Rail Yeerongpilly Station, would directly support the transit oriented function of the Yeerongpilly TOD. Cross River Rail would provide emphasise the importance of a TOD at this location.

2.3 Local planning framework

There are several instruments that outline Brisbane City Council's planning intention for planning and development. These are:

- Brisbane City Plan 2000
- Brisbane City Council Local Laws.

As identified in **Section 2.1.1**, by virtue of provisions established in Schedule 4 of the SP Regulation, the Project would be exempt from assessment against the City Plan. However, as required under Section 3.3.3.1 of the TOR, an assessment of the local planning frameworks has been undertaken.

2.3.1 Brisbane City Plan 2000

The City Plan provides both strategic and statutory land use and planning guidance for future development within the Brisbane City Council LGA. The City Plan provides a three level approach to planning in Brisbane, being the Strategic Plan, Area Plans and Local Plans.

Strategic Plan

The strategic plan sets out the broad planning policy for the LGA and expresses the overall land use structure for the city to the planning horizon of 2011. To guide strategic planning for the LGA, the plan identifies:

- a vision
- desired environmental outcomes (DEOs) and Strategies for the City
- elements of the city, including the green space system, residential neighbourhoods, industrial locations, centres, movement system, native title and heritage.

CityPlan Vision

Brisbane City Council's vision for Brisbane is *the Liveable City' – Brisbane will be the most liveable and progressive city in the Asia–Pacific Region*. There are a number of aspects of the City Plan vision that are relevant to Cross River Rail including:

- enhancing the City's quality of life
- Brisbane as the economic, cultural, social and administrative heart of the South East Queensland region
- a human scale living environment with a sense of place and based on the City's subtropical character
- each of Brisbane's local communities to have a clear sense of identity and have ready access to a wide range of services and public transport facilities
- infrastructure such as transportation 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 DEOs for the city.

Desired Environmental Outcomes and Strategies

The City Plan sets out broad city-wide development intentions known as DEOs. DEOs are used to assess the likely outcomes of the Project at a strategic level, determining whether the project accords or conflicts with the overarching directions of the City Plan. DEOs relevant to the Project are:

- community life, health and safety
- land use and built environment
- access and mobility.

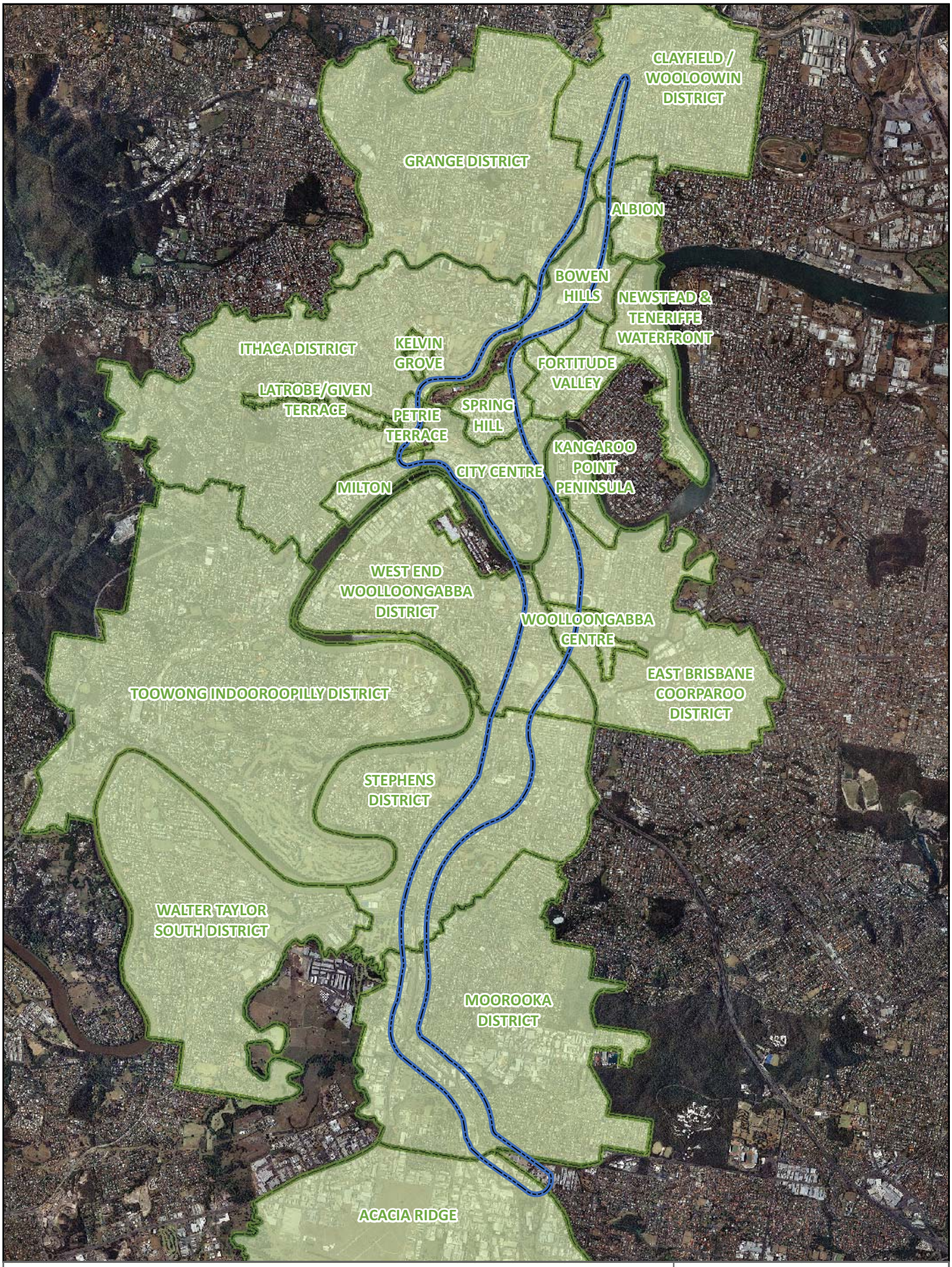
The relevance and accordance with these DEOs is described in **Table 2-5**.

Table 2-5 City Plan Desired Environmental Outcomes

Desired Environmental Outcome	Project relevance
Community life, 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	This DEO is relevant to the project as it aims to achieve community life, health and safety through enhanced accessibility such as equitable access to centres, services, facilities and transport. Pollution reduction is also an important component of the DEO. The DEO aims to reduce pollution through encouragement of the use of public transport, cycling and walking to minimise private vehicle use.
Land use and built environment 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, centres, employment areas and transport links	This DEO is relevant to the Project as it supports compact, self-contained, smart, networked communities that use and reuse land and other resources more efficiently and restricts urban sprawl. The DEO also seeks to maintain the city centre as the dominant centre, to be used higher order activities in South East Queensland, supported by a network of multi–purpose and special purpose centres Transport/land use integration is an important factor in realising the intent of the DEO as well as ensuring effective linkages between centres for sustainable transport modes.
Access and mobility 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	This DEO is relevant to the Project as it seeks to support a movement system that is integrated with the land use pattern of the region. This system would maximise efficient use and enhance the accessibility of the movement system through promoting a pattern of development that reduces private motor vehicle dependency and increases potential for use of public transport, cycling and walking. Land use and transport integration plays a key role in minimising time and distance travelled for journeys to work. The intent of the DEO is also to support higher density development and mixed use development in Centres to encourage efficient accessibility. This will result in locating employment and housing uses closer together to support accessibility, convenience, safety and efficiency and encourage the use of public transport, cycling and walking as journey to work modes The movement system would not only provide a connected network within the Brisbane City but will also integrate with transport networks of the South East Queensland region.

Local plans

The City Plan includes local plans and neighbourhood plans, which provide detailed planning for specific localities and guide the future development of these specific areas. These plans take precedence over City Plan area provisions. The study corridor contains several areas addressed by local and neighbourhood plans, these are shown in **Figure 2-3**.



LEGEND

- Study Corridor
- Local Area Plan Boundary

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 2-3

Local Area Plan Boundaries

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The Terms of Reference requires the EIS to looks at all Local, District and Neighbourhood Plans that are located within or partially within, the study corridor. However, there are a number of plans that would not be affected by the Project, including:

- Clayfield/Wooloowin District Local Plan
- Grange District Local Plan
- Albion Neighbourhood Plan
- Spring Hill and Petrie Terrace Local Plan
- Milton Local Plan
- Kangaroo Point Peninsular Neighbourhood Plan
- Kangaroo South Renewal Strategy.

Information relating to these local plans is addressed in **Appendix A**.

The relevant local and neighbourhood plans, located within or partly within the study corridor are:

- Bowen Hills Local Plan
- Ithaca District Local Plan
- City Centre Neighbourhood Local Plan
- East Brisbane/Coorparoo District Plan
- Woolloongabba Centre Neighbourhood Plan
- Stevens District Local Plan
- Moorooka District Local Plan
- Acacia Ridge Local Plan.

Bowen Hills Local Plan

Bowen Hills local plan generally includes the suburb of Bowen Hills and covers a large portion of the northern section of the study corridor.

Capitalising on the area's proximity to Brisbane CBD and Fortitude Valley, the local plan proposes intensification of land uses, particularly around transport nodes.

Major sites in the local plan area include RNA Showgrounds and Mayne Rail Yard. These areas would be redeveloped in accordance with a master plan and will develop as high quality mixed use environments. These developments would be integrated with existing surrounding areas and open space areas.

Growth and development is also projected in association with Royal Brisbane and Women's Hospital. Development associated with the hospital is likely to resemble health related commercial activity and office uses, forming synergies with health services related to the hospital.

A large proportion of this area has also been identified as the Bowen Hills UDA.

Significant works are planned within the Bowen Hills local planning area as part of the Project. The Project would provide a new, full-time operating rail station to replace the existing Exhibition Station, potentially acting as an indirect catalyst for intensification of residential and commercial land uses as identified in Bowen Hills local plan.

Bowen Hills local plan identifies the potential for redevelopment of RNA Showgrounds and the Mayne Rail Yard to achieve the desired outcomes for the area; however this is a longer term development proposal.

The Project would require part of Mayne Rail Yard for the establishment of new surface rail infrastructure, which is partially inconsistent with the Local Plan objectives. In the event that Mayne Rail Yard is redeveloped, the new rail infrastructure would need to be accommodated.

Ithaca District Local Plan

Ithaca District is a large area that covers a large part of the inner west of Brisbane. Land within the local plan area to the north-west of Victoria Park is within the study corridor.

Commercial and light industrial uses are to be primarily located between Milton Road and the Brisbane River within the north Milton industrial precinct. This allows for efficient access to the Brisbane CBD and the major road networks of Milton Road, the Inner City Bypass and the Pacific Motorway.

Further commercial development is also proposed for the area immediately north and west of Victoria Park around the existing sites of Royal Brisbane and Women's Hospital and Queensland University of Technology's Kelvin Grove Campus.

Residential development within the District is primarily established as character 'timber and tin', single lot dwellings. Retention of these areas is guided by local planning.

Enoggera and Ithaca creeks are to be protected for their ecological and recreational values. Improved recreation links are to be established along the length of the waterway corridors. These waterways will be rehabilitated to enhance their natural values.

The Project would not be located within Ithaca District and as a result, is considered to be generally consistent with local planning in these areas as there are no surface impacts and changes to future planning would not be affected. Some indirect support of the proposed commercial development around Royal Brisbane and Women's Hospital may be experienced due improved rail transport accessibility at Ekka Station.

City Centre Neighbourhood Plan

The City Centre Neighbourhood Plan comprises the whole of the Brisbane CBD and is included within a large proportion of the central section of the study corridor.

Brisbane City is the primary commercial centre for Queensland and as a result land use planning for the city centre encourages development of high density commercial and residential areas, complemented by a vibrant retail core and high level recreational and entertainment uses. To encourage intensity of development within the inner city, the neighbourhood plan does not enforce a maximum building height, unless a building is located in a sensitive area (eg adjacent a heritage place).

Residential development is considered essential to the development of the city centre and a number of sites have been identified as strategic redevelopment areas within the inner city area. These sites have been earmarked as potential office development or hotel development.

Whilst reinforcing the major high rise commercial areas and supporting intensity of uses, development must also maintain the character and integrity of heritage places located in the city centre. Additionally, development must also support reduced dependence on private vehicles through high quality pedestrian connections and access to public transport.

The plan establishes special context areas (SCA), such as places of historical and cultural significance or areas that offer future development opportunities. SCAs include:

- North Bank, located along the Brisbane River Bank from the William Jolly Bridge to the City Botanic Gardens.
- Town Reach, located along the eastern bounds of the local plan along Brisbane River. This area is identified as a significant redevelopment opportunity. Future development is to allow provision for an underground train or busway station.
- Central Station Plaza provides opportunities for new areas of public open space and associated urban development. Development is projected to contain a mix of uses including major office buildings/hotel and should strengthen linkages between Spring Hill and the city core. This plan also requires allowance for the future integration of a new rail network and intermodal transport connection to be integrated into the development.
- Countess Street and Roma Street Station provides opportunity for development to strengthen the connection between the city centre, Petrie Terrace, Normanby, Kelvin Grove and inner western suburbs. Development is to be a lower intensity to the city to reflect the area's purpose as a transition zone between the city and the inner urban suburbs.

The Project would be tunnelled through the city centre, with surface works limited to areas including, and immediately adjacent to, two new underground stations located at Albert Street and the existing Roma Street Station.

The Project supports the local planning vision for the city centre through directly assisting in the reduction of private vehicle transport in the city centre and increasing reliance on public transport modes.

The neighbourhood plan identifies that Roma Street and Albert Street are developed as primary pedestrian streets. This designation would support the movement of passengers between the Roma Street and Albert Street stations and key locations, such as Queen Street.

Indirectly, the Project supports the vision through facilitating increases in densification of the urban form and creating a more connected city centre. The Project also supports proposed development outcomes within SCAs, specifically development associated with North Bank due to the location and improved access to and from the Albert Street Station and Countess Street and Roma Street vicinity through improving public transport connectivity to this area.

The Project would improve accessibility to key locations within the Brisbane CBD, such as around Countess Street and Roma Street or lower Albert Street and Alice Street therefore enabling the intensification of residential, commercial or entertainment uses within these areas.

East Brisbane/Coorparoo District Local Plan

The East Brisbane/Coorparoo District Local Plan includes East Brisbane and parts of Kangaroo Point, Woolloongabba, Greenslopes and Coorparoo. It covers part of the Kangaroo Point and Woolloongabba areas within the study corridor.

The key development principles of the local plan are to protect the existing significant character housing and areas with environmental values, whilst also maintaining a wide range of residential and commercial uses and improving vehicle and pedestrian/cycle access throughout.

Environmental resources, such as Norman Creek, are to continue to be protected for their natural values, forming a wider network of natural areas.

Centres, such as Coorparoo Junction and Stones Corner, are to remain as important places across the district for employment, retail and social purposes.

A new station at Woolloongabba would be consistent with local planning. Planning intent for this area identifies future growth and development of the Woolloongabba site. This would be supported by the introduction of new transport infrastructure. The intent for development of this site is that it would develop through transit oriented principles which is reliant on the provision of high quality transport links.

The establishment of a station on the Goprint site in Woolloongabba could provide a central node for increased residential uses and densities as well as opportunities for further commercial development.

Focussing development around this location is also likely to assist in the protection of character housing and environmental values within the area, in line with local and neighbourhood planning principles.

Woolloongabba Centre Neighbourhood Plan

The Woolloongabba Centre Neighbourhood Plan covers the primary commercial area within Woolloongabba along Stanley Street, Logan Road and Ipswich Road. The western half of this local plan area is within the study corridor.

Significant local planning improvements are proposed by the local plan. Key land use changes and developments located within the study corridor include:

- development of an intensive core area at the intersection of Logan Road and Jurgens Street, containing a mix of uses with heights of up to 20 storeys
- residential uses are to continue to be located at Woolloongabba Hill with a mix of housing types supported. Intensification of uses in this area is proposed, with maximum building height reaching four storeys.
- Logan Road and Stanley Street are to continue to develop through a mix of uses. Intensification of this area through new development is supported to buildings heights of six to eight storeys.

The Project would be tunnelled in this area and as result, is unlikely to generate any significant direct change to the local planning. Therefore future development is likely to be consistent with local and neighbourhood planning intent. However, the Project would indirectly aid the development proposed as part of the Woolloongabba Centre neighbourhood plan to through the provision of improved public transport accessibility to the neighbourhood.

West End-Woolloongabba District Local Plan

The West End-Woolloongabba District Local Plan covers an area primarily occupied by Woolloongabba, West End, Dutton Park and Highgate Hill. Significant local planning improvements are proposed by the local plan for major sites within the study corridor.

Key land use changes and developments located within the study corridor include:

- The site currently occupied by Goprint is earmarked for potential future redevelopment to capitalise on the location of the site to the South East Busway (Woolloongabba Station) using transit oriented development principles and allowing for a mix of uses, including high density residential development.
- Buranda residential precinct located along Ipswich Road, adjacent the Princess Alexandra Hospital, is to provide medium density residential development. Development is to provide a range of housing types.

A new station at Boggo Road within this area would be consistent with the local planning. Planning intent for this area identifies future growth and development of the Boggo Road site would be supported by the introduction of new transport infrastructure. The intent for development of this site is that it would develop through transit oriented principles which is reliant on the provision of high quality transport links.

The establishment of a station within Boggo Road Urban Village could provide a central node for increased residential uses and densities, as well as opportunities for further commercial development.

Focussing development around this location is also likely to assist in the protection of character housing and environmental values within the area, in line with local and neighbourhood planning principles.

Stephens District Local Plan

The Stephens District Local Plan covers the suburbs of Dutton Park, Fairfield, Yeronga and Yeerongpilly. A large proportion of the southern section of the study corridor traverses through this local plan area.

The Local Plan identifies the need to provide further residential developments within the District through redevelopment of redundant sites such as Boggo Road Gaol and Tennyson Power Station. These sites are to be supported by public transport and will need to be sympathetic to the existing character housing that is prevalent throughout the District.

Ipswich Road is to remain as the major entry point to the District and as such, will be a key location for accommodating more intensive residential and commercial/retail development.

Open space along the Brisbane River and access to the river should be maintained and enhanced. While existing accesses would be maintained, opportunities should be explored to provide greater access through the redevelopment of redundant sites.

The Project would indirectly assist in achieving the planning principles for the areas around Yeerongpilly Station through the provision of improved public transport accessibility. Increased rail servicing and new station facilities would increase pedestrian accessibility from identified residential development areas such as Tennyson Power Station.

The local plan identifies that land to be occupied by the major Yeerongpilly worksite contains general industry activities that do not have adverse impacts on nearby residential properties. Post construction, this area may experience pressure for intensified development for uses such as residential. It is unlikely that intense industrial uses that would have adverse impacts on the nearby residential uses would develop. Future land use change would need to be managed through the Stephens Local Plan and other elements of City Plan by the Brisbane City Council.

Moorooka District Local Plan

The Moorooka District Local Plan covers a large area that includes part of the suburbs of Annerley, Moorooka, Salisbury, Nathan, Yeerongpilly and Rocklea. A large proportion of the southern section of the study corridor traverses through this local plan area.

The plan identifies areas of character residential properties that should be retained. The local plan identifies that future residential development should be developed in a way that contributes to the character of the area, while also being diverse enough to meet the needs of the community.

Significant environmental features such as Toohey Forest, Rocky Waterholes Creek and Stable Swamp Creek are to be preserved for their ecological and recreational values. Smaller local parklands are to complement these larger environmental features. Views from within the area to other environmental features such as hills or ranges, or to the city centre, are to be preserved and complemented through landscape amenity improvements. These include green, leafy streets and attractive commercial and industrial areas.

Works would occur for the Project within this local area. Due to the nature of works, the Project is unlikely to conflict with the development objectives of local planning.

Acacia Ridge Local Plan

The Acacia Ridge Local Plan covers a large area in Brisbane's south. The most southern extent of the study corridor is located within this local plan area.

The Acacia Ridge area is dominated by Archerfield Airport.

Future residential development within this area is to consider potential sensitivity implications of being located within close proximity to the airport, light and medium industrial uses.

Environmentally sensitive areas around Blunder Creek and Oxley Creek are to be protected from intensive industrial activities. The local plan identifies that rehabilitation around these waterways is required and that provision of active transport networks is encouraged.

Works would occur for the Project within this local area. Due to the nature of the works, the Project is unlikely to conflict with the local plan development objectives.

2.3.2 Area designations

The City Plan sets out development intentions and DEOs for each area, which identifies the intended ultimate pattern of development that is to be achieved. This area classification is identified on the planning scheme maps within the City Plan.

Planning scheme area classifications for the study corridor are shown on **Figure 2-4** (whole of corridor), **Figure 2-5** (north), **Figure 2-6** (central) and **Figure 2-7** (south) and the classifications are outlined in **Table 2-6**.

2.3.3 Local laws

Local laws are adopted by councils as a means to having a greater level of protection over particular places or activities. Local laws are administered under the *Local Government Act 2009*. They provide local governments with the ability to establish permit or licence regimes for activities they seek to regulate, to create offences for unacceptable behaviour and to allow for the issue of compliance or abatement notices.

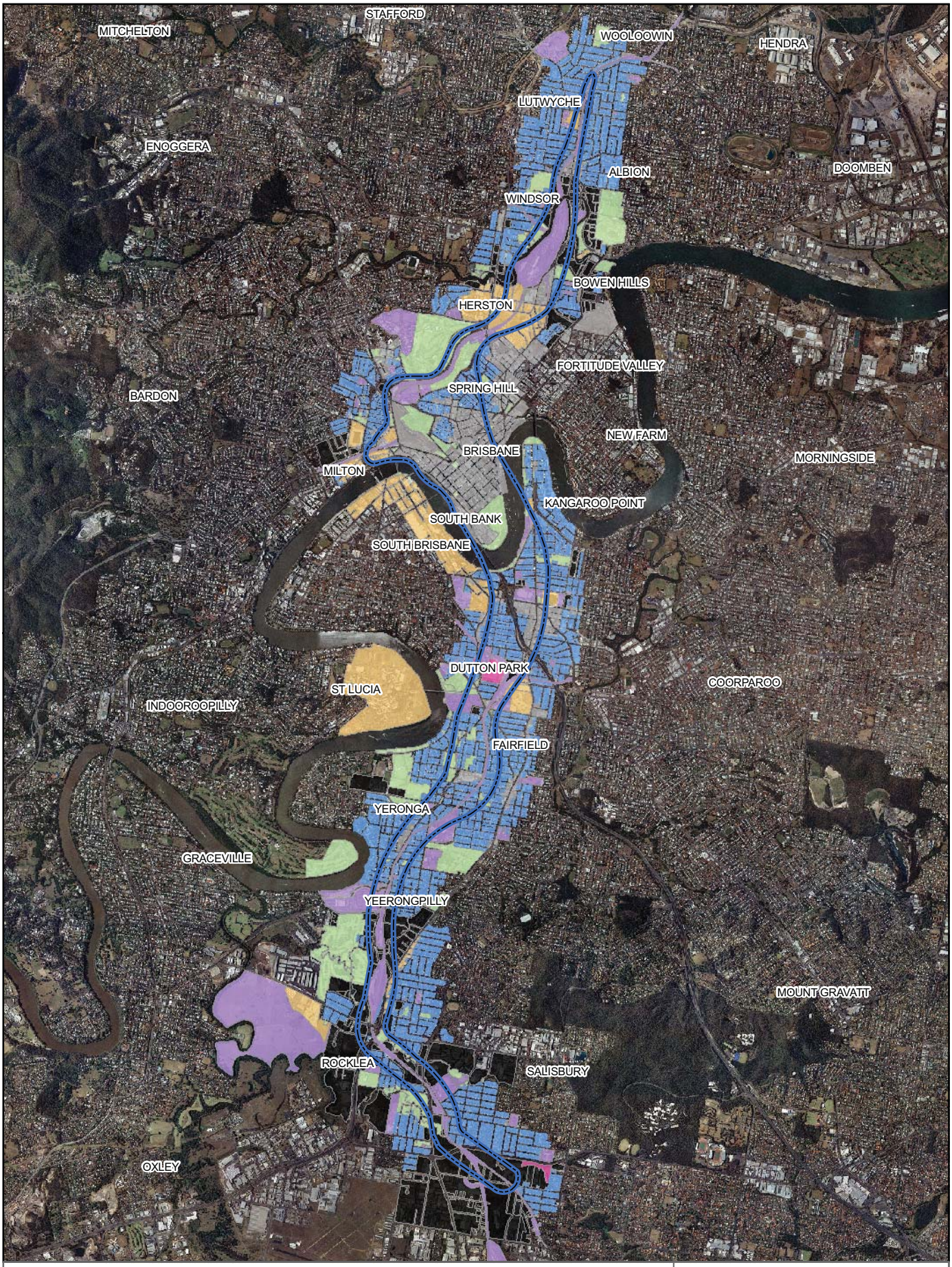
Brisbane City Council currently has 35 local laws and six subordinate local laws. Local laws relevant to the Project are discussed further in **Chapter 4 Project Description**.

Table 2-6 City Plan area designations

Area	Purpose/intent	Project relevance
Character Residential	Character residential areas primarily accommodate pre–1946 houses. Key character residential precincts located within the study corridor are located in areas of Spring Hill, Woolloongabba and Fairfield. Character residential areas are included in the demolition control precinct.	Character and low density housing areas located in areas adjacent and in close proximity to rail stations serviced by the Project may eventually be redeveloped at higher densities to benefit from increased transport connectivity. Character and low density areas located in areas that removed from rail infrastructure are unlikely to experience changes in density. This is a result of existing planning provisions that seek to retain traditional housing stock and character and to maintain the low density urban form.
Low Density Residential	Predominantly comprised of detached houses, one or two storeys in height. Prominent low density areas within the study corridor are located within Albion/Wooloowin.	
Low-medium Density Residential	The Low–Medium Density Residential Areas contain a mix of houses up to two storeys, 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. Low-medium density areas within the study corridor are the primary residential classification within the study corridor.	It is envisaged that low-medium density areas, predominantly located within the Wooloowin, Albion, Fairfield, Yeronga and Yeerongpilly areas of the study corridor, will progressively be redeveloped at higher densities. This is specifically relevant to areas close to Albion, Wooloowin and Yeerongpilly stations.
Medium Density Residential	Medium Density Residential Areas are located in near City locations with good access to public transport and centres. Medium Density Residential Areas will accommodate single unit dwellings and multi–unit development up to five storeys. Medium density residential areas are primarily located within Kangaroo Point and Woolloongabba within the study corridor.	Areas classified as medium or high density residential are unlikely to change as a consequence of the Project.
High Density Residential	High Density Residential Areas are located close to the City with very good access to public transport and facilities. High Density Residential Areas are in locations with outstanding views to the Central City or Brisbane River. High density residential areas are primarily located within Kangaroo Point and Spring Hill within the study corridor.	

Area	Purpose/intent	Project relevance
Special Purpose Centre	Special Purpose Centres provide for particular major activities. Each special purpose facility is designated differently within the scheme determined by the purpose of the development. The study corridor contains a number of special purpose centres including: • SP1 – Major Hospital and Medical Facility (including the Prince Albert Hospital and Royal Brisbane and Women's Hospital), • SP2 – Major Education and Research Facility (including QUT Gardens Point) • SP4 – Major Sporting Stadium (Gabba Stadium) • SP5 – Entertainment Centre (RNA Showgrounds) • SP8 – Major Residential Institution (Albion) • SP13 – Office Park (Bowen Hills)	A number of special purpose centres with high travel demands would benefit from the improved public transport accessibility provided by the Project, including: • Royal Brisbane and Women's Hospital • RNA Showgrounds during major events • office park located to the south of Mayne rail yards • Gabba Stadium during major events • Princess Alexandra Hospital • Moorooka Car Sales and Service area along Ipswich Road These area classifications are unlikely to change as a consequence of the Project.
Multi-Purpose Centre (MP1) City Centre	The political, administrative, economic and social heart of Brisbane	A number of multi-purpose centres with high travel demands would benefit from improved public transport accessibility provided by the Project, including: • city centre (MP1) • major centre (MP2), includes areas in Bowen Hills, Spring Hill and Woolloongabba • suburban centre (MP3) These area classifications are unlikely to change as a consequence of the Project.
Multi-Purpose Centre (MP2)	The major concentrations of Centre Activities outside the City Centre. Major Centres are located at Spring Hill and Woolloongabba on the outskirts of the Brisbane CBD.	
Multi-Purpose Centre (MP3) Suburban Centre	Characterised by small tenancies within a limited area, or lower density larger tenancies over a broader area. They generally provide a variety of services and contains more than 6,000m^2 of gross floor area MP3 areas include Spring Hill, Fairfield, Bowen Hills, Albion and Yeronga.	
Multi-Purpose Centre (MP4) Convenience Centre	Characterised by smaller centres providing local services within walking distance of residents. They generally contain less than 6,000 m^2 of gross floor area. MP4 areas include Dutton Park.	
Emerging Community	Areas containing land suitable for future urban development. Land within Emerging Community areas require the preparation of a neighbourhood structure plan before development can occur. Emerging communities areas are located in Dutton	Future urban development within this area would be supported by improvements to public transport accessibility as a result of the Project's station at Boggo Road.

Area	Purpose/intent	Project relevance
	Park.	
Community Use Area	Land in the Community Use Area may be either privately or publicly owned and accommodates a range of community uses. Community uses are designated differently within the scheme, determined by the purpose of the development. The study corridor contains a number of community use areas including: • CU1 – Cemetery (Brisbane South Cemetery) • CU2 – Community Facilities (such as religious facilities) • CU4 – Education Purposes • CU5 – Emergency Services (including ambulance stations etc) • CU7 – Railway Activities • CU8 – Utility Installation	With exception to community use areas that may be resumed for the Project, it is unlikely changes to these classifications would occur as an indirect result of the Project.
Park Land	Characterised by informal open air recreation and outdoor cultural and educational activities. Areas may also provide opportunities for informal sports or other events on a casual basis. Major areas include Victoria Park and Roma Street Parklands.	Park land and sport and recreation areas are unlikely to change as a consequence of the Project. Some areas of park land within Victoria Park would be resumed for the Project.
Sport and Recreation	Provides for more formal sport and recreation and may include club buildings and associated off-street parking facilities.	
Light Industry	Comprised of industries and warehousing that has low environmental impact.	Industrial areas within Yeerongpilly would be acquired for the construction and operation of the Project. Following construction, there may be pressure to redevelop land surplus to the Project for non-industrial urban development to capture the benefits of improved public transport access. This would be subject to a separate planning process.



LEGEND

- Study Corridor

Area Classification

- Community Use Areas
- Emerging Communities
- Green Space Areas
- Industrial Areas
- Investigation Area
- Multi Purpose Centres
- Residential Areas
- Special Purpose Centres

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 2-4

City Plan Area Classifications - Corridor

0 0.5 1 1.5 2 2.5 km

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CrossRiverRail

SKM aurecon CRR JOINT VENTURE

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LEGEND

- Study Corridor

Area Classification

- Community Use Areas
- Emerging Communities
- Green Space Areas
- Industrial Areas
- Investigation Area
- Multi Purpose Centres
- Residential Areas
- Special Purpose Centres

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 2-5

City Plan Area Classifications (Northern Section)

0 0.25 0.5 0.75 1 km

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N

CrossRiverRail

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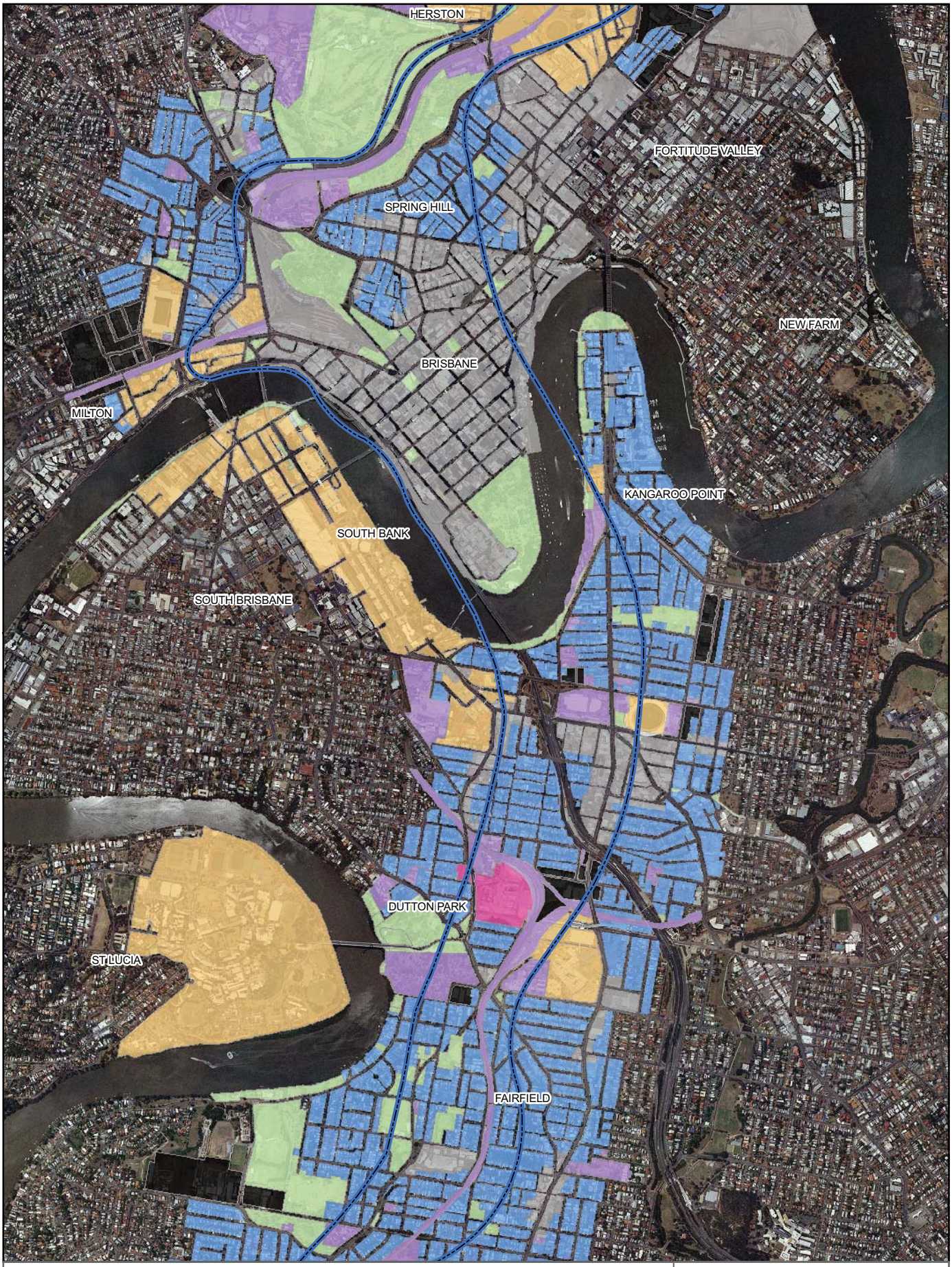

LEGEND

- Study Corridor

Area Classification

- Community Use Areas
- Emerging Communities
- Green Space Areas
- Industrial Areas
- Investigation Area
- Multi Purpose Centres
- Residential Areas
- Special Purpose Centres

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 2-6

City Plan Area Classifications (Central Section)

0 0.25 0.5 0.75 1 km

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CrossRiverRail

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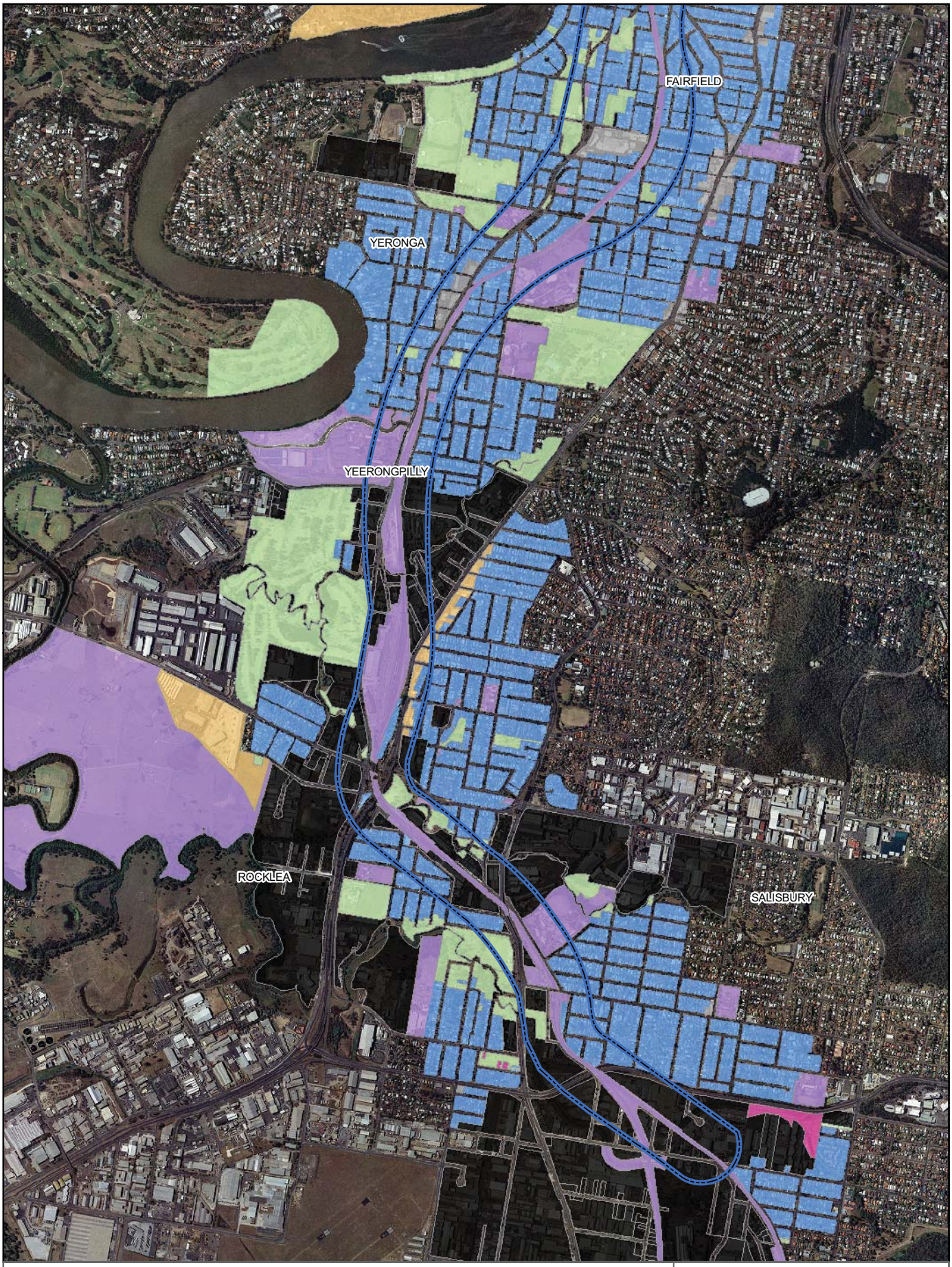

LEGEND

- Study Corridor

Area Classification

- Community Use Areas
- Emerging Communities
- Green Space Areas
- Industrial Areas
- Investigation Area
- Multi Purpose Centres
- Residential Areas
- Special Purpose Centres

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 2-7

City Plan Area Classifications (Southern Section)

0 0.25 0.5 0.75 1 km

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1:30,000 at A4

CrossRiverRail

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3 Description of existing land use

3.1 Existing land uses

A survey of existing land uses within the study corridor was undertaken as part of these investigations in May 2010. This was supplemented by further surveys for the southern area in September 2010. Land use descriptions used to classify the existing land uses have been outlined in **Table 3-1**

Table 3-1 Land use categories

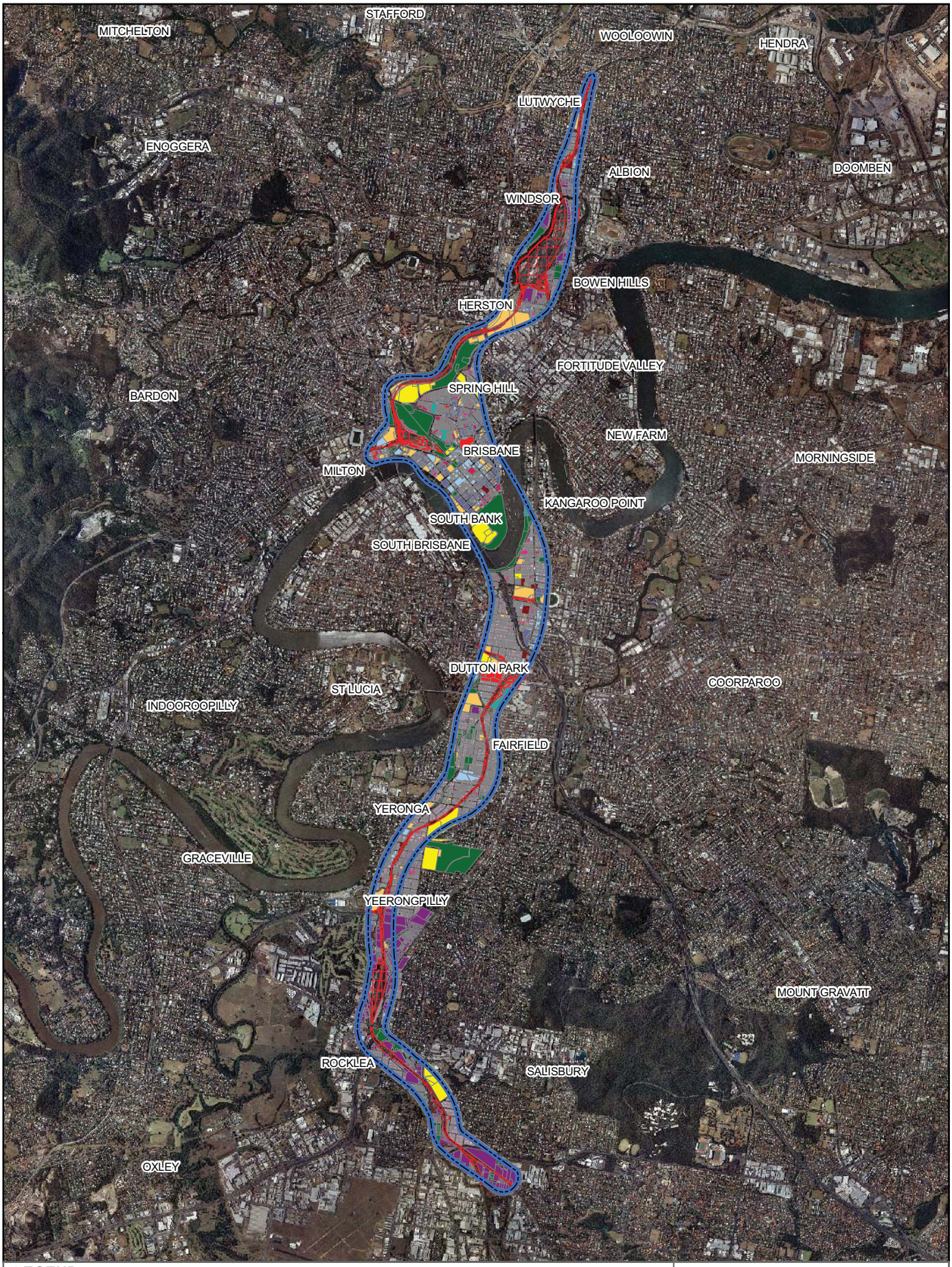
	Land use	Definition
	Residential-Detached	Individual residences. Premises that provide individual accommodation for more than one group of people/household. Boarding houses, guest houses, private hotels and motels.
	Residential – Multiple Unit	Dwellings that contain more than one household for example unit and apartment complexes.
	Residential-Accommodation	Short term/temporary accommodation including hotels, motels and guesthouses
	Mixed Use (Residential/ Commercial/ Retail)	Mixed use development that contains residential, commercial and retail activities. Generally coordinated with commercial or retail uses on the ground floor with residential uses situated above.
	Mixed Used (Commercial/ Retail)	Mixed use development that contains a range of commercial and retail uses within the one premises
	Commercial/ Retail	Premises used for a commercial or retail activity (retail shopping, restaurants, food outlets and convenience stores, etc)
	Office Space	Premises used for typical office activities.
	Industry	The manufacture, production, processing, repair, alteration, dry cleaning or laundering (not including laundromats), recycling, storage or transfer of any article, material or thing whether solid, liquid or gaseous. Office activities that serve an administrative function directly related to a specific manufacturing or distribution activity. Businesses selling heavy machinery, motor vehicles, boats, timber or other building materials. Scientific or technological research, investigation or testing.
	Community	Retirement and aged care. Library, church, hall. Emergency services.
	Education	Primary, secondary and tertiary education facilities.
	Health Care	Premises that provide medical care and treatment
	Open Space/ Park/ Recreation	Public open space Sporting clubs and facilities
	Car Park	Area used solely for the purpose of providing a car park
	Vacant	Area with no current defined use.

In addition to existing land use descriptions, a number of other terms have been used to describe specific land uses in the study corridor. The definitions of these uses are provided in **Table 2-6**.

Land use data gathered was identified under the categories defined in **Table 3-2** and shown in **Figure 3-1** (whole of corridor), **Figure 3-2** (north), **Figure 3-3** (central) and **Figure 3-4** (south).

Table 3-2 Key terms and definitions

Key term	Definition
Low Density	A building that is one to two storeys in height.
Medium Density	A building that is three to five storeys in height.
High Density	A building that is greater than five storeys in height.
Character Building	A building that was generally constructed prior to 1946 and is representative of Brisbane's history.
Detached Dwelling	An individual domestic residence that is not attached to other residences.
Multiple Unit Dwelling	A place of short and long term residence by several discrete households, domestic groups or individuals irrespective of the building form. Multi–unit dwellings may be contained on one lot or each dwelling unit may be contained on its own lot subject to community title schemes.



LEGEND

- Study Corridor

Existing Landuse

- Residential - Detached
- Residential - Multiple Unit
- Residential - Accommodation
- Mixed Use (Resid/Comm/Retail)
- Mixed Use (Commercial/Retail)
- Commercial/Retail
- Office Space
- Industry
- Community
- Education
- Health Care
- Car Park
- Open Space/Park/Recreation
- Vacant
- Transport Infrastructure

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 3-1

Existing Land Use - Corridor

0 0.5 1 1.5 2 2.5 km

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CrossRiverRail

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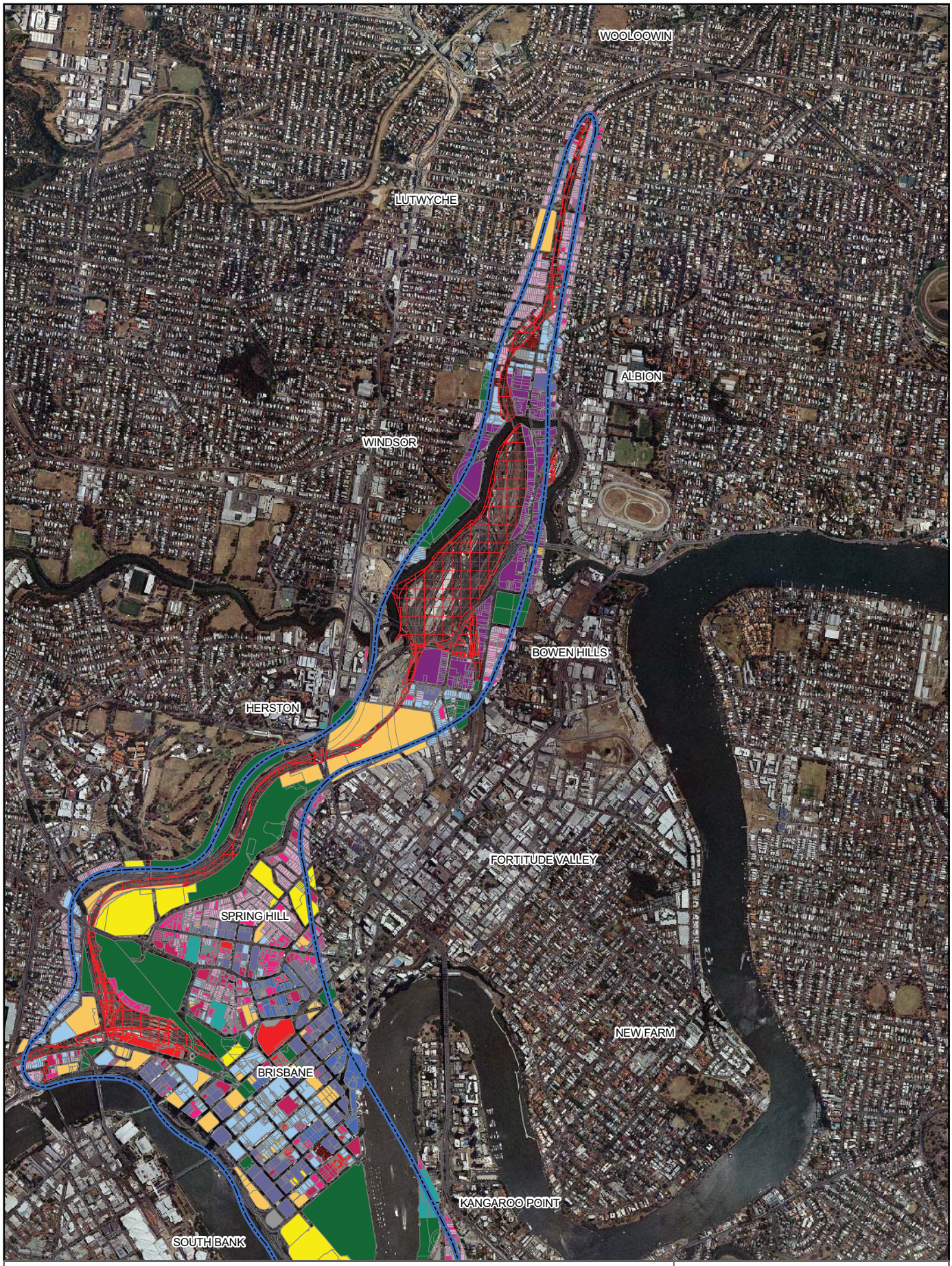

LEGEND

- Study Corridor

Existing Landuse

- Residential - Detached
- Residential - Multiple Unit
- Residential - Accommodation
- Mixed Use (Resid/Comm/Retail)
- Mixed Use (Commercial/Retail)
- Commercial/Retail
- Office Space
- Industry
- Community
- Education
- Health Care
- Car Park
- Open Space/Park/Recreation
- Vacant
- Transport Infrastructure

0 0.25 0.5 0.75 1 km

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CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 3-2

Existing Land Use (Northern Section)

CrossRiverRail

SKM aurecon CRR JOINT VENTURE

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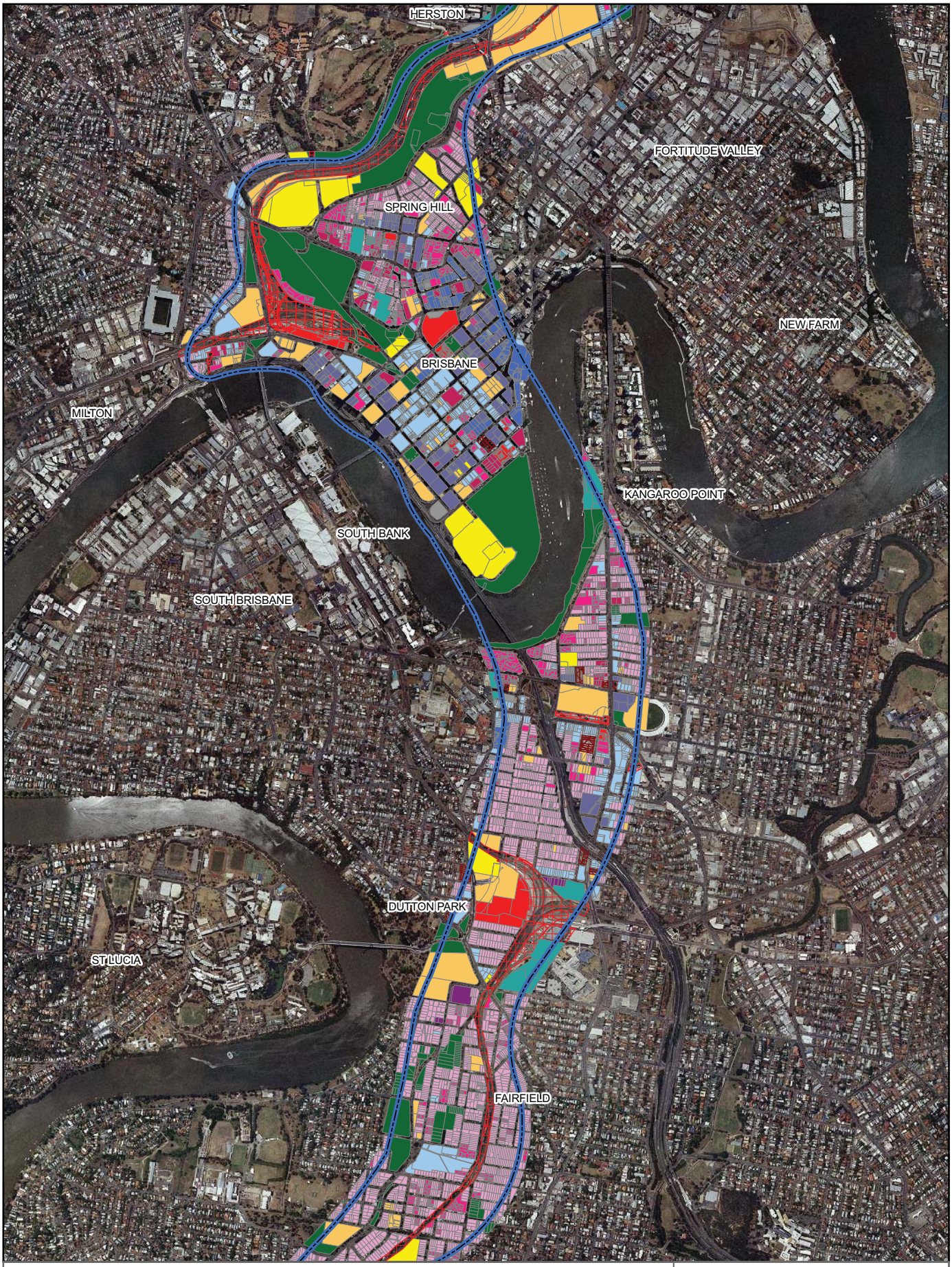

LEGEND

- Study Corridor

Existing Landuse

- Residential - Detached
- Residential - Multiple Unit
- Residential - Accommodation
- Mixed Use (Resid/Comm/Retail)
- Mixed Use (Commercial/Retail)
- Commercial/Retail
- Office Space
- Industry
- Community
- Education
- Health Care
- Car Park
- Open Space/Park/Recreation
- Vacant
- Transport Infrastructure

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 3-3

Existing Land Use (Central Section)

0 0.25 0.5 0.75 1 km

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CrossRiverRail

SKM aurecon CRR JOINT VENTURE

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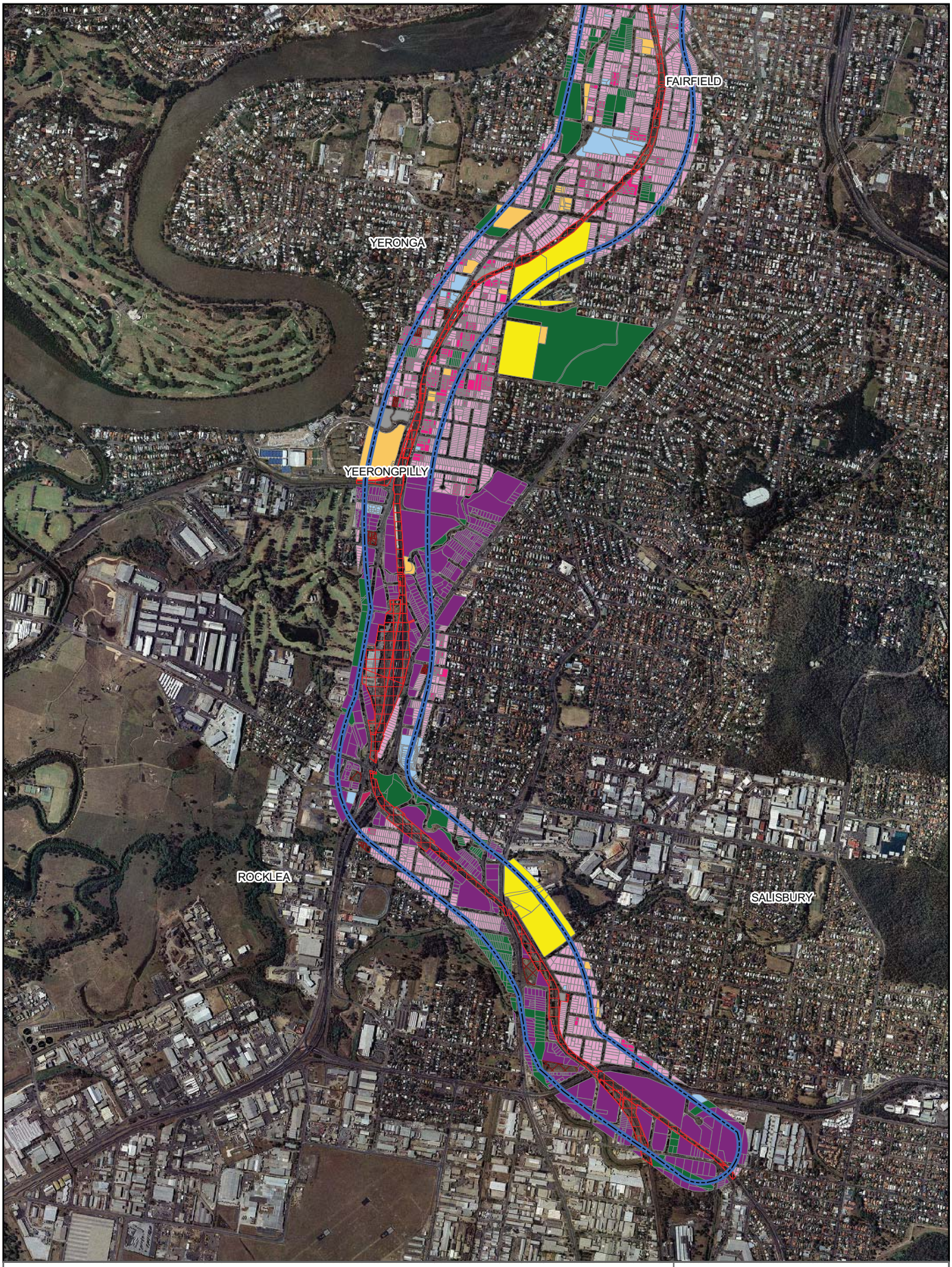

LEGEND

- Study Corridor

Existing Landuse

- Residential - Detached
- Residential - Multiple Unit
- Residential - Accommodation
- Mixed Use (Resid/Comm/Retail)
- Mixed Use (Commercial/Retail)
- Commercial/Retail
- Office Space
- Industry
- Community
- Education
- Health Care
- Car Park
- Open Space/Park/Recreation
- Vacant
- Transport Infrastructure

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 3-4

Existing Land Use (Southern Section)

0 0.25 0.5 0.75 1 km

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CrossRiverRail

SKM aurecon CRR JOINT VENTURE

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3.1.1 Overall study corridor

The study corridor extends from just north of Wooloowin Station in the north to just south of Salisbury Station in the south (**Figure 4-1** in **Chapter 4 Project Description**). The study corridor generally follows existing rail corridor alignments, with exception of the central section between Roma Street Station and Park Road Station. The study corridor is approximately between 400 m and 2 km in width.

A number of major land uses are located within the study corridor including hospitals, sporting and entertainment facilities, educational institutions, science and technology precincts and significant open space and recreation areas. In addition to these, the corridor includes the Brisbane CBD containing land uses and activities that are of State and regional importance.

A number of key development areas are also located within the corridor including land at Bowen Hills, Woolloongabba, Dutton Park and Yeerongpilly.

In addition to the existing rail corridor, a number of significant transport corridors also bisect the corridor at various locations including the Clem Jones tunnel and associated road networks, Bowen Bridge Road, the Inner City Bypass, Pacific Motorway, Ipswich Road and Fairfield Road. The study corridor also contains termination points for the future Airport Link and Legacy Way tunnels.

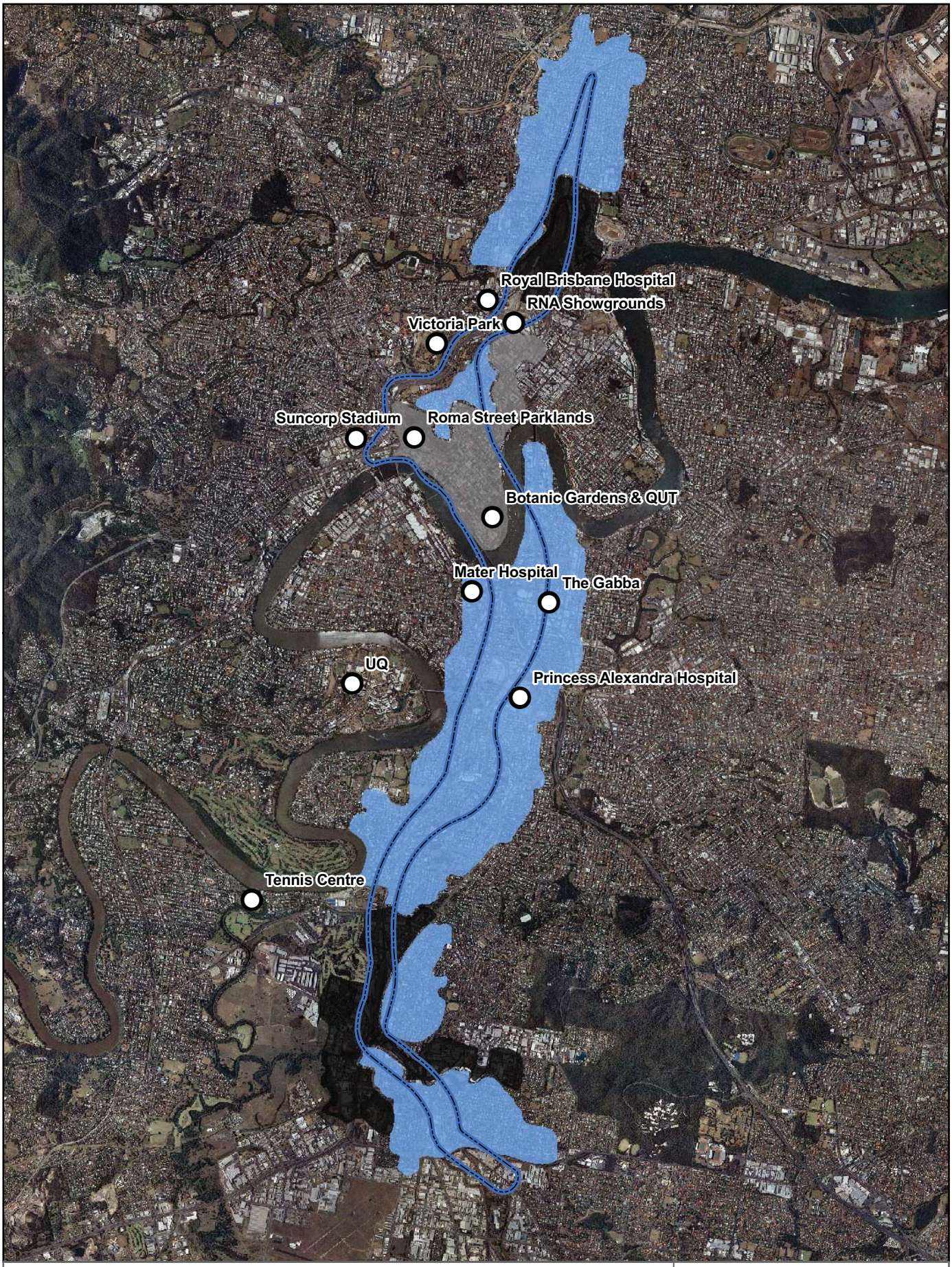
Land uses within the study corridor reflect the inner city and inner suburban location. Land uses comprise a broad mix and generally include areas of residential, commercial, community, open space and light industry.

The study corridor contains a mix of densities with the highest densities located within the Brisbane CBD. Other areas that contain higher density development are situated at key employment areas, such as Woolloongabba, Spring Hill, or around key transport nodes.

Overall, residential is the most prominent land use within the study corridor. Residential areas are located in a number of locations including:

- to the north of Breakfast Creek
- within the suburb of Spring Hill
- between the Brisbane River and Yeerongpilly Station
- east of Ipswich Road and between Stable Swamp Creek and Riawena Road.

Industrial land uses are primarily located within Bowen Hills and between Yeerongpilly Station and Stable Swamp Creek. Commercial uses are predominantly located within the Brisbane CBD area. The general land uses within the study corridor are shown on **Figure 3-5**.



LEGEND

- Key Feature
- Study Corridor

Land Use Precinct

- CBD
- Industry
- Residential

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 3-5

Land Use Context

0 1 2 km

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CrossRiverRail

SKM aurecon CRR JOINT VENTURE

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3.2 Northern section – Wooloowin to Bowen Hills

The Northern Section of the study corridor is dominated by a number of large community uses surrounded by low-medium density residential and industrial uses.

Area classification and existing land uses are described in this section and mapped on **Figure 2-5** and **Figure 3-2** respectively.

3.2.1 Wooloowin/Albion

Future development within the Wooloowin/Albion section of the study corridor is guided by two local plans, Clayfield/Wooloowin District Local Plan and the Albion Neighbourhood Plan. Growth and development within these areas will continue to recognise pre-1946 timber and tin housing precincts and the role these areas have in distinguishing the character of the area.

High density residential development is encouraged around key transport nodes such as Albion and Wooloowin stations.

Commercial uses within the area are to be focussed around Albion Village.

Significant developments that are planned or being constructed within Wooloowin/Albion include:

- The Mill, comprising a mixed use, transit oriented development adjacent the Albion Station
- development adjacent to Holy Cross School is to be predominantly residential with some areas of retail and community use is currently in the development application process.

Area classification

Area classifications for Wooloowin/Albion indicate that the majority of the northern areas will be maintained for residential development with predominantly low density development classified for the western side of the rail corridor and low-medium density residential generally classified for the eastern side of the study corridor.

Other uses within this section include:

- a special purpose – major residential institution west of the rail corridor
- community purpose – railway activities along the rail alignment
- multi-purpose centre – suburban centre south of Wooloowin/Albion, immediately east of Albion Station.
- general and light industry south of Albion Road to Breakfast Creek.

Existing land uses

Wooloowin, Albion and the north-eastern area of Windsor generally comprise a mix of low-density residential uses, commercial and light industrial developments that are typically centred around key transport nodes.

Detached, low density residential dwellings are the dominant land use, with residential areas largely comprised of pre-1946 timber and tin character houses. As the majority of uses along the study corridor are of a residential nature, many of these uses are located immediately adjacent to the rail corridor.

Multiple unit dwellings are also common throughout Wooloowin/Albion, predominantly located around key transport nodes of Wooloowin and Albion stations. While there are a number of older multiple unit dwellings, most are more recent infill developments that have replaced detached character dwellings.

Commercial and light industrial precincts are located around Sandgate and Hudson roads, with land uses consisting of restaurants/cafes, office space, retail, wholesale/warehouse businesses and some vehicle maintenance and service station businesses.

Community facilities located in the vicinity of the rail corridor include Holy Cross Church complex at Bridge Road and Windsor Park.

A number of small open spaces are scattered across the suburbs which provide informal recreation uses. These uses are generally set back by at least a block from the rail corridor in this section.

Other prominent land uses within this section of the study corridor include the Queensland Rail facility at Hudson Road, Unitab complex at Sandgate Road and commuter parking facilities located at Wooloowin and Albion stations.

A number of residential properties, small businesses and an area of vacant land are located between the rail line and Dickson Street. Some areas of vacant land within the Wooloowin/Albion section are for parking by adjacent businesses and commuters.

Access and connectivity in Albion and Wooloowin is disrupted by the existing rail line. Road access is provided at Albion Overpass, Bridge Street and Fraser Street. Pedestrian access is provided via pedestrian bridges at Wooloowin and Albion stations and at road crossings. The Albion Local Plan identifies Albion Road, Albion Overpass and Sandgate Road as key pedestrian/cycle links within the study corridor.

Areas and features of environmental significance, identified in Brisbane City Council's Natural Assets Planning Scheme Policy (NAPS Policy), are located in the vicinity of the rail corridor at Hudson Road, adjacent to the Albion Overpass and McDonald Road and along the northern bank of Breakfast Creek. These environmentally significant areas and features are described further in **Chapter 11 Nature Conservation.**

3.2.2 Bowen Hills

Several large land uses of regional and local importance are located within or near to the study corridor at Bowen Hills, including Royal Brisbane and Women's Hospital, RNA Showgrounds and Mayne Rail Yard.

Significant development and population growth is projected for Bowen Hills. Future development would provide a mixed use precinct containing a range of densities, to optimise its proximity to Fortitude Valley, Brisbane CBD and good access to all modes of transport. The Bowen Hills Station is planned to become a focus for the regeneration of the locality.

Royal Brisbane and Women's Hospital is identified as a key regional health location, generating a significant transport demand from patients and employees alike. Increased land use intensity would support the health precinct and assist connectivity and access to the hospital complex.

Bowen Hills UDA

The declared Bowen Hills UDA is located approximately 3 km from Brisbane CBD. The UDA is approximately 108 ha in area and is bound by Bowen Bridge Road and Enoggera Creek to the west, Mayne Rail Yard and Breakfast Creek to the north, Water Street and St Pauls Terrace to the south and Breakfast Creek, Cintra Road and Markwell Street to the east (refer to **Figure 2-2**).

A number of key landmarks are contained within the UDA including, RNA Showgrounds, Bowen Hills Station and Queensland Newspapers. Bowen Hills UDA is described further in **Section 2.2.8**.

Area classification

Area classification generally support the existing land use pattern, with all major activities recognised. Specifically:

- northern areas are designated as industry
- community purpose – railway activities, focussing on Mayne Rail Yard
- multi-purpose centre – suburban centre uses located west of the rail corridor
- open space or sport and recreation areas are located west of Abbotsford Road and on the corner of O'Connell Terrace and Bowen Bridge Road
- special purpose precinct – office park and special purpose precinct – entertainment centre classified for the majority of the Bowen hills area and includes the RNA Showgrounds and land located along O'Connell Terrace, Brooks Street.

Existing land uses

The Bowen Hills section of the study corridor is dominated by a number of large transport, entertainment, construction and health uses. Industrial, residential and commercial uses also feature prominently.

Queensland Rail Mayne Rail Yard, Bowen Hills Station and Brisbane City Council Bowen Hills Bus Depot are the key transport uses located within this section.

Clem Jones tunnel and Airport Link tunnel (currently under construction) are partially located within the western boundary of the study corridor. Airport Link construction is due to be completed in 2012.

RNA Showgrounds is a prominent entertainment use, dominating the landscape south of O'Connell Terrace (**Photograph 3-1**). RNA Showgrounds accommodates over 250 events each year (Royal National Agricultural Association of Queensland, 2009). Most of these events are small and have a fairly minor impact on the adjacent land uses and road networks. However, larger events such as the Ekka, which attracts approximately 400,000 people over 10 days, can impact on adjacent land uses and road networks before, during and after the event.

Photograph 3-1 RNA Showgrounds

The Royal Brisbane and Women's Hospital is located on Bowen Bridge Road adjacent to the study corridor. This is the largest tertiary hospital in the State and has a total staff of approximately 7,500 people (Queensland Health, 2010). It also provides a teaching and research function facilitating linkages with tertiary institutions.

Residential uses within Bowen Hills consist of a mix of low-density character detached dwellings and larger multiple unit dwellings. While residential uses are primarily confined to the area east of Abbotsford Road and south of Folkestone Street, new residential is emerging along Jeays Street and Hurworth Road. There are also some residential uses located to the west of Breakfast Creek and immediately adjacent to the study corridor on Campbell Street.

A number of community uses are located within this section of the study corridor, including health care providers. These uses are located particularly around O'Connell Terrace, Campbell Street and Hamilton Place. Community uses are described further in **Chapter 20 Social Impact Assessment.**

Open space areas include Perry Park on Edmonstone Road, Bowen Park on Bowen Bridge Road, the western bank of Breakfast Creek and RNA Showgrounds. Recreational areas within the study corridor are generally separated from the study corridor by other uses, infrastructure or Breakfast Creek.

Commercial and light industry land uses are prominent within Bowen Hills and generally comprise manufacturing, production, processing, repairing, storage or transport businesses as well as a mix of office space, retail and cafe businesses.

O'Connell Terrace is the main east-west connection between Abbotsford Road and Bowen Bridge Road. O'Connell Terrace is a primary access for businesses around Campbell Street, Hamilton Place and Brookes Street. Pedestrian access is constrained by the industrial nature of land uses, presence of large scale transport infrastructure and lack of sufficiently paved footpaths. Roads such as Abbotsford Road, Bowen Bridge Road and O'Connell Terrace are identified in the Bowen Hills local plan as providing bike/walk ways. Traffic and pedestrian movements are discussed further in **Chapter 5 Transport.**

3.3 Central section – Spring Hill to Dutton Park

The Central Section of the study corridor extends from Bowen Bridge Road to Venner Road and includes the areas of Spring Hill, Brisbane CBD, Kangaroo Point, Woolloongabba, Dutton Park and Fairfield. Generally this section is dominated by the Brisbane CBD and characterised by the broad mix of uses in surrounding inner city suburbs.

Area classification and existing land uses have been described and mapped on **Figure 2-6** and **Figure 3-3** respectively.

3.3.1 Spring Hill

Spring Hill, including parts of Herston, contains a number of important recreational, community, transport and education land uses including:

- recreational uses such as Victoria Park, Victoria Park Golf Course and Roma Street Parklands
- health uses including St Andrews War Memorial Hospital and Brisbane Private Hospital
- educational uses such as Brisbane Grammar School, Brisbane Girls Grammar School, St Josephs College Gregory Terrace, Brisbane Primary School and St James College
- commercial and retail precincts including Boundary Street.

Future development and growth within Spring Hill is directed by the Spring Hill and Petrie Terrace Local Plan, parts of the Ithaca District Local Plan and eastern areas of the Milton Local Plan. Future development is to be sympathetic to buildings that have historical and cultural significance, including character residential areas. While allowing for increased residential densities, preferred forms of residential development are to retain the character and heritage of Spring Hill.

Commercial development is to continue to occur within areas surrounding Boundary Street, with expansion of commercial areas to be contained within areas designated as city centre.

Area classification

Area classification in the Spring Hill section of the corridor is comprised of a mix of residential uses, community use, open space and multi-purpose centre designation that accommodate city fringe commercial and retail uses. Existing land use is generally reflective of the area classifications within Spring Hill and as a result, it is likely that significant land use change or densification would occur in the near future.

As the project does not directly influence increased transport connectivity in the area, it is unlikely that Cross River Rail would encourage land use change in this area.

Specifically, area classifications in Spring Hill include:

- a mix low-medium density residential and character residential is the predominant residential classification with areas of high density residential located south of Boundary Street
- community use areas include education, utility services and railway. An area of light industry is also located in the area bound by Musgrave Road, Kelvin Grove Road and Hale Street
- multi purpose centre located south of Boundary Street and College Road, comprising a mix of suburban centre and city centre designated areas
- green space between Wickham Terrace and Parkland Boulevard
- special purpose centres (major Defence and communications facility and office park) and community use areas (emergency services and railway) located west of Countess Street.

Existing land uses

Spring Hill accommodates a broad range of uses, with many prominent community, recreation, health and education activities.

Education uses include five schools, Brisbane Girls Grammar School, Brisbane Grammar School, St Josephs College at Gregory Terrace and Brisbane Central Primary School at Water Street. Each of these schools generates a large number of trips.

Health uses also feature prominently within Spring Hill with St Andrews Hospital situated between Wickham Terrace and Boundary Street and Brisbane Private Hospital on Wickham Terrace. These hospitals also provide a range of other associated health, community and education uses. Similar uses are also located along Water Street.

Large areas of open space and recreational uses also occupy land within the Spring Hill area including Victoria Park, Wickham Park, Albert Park and King Edward Park. Albert Park forms a continuation of the Roma Street Parklands and is included within the Brisbane CBD.

Victoria Park is the dominant land use within the Spring Hill section of the corridor, occupying land to the north and south of the Inner City Bypass (**Photograph 3-2**). Victoria Park comprises extensive areas of open space, providing for a number of formal and informal recreational activities. Recreational activities proximate to the proposed Cross River Rail works include Centenary Aquatic Centre, children's playground and an off-lease area. Other recreational activities include sporting facilities (cricket, tennis and netball) that are primarily used by the nearby schools.

Victoria Park is identified on the Queensland Heritage Register and the Brisbane City Council heritage register for non-indigenous heritage values. Victoria Park also has indigenous heritage significance, specifically York's Hollow. Further description of the cultural heritage values is provided in **Chapter 18 Indigenous Cultural Heritage** and **Chapter 19 Non-Indigenous Cultural Heritage.**

Photograph 3-2 Victoria Park and Victoria Park Golf Course (looking from the Centenary Pool Complex)

The Centenary Aquatic Centre is also located within the Victoria park area and is a key recreation centre which includes a number of allied health care businesses. These businesses are described further in **Chapter 20 Social Impact Assessment.**

Other land uses throughout the corridor are generally mixed and include numerous commercial uses, health care and residential uses. Mixed uses are located along Boundary Street (refer to **Photograph 3-3**) and Wickham terrace. Prominent commercial businesses including the International Hotel and Transport and Main Roads offices on Boundary Street. The hospital generates a large number of trips and Boundary Street uses generate high levels of traffic and pedestrian movements, particularly in peak periods.

Photograph 3-3 Boundary Street (looking west towards the intersection with Gregory Terrace)

Residential areas are located in the area bounded by Gregory Terrace, Boundary Street and St Pauls Terrace. Residential uses are characterised by a mix of both character and brick, detached and multiple unit dwellings located on steep, narrow streets. Some areas offer views towards Victoria Park and Brisbane CBD (refer to **Photograph 3-4**). Modern architectural styles are also evident in this residential area, particularly with multiple units along Gregory Terrace and Boundary Street.

Photograph 3-4 Typical residential street in Spring Hill

Pedestrian accessibility throughout Spring Hill is constrained only by the major traffic arteries (College Road, Wickham Terrace, Gregory Terrace and Boundary Street). The ICB land bridge between the northern and southern sections of Victoria Park is a key feature in providing pedestrian and cycle connectivity between Brisbane CBD and the inner northern suburbs.

3.3.2 Brisbane CBD

The Brisbane CBD is the primary activity centre for South East Queensland and the administrative centre at both the State and regional levels. The Brisbane CBD contains a number of clusters of financial, law, government, retail, education and entertainment activities.

Significant recreational, community, transport and education uses include the Queensland University of Technology Gardens Point Campus, Brisbane Botanic Gardens, Central station, Customs House and St Stephens Catholic Cathedral.

Future development is guided principally by the City Centre Neighbourhood Plan, supporting increased densities and a mix of uses to foster vibrancy in the city centre. A number of planning investigations are underway in respect of key sites in the Brisbane CBD, including North Bank, Howard Smith Wharves, Central Station and the Town Reach precinct. Redevelopment of these precincts would provide a range of additional commercial, retail and residential in the Brisbane CBD.

Area classification

Brisbane CBD is primarily classified as multi-purpose centre. All multi-purpose centre areas within this section of the study corridor are classified as city centre.

Land designated as green space – park land is scattered throughout the multi-purpose centre, including at:

- Emma Miller Place, located at Albert and Turbot Street
- Anzac Square, located between Ann Street and Adelaide Street
- Wickham Park and King Edward Park, located on Wickham Terrace, Turbot street and Upper Edward Street
- Fig Tree Reserve, located on Eagle Street and Elizabeth Street
- Queens Gardens, located on William Street, George Street and Elizabeth Street
- City Botanic Gardens, located along the Brisbane River, south of Alice Street.

Existing land uses

Major land uses within the Brisbane CBD provide a range of education, entertainment, government, recreation, retail and transport functions.

The most prominent land uses within the Brisbane CBD are commercial and retail uses, comprised within a mix of buildings types including modern, recently constructed buildings and heritage listed buildings. Heritage listed buildings and heritage precincts are described in **Chapter 18 Indigenous Cultural Heritage** and **Chapter 19 Non-Indigenous Cultural Heritage.**

Land uses within the Brisbane CBD are located within distinct precincts, with the prominent of these being:

- financial and services precinct located to the east of the city in the vicinity of Creek Street
- government administrative precinct, primarily centred around George Street and William Street
- retail precinct centred around Queen Street, between George and Edward Streets and extending to Elizabeth Street and Adelaide Street to the north and south
- legal precinct located to the north of George Street and Herschel Street
- education and recreation are located to the south of the CBD, south of Alice Street
- major transport uses, including Roma Street and Central Stations, Brisbane Transit Centre, Roma Street rail yard, busway stations at Roma Street, King George Square and Queen Street Mall and ferry terminals at North Quay, Gardens Point and Riverside.

The primary government administrative precinct contains local, State and Commonwealth buildings. Key administrative buildings located on these streets include the Commonwealth Law Court and Law Court Complex, State Law Building, Treasury Building, Lands Administration Building, State Works Centre, Parliament House and Brisbane City Council main offices. The Department of Public Works has the greatest ownership presence within the administrative precinct, with the majority of buildings along George Street, William Street, Alice Street and Queen Street and a number of buildings on Charlotte Street, Mary Street and Margaret Street.

The legal precinct also contains a number of government buildings and is located around Roma Street Station along with other uses that are dependent on transit activities. Prominent land uses include Roma Street Station, Brisbane Transit Centre, Queensland Police Headquarters, Law Courts and watch-house, Victoria Barracks and the commercial and retail hub situated around Petrie Terrace and Caxton Street. Roma Street parklands are also a significant land uses within this area of the CBD.

Within the financial and services precinct, the prominent land use is commercial supported by some ground level retail uses. Commercial land uses are primarily high density office buildings. Due to the activity and density of development in this precinct, this area has a high trip generation during weekday peak periods with a large proportion of pedestrian traffic travelling between the busway stations and Central Station.

The retail precinct forms the city heart and is comprised predominantly by retail uses. Queen Street Mall is the main retail area within this precinct, although retail uses are also located on surrounding streets such as Albert Street, Edward Street, Elizabeth Street and Adelaide Street.

Beyond the mall area, Queen Street has been undergoing a progressive redevelopment with a number of recently constructed, or currently under construction, residential and commercial towers. Albert Street, south of Queen Street, has also been undergoing a progressive redevelopment with a number of recently constructed, or currently under construction, residential and commercial towers.

Albert Street provides a link between the retail heart, prominent trip attractors located at the southern end of the Brisbane CBD such as residential developments, City Botanic Gardens and QUT and Roma Street Parklands. Due to its identified purpose as a linkage between a number of key locations and the predominant provision of wide tree-lined footpaths, Albert Street primarily contains uses that take advantage of greater levels of pedestrian traffic such as small scale retail outlets and restaurants/cafés (refer to **Photograph 3-5)**. In parts, footpath width is restricted by street furniture, street dining and building access requirements.

Photograph 3-5 Albert Street

QUT Gardens Point campus is located adjacent to the Brisbane River, Botanic Gardens and Parliament House at the southern end of George Street. The Gardens Point campus is one of three QUT campuses within South East Queensland. It covers an area of approximately 7 ha. Other prominent education uses within this section of the study corridor are located on Turbot Street.

City Botanic Gardens is the largest public open space wholly located within the study corridor. City Botanic Gardens occupy a site of approximately 20 ha and is bounded by Alice Street, QUT, Parliament House and the Brisbane River. City Botanic Gardens includes a range of business and community uses including the Riverstage, café and cycle hire. Other recreational and open space areas within the Brisbane CBD include Roma Street Parklands, Hardgrave Park, E.E. McCormick Place, Emma Miller Place Queens Park, ANZAC Square, Post Office Square, King George Square and Reddacliffe Place at Brisbane Square.

Alice Street provides access to QUT Gardens Point campus and City Botanic Gardens. Land use along Alice Street includes a range of uses such as residential and accommodation uses, a restaurant and a mixed use building (refer to **Photograph 3-6**). These land uses all have access onto Alice Street. Royal on the Park, mixed use residential and the commercial building located adjacent to Royal on the Park have dual access onto Alice Street and Margaret Street.

Photograph 3-6 Alice Street (looking west)

Residential uses are also scattered throughout the Brisbane CDB and are comprised of high density multi-unit towers, providing short term and long term accommodation. There are several clusters of residential development in the CBD including:

- Roma Street Parklands, adjacent Roma Street Station
- south of Charlotte Street and surrounding Albert Street
- Alice Street, particularly short-term accommodation including two hotels (Quay West and Royal on the Park).

Community uses are also extensively located within Brisbane CBD. While there is not a clearly defined precinct for community uses, a concentration of churches and community service facilities are located on Ann Street. Community uses are further described in **Chapter 20 Social Impact Assessment.**

The pedestrian network within Brisbane CBD provides a dense network of footpaths, laneways and arcades between buildings and numerous signalised intersections. This allows a fairly accessible environment for pedestrians. The grid pattern layout of Brisbane CBD provides pedestrians with a permeable walking environment, well connected with primary trip origins/destinations and mass transit such as Central Train Station. The city centre neighbourhood plan identifies Roma Street, Tank Street, George Street, Queen Street, Adelaide Street and Elizabeth Street (between George Street and Edward Street), Edward Street and Albert Street as primary pedestrian streets.

Access to basement parking for commercial and residential uses is primarily provided directly off the street at the front of, or next to, the building. In some cases, vehicular access to buildings is provided at the rear via laneways where they exist, such as Beatrice Lane or Esk Lane. In other cases, vehicle access is available from within the carriageway such as the Myer Centre car park exit within Albert Street and the Queens Plaza car park entrance and exit within Edward Street.

Environmentally significant areas are generally located along the banks of the Brisbane River and within the City Botanic Gardens. These environmentally significant areas and features are described further in **Chapter 11 Nature Conservation.**

3.3.3 Kangaroo Point/Woolloongabba

The Kangaroo Point/Woolloongabba section of the study corridor contains a number of locally and regionally significant land uses such as St Vincent's Hospital on Main Street, Queensland Government Land Centre and Goprint facility, and the Brisbane Cricket Ground (The Gabba). The Mater Hospital complex is nearby to the west on Stanley Street.

The Woolloongabba and Kangaroo Point south area is projected to undergo significant redevelopment and population growth through renewal and redevelopment opportunities.

Clem Jones Tunnel is located within this section of the study corridor and connects Ipswich Road and the Pacific Motorway with the ICB and Lutwyche Road. The tunnel corridor passes under the eastern edge of the Land Centre and Main Street.

Woolloongabba UDA

Woolloongabba UDA is located approximately 2 km south-east of Brisbane CBD. The UDA is approximately 10 ha in area and is bounded by Vulture Street, Main Street, Stanley Street and Allan Street (refer to **Figure 2-2**). The site currently contains the Queensland Government Landcentre and Goprint sites, Woolloongabba Busway Station, South Brisbane Dental Hospital and Morrison Hotel.

Woolloongabba UDA is located in close proximity to a number of important land uses and transport hubs including the Pacific Motorway cycleway, Woolloongabba busway station, The Gabba, Logan Road shopping and dining precinct, future residential development located at Kangaroo Point South, Gabba central and along Logan Road. Mater Hospital and South Bank are within close walking distance of the UDA. Woolloongabba UDA is described further in **Section 2.2.9**.

Area classification

Areas north of Vulture Street within Kangaroo Point/Woolloongabba are generally classified as residential with the exception of several areas designated as green space, community purposes and one area designated as special purposes – major hospital along River Terrace.

Land classified as high density residential is located west of the Pacific Motorway. Land to the east of the motorway, is classified for lower density residential. Medium density residential land fronts major road corridors while low-medium density residential is designated for areas set back from major roads.

Open space areas are located along Lower River Terrace, Brisbane River, Bradfield Highway, Baines Street and Main Street.

Community uses are located along River Terrace and include two areas designated as education facilities and three areas designated as community facilities. One of these areas is the former site of the Kangaroo Point TAFE, which has since been amalgamated with and relocated to the South Brisbane TAFE campus.

Southern areas of the Kangaroo Point/Woolloongabba section of the study corridor are designated as predominantly multi-purpose centre. Multi-purpose centre – suburban centre classifications front Stanley Street. Land fronting Ipswich Road, Jurgens Street and Balaclava Street is designated as multi-purpose centre – major centre.

Character residential is predominant within the southern portion of this section. A small area designated as low-medium residential is also located south of Stanley Street.

The area located immediately north of the existing rail line is designated as light industry.

Existing land uses

The Kangaroo Point/Woolloongabba section of the study corridor contains a diverse mix of uses at a range of different densities, including entertainment, retail, transport and community activities.

This part of the study corridor is traversed by a number of major traffic arteries, including the Pacific Motorway, Clem Jones tunnel, Ipswich Road and Main Street, Vulture Street, Stanley Street and Annerley Road. Other transport corridors impacting on the area include the South East Busway, Eastern Busway and the rail corridors to the Port of Brisbane and the Main Line running between Roma Street and Park Road station. The land use pattern and amenity of the area has been influenced significantly by these transport corridors.

A range of prominent uses are located within this area, particularly along Main Street and Vulture Street. Uses include:

- St Vincent's Hospital, Pineapple Hotel and Woolloongabba Telstra Exchange building along Main Street
- Church of Jesus Christ of the Latter Day Saints on River Terrace
- St Joseph's Primary School on Leopard Street
- St Nicholas Russian Orthodox Church and the German Club on Vulture Street
- major transport facilities, such as the South East Busway, including the Woolloongabba Busway Station (**Photograph 3-7**), Park Road Station, Boggo Road Busway Station, the Pacific Motorway and Clem Jones tunnel
- Mater Hospital precinct, west of the study corridor
- Sommerville House School and St Laurences College, west of the study corridor.

Photograph 3-7 Gabba busway station

The Mater Hospital precinct contains six separate hospital facilities and provides employment for approximately 5,600 people and extends high-level health care to approximately 500,000 patients each year (Mater Health Services, 2010). The Mater Hospital complex is a major trip generator serviced by all modes of transport, including rail (South Bank Station) and the South East Busway. Car parking demand from the hospital complex competes with commercial, residential, entertainment and major events at the Gabba.

Commercial and retail uses are generally located along key transport corridors such as Stanley Street, adjacent to Vulture Street and Ipswich Road. A cluster of retail and commercial activities are also located at Logan Road, developed as part of stage one of the Woolloongabba Neighbourhood Plan. Uses in this are include a mix of existing and emerging small scale retail and restaurants/cafes.

Other uses within the area include retail, commercial and residential. Residential areas are comprised of a mix of detached and multiple unit dwellings, comprising both character and newer housing types. Residential areas within this section of the corridor are located within several precincts, including:

- Kangaroo Point, along the river and south to Vulture Street, particularly on streets that run between Main Street and River Terrace
- north of Vulture Street in Kangaroo Point
- south of Hawthorn Street in Woolloongabba and surrounding Park Road station
- Hawthorn Street, Wilson Street, Broadway Street, Qualtrough Street and Redfern Street.

Residential areas are generally separated from major transport corridors by a buffer of commercial uses that front onto major roads. However, mixed uses of commercial retail and residential, such as Gabba Central, are being developed along these key corridors.

Small pockets of light industry are also located within the Woolloongabba area, specifically south of the Pacific Motorway on Burke Street and Dibley Street (refer to **Photograph 3-8**). Other notable land uses in this area include Holy Annunciation Orthodox Church and Disability Support Services Unit, Holy Trinity Anglican Church, the Brisbane Traffic Management Control Centre on Hawthorne Street and a number of community support services on Ipswich Road and Dibley Street.

Photograph 3-8 Burke Street at Woolloongabba (looking west)

The main open space and recreational areas are generally located along the Brisbane River and at Baines Street at Kangaroo Point Park. The Gabba complex also provides commercial recreation opportunities.

Pedestrian accessibility varies throughout this section of study corridor. While the major roads present barriers to pedestrian movement, urban regeneration works undertaken around Woolloongabba busway station and the intersection of Ipswich Road and Stanley Street have improved access to the Gabba and retail businesses located on Logan Road..

Features of environmental significance identified in Brisbane City Council NAPS Policy, are located within the study corridor along River Terrace, Leopard Street, Main Street and Lockhart Street. Environmentally significant areas and features are described further in **Chapter 11 Nature Conservation.**

3.3.4 Dutton Park

The Dutton Park area generally contains primarily low density detached residential uses. The area also includes a number of major land uses including Boggo Road Urban Village, Princess Alexandra Hospital, Queensland Rail service yard, Brisbane South (Dutton Park) Cemetery and Dutton Park State School.

Boggo Road/Buranda containing Princess Alexandra Hospital, is identified as a specialist activity centre in the SEQ Regional Plan. This precinct has regional economic significance, providing a primary focus as a health and Ecosciences Precinct. High density development within this precinct is supported, with proposed densities of 40 to 120 dwellings per hectare.

Local planning for the Fairfield/Dutton Park section of the study corridor is undertaken through the Stevens District Local Plan. The future land use pattern projected by the local plan is generally consistent with strategic planning for the area and the current land use pattern. Key outcomes of the local plan include redevelopment of the Boggo Road Urban Village and ensuring that development is integrated with public transport. Maintaining networks of open space throughout the local plan area is also important.

Boggo Road Urban Village Structure Plan

Boggo Road Urban Village Structure Plan was released in April 2007. The structure plan provides additional local planning requirements to the City Plan, guiding development within Boggo Road Urban Village to ensure development is reflective of the vision and goals for the area. The development application for the site was approved by Brisbane City Council in November 2007.

Boggo Road Urban Village is to develop as a vibrant inner-urban precinct, anchored by the State Government's Ecosciences Precinct. In addition to the Ecosciences Precinct, Boggo Road Urban Village is planned to accommodate a mix of uses including residential, commercial, retail, cultural uses and open space areas. The site integrates the State heritage listed Boggo Road Gaol through adaptive re-use of the building. The site is well integrated with new and existing infrastructure such as Dutton Park station, Boggo Road busway station and the Eleanor Schonell Bridge connecting with the University of Queensland.

Key principles and objectives for Boggo Road Urban Village, relevant to Cross River Rail are:

- ensure future development is environmentally and economically sustainable, and is carried out in an environmentally and culturally responsible manner
- ensure development outcomes incorporate sustainable and resource efficient subtropical design
- provide a level of density and public transport infrastructure in accordance with the intentions of the SEQ Regional Plan and the SEQIPP
- accommodate integration of the project with existing and proposed public transport facilities
- incorporate affordable housing and other multi-unit residential development
- provide for access to education and community facilities, and public open space.

Area classification

The predominant area classification for land within the Dutton Park section of the study corridor is residential. The majority of the study corridor is classified as low-medium density residential, with areas of character residential located to the north of Cornwall Street.

Areas classified as green space are dispersed throughout this section of the corridor, particularly on the eastern side of the rail line.

Several community use areas are designated in the northern area of the Dutton Park section of the study corridor including three areas designated for educational purposes located along Annerley Road, Kent Street and Cornwall Street. One area is designated as a cemetery located on Annerley Road.

A small area to the north of the study corridor, between Annerley Road, Pound Street and Railways Terrace, has been designated as a multi-purpose centre-convenience centre.

Other area classifications that exist in this corridor section include emerging community located on an area of land bounded by Annerley Road and the railway and special purpose centre – major hospital located east of the rail line, on the eastern boundary of the study corridor.

Existing land uses

Key land uses located in the area include residential and commercial developments located between Annerley Road and the rail corridor, Dutton Park Primary School, South Brisbane (Dutton Park) Cemetery, Boggo Road Prison Museum and Boggo Road Urban Village, Queensland Rail service yard and Princess Alexandra Hospital.

The principal activity in this locality is the Princess Alexandra Hospital with approximately 6,000 staff providing high-level medical care at the metropolitan, regional and State levels (Queensland Health, 2011). The Princess Alexandra Hospital is one of three tertiary level facilities in Queensland, providing care in all major adult specialties, with the exception of obstetrics. It is one of Australia's leading teaching and research hospitals (Queensland Health 2010).

The Princess Alexandra Hospital provides high-level health care to approximately 490,000 outpatients and approximately 80,000 admitted patients each year (Queensland Health, 2011). The hospital complex is a major trip generator serviced by all modes of transport, including Park Road station and the Eastern Busway and Boggo Road busway. Parking demand for the Princess Alexandra Hospital competes with commercial, retail and residential demand in the area.

The Ecosciences Precinct is situated within the Boggo Road Urban Village and contains office and laboratory accommodation for over 1000 research staff (Queensland Government, 2010). Residential development for up to 500 units of varying configuration would be provided on completion (Queensland Government, 2010). Overall, this area, combined with the Princess Alexandra Hospital complex, will become a significant trip generator requiring highly developed public transport services.

Elsewhere in this section, residential uses are characterised primarily by detached, character dwellings.

Areas and features of environmental significance identified in Brisbane City Council NAPS Policy are located within the northern parts of the Dutton Park study corridor section. This includes Boggo Road Gaol site, Cemetery and Dutton Park. Environmentally significant areas and features are described further in **Chapter 11 Nature Conservation.**

3.4 Southern section – Fairfield to Salisbury

The southern section of the corridor extends from Annerley Road and Cornwall Street to the southern extent of the study corridor at Riawena Road Salisbury. The study corridor passes through the suburbs of Fairfield, Yeronga, Yeerongpilly, Moorooka, Rocklea and Salisbury. Generally this section of the study corridor is characterised by a mix of low density residential, light industry, open space and community uses.

Area classifications and existing land uses have been described within this section and mapped on **Figure 2-7** and **Figure 3-4** respectively.

3.4.1 Fairfield, Yeronga, Yeerongpilly

The Fairfield, Yeronga, Yeerongpilly area is primarily comprised of low density residential uses in the north with light industry to the south, around Lucy Street and Wilkie Street. There are several facilities used for education, community and recreational purposes in this part of the study corridor.

Local planning is addressed by the Stevens District Local Plan. The local plan promotes future development to be maintained in line with the current land use pattern and characteristics.

The Queensland Tennis Centre, Tennyson Reach development and the Yeerongpilly TOD will influence land use and transport demand in the study corridor. The existing Department of Primary Industries site containing the Animal Research facility is also projected to be developed for Yeerongpilly TOD. The proposal involves higher density mixed uses (residential and retail) to optimise the benefit of rail transport via Yeerongpilly station. Development of the site is to be managed under the guidance of the ULDA. The TOD site is illustrated in **Figure 2-2**.

Area classification

The predominant area classification for the Fairfield, Yeronga, Yeerongpilly area is low-medium density residential. Residential areas are also classified as character residential.

Several areas are classified as community use. Railway is a prominent community use designation. Two areas are designated as community facilities. One, located on the corner of Fairfield and Venner Road incorporates the RSPCA animal refuge, while the other located on Wilkie Street includes a church. The Yeronga educational complex (primary, secondary and TAFE), classified as educational purposes, is bounded by Venner Road, the rail corridor, Villa Street, Park Road, Oakwood Street and the residential properties to the west of Broadmere Street.

Several blocks along Fairfield Road in Yeronga are designated as multi-purpose centre - suburban centre. This includes:

- land located from north of Kadumba Street to Yeronga Street
- land bounded by Fairfield Road, Brougham Street, Mildmay Street and Ashby Street.

The special purpose – vehicle sales and servicing areas classification covers land fronting Ipswich Road between Gainsborough Street and Kenway Street within the study corridor, but extends well to the north of the study corridor.

The industry classification covers land bounded by Cornwall Street, Princess Street and Fairfield Road and along Wilkie Street and Lucy Street Yeerongpilly.

Existing land uses – Fairfield, Yeronga and Yeerongpilly

Low density residential is the predominant land use, typically represented in some localities by character housing. Multiple unit dwellings of varying ages are also scattered along the study corridor, becoming more prevalent around key transport nodes and major arterial roads such as Fairfield station, Yeronga station and Fairfield Road.

The study corridor and it's land use pattern is influenced by the transport corridor formed by the railway and Fairfield Road.

The Queensland Tennis Centre and Tennyson Reach are located west of the study corridor and Yeerongpilly station (refer to **Photograph 3-9**). Ultimately, Tennyson Reach will comprise six residential apartment buildings ranging between six and ten storeys in height. Such development, combined with similar residential development in Yeerongpilly TOD would increase the residential capacity and demand on the existing infrastructure of Fairfield Road and Yeerongpilly Station.

Photograph 3-9 Tennyson Reach

A small area of light industry/commercial development is located between Fairfield Road and South Brisbane Cemetery. Access to these sites is from both Cornwall Street and Princess Street.

South of Yeerongpilly Station, land within and adjacent to the study corridor is dominated by light industrial and commercial uses. Uses include a mix of car yards and vehicle maintenance and repair businesses, warehouse and wholesale activities, commercial uses and community support uses. The industrial land along Fairfield Road south of Tennyson Memorial Avenue was served by a combination of road and rail transport. The rail freight depot at Clapham Rail Yard is no longer operating at full capacity.

Community facilities located within this area are described further in **Chapter 20 Social Impact Assessment.** A number of these uses are dependent on the proximity to major road and rail corridors.

Fairfield, Yeronga and northern Yeerongpilly contain a number of parcels of open spaces. These areas of open space host both organised and passive recreation and are reasonably well connected (refer to **Photograph 3-10**). Brisbane Golf Club on Tennyson Memorial Avenue and Yeronga Bowls Club on School Street are also located within, or partially within, this section of the study corridor. Public access to these areas is limited.

Moolabin Creek flows from east to west through this section of the study corridor under the existing rail line, north of Clapham rail yards.

Photograph 3-10 Robinson Park, Fairfield

Many streets are also lined with well-established trees that provide an urban landscape typical of Brisbane's older suburbs. Connected open spaces and wide local streets provide good accessibility and permeability in Fairfield, Yeronga and northern Yeerongpilly.

Existing pedestrian accesses across the rail corridor are via road bridges/underpasses and pedestrian bridges. These are located at Annerley Road, Denham Street, Venner Road, Park Road, Cardross Street, Wilkins Street, Cronin Street and at Fairfield, Yeronga and Yeerongpilly stations. These links are located approximately between 150 m and 450 m apart. An extension of the existing footbridge over Yeerongpilly Station has been constructed over Fairfield Road to the Tennis Centre and Tennyson Reach on the western side of Fairfield Road.

In the southern area of Yeerongpilly, including a small area of Moorooka, pedestrian access is more constrained. A 1.8 km barrier exists between the crossing at Yeerongpilly station and the pedestrian underpass at Sherwood Road. Few designated cycle or pedestrian networks are located in this area.

Road access within this section is generally defined by east-west local streets that provide connection to Fairfield Road and Ipswich Road. A number of local north-south streets, such as Wilkie Street and Park Road provide access within local areas. Wilkie Street provides access from Fairfield Road to Yeerongpilly station, via Cardross Street, to residential properties immediately to the east and to the industrial land uses on Station Road and Lucy Street.

Fairfield Gardens Shopping Centre, RSPCA Animal Refuge on Venner Road, Animal Research Institute on Fairfield Road, Queensland Rail infrastructure at Clapham Rail Yard and a ribbon of commercial and retail uses extend along Fairfield Road between Dulwich Road and Nelson Street are other prominent uses within this corridor section. The Yeronga Service Club is situated within this commercial ribbon.

Fairfield Gardens is located immediately west of Fairfield Station. The local shopping facility was identified during consultation as an important local centre for residents in Fairfield and neighbouring suburbs. Fairfield Gardens provides a range of retail, community and service uses including a bus station and Council-operated library and ward office. There are other services such as petrol station, fast food, offices and churches nearby. This centre is adjacent to Robinson Park to the west and rail corridor to the east.

A number of small convenience businesses also located on Wilkie Street across the road from Yeerongpilly Station and along Ipswich Road.

A number of primary, secondary and tertiary education facilities are located within, or immediately adjacent to the study corridor. Educational facilities include Yeronga TAFE and Yeronga State High School on Villa Street and Yeronga Primary School on Park Road.

Community facilities are located in various areas throughout this section of the study corridor, the majority of these located along Fairfield Road. Although not located within the study corridor, Yeronga Park should be identified for its role in accommodating a large number of community facilities. Community facilities within Yeronga Park are described further in **Chapter 20 Social impact Assessment.**

Areas and features of environmental significance identified in Brisbane City Council NAPS Policy are located at intermittent locations within the study corridor. These environmentally significant areas and features are described further in **Chapter 11 Nature Conservation.**

3.4.2 Rocklea/Salisbury

The Moorooka/Rocklea/Salisbury section of the study corridor contains a mix of residential and industrial uses. Land use mix indicates the transitional role the area plays between industrial suburbs to the west and residential suburbs to the east. No significant regional land uses are located within this section of the study corridor. However, several educational uses including Skills Tech Salisbury Campus and Nyanda State High School provide an education focus.

Local planning within this section of the study corridor occurs through the Moorooka District local Plan and southern areas of Acacia Ridge Local Plan. Local planning seeks to retain character residential uses and preserve natural features such as Oxley Creek environmental corridor.

Area classification

Predominant land use classification for the Rocklea/Salisbury section of the study corridor is general industry. General industry areas are designated across this section, particularly within southern areas.

A mix of low density and low-medium density residential use areas are primarily located south of Rocklea station and east of Salisbury Station.

Green space areas are located throughout this section of the study corridor and are most prominent along low-lying watercourse areas.

With exception to the community use – railway area, community use areas are sparsely located throughout this section of the study corridor. Community use – education purposes are located on Frewin Street.

Existing land uses

The Rocklea/Salisbury section is generally representative of the primarily industrial nature of the surrounding suburbs.

Industry is the most prominent land use within this section of the study corridor. Uses contain manufacturing, production, processing, repairing, storage or transport businesses, that can be located in the vicinity of residential, community or recreational land uses. These areas also contain a number of office complexes and community facilities.

Industrial land uses are primarily situated around the major transport networks, such as the rail line, Beaudesert Road and Granard Road.

Residential uses also feature prominently within the Rocklea/Salisbury section. Residential dwellings are located south of Rocklea rail station and east of Salisbury rail station and are mainly detached dwellings. Some multiple unit dwellings are located in areas close to Rocklea Station.

Two education facilities, Nyanda State High School and Skills Tech Australia Salisbury Campus on Fairlie Terrace are located within this section of the corridor.

Open green space is primarily situated along Rocky Waterholes Creek and Stable Swamp Creek (refer to **Photograph 3-11**). Green space is provided along side these creeks allowing for connectivity between open recreational areas in and outside the study corridor. Peter Scott skate park is located on the banks of Rocky Waterholes Creek and Kookaburra Park and Brothers St Brendans Leagues Club is located on the banks of Stable Swamp Creek.

Photograph 3-11 Stable Swamp Creek

Local roads provide access to major arterial roads such as Ipswich Road, Beaudesert Road, Muriel Avenue, Sherwood Road and Riawena Road. With exception to an at-grade crossing between Railway Parade and Heaton Street, access over the rail corridor is via these arterial roads. Within industrial areas, local roads are generally wider than roads in other sections as they to accommodate a greater proportion of industrial traffic.

Pedestrian and cycle access is provided along existing road networks, with few designated networks within this section of the study corridor. Existing pedestrian accesses over the railway line is via road bridges/underpasses at Sherwood Road and Riawena Road, an at-grade crossing at Beaudesert Road Service Road and pedestrian bridges at Rocklea and Salisbury stations. No immediate access from industrial or residential uses located adjacent to the rail line is provided over the rail corridor with exception of Riawena Road.

Green corridors located adjacent to Rocky Waterholes Creek and Stable Swamp Creek provide opportunities for pedestrian movement throughout the area. With the exception of some park space, this green space is poorly maintained and limited formalised pedestrian accesses under barriers (eg rail or road bridges) exist.

3.5 Prominent proposed developments

Future development is proposed at key sites within the study corridor. These developments should be considered in the assessment of the Project. Potential developments require good accessibility to efficient transport networks and have potential to increase demand on local and regional transport networks through land use intensification. Prominent developments are outlined in **Table 3-3**.

Construction of the Project is planned to commence in 2015. As a result it is anticipated that the majority of developments identified that are located within the corridor would be developed prior to construction.

Whilst significant development is likely to occur for larger development such as RNA Showgrounds and Yeerongpilly TOD prior to commencement of construction activities relating to Cross River Rail, full development of these sites is not anticipated. Ongoing consultation with key stakeholders relating to these developments would occur to provide a coordinated approach to construction.

Table 3-3 Prominent proposed developments

Name	Address	Lot and plan	Summary of proposed development	Development application (status)
Wexford Green	22 Morris Street, Wooloowin	19 RP170266	272 residential units and 17 townhouses complemented by retail, commercial and community uses.	Yes (Approved 1/06/10)
The Mill	The site is located on 1.3 hectares and is bound by the rail corridor, Albion Road and Hudson Road, Albion	129, 130, 131, 134, 135, 136 RP19306, 1, 2, 132 RP48402, 1, 2, 3 RP59681	Mixed use TOD accommodating a mix of residential apartments, commercial offices, residential and retail uses.	Yes (Approved)
RNA Showgrounds Redevelopment	The site is located within the RNA Showgrounds, Bowen Hills	481 SP196765 600, 3 SP190738, 2 SP144596, 487 SP196776, 484, 486 SL 4553, 641 SP196755, 485 SP192466, Alexandria Street Road Reserve	Development of an additional 310,000 to 340,000 m^2 of gross floor area of mixed use development.	Yes (Approved 1/12/2010)
Metro (Bowen Hills No. 1)	16 Hamilton Place, Bowen Hills	1, 4 RP99817	194 residential units and shop space.	Yes (Approved 25/10/2010)
Metro (Bowen Hills No. 2)	29-35 Campbell Street, 12 Hazelmount Street, 29 Mayne Street, Bowen Hills	1 RP78299, 1 RP89174, 46 RP9895, 49 SP110353	286 residential units and shop space.	Yes (Approved 29/4/2011)
Metro (Bowen Hills No. 3)	37 Mayne Street, Bowen Hills	1 RP110079	242 residential units.	Yes (Lodged 20/12/2010)
Unknown	151-171 Roma Street, Brisbane	1SP100562, 2,3,4,5,6 SP100562, 50SP136610	New office, centre activities and car park within the Roma Street Transit Centre. Uncertain as to future timings.	Yes (Approved 12/12/2007)
Brisbane City Hotel	40 Elizabeth Street, Brisbane	1 RP883066	27 storey, 289 apartment hotel.	Yes (Approved 22/9/2010)
Unknown	111 Mary Street and 222 Margaret Street, Brisbane	1-6 RP123433	A 90 storey residential and hotel tower and a 34 storey office tower.	Yes (Lodged 24/5/2011)
99-103 Mary Street	99-103 Mary Street, Brisbane	17 RP129686	31 storey hotel with 216 hotel rooms and 15 serviced apartments.	Yes (Approved 8/12/2010)

Name	Address	Lot and plan	Summary of proposed development	Development application (status)
Camelot Residential Development	30 Albert Street and 131 Margaret Street, Brisbane	10 SP218967, 11 RP1073, road reserve	37 storey tower comprising 420 residential units and retail and commercial space.	Yes (Lodged 23/12/2010)
Carrington Tower	140 Alice Street and 16 Albert Street, Brisbane	12 SP231766, 1 RP40587	43 storey tower comprising 223 residential units. Proposed completion by December 2014.	Yes (Approved 15/2/2011)
Century Apartments	460 Vulture Street, Woolloongabba	1, 2, 3 RP78979, 98RP11335	Residential development comprising 34 apartments.	No. Proposed development.
Unknown	9 Hubert Street, Woolloongabba	18, 22, 26, 30, 34, 38, 42, 46, 50 and 54 RP11205, 5 RP 11205, 1 RP11210, 1, 2 RP 74662, 7, 8 RP11205. 9, 3 RP 838591	Three towers (30, 25 and 20 storeys) comprising a total of 502 residential units.	Yes (Lodged 18/5/2011)
Yeerongpilly TOD Site	Located on approximately 14 hectares of land and bound by Fairfield Road, King Arthur Terrace, Tennyson Memorial Avenue and the Brisbane River in Yeerongpilly.	566 SP214202	Mix of residential densities and retail uses, characterised by TOD principles to capitalise on the sites location to Yeerongpilly Station. Several sites have been released for early development, with development applications submitted to Brisbane City Council for approval.	No. Development is being undertaken by the State Government.

Note: Information in this table is correct as of 16/06/2011

3.6 Land tenure

Land tenure for the study corridor is shown in **Figure 3-6** (whole of corridor), **Figure 3-7** (north), **Figure 3-8** (central) and **Figure 3-9** (south).

Table 3-4 shows existing land tenure in the study corridor. This has been broadly described under the Digital Cadastral Data Base (DCDB) tenure codes.

Table 3-4 Land tenure codes

Tenure Code	Description
Freehold	Land held in Fee Simple (freehold title) which includes titles surrendered to the State of Queensland in terms of S358 of the Land Act 1994
Lands Lease	Leasehold land administered by the Department of Environment and Resource Management
Railway	Land vested for railway purposes in Queensland Transport or Queensland Rail
Reserve	Land reserved by the Department of Environment and Resource Management 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
Council Land	Land held by Brisbane City Council under various tenure, including freehold
Port and Harbour Boards	Land vested under the control of Port Authorities

Other tenures not described above include:

- Road Reserve, which is land dedicated as roads under the control of either Transport and Main Roads (State-controlled Roads) or Brisbane City Council
- Railway, which includes land vested for railway purposes in Transport and Main Roads or Queensland Rail.

The majority of land within the study corridor is held in freehold title. Freehold land required for the Project would either be acquired in accordance with the provisions of the *Acquisition of Land Act 1967.*

The existing railway line is currently held as leasehold land (Lands Lease). The key parcels of land in the study corridor identified as “State Land” includes Roma Street Parklands and land occupied by the Eastern Busway adjacent to Dutton Park Cemetery. State land (including Lands Lease) would require agreement from the party entitled to tenure.

Land in the study corridor held in reserve generally includes:

- open space areas, such as City Botanic Gardens and Kangaroo Point Cliffs
- State-controlled roads such as the Pacific Motorway, including the Riverside Expressway
- land identified for future transit oriented development at Yeerongpilly.

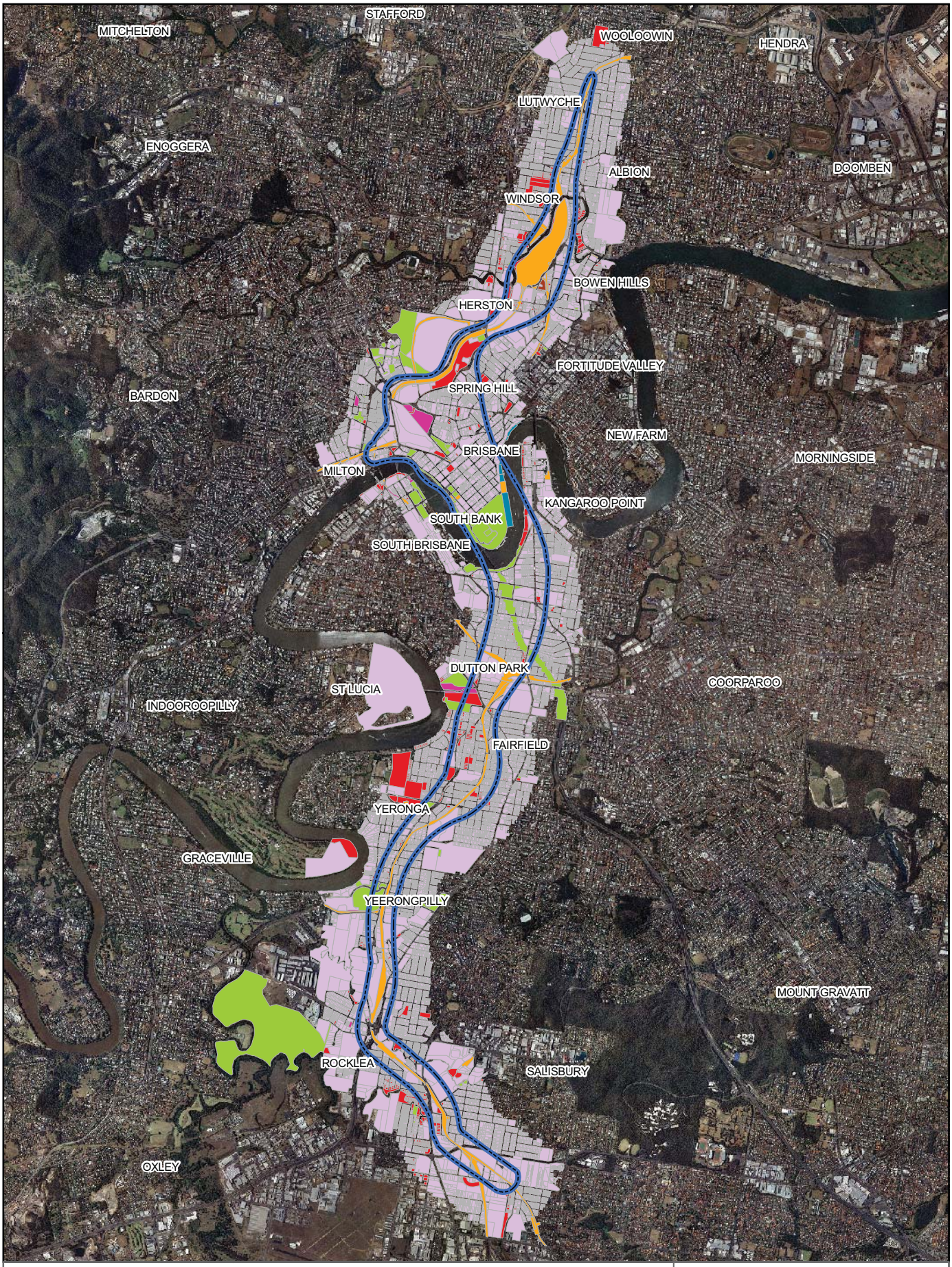
There are four properties located within the study corridor that are held in Freehold and owned by the Commonwealth, including:

- Commonwealth Law Courts at 119 North Quay, Brisbane
- Victoria Barracks at 83-129 Petrie Terrace, Brisbane
- General Post Office at 261 Queen Street, Brisbane

- Naval Offices at 3 Edward Street, Brisbane.

Council land in the study corridor generally comprises areas of park and open space, including Victoria Park at Spring Hill, Dutton Park Cemetery, Yeronga and Fairfield Parks and Rocklea Park.

Moorings currently located in the Brisbane River adjacent to City Botanic Gardens are under the control of the Port Authority.



LEGEND

- Study Corridor

TENURE

- Freehold
- Council Land
- State Land
- Crown Land
- Action Pending
- Lands Lease
- Reserve
- Housing Commission Lease
- Port and Harbour Boards
- Railway

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 3-6

Land Use Tenure - Corridor

0 0.5 1 1.5 2 2.5 km

1:75,000 at A4

N

CrossRiverRail

SKM aurecon CRR JOINT VENTURE

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LEGEND

- Study Corridor

TENURE

- Freehold
- Council Land
- State Land
- Crown Land
- Action Pending
- Lands Lease
- Reserve
- Housing Commission Lease
- Port and Harbour Boards
- Railway

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 3-7

Land Use Tenure (Northern Section)

0 0.25 0.5 0.75 1 km

1:30,000 at A4

N

CrossRiverRail

SKM aurecon CRR JOINT VENTURE

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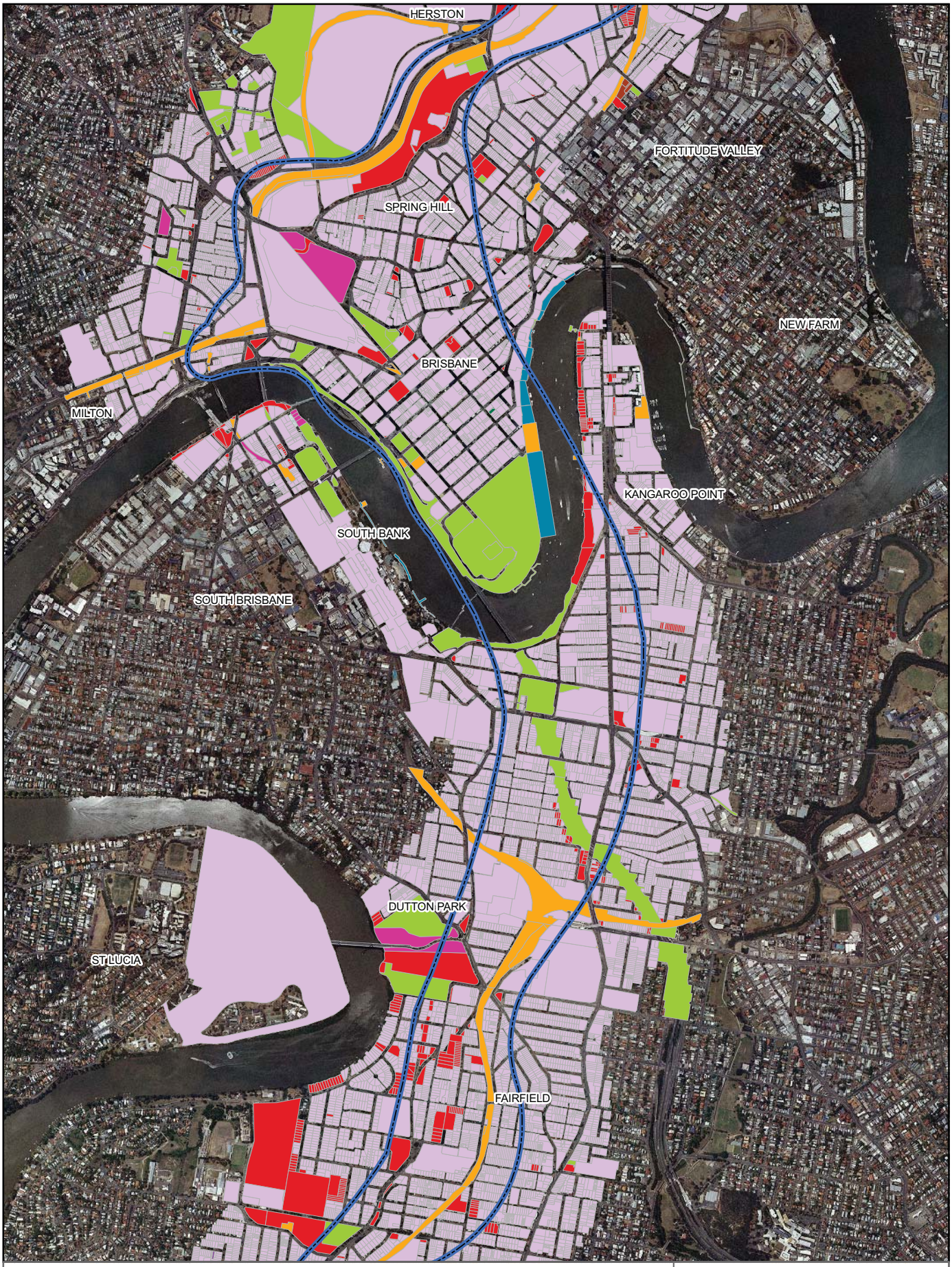

LEGEND

- Study Corridor

TENURE

- Freehold
- Council Land
- State Land
- Crown Land
- Action Pending
- Lands Lease
- Reserve
- Housing Commission Lease
- Port and Harbour Boards
- Railway

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 3-8

Land Use Tenure (Central Section)

0 0.25 0.5 0.75 1 km

N

1:30,000 at A4

CrossRiverRail

SKM aurecon CRR JOINT VENTURE

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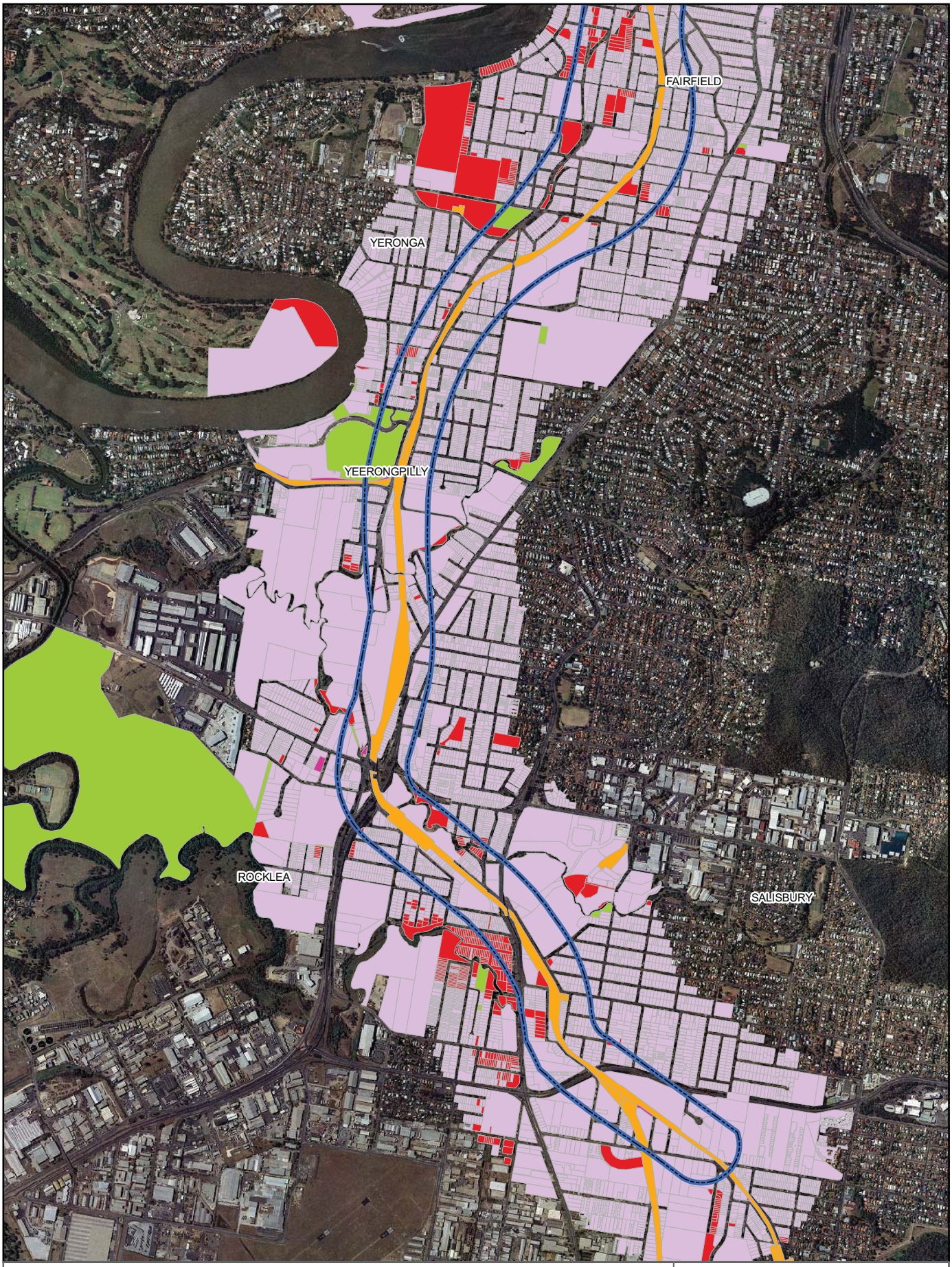


LEGEND

- Study Corridor

TENURE

- Freehold
- Council Land
- State Land
- Crown Land
- Action Pending
- Lands Lease
- Reserve
- Housing Commission Lease
- Port and Harbour Boards
- Railway

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 3-9

Land Use Tenure (Southern Section)

0 0.25 0.5 0.75 1 km

N

1:30,000 at A4

CrossRiverRail

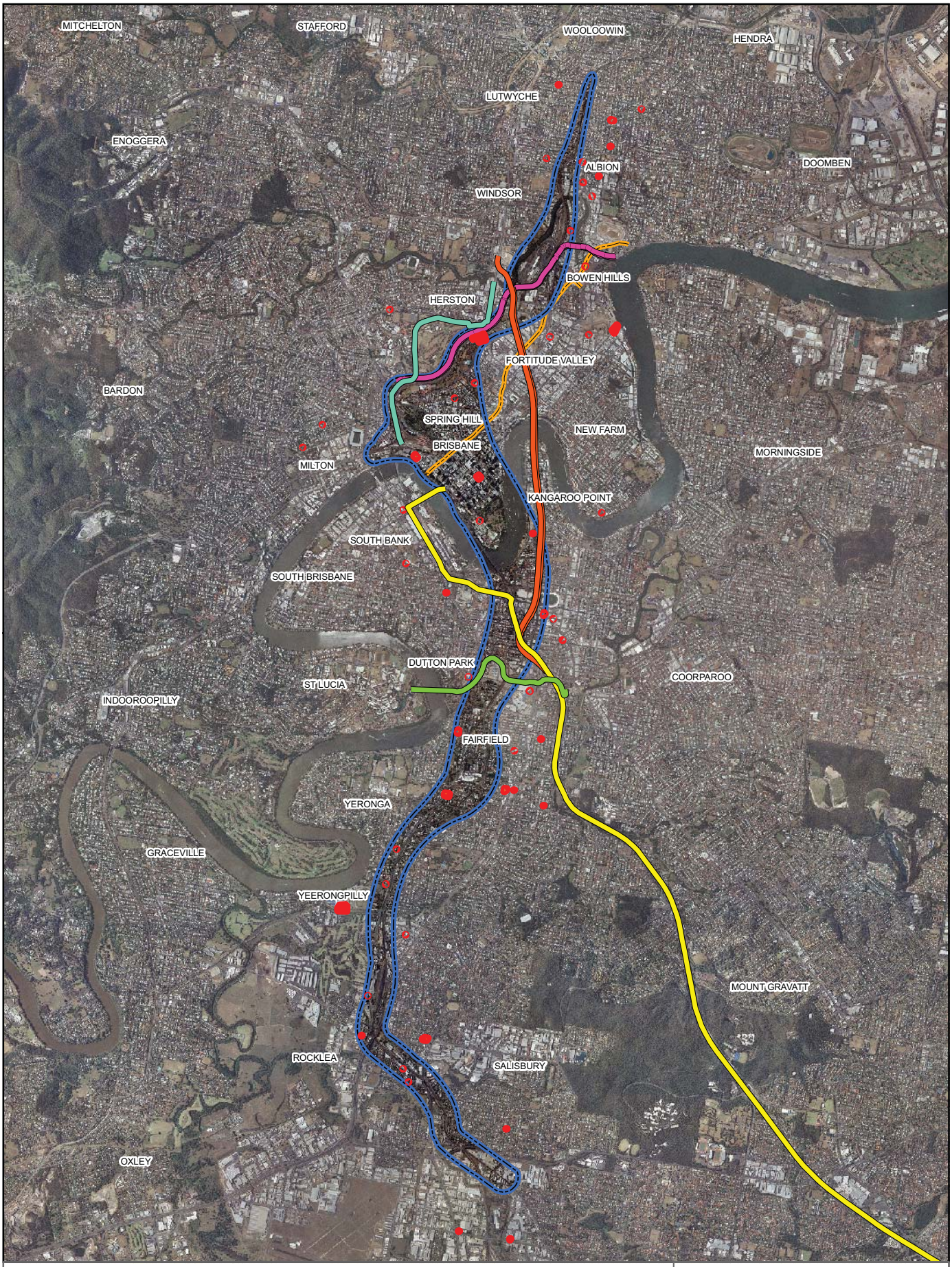
SKM aurecon CRR JOINT VENTURE

3.7 Key infrastructure and utilities

The study corridor also contains numerous easements and corridors for existing or proposed infrastructure and utilities. These have been considered in the design of the Project. Key infrastructure easements and corridors in the study corridor are described in **Table 3-5** and are shown on **Figure 3-10**.

Table 3-5 Key infrastructure corridors and utilities

Description	Type of infrastructure	Status	Location
Northern Busway/ Inner Northern Busway	Bus corridor	Existing	Elevated busway connection between Gilchrist Avenue, Bowen Bridge Road and Victoria Park. Busway routes also run from Victoria Park, east of Countess Street to the Roma Street Busway Station. From Roma Street, the busway continues in tunnel under Albert Street to the King George Square Busway Station.
South East Busway	Bus corridor	Existing	Underground busway network under Albert Street, between Elizabeth and Albert streets and under Queen Street, between Albert and William streets. The busway travels generally below ground between South Bank Station and Woolloongabba junction and then generally travels at grade adjacent to the eastern side of the Pacific Motorway.
Eastern Busway	Bus corridor	Existing	The Busway travels east-west from the Eleanor Schonell Bridge, under the Boggo Road Urban Village and the existing rail corridor to the South East Busway at Buranda. Stations are located at Boggo Road (Park Road Station) and at the PAH.
ICB	Road corridor	Existing	The ICB travels through Spring Hill and Bowen Hills. The road corridor is in tunnel under the RNA Showgrounds between Bowen Bridge Road and O'Connell Terrace.
Clem Jones tunnel	Road corridor	Existing	Twin tunnels extending from Ipswich Road and Pacific Motorway under the suburbs of Woolloongabba, Kangaroo Point, Fortitude Valley and Bowen Hills to Lutwyche Road and the Inner City Bypass.
Substations	Electricity Facilities	Existing	Prominent Energex substation facilities are located in Victoria Park at Spring Hill, Brisbane and Yeronga.
S1 Sewer	Water pipeline	Existing	The S1 Sewer extends under Turbot Street from the intersection of North Quay and Turbot Streets.



LEGEND

- Study Corridor
- S1 Sewer
- Substation Land (Energex)

Road Corridor

- Inner City Bypass
- Clem Jones Tunnel (Clem7)

Bus Corridor

- Inner Northern Busway
- Eastern Busway
- South East Busway

CROSS RIVER RAIL
ENVIRONMENTAL IMPACT STATEMENT

Figure 3-10

Key Infrastructure and Utilities

0 0.5 1 1.5 2 2.5 km

1:75,000 at A4

N

CrossRiverRail

SKM aurecon CRR JOINT VENTURE

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3.8 Native Title

There are two registered native title (NT) claims under the Commonwealth *Native Title Act 1993* 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 Brisbane City Council LGA. Indigenous values and interests within the study corridor are described in **Chapter 18 Indigenous Cultural Heritage.**

The Project would be located within parcels of Crown (State) land. As a result, the Project would be subject to the provisions under the *Queensland Native Title (Queensland) Act 1993*. Section 24KA of the NT Act provides for the establishment of "facilities for service to public" without the need for extinguishment or suppression of native title rights and interests.

As the Project would be considered as a beneficial to the public, provisions under Section 24KA would be applied. Native title rights and interests would continue to exist and would not be extinguished. Rights and interests would have no bearing on construction, operation, use, maintenance or repair of the Project.

As a requirement of Section 24KA process, the Traditional Owners have been notified of the Project and have also been commissioned to undertake an appraisal of potential indigenous cultural heritage items within the study corridor.

A Cultural Heritage Management Plan (CHMP) would be prepared for the Project prior to commencement of construction. The CHMP would detail processes for identification and management of indigenous cultural heritage items.

Due to the nature of the Project, the Project's location and the processes to be put in place under Section 24KA, it is unlikely that an Indigenous Land Use Agreement (ILUA) under the Commonwealth *Native Title Act 1993* would be established between the Project and the Traditional Owners.

4 Potential impacts and mitigation measures

4.1 Property requirements

4.1.1 Reference Project

The Project would require the acquisition of 108 properties for surface works, including work sites, stations and ancillary infrastructure. In addition, volumetric acquisition would be required of a further 303 properties. The impacted properties are shown in **Volume 2 Reference Design Drawings**.

Surface acquisitions to be undertaken to accommodate the Project would primarily be of a mixed use. The majority of surface acquisitions would occur in the south of the corridor.

Volumetric subdivisions required for the Project are predominantly located within the central section of the corridor. Residential land uses are the most prevalent land use type to be affected by volumetric subdivision. Volumetric acquisitions require the resumption of land below the surface of the property and no change of ownership or relocation of occupier would be required.

Key land uses directly affected by surface works include:

- part of Victoria Park, east of the rail line, for the northern portal worksite and a small portion required permanently for the northern portal itself
- the Royal on the Park Hotel, at the corner of Albert Street and Alice Street, for a worksite associated with the Albert Street Station with the corner of the lot at ground and basement levels required to permanently house the southern Albert Street Station concourse and access shaft
- commercial uses at the north-east corner of Mary Street and Albert Street, for a permanent station entrance as well as worksite associated with the Albert Street station
- the Goprint site at Woolloongabba, for the Gabba Station worksite with the western edge of Goprint site required permanently to accommodate the station itself
- industrial uses at Station Road, Yeerongpilly, for the southern worksite with a small proportion of these sites required permanently to accommodate the new Yeerongpilly Station and relocated Wilkie Road and Lucy Street
- portion of land currently occupied by Energex substation and surrounding Brisbane City Council owned reserve located on land at Railway Road, between Bledisloe and Sunbeam streets and Fairfield Road for the construction and ongoing operation of the ventilation emergency access building.
- RNA Showgrounds, for the Ekka station and associated worksite, with a portion of showgrounds land immediately the north-west of the current station required permanently for the widened and relocated station footprint
- Boggo Road Urban Village, for construction of the Boggo Road Station underground including two sites required permanently to accommodate station entrances and platform accesses.

Key sites where volumetric subdivision is proposed are located within the Brisbane CBD, Boggo Road Urban Village and Woolloongabba area.

The property resumptions are outlined in **Table 4-1** and **Table 4-2**.

Table 4-1 Property resumptions – property type

Property type	Surface resumptions	Volumetric resumptions
Residential	48	258
Mixed (commercial, industrial, mixed)	67	58
Other (park, school, religious, etc)	4	23
Total	108	303

Table 4-2 Property resumptions – section of study corridor

Section of study corridor	Surface resumptions	Volumetric resumptions
North	8	0
Central	16	158
South	84	145
Total	108	303

The ICRCS identified that property acquisitions would be required at Fairfield for the establishment of a new Cross River Rail network. As the southern portal is proposed to be located at Yeerongpilly, the only permanent surface acquisition within Fairfield would be within the road island bound by Fairfield Road, Railway Road, Bledisloe Street and Sunbeam Street.

4.1.2 Tenure

The Project would directly impact, either through surface or volumetric acquisition, 412 land parcels. These land parcels comprise a mix of tenure types, including lands lease, freehold and reserve.

It is expected that the majority of land required for the Project, including sub-surface land, would be acquired (freehold) or leased (non-freehold) by the State, with the exception of industrial land at Yeerongpilly and land required for the southern Albert Street Station entrance.

As is the case with existing rail corridors, land would be converted to unallocated State land and sub-leased for transport corridor purposes to the relevant transport manager for construction and operation. As such, it is likely that the tenure arrangements for the land required for the Project would ultimately reflect the lands lease tenure arrangements of the existing railway corridors within the study corridor.

State land required for temporary construction purposes would be freed from the existing parcel in order to allow the necessary activities to proceed. At completion of activities for the Project, the parcel would return to its existing tenure arrangement. Land held in freehold would need to be acquired first by the State and then leased to the relevant transport manager in order to undertake the necessary construction activities. If it is not required at completion of construction, it is likely that it would be returned to freehold tenure and sold, usually with the original owner being given the first opportunity to purchase.

Land acquired for the Yeerongpilly worksite and the southern Albert Street Station worksite is likely to be acquired by the State for the purposes of transport and incidental purposes (road, parking, pedestrian walkways, construction activities, storage and services) and ‘transport associated development’ as defined under the *Transport Planning and Coordination Act 1994* (TPC Act).

Following construction, these properties could be developed for the purposes of transport associated development. The redevelopment of these sites would not be part of the Project and would be subject to separate planning processes.

While not part of the Project to which this EIS refers, there may be floor space for retail purposes provided at a future time within Roma Street, Albert Street and Yeerongpilly stations. In such circumstances, where land has been acquired (freehold) by the State, the floor space would be kept in the same tenure arrangement as the rest of the Project's rail infrastructure and would be subleased for commercial purposes.

In the instance of Yeerongpilly Station and Albert Street Station south entrance, retail and commercial floorspace would be kept in the transport associated development tenure arrangement and subleased for the relevant purposes.

4.2 Overall study corridor

Integration of land use and transport infrastructure planning and development is a significant consideration for Cross River Rail. At a regional level, the Project would assist in managing capacity issues associated with the inner city rail network and would thereby assist in building viability of rail within South East Queensland as well as facilitating the continued growth and development of the region.

The Project is strategically located within the urban footprint and would integrate with a number of high growth residential and employment areas and high trip generating land uses, including UDAs, Boggo Road Urban Village, Yeerongpilly TOD and the Brisbane CBD. The development of new stations at these key growth areas would create an improved public transport network, as a result of additional stations, capacity and collocation with high intensity uses, therefore reducing the demand for private vehicle transport. Where existing transport infrastructure already exists, at locations such as Woolloongabba and Boggo Road, a multi-modal transport interchange would be developed through integration with existing busway infrastructure.

The Project would also support a number of regionally significant employment services and community uses that form the planned network of regional centres. In addition to the areas mentioned, these areas include the Royal Brisbane and Women's Hospital, QUT Gardens Point, Princess Alexandra Hospital and Tennyson Tennis Centre. The Project would provide improved transport connectivity to these uses, thereby supporting a more sustainable land use pattern.

4.2.1 Post-construction land use

Redevelopment of worksites

Following completion of construction activities, land occupied by worksites that are not required for the Project would be available for redevelopment in accordance with the relevant planning instrument (i.e. City Plan or UDA Development Scheme). In some cases the Project would directly influence the future development opportunities in these areas trough enhanced accessibility to high quality public transport services.

Worksites that would be redeveloped for the Project include:

- Roma Street sites would be utilised for the Project or reinstated for rail activities
- upper Albert Street worksite would be used to develop a new civic space in conjunction with a station access
- a portion of the southern Albert Street worksite would be used for station access
- a portion of the Woolloongabba site would be used for the station and station access
- Yeronga worksite would be used to accommodate the tunnel ventilation building while the work site in Robinson Park would be rehabilitated and returned to open space
- part of the Yeerongpilly worksite would be used for the development of the new Yeerongpilly Station and ancillary Project works such as the realignment of the southern portion of Wilkie Street.

Worksites that would provide surplus land following the completion of construction activities include:

- the majority of the Victoria Park worksite would not be required for long term Cross River Rail activities and would be reinstated in line with the “Community Use” area classification of this land
- the southern Albert Street worksite would have a large area of surplus land available for redevelopment. Redevelopment would occur in line with City Plan and the City Centre Neighbourhood Plan
- Gabba Station provides opportunities for development above the rail station cavern. Development of the worksite would be in line with the Woolloongabba UDA Development Scheme
- Boggo Road worksite would be redeveloped in accordance with planning for the Boggo Road Urban Village precinct
- surplus land located at the Yeerongpilly worksite provides opportunity for future development of uses that are currently not identified by the City Plan, such as higher order residential and commercial uses. In order for this to occur, changes to the City Plan would need to be considered.

Redevelopment of surplus land would generally be consistent with relevant local planning instruments or with UDA development schemes.

Surplus land in lower Albert Street would be developed for multi purpose centre, city centre uses. High density commercial, residential, accommodation or mixed use development is anticipated for this area.

Redevelopment of the Woolloongabba worksite would occur in accordance with the planning intent outlined in the Woolloongabba UDA Proposed Development Scheme. Future development is to contain a combination of mixed use, civic and open space zonings. Mixed use development incorporates a range of high density residential, commercial, retail, community, tourism, entertainment and recreation activities. The civic zone and open space zone cater for a range of outdoor public spaces such as parkland and urban plazas. The Gabba Station has been designed to accommodate these potential uses over the Cross River Rail station. However, as identified in the Proposed Development Scheme, basement car parking for developments over the rail station would need to be provided at a separate location.

Similarly, re-use of the Boggo Road worksite would be consistent with planning for the Boggo Road Urban Village. While part of the 16,800 m³ worksite would be reinstated as a public plaza, the remainder of the worksite would be available for redevelopment. Redevelopment of the worksite within Boggo Road Urban Village would be coordinated through the Department of Public Works and the Boggo Road Urban Village structure plan.

The Yeerongpilly worksite is currently included in the general industry area identified by the Brisbane City Plan. The intent of a general industry area is to provide a wide range of industries and complementary activities that meet high standards of amenity and environmental standards. Typically, general industry uses can be located near to residential areas and comprise a mix of car yards and vehicle maintenance and repair businesses, warehouse and wholesale activities, commercial uses and community support uses.

Given the site’s proximity to the new Yeerongpilly Station and improved transport access, redevelopment of this site for higher order uses such as mixed use residential and commercial, should be considered. This would require a change to the existing land use designation of this site and subsequent revision to the City Plan. This would be undertaken as part of a separate planning process to the Project. This would provide improved land use and transport integration and support increased public transport use and decreased private vehicle use.

4.3 Northern section

The Project would have a range of implications for land use within the northern section of the corridor. Construction impacts would be largely focussed around the Project worksites, to be located at the RNA Showgrounds (Ekka Station) and Spring Hill.

Potential impacts arising from the new infrastructure and its operation are anticipated throughout the northern section of the corridor. In areas to the north of Breakfast Creek, indirect impacts from growth and development are anticipated as a result of the Project.

To the south of Breakfast Creek, the Project would result in both direct and indirect impacts to land use. The Project is likely to result in changes at key locations including RNA Showgrounds and Bowen Hills.

4.3.1 Wooloowin/Albion

This section provides an overview of the key issues for land use within the Wooloowin/Albion section of the study corridor. As there are no proposed works within this section of the study corridor, issues predominantly relate to potential indirect changes to land use, access and amenity.

Key issues relate to potential impacts to access and amenity include:

- increased capacity and connectivity on the rail network may be a catalyst for densification of land use
- increases in existing parking demand in close proximity to rail stations and potential resulting implications for access to residential and commercial properties.

Implications for existing land use

The Project would not impact directly on land use or amenity in the Wooloowin/Albion area.

Implications for future land use

The Project may result in indirect changes to land use, access and amenity due to increases in transport services and capacity on the rail network.

Additional demand on existing park and ride facilities may increase as a result of the Project. If parking demand exceeds the capacity of existing designated areas, spill over may occur into surrounding local roads, with effects on accessibility for residents and/or commercial businesses. Refer to **Chapter 5 Transport** for more detailed assessment of park and ride demands and potential impacts.

Increased transport capacity and services would also support land use change such as intensification of uses surrounding Wooloowin and Albion stations. Potential transport improvements would support higher density residential development and small areas of commercial development at locations adjacent to Wooloowin Station in response to enhanced accessibility and services. Development in other areas would be restricted due to the area containing character residential.

Potential development at Albion also would be supported around Albion station, specifically to the east, around the Albion Village area. More intense commercial use would be supported to the south-east of Albion Station, consistent with local planning intentions.

The Project may support land use transition to low-medium or medium density in areas to the west of the rail corridor, to capitalise on improved access to transportation services.

4.3.2 Bowen Hills

The Project would have implications for a number of major land uses and future development areas including the RNA Showgrounds and Bowen Hills UDA. Long term land use changes in Bowen Hills would include:

- loss of commercial buildings and land within RNA Showgrounds concurrently with redevelopment of the RNA under the master plan
- impacts to heritage buildings and structures within RNA Showgrounds concurrently with redevelopment of the RNA under the master plan
- changes to access to RNA Showgrounds and uses located along O'Connell Terrace due to raising of the road
- changes to access, including improved vehicle height clearance and overall wider access, within the RNA Showgrounds site, particularly between Show Ring 1 and Show Ring 2.

The Project would likely result in temporary impacts to land use during construction as well as permanent impacts to land use in Bowen Hills. Construction impacts within this area include:

- pedestrian and traffic access changes, particularly for uses surrounding RNA Showgrounds and for access to RNA Showgrounds during events
- changes to access and mobility within RNA Showgrounds during events, including movement of goods and animals during the Ekka
- impacts to pedestrian and traffic access to land uses along O'Connell Terrace due to construction of upgrades to the road network
- noise and visual impacts as a result of construction activities.

Implications for existing land use

Surface works and upgrades relating to Exhibition station would be undertaken primarily within the existing rail corridor. However additional track work and station upgrades would result in loss of land within the RNA Showgrounds. Land would be acquired in the north of RNA Showgrounds and would involve the loss of a number of buildings and features. Some of these buildings and features are identified under the RNA Showgrounds listing on the Queensland Heritage Register and are described further in **Chapter 20 Non-Indigenous Cultural Heritage.**

Surface works would also require additional land between Exhibition Station and Mayne Rail Yards, as well as within Mayne Rail Yards. Works would involve partial acquisition of the Queensland Newspapers property, although there would be no resumption of critical buildings or infrastructure. As a result, it is anticipated that the existing uses would continue.

Works would also be undertaken to the immediate west of the existing rail corridor, within land that was previously occupied by construction activities for the Clem Jones tunnel, for construction of the Mayne feeder station. Within Mayne Rail Yards, works would likely have minimal impact on existing rail operations as the proposed route alignment has been adopted to minimise impacts to movement and stabling operations through circumventing along the edge of the site.

During the construction phase, O'Connell Terrace would be raised over the rail corridor in order to meet Queensland Rail standards. Raising O'Connell Terrace may impact the accessibility to and from RNA Showgrounds, as current access to O'Connell Terrace is used for transport of goods and livestock during Ekka events.

O'Connell Terrace would also be partially closed to traffic during part of the Project's construction period. Land uses that are accessed via O'Connell Terrace may experience some changes in accessibility while this upgrade is being undertaken. Alternative accesses are available and therefore accessibility would be maintained. Access to Lanham Street would be maintained, via construction of a temporary bridge, throughout construction to allow access to Mayne Rail Yard. Transport and traffic implications are described further in **Chapter 5 Transport.**

Disruption to access for uses located along Mayne Road and Hudd Road may also be experienced during construction. Construction traffic accessing the construction site may result in impacts to accessibility for commercial businesses located along these roads.

Existing levels of pedestrian access and traffic and rail movement within RNA Showgrounds would be redirected around the worksite during construction of the Project. The construction activities would involve disruptions to connectivity between the northern and southern side of RNA Showgrounds. Access past the worksite would be maintained through staged construction across roads to minimise traffic and pedestrian interruptions.

Construction activities would take place at RNA Showgrounds for a period of two to three years, affecting two to three 'Ekka' events. Construction activities would need to maintain internal connectivity within the RNA Showgrounds for the movement of goods and livestock during Ekka events as well as internal access for pedestrians.

Amenity mitigation measures are also proposed during the construction phase of the Project to manage potential noise and visual impacts. Amenity mitigation measures include noise and visual barriers which may generate further disturbances to pedestrian movements within RNA Showgrounds.

Implications for future land use

Both the RNA Showgrounds Master Plan and Cross River Rail would require the removal of the existing RNA cattle pavilions in order to establish the worksite. The RNA Showgrounds Master Plan proposes that the new cattle pavilion facilities be relocated within the RNA land. To ensure that RNA Showgrounds maintains its existing capacity, Cross River Rail would need to coordinate with the RNA to ensure that the new cattle pavilions are constructed prior to the establishment of the Cross River Rail worksite.

At the completion of works for the Ekka Station, the RNA Showgrounds would be reinstated to be consistent with the RNA Showgrounds Master Plan and Development Scheme for Bowen Hills UDA (**Section 2.2.8**). Any post-construction also would be consistent with the master plan proposals.

The Project has been designed with consideration, and in support of, the RNA Showground Master Plan land use proposals.

Ekka Station may also support development proposed as part of Bowen Hills UDA Development Scheme (**Section 2.2.8**).

4.4 Central section

The Project would impact on land use as well as stimulate secondary land use change in the Brisbane CBD and CBD fringe areas such as Spring Hill, Kangaroo Point and Woolloongabba.

4.4.1 Spring Hill

Within Spring Hill, land use impacts are concentrated around the worksite and relate mostly to construction activities. Some longer term impacts would be experienced as a result of connections with the surface rail network and the northern portal in Victoria Park.

Impacts to land use in Spring Hill are summarised as:

- construction works would require land within Victoria Park
- construction traffic impacts for access to the Biomedical Technology Service facility
- changes to pedestrian and cycle networks
- construction impacts for sensitive land uses on the southern side of Gregory Terrace

Implications for existing land use

Proposed construction works require land including Victoria Park, BCC Local Asset Services Central Compound and Biomedical Technology Service facility. The worksite also would be proximate to St Josephs College Gregory Terrace tennis courts.

The BCC facility would be wholly required for tunnel portal construction activities as well as the site for the Exhibition feeder station. The BCC facilities would be required to be relocated in consultation with Council.

The worksite would occupy a small area of each of Victoria Park and the Biomedical Technology Service facility and would not affect the utility of either. It is expected that these uses would be able to continue operating at their current capacities.

The work site would require removal or relocation of part of the existing access road, a number of trees and a playground. Neither the Centenary Aquatic Centre nor the tennis courts would be affected directly by the Project. The loss of vegetation within Victoria Park is discussed further in **Chapter 11 Nature Conservation.**

Access to the worksite for general construction traffic and spoil haulage would be via an upgraded access road through Victoria Park to Gregory Terrace. The Project would share the same access to Gregory Terrace as the Biomedical Technology Service facility. Traffic accessing the worksite would be managed to ensure that traffic impacts are minimised for local traffic.

Construction of the Legacy Way (previously Northern Link) northern portal and ventilation outlet is proposed to be undertaken through to 2015. There may be a small overlap from the commencement of construction activities for Cross River Rail and the completion of construction activities for Legacy Way in 2015 at Victoria Park. While the two Projects would be located within the same visual catchment, cumulative impacts to nearby land uses would be avoided as a consequence of the buffering effect of the ICB.

Existing pedestrian and cycle access through Victoria Park would be affected during construction. Bikeways within Victoria Park would be realigned around the work sites to ensure that access is maintained throughout the construction phase. At the completion of construction, road and pedestrian networks would be reinstated to reflect the existing networks.

Amenity mitigation measures are proposed to be implemented for the northern portal work sites. Noise/visual barriers would be installed around worksites and existing bikeways within Victoria Park. Amenity mitigation measures would require a small footprint and are unlikely to generate further significant impacts on the utility of Victoria Park.

A number of sensitive uses, including health and education facilities, are located within Spring Hill. These uses have little potential to be affected by vibration and noise generated from tunnelling works. The alignments of both tunnels would avoid going directly beneath these sensitive uses. Potential vibration impacts for sensitive uses are discussed further in **Chapter 16 Noise and Vibration.**

Once operational, surface facilities would be located within the existing rail corridor. A small section of the open transition structure would be located within BCC Local Asset Services Central Compound and the Biomedical Technology Service facility. A feeder station would be located within the existing bounds of the BCC land and as a result would not be made available after the completion of construction activities.

The transition structure would only occupy car parking space for the Biomedical Technology Service facility. The operational impacts to this site are likely to be negligible.

Implications for future land use

The Project is not expected to influence future development on Gregory Terrace, Water Street and the eastern end of Boundary Street due to the separation distance of between these areas and rail infrastructure.

For the area immediately north of Roma Street Station, the increased level of accessibility would support a change in land use intensity. Existing area classifications in this area include low-medium and high density residential. As a result development is likely to occur in line with these designations.

4.4.2 Brisbane CBD

The Project is likely to result in a range of impacts to land use within Brisbane CBD, with significant impacts experienced around construction work sites. Impacts in Brisbane CBD include surface and volumetric land acquisitions, access and amenity changes for traffic, pedestrians, cyclists and changes to accessibility for businesses.

Impacts to land use within the CBD are likely to be during the construction period. However, longer term impacts may be experienced in some locations. Long term implications for the project include:

- surface land acquisitions are required for construction and rail station access. These land requirements would result in the permanent loss of a number of retail businesses.
- traffic capacity would be restricted along some inner city streets to accommodate footpath treatments, enabling future improved pedestrian movement
- future land use change such as increase in variety of land use type and intensity in areas surrounding Roma Street and Albert Street stations.

A summary of key construction issues include:

- surface land acquisitions for land located at construction work sites
- loss of designated car parking and loading capacity
- changes to pedestrian and cycle networks during construction
- changes to traffic movement and access as a result of construction activities
- construction impacts for sensitive land uses such as noise and vibration.

Implications for existing land use

Throughout the Brisbane CBD, the Project would be located within tunnel with surface structures located at Roma Street and Albert Street stations. Tunnelled infrastructure would be primarily located under existing roads and rail corridors. Land uses affected by surface and volumetric acquisitions would be primarily commercial, with remaining land utilised for residential and open space uses.

Construction of Roma Street and Albert Street stations would require the acquisition of freehold land, including land owned by BCC. The worksites would require acquisition of 22 commercial businesses (10 properties) in Albert Street. No businesses or residential properties would be resumed at Roma Street.

Land would be required at four separate sites for Roma Street Station works. The four worksites are described as follows:

- **Roma Street A:** land bound by Parkland Boulevard, Parkland Crescent and Central Parklands residential development and is currently utilised for Queensland Rail car parking.
- **Roma Street B:** land bound by Roma Street Station building, rail station platforms two and four and the rail lines that access these platforms. The site is currently utilised for Queensland Rail car parking.
- **Roma Street C:** land bound by Roma Street Transit Centre, Inner Northern Busway, Roma Street and Emma Miller Place. The site is currently used as an access road to Roma Street Parklands, Gallipoli Place and part of Emma Miller Place. The access road would be reconfigured to maintain access during construction.
- **Roma Street D**: land bound by the existing rail easements, Parkland Crescent and the bikeway within Roma Street Parklands. The land is currently utilised as car parking space for the parklands. This is removed from the proposed Roma Street Station construction activities and is proposed as a support site.

Loss of public parking spaces for Roma Street Parklands and Roma Street Station would also occur as a result of construction. Some 137 pay and display spaces at the College Close car park and 41 pay and display spaces at the Platform 10 car park would be lost as a result of Project requirements. It is likely that the spaces within the College Close car park and Platform 10 car park would be reinstated once construction was completed. In addition to the temporary loss of public car parking spaces, 37 spaces reserved for Queensland Rail employees adjacent to platform 3, would be lost permanently for construction of the station central shaft.

Albert Street Station would require land at two separate sites for the construction of Albert Street station. The two work sites are described as:

- **Albert Street north**: land bound by Albert Street, Mary Street and existing buildings. The site would require demolition of existing low rise commercial buildings and would be utilised for construction of the northern Albert Street station entrance.
- **Albert Street south:** land bound by Albert Street, Alice Street, Margaret Street and existing buildings. The site would require demolition of the existing Royal on the Park Hotel, allowing for construction of the southern entrance of Albert Street station.

The worksites would generate indirect impacts to adjacent and nearby land uses. In particular:

- 30 premises containing a wide mix of residential, commercial, retail and government uses located adjacent to, or directly across the road from, Albert Street worksites may experience an adverse change in amenity, pedestrian and traffic accessibility during construction.
- 89 premises, consisting of similar mixed land uses, would be potentially impacted by changes to local road and pedestrian impacts around Albert Street. These premises may experience a decline in amenity and accessibility as a result of Project activities, including changes to local road and pedestrian networks.

As the Roma Street worksites would be located primarily within Queensland Rail land, it is likely that few indirect impacts to nearby businesses would be experienced.

Pedestrian and vehicular traffic may be impacted also by construction traffic accessing worksites. Construction vehicles, including spoil haulage trucks, would be required to access worksites throughout the duration of construction. At their peak, a requirement for approximately 103 trucks per day from Roma Street and 80 trucks per day from Albert Street would be required for spoil haulage. Appropriate traffic management practices would be implemented to ensure that these vehicles can enter and exit worksites with minimal disturbance to existing movement networks and amenity of surrounding land uses. This is further outlined in **Chapter 5 Transport .**

Pedestrian and vehicular traffic past construction sites would need to be maintained during the Project. However, disruptions to movements on Roma Street, Albert Street, Alice Street and Mary Street may occur. To minimise disruptions, staged construction is proposed to avoid full interruptions to traffic.

During the construction phase in Albert Street, it is anticipated that some of the dining and cafe activities would relocate to parts of the CBD in response to the changed pedestrian environment. Other uses of a less 'transient' nature, such as the residential and commercial premises above ground floor, or at street level, would be expected to remain and would require the protection of effective worksite management and traffic management.

Permanent changes to the road network would occur in Albert Street, between Alice Street and Elizabeth Street. These changes would facilitate increased pedestrian traffic from Albert Street station. Loading areas and taxi areas located along Albert Street would be reallocated to accommodate traffic changes and to widen footpaths. This change is not anticipated to significantly impact traffic flows along Albert Street. For further analysis see **Chapter 5 Transport.**

Once construction has been completed, it is likely that pedestrian accessibility would be improved. In order to accommodate additional pedestrian numbers generated by the Project, pedestrian capacity on the footpaths surrounding the new station entrances is required. Proposed pedestrian treatments in the vicinity of Albert Street Station would occur through:

- widening footpaths and increasing pedestrian standing areas at intersections between Alice Street and Elizabeth Street
- increased footway capacity at key crossing locations along Albert Street to accommodate increased volumes of pedestrians along this route.

Once construction has been completed, the work sites would be decommissioned and rehabilitation of these sites would occur. Public spaces such as footpaths and roadways would be reinstated to meet necessary Brisbane City Council requirements.

Implications for current development proposals

A development application for a 43 storey residential tower has been approved for development by Brisbane City Council at 140 Alice Street and 16 Albert Street (land opposite the proposed southern Albert Street rail station entrance). The proposal (Carrington Towers) is to involve demolition of the existing building and redevelopment for 223 residential units.

Demolition is expected to commence by 2011, with development of the new tower to be completed by December 2014. Construction of the Albert Street station is projected to be completed prior to commencement of construction at Albert street worksites and therefore would not result in any cumulative impacts to local amenity, pedestrian accessibility and traffic on Albert Street and Alice Street. However, the prospective tenants of Carrington Towers are likely to be affected by the Project's construction activities.

Similarly, the development at 99-103 Mary Street is also likely to be fully developed prior to commencement of construction of Cross River Rail. Whilst there are not likely to be any cumulative impacts resulting from construction of both the Cross River Rail Albert Street Station and the tower, prospective tenants may be affected by the Project's construction activities.

Implications for future land use

Both Roma Street and Albert Street stations would support changes to density or mix of nearby land uses. As these locations are both located within the City Plan's city centre area classification, future development would not be constrained by density or building height restrictions.

Albert Street south worksite would be used for construction of the southern station entrance. The site would have some residual land which would be made available for redevelopment. Redevelopment of the residual worksite is separate to the Cross River Rail would be consistent with the planning intent of the Brisbane City Plan.

City Plan designates this land as multi-purpose centre, city centre (MP1). The Brisbane City Centre Neighbourhood Plan also identifies the Albert Street south site as a Strategic Redevelopment Area for the CBD which is to contain at least 29,000 m^2 of office development.

The Project would result in the permanent loss or relocation of 22 retail businesses for the establishment of Albert Street station access. The provision of space for retail purposes around the proposed civic space at the station entrance would assist in offsetting loss of available CBD retail space.

Opportunities also exist for redevelopment in areas surrounding Albert Street and Roma Street stations. Urban renewal is an on-going process in the Brisbane CBD, as evidenced by current activities around Roma Street Transit Centre. Cross River Rail would support this on-going renewal process. Roma Street Transit Centre has also been identified for improvements which could be integrated with the new underground rail service.

Long term planning for the area surrounding Roma Street proposes utilising airspace over the rail corridor. New development would contain a mix of land use types including commercial, retail, residential, community, civic and recreation.

A 'zone of influence' would be required to protect the structural integrity of the Cross River Rail infrastructure and Albert Street and Roma Street stations. A more detailed description of this feature is provided in **Section 4.8**.

4.4.3 Kangaroo Point/Woolloongabba

The likely changes to land use arising from implementation of Cross River Rail would occur in the vicinity of the construction worksite at Woolloongabba. The Project would require surface acquisitions in the vicinity of the proposed Gabba Station and worksite as well as volumetric land acquisitions along the tunnelled section of the corridor.

Some longer term impacts may also be experienced. Key impacts as a result of the Project in this location include:

- surface land acquisition associated with the construction worksite, Woolloongabba station and volumetric subdivision along the tunnelled portion of the corridor
- impacts for access to Woolloongabba from the Pacific Motorway due to construction activities
- impacts for access and amenity of surrounding land uses as a result of construction activity and construction traffic accessing the Woolloongabba worksite
- support for future land use change proposed in the Woolloongabba UDA.

Implications for existing land use

The Project would be constructed primarily in tunnels through the Kangaroo Point and Woolloongabba section of the study corridor, with the only above ground component being the Gabba Station. Land uses affected by volumetric subdivision are predominantly residential, with remaining uses comprising a mix of commercial, industrial, community and open space.

The Woolloongabba worksite would be required to construct Gabba Station and would occupy land currently occupied by the Queensland Government Goprint facility. While the ground level components of the station would be located within the bounds of the Goprint site, the station cavern would extend under Stanley Street and Vulture Street and a number of commercial properties to the north and south. No direct surface land use impacts would affect these commercial properties.

Property access to residential and commercial properties located on the northern side of Vulture Street and the southern side of Stanley Street would be maintained during construction and operation of the Project.

The worksite located at the western end of Woolloongabba UDA would not impact on accessibility during major events at the Gabba. In particular, access from Woolloongabba busway station to the Gabba stadium would not be impeded by construction activities for the Project. Further assessment of transport impacts are described in **Chapter 5 Transport.**

Mitigation measures would be required and implemented at the Woolloongabba worksite, including establishment of noise and visual barriers. Pedestrian connectivity would be maintained by locating these barriers along the boundaries of the worksite.

Gabba Station has been designed to accommodate an influx of passengers during events at the Gabba. In order to accommodate the projected volumes of pedestrians accessing the new station from the Gabba, pedestrian paths have been proposed adjacent to Vulture Street and to the South East Busway corridor.

The location of the Gabba Station would also enhance accessibility to the Mater Hospital complex and the medical services which are situated in satellite locations around the hospital. Considering the regional significance of the hospital, this added layer of accessibility would provide a community benefit well beyond the locality of both the hospital and the Cross River Rail station.

Implications for future land use

The Woolloongabba worksite and station would be accommodated in the western half of the Woolloongabba UDA. The Woolloongabba Submitted Development Scheme recognises that future residential and commercial development could be accommodated land currently occupied by the GoPrint and Land Centre buildings. Through the provision of new transport infrastructure, the Project would support development for medium to high density residential and commercial purposes, consistent with the development scheme. The desired outcomes of the Woolloongabba UDA are described further in **Section 2.2.9**.

By enhancing accessibility in Woolloongabba, Cross River Rail would also support land use change at other nearby locations such as Gabba Central precinct and Kangaroo Point south. Land use change would have to be balanced with the need to protect heritage places and character buildings on the north side of Vulture Street and south side of Stanley Street.

Land to the south of Stanley Street has been designated for development in the Woolloongabba Centre Neighbourhood Plan. Preferred land uses include a mix of residential and commercial development around Deshon Street and Logan Road that would benefit from, and support, new transport infrastructure.

Land use changes stimulated by enhanced accessibility to Woolloongabba would drive a need for plan changes in conjunction with implementation of the Woolloongabba Development Scheme.

4.4.4 Dutton Park

The Project is likely to stimulate or support land use changes at Dutton Park, particularly in proximity to the station and the worksite located at Boggo Road Urban Village. The Project would result in surface acquisitions within the urban village as well as volumetric land acquisitions along the tunnelled section of the corridor.

Most land use changes in the Dutton Park area are likely to be confined to the urban village during construction. Key impacts as a result of the Project in this location include:

- surface land acquisition associated with the construction work site and Boggo Road station and volumetric subdivision along the tunnelled portion of the corridor
- changes to access to Boggo Road Urban Village, Park Road station and Boggo Road busway station during construction
- changes to access and amenity of surrounding land uses due to construction activity and traffic accessing the work site
- future land use changes in areas surrounding the new station location.

Implications for existing land use

The Project would pass through Dutton Park in tunnels, with above-ground structures for Boggo Road Station. Surface works would be located within land owned by the Department of Public Works.

The tunnels have been aligned primarily under existing road and rail corridors to minimise potential impacts to residential properties and other sensitive uses. As it is not possible to follow road and rail corridors for the section between Dutton Park and Woolloongabba, the tunnels would traverse below a mix of residential, commercial, industrial, community and open space uses.

In addition to the residential uses that would be affected volumetrically, the Project would pass beneath two potentially sensitive uses including the eastern corner of the South Brisbane Cemetery and the Ecosciences Precinct in the Boggo Road Urban Village. Both these places could be susceptible to vibration from tunnelling activities and impacts would need to be managed accordingly. Potential vibration impacts to sensitive uses are described in **Chapter 16 Noise and Vibration**.

The Boggo Road Station would be situated within the Boggo Road Urban Village, with the cavern located between the Boggo Road Gaol and the Ecosciences Precinct. The location of the station would allow for direct access to the Urban Village, the Boggo Road busway station and the Park Road Station.

Boggo Road Station would be constructed using cut and cover methods, impacting on the pedestrian plaza situated between the Ecosciences Precinct and the Gaol. Alternative pedestrian accesses around the work site would be required.

Development of the station would also require the temporary closure of Peter Doherty Street would to facilitate construction. Temporary realignment of Boggo Road in the vicinity of the busway station entrance would also be required to allow for continued vehicle access to the site during construction.

Disruptions may be experienced to traffic movement, particularly when traffic is entering and exiting the work site. Appropriate traffic management should be undertaken to manage impacts to traffic. Traffic impacts are described in **Chapter 5 Transport**.

The location of the Boggo Road Station would create a transport hub with the Dutton Park Station, the Boggo Road busway station and services from the University of Queensland at St Lucia. This hub would enhance accessibility to the Princess Alexandra Hospital complex and the medical services around it. This connection would be further enhanced with a possible future provision of direct pedestrian access to the Cross River Rail from the Princess Alexandria Hospital complex. Cross River Rail would also strengthen the knowledge-based ties between the University of Queensland, the Boggo Road Urban Village and the Princess Alexandra Hospital.

Implications for future land use

The Project provides opportunity to support Boggo Road Urban Village's aims of providing a high density, mixed use development. Potential improvements to accessibility to the Urban Village as a result of the Project may result in further demand for residential and commercial uses to be accommodated within the site.

In addition, enhanced accessibility at Boggo Road would likely stimulate re-development pressure on land to the immediate south, ie Rawnsley Street. This area is currently classified mostly as character residential, as well as a small area designated as multi-purpose, convenience centre. Similarly, pressure for re-development on land to the west of Annerley Road could arise as a consequence of enhanced accessibility. Possible land use changes could include low-medium density, medium density residential and commercial development.

4.5 Southern section

The southern section of the corridor contains mostly residential and industrial land uses. Impacts to land use within this area of the corridor are generally focussed around the southern portal, new Yeerongpilly Station and the Yeerongpilly worksite.

4.5.1 Fairfield/Yeronga/Yeerongpilly

The Project would likely result in a range of impacts to land use within the Fairfield, Yeronga and Yeerongpilly suburbs, with significant impacts experienced around the worksites. Impacts in this section are likely to result in surface and volumetric land acquisitions, access and amenity impacts for traffic, pedestrians, cyclists and changes to accessibility for residents and businesses.

Cross River Rail would support the implementation of planning for the Yeerongpilly TOD by providing a high quality public transport service to the CBD with linkages into other parts of the rail network and other modes of public transport.

Impacts to land use would occur during construction and operation. The most prominent impacts during the construction phase include:

- loss of residential land to the east of Wilkie Street, Yeerongpilly
- loss of general industry land within Yeerongpilly, around Wilkie Street and Lucy Street
- loss of a small area road reserve serving as green space and the loss of part of Energex substation land for the realignment of Railway Road, Fairfield
- changed access for pedestrian, cycle and traffic networks during construction
- construction impacts for sensitive land uses such as noise and vibration.

Long term implications from the Project works include:

- surface land acquisitions are required for construction, rail station, ventilation shaft and road realignments. These land requirements would result in permanent loss residential properties and potential industrial businesses.
- future land use change including change to land use type and intensity in the vicinity of Yeerongpilly Station, including the Yeerongpilly TOD.

Implications for existing land use

The Project would pass through Fairfield, Yeronga and Yeerongpilly in a combination of both tunnelled and surface works including the construction of the ventilation shaft and emergency access at Fairfield. The major worksite for the Project would be established along Lucy Street, Yeerongpilly.

The worksite to support construction of the southern ventilation shaft would be situated across two sites including an area of land adjacent to Fairfield Road and within an undeveloped portion of land occupied by an Energex substation in Fairfield. The site would front Sunbeam Street, Railway Terrace and Bledisloe Street.

Temporary occupation of the undeveloped portion of land occupied by the Energex substation would be used to realign Railway Terrace. This would allow construction of the southern ventilation shaft on the land bounded by Fairfield Road, Railway Road and Bledisloe Street.

Access to the southern ventilation shaft work site would be via Fairfield Road, Bledisloe Street and Railway Road. It is not expected that nearby land uses would experience substantial declines in property accessibility. However, residential properties located on the southern portion of Railway Terrace, Sunbeam Terrace and Bledisloe Street may experience some disruptions to access. This includes Yeronga Vet Surgery and Fairfield Christian Family Church. Appropriate traffic management practices would be implemented to ensure that access to these properties is maintained during construction.

To accommodate the construction of Yeerongpilly station and land required for the construction worksite, both residential and industrial land would be acquired along Wilkie Street and Lucy Streets. Wilkie Street and Lucy Street would be required for use during the construction phase.

Wilkie Street would be realigned as part of the project to enable development of the new station. This arrangement would be constructed as part of Project early works and would reinstate similar connectivity and circulation in the area.

Station Road and part of Lucy Street would be closed to traffic and used to provide access to the worksite during construction. Land uses that front onto the closed section of road would be acquired. Existing through traffic would be required to use alternative routes. Alternative accesses to arterial roads, such as Ipswich Road, would be available via School Road and Gow Street.

Surface works would be undertaken within Moorooka and Yeerongpilly to widen the existing rail corridor and augment Clapham Rail Yard. Works to be undertaken around Clapham Rail Yard would require full or partial resumption of properties on Evesham Street, Unwin Street, Ipswich Road and Fairfield Road. These works would also require partial realignment of Ipswich Road.

Resumption of cleared storage and car parking land to the west of Clapham Rail Yard would also be required for the Project. This area is currently used by Weston Milling. Associated buildings are not proposed to be used for the Project.

Project works including additional tracks and Yeerongpilly Station would increase the width of the rail corridor. Existing pedestrian crossings of the rail corridor would be retained and widened where required to maintain pedestrian connectivity. Improvement of pedestrian crossing would also occur as part of the Project to off-set the potential risk of increasing the severance effect of the existing rail corridor.

Changes to access and mobility at Yeerongpilly station include:

- widening of the existing pedestrian bridge over the rail corridor to Queensland Tennis Centre and proposed Yeerongpilly TOD site
- provision of kiss ‘n’ ride facilities in Wilkie Street
- relocation of the inbound local bus stop on Fairfield Road, to achieve better integration with the rail station.

During construction, residential land located on Livingstone Street, Bow Street and Park Lane that back onto the Yeerongpilly worksite would experience potentially adverse changes to amenity. The residential area backing onto industrial uses is affected to some extent already by noise and other industrial effects.

The proposed construction activities for the Project would be undertaken on a much greater scale than existing industrial activities. Consequently, specific mitigation measures to address noise, night lighting, traffic and other construction activities would be required around the Project's worksite, changes to amenity would be experienced.

Once constructed, the Project would provide visual screening and noise attenuation to mitigate potential noise and visual impacts from the rail operations where required. Visual screening and noise attenuation measures would be accommodated within land resumed for construction activities and would not require additional land.

Implications for future land use

The Project is important for supporting sustainable population growth and development in the Yeerongpilly area. The Project is expected to provide improved transport access to the Yeerongpilly TOD, to the Queensland Tennis Centre and Tennyson Reach, as well as improved connectivity for workers employed within adjacent industrial areas.

The Yeerongpilly TOD concept plan of development provides for a mix of commercial, retail, residential and community uses which relies on the linkage between the proposed Cross River Rail station at Yeerongpilly and the existing 'driver' in the Queensland Tennis Centre. The existing community living and working around the TOD would also support the development. The high quality transport services provided by Cross River Rail, integrated with other modes, and connecting with strategic employment centres, would support or 'underwrite' the future implementation of the concept plan of development for Yeerongpilly TOD.

The area surrounding the Yeerongpilly worksite and new station may experience pressure for intensified development for uses such as residential. Redevelopment in this location would be largely driven by the close proximity to the new Yeerongpilly Station and resultant transport advantages expected from the Project. Land use change in Yeerongpilly would continue to be managed through the Stephens Local Plan and other elements of City Plan by the Brisbane City Council. A change to the planning instruments would be required to facilitate land use change should Council consider such changes to be warranted.

The Brisbane City Council has sought to retain the character housing in Yeerongpilly through land use designations and planning measures. Increased residential densities would need to reflect this intention.

It is unlikely that the Project would generate redevelopment within Yeronga as there are no proposed surface works or additional rail infrastructure planned for this area.

4.5.2 Rocklea/Salisbury

The Project is expected to bring about impacts to land use within Rocklea and Salisbury as a result of rail corridor and road realignments. Key impacts as a result of the Project in this location include:

- surface land acquisition associated with minor rail corridor widening works
- surface land acquisition associated with road realignments
- impacts to vehicle, pedestrian and cycle access as a result of road realignments and closures.

Implications for existing land use

Works undertaken in the Rocklea/Salisbury section would include some minor rail corridor widening works, realignment of a number of local roads and property acquisition for the protection of land for future rail expansion projects, such as a rail line to Beaudesert. Some land would be required within Rocklea and Salisbury that is currently occupied by light industrial activities, including a BCC services facility. Properties would be required on Fairfield Road, Railway Parade and Dollis Street.

Changes to access and traffic movement would be required for the Project throughout Rocklea and Salisbury. The Project would require the following long term changes to access and traffic movement within this section of the corridor:

- realignment of Fairlie Street in Rocklea
- realignment of Heaton Street in Rocklea
- Station Street in Rocklea to be reduced to one lane from Fairfield Road
- Closure of the Beaudesert Road Service Road open level crossing in Rocklea
- realignment of Dollis Street in Salisbury.

Changes to the road system would result in changes to traffic movements within the area during construction. Changes to the road system would also have on-going impacts to traffic movements once the Project has been delivered. Changes to access and movement during construction may affect traffic flows on Fairfield Road and Beaudesert Road without greatly reducing function. Restriction of traffic movements is not expected to significantly impact traffic flows or significantly impact existing levels of service for access and movement.

Once the road realignments have been completed, there is potential for existing land uses to experience a decline in accessibility. In particular, the closure of Beaudesert Road Service Road open level crossing may reduce the level of accessibility to nearby land uses. Further traffic implications as a result of these road closures are discussed in **Chapter 5 Transport.**

Future pedestrian access and movement to Rocklea Station would be improved as a result of the Project. Upgrades would be made to ensure that pedestrian access to, and within, the station is compliant with the *Disability Discrimination Act 1992* (DDA) requirements. This would involve upgrades to platform accesses (new stairs, lifts and overbridge), pedestrian paths, parking areas and building treatments.

Implications for future land use

With the forecast reduction in patronage for both Rocklea and Salisbury stations with the Project in 2016, there is little prospect of either direct or indirect changes to land use, access and amenity.

Existing parking at both Rocklea and Salisbruy stations would be adequate for forecast patronage in 2016. However, parking may require augmentation by 2031 as patronage increases.

4.6 Industrial land

Industrial activities and industrial zoned land located within the inner suburbs is important for the economic viability of Brisbane. The Brisbane Economic and Employment Development Strategy indicated that the growth in Brisbane's economic capacity will occur in approximately 30 suburbs over the next 20 years.

Of these suburbs, the inner south-western suburbs including Fairfield and Rocklea were identified as key economic zones. These areas are located along the study corridor and some of the industrial areas within these zones would be impacted directly by the Project.

Strategies for future growth and viability of economic zones in Brisbane are outlined in the Draft CityShape Implementation Strategy. Important considerations in the Strategy include:

- availability of appropriate areas of industrial and commercial land within Brisbane
- existing land use planning regulations support forecast economic and employment growth in key economic locations.

The development of major infrastructure projects and land use changes and redevelopment in the inner Brisbane area has impacted on industrial land stock within inner Brisbane. The Project would impact on industrial land at Yeerongpilly and Salisbury. The impact would involve the cessation of industrial activities for the duration of the construction phase while industrial land is used for the major worksite at Lucy Street and Wilkie Street. A worksite would also be established on industrial land at Lillian Avenue and Dollis Street, Salisbury.

Industrial land in Yeerongpilly is classified for general industry and currently contains a range of large and small industrial activities, including vehicle service, metal working, food processing and warehousing and storage. These industrial areas also include some areas of office space that contain a range of small scale commercial and community uses.

A total of 107 businesses within industrial areas would be resumed for the Project. While the majority of these businesses are of a light industrial nature, a number of commercial office and community uses are also located within this industrial area.

Lucy Street would be retained in its existing form to provide an efficient worksite access and egress, while maintaining a reasonable utility for the land subsequent to Project requirements. The existing industrial building along the northern boundary of the Lucy Street worksite would be retained and used for Project purposes, including mitigation of construction noise impacts on the residential land to the north.

The land at Dollis Street is used for car parking and storage. It would be used as a worksite mostly for plant and equipment storage and materials lay-down during the construction phase.

Once construction has been completed, it is a consideration of the Project that the worksite would be redeveloped for uses that benefit from being located in close proximity to a transport node. This development is anticipated to be developed as a mixed use development applying transit oriented principles. As a result, the location of industrial uses in this location would cease.

4.7 Potential constraints on surrounding development

A ‘zone of influence’ has been identified for the purposes of volumetric acquisition, around the tunnels and underground stations to protect the Project from impacts of future development.

The ‘zone of influence’ comprises a buffer of 7 m extending from the outside of each tunnel and 10 m from the outside of station caverns. The buffer would be acquired through a volumetric acquisition process and would be noted on the title documents for land within the buffer. The zone of influence would be design and applied differently in each of the following scenarios, that is for:

- existing structures and development
- future development approved under a current development permit (issued prior to a decision by the Government on whether to proceed with the Project)
- land noted for possible future development, but with no current development permit in place.

Where existing structures are located within the proposed ‘zone of influence’, a reduced buffer or separation would be applied. The Project has been designed to ensure these structures are not impacted by the Project. Where an approved development application for land adjacent to Project infrastructure exists prior to the Queensland Government decision to proceed with the Project[1], the approved development has to also be considered in the Project design.

[1] The Queensland Government will consider whether to proceed with Cross River Rail or not once the evaluation report of the Coordinator-General is complete and the business case adopted.

The full zone of influence would be applied to developments not approved prior to the approval of the Project.

The Project alignment has been designated as a 'railway corridor' to protect the Project's alignment and structures from being impacted by new development. This requires that development applications for nearby land to be referred to Transport and Main Roads (as concurrence agency) for assessment to ensure that the Project's structures are considered in the design of any new developments. Transport and Main Roads is currently a concurrence agency for the Cross River Rail future public transport corridor.

The zone of influence could potentially result in future constraints to development through limiting future basement development. While the Project would influence development along the entire length of the underground works, the influence would be most evident in areas suitable for higher density development such as the Brisbane CBD, Bowen Hills and Woolloongabba UDA areas and Boggo Road Urban Village.

The Project infrastructure through the Brisbane CBD would be aligned under Albert Street. The zone of influence would extend beyond the road reserve to impact properties adjacent to Albert Street. While the design of the tunnels and Albert Street station could accommodate 100 storey buildings and basement depths of up to 35 m, any new developments on adjacent sites would need to consider the zone of influence and Project infrastructure. The development approved on land situated at 140 Alice Street and 16 Albert Street can accommodate the zone of influence. Future development along Albert Street would need to consider tunnel locations when designing basements, foundations and rock anchors.

While the tunnels would influence the redevelopment of sites along Albert Street, not all sites are suitable for redevelopment. The tunnel and station infrastructure within the Woolloongabba UDA has been designed in coordination with the master plan to ensure that the ULDA's desired outcomes are achieved. In particular, the station cavern has been designed to accommodate the proposed development over the northern end. Basements within this location would need to consider the location of the station cavern.

Redevelopment of sites immediately north and south of the Woolloongabba UDA would need to consider the location of the Gabba Station cavern. Land to the south of Stanley Street is occupied by buildings that form part of a heritage precinct, identified under Brisbane City Council's development control precinct. Large scale redevelopment at this location would be unlikely.

A coordinated approach to development at Boggo Road Urban Village is required with the Project to allow for tunnel and station alignments to be considered in conjunction with the Ecosciences building and the PWD (Leighton) multi-storey project. An allowance has been made in the Project design to accommodate underground car parking from this project, while similar recognition of structural supports and integrity are required in both Cross River Rail and the development project.

At other locations along the tunnel alignment, future redevelopment would be primarily influenced by the City Plan's area classifications. Prominent area classifications along the tunnel's alignment, including low to medium residential areas, character residential areas, general industry areas and open space areas. While the zone of influence would be applied in these areas, it is unlikely to constrain development as the identified area classifications do not allow for developments that would include deep basement or foundation supports.

4.8 Spoil

Construction spoil would be generated in varying quantities at all the Project's work sites. The estimated spoil quantities to be removed from each work site are identified in **Table 4-3**.

Table 4-3 Estimated volumes of spoil generated

Construction site	Spoil generated (in-situ, m^3)
Southern portal (Yeerongpilly worksite)	375,000
Southern ventilation shaft (Fairfield)	11,500
Boggo Road Station	155,000
Gabba Station	437,000
Albert Street north	60,000
Albert Street south	130,000
Roma Street south	125,000
Roma Street central	15,000
Roma Street north	21,000
Northern portal approach	96,000
Total insitu m^3	1.4 million m^3
Total tonnes*	3.4 million t

Notes:
** estimated density of insitu material is 2.4 tonnes/ m^3*

4.8.1 Spoil placement sites

An assessment of potential transport routes and spoil placement sites was undertaken to determine the most appropriate method for transporting and disposing generated spoil. An outline of the assessment is provided in **Chapter 3 Project Development.** On the basis of the outcomes of the assessment and advice from the Commonwealth Department of Environment, Heritage, Water and the Arts (now Department of Sustainability, Environment, Water, Population and Communities), land within Swanbank, Ipswich was identified which satisfies the Project requirements for the Reference Project.

Assessment of land suitability within the Swanbank area identified a precinct for spoil placement situated to the south of Swanbank Road and north of Cumner Road. The precinct is served by Abrahams Road. This precinct has an area of approximately 370 ha, includes disused mine voids and is removed from sensitive receptors. If land within the spoil placement precinct is not available for commercial reasons, there are a number of suitable alternatives in the general Swanbank area. Such alternatives also are well removed from sensitive receptors and have access from State-controlled roads.

The spoil placement precinct is located within an area identified on the *Ipswich City Plan Mining Influence Area Overlay Map* as having been subjected to prior surface and potential underground mining activities. Prior surface mining operations are visually evident. The mine voids within the spoil placement precinct are of sufficient size to accommodate the volume of spoil generated from Cross River Rail construction works.

Spoil could be placed within the mine voids with little if any risk of off-site impacts such as dust, soil erosion and sedimentation in local streams or loss of habitat.

The locality of the spoil placement precinct is sparsely populated and primarily occupied by industrial or waste disposal activities or land that is unable to accommodate development due to mining disturbance. The nearest residential property is located approximately 1.7 km to the north-east.

4.8.2 Spoil haulage

Transportation of spoil from work sites to disposal site(s) would be primarily along Ipswich Road/ Ipswich Motorway or the Inner City Bypass/ Milton Road/ Western Freeway with both routes travelling along the Ipswich Motorway and Cunningham Highway to Swanbank.

Depending on the location of the work site, a number of local roads would be used to access the Ipswich Road haul route. From Yeerongpilly, local roads to be used include Fairfield Road and Lucy Street. A number of local roads would also provide access to the Western Freeway haul route, including Roma Street, Margaret Street, Alice Street, Gregory Terrace and O'Connell Terrace.

At Swanbank, haulage trucks would leave the Cunningham Highway and follow Redbank Plains Road and Swanbank Coal Road to access the spoil placement precinct. The haulage route has been selected to minimise the potential impact on residential uses within the area.

4.9 Summary of impacts

The regional and local planning frameworks provide an overarching view that transport networks within South East Queensland and Brisbane require continual development to accommodate the future growth forecast for the region. Generally, a range of transport responses will be required to ensure that the region is able to operate efficiently. The provision of a new rail corridor (Cross River Rail) would assist in improving regional and local passenger movements and support these regional and local planning frameworks.

Cross River Rail would support sustainable population growth both in Brisbane and in South East Queensland by providing enhanced accessibility and connectivity between residential areas and places of employment and services. By supporting the establishment of high density centres in designated locations around some of the stations, Cross River Rail would relieve travel demand pressures on the regional and local transport systems (eg road, bus). Detailed information regarding economic and social benefits of the Project are provided in **Chapter 20 Social Impact Assessment** and **Chapter 21 Economic Assessment.**

The integration of Cross River Rail infrastructure and services with existing and planned public transport and land use in key locations, such as Yeerongpilly, Boggo Road, Woolloongabba, Albert Street and Roma Street would also support regional planning and sustainable growth.

Cross River Rail would require the acquisition of land on the surface and underground, or volumetrically. The surface land requirements would coincide with worksites and the stations, including underground stations. The volumetric acquisitions would coincide with the mainline tunnels, cross-passages and underground stations. The volumetric acquisition would include the entire zone of influence.

The Project would require the acquisition of land used for State and local government, residential, open space and recreation, industrial and commercial purposes. While most of these uses could re-establish at alternative locations, there are a small number of uses that may be compromised as a result of resumption. A number of ancillary facilities, such as car parking, or regional service centres, such as the Brisbane City Council facility within Victoria Park, are location dependent land uses and relocating them may not be possible.

The Project would require resumption of a large area of general industry land at Yeerongpilly. Post construction land use at this site has been considered by the Project and has identified opportunities for development of the site to support the new rail station at Yeerongpilly. Post-construction redevelopment of the site would need to assess the potential impact on industrial land stock against the potential value captured for Cross River Rail if other uses were to be developed at this location. While uses within this area could potentially be located at an alternative location, rehabilitation of the worksite post-construction should consider the importance of preserving significant industrial areas within Brisbane.

Through the provision of improved public transport accessibility and efficiency, the Project would be likely to support intensification of land uses around stations. Any redevelopment would be managed by the relevant planning and assessment manager. Redevelopment would be in line with the aims of the development schemes for Bowen Hills and Woolloongabba UDAs, the City Centre Neighbourhood Plan, Boggo Road Urban Village and Yeerongpilly TOD.

Once operational, Cross River Rail would lead to an improvement to amenity and pedestrian accessibility for the neighbourhoods served by its stations and other stations with consequential increased frequency of service. However, during construction, land uses within close proximity to worksites may experience a temporary decline in amenity and accessibility as a result of road and footpath closures, noise, vibration, air quality and visual implications. These issues are addressed in **Chapter 16 Noise and Vibration**, **Chapter 15 Air Quality and Greenhouse Gas Emissions** and **Chapter 10 Visual Amenity and Lighting.**

4.10 Mitigation measures

The following outlines measures to manage land use impacts from the construction and operation of the Project. They include measures to be undertaken as part of the Project as well as recommended measures to be undertaken separate to the Project to maximise the benefits provided by the Project through improved public transport access and land use and transport integration.

As discussed in **Section 4.2.1**, consideration should be given to the redevelopment following construction of the Yeerongpilly construction worksite to maximise the benefits of improved transport access. A separate planning process should be implemented by the Queensland Government or Brisbane City Council, in consultation with the local community, to determine the preferred future land use pattern for this area. This should include consideration of the provision of commuter car parking to support the proposed Yeerongpilly station.

Improved access to the PAH and nearby medical services provided by the location of the proposed Boggo Road station, would be further enhanced by the provision of direct pedestrian access between the station and the hospital complex. Consideration should be given in the future planning and development of this area by Brisbane City Council, the Queensland Government or other private developer(s), to the provision of this connection.

Environmental management plans (EMP) would be prepared for the construction and operation phases of the Project which identify measures to ensure that potential impacts of the Project are minimised and environmental values of the study corridor are protected and enhanced where possible.

Draft outline EMPs for construction and operation are provided in **Chapter 24 Draft Outline EMP.** The draft outline EMP also includes design guidelines to be implemented through the detailed design process to avoid or manage the Project's environmental impacts.

Recommended mitigation measures to avoid or minimise potential impacts on adjoining land uses are outlined below. Further mitigation measures to manage land use impacts are also outlined in **Chapter 24 Draft Outline EMP .**

4.10.1 Design and operation

During the detailed design phase, the following measures are recommended to avoid or minimise potential land use impacts of the Project's design and operation:

- Ongoing consultation is to be undertaken with the RNA and Lend Lease with regard to the design, access, heritage and construction schedules of the Project and RNA redevelopment to assist in managing potential impacts for both projects.

- Ongoing consultation is to be undertaken with key stakeholders in relation to the future development of the Bowen Hills and Woolloongabba UDAs (ULDA), Boggo Road Urban Village (DPW and Leighton) and Yeerongpilly TOD (Department of Planning and Local Government) to ensure that the objectives of the Project and these developments continue to be achieved through increased transport and land use integration.
- Opportunities to minimises the loss due to the Project of pre-1946 character housing, particularly at Yeerongpilly, should be investigated.
- Opportunities to minimise the loss of retail space within the CBD through the provision of retail space within the Albert Street station should be investigated.
- Ongoing consultation should be undertaken with Brisbane City Council in relation to the relocation of Council's Local Asset Services central compound at Gregory Terrace, Spring Hill.
- Opportunities to minimise the temporary loss of land within Victoria Park for construction worksite should be investigated through detailed construction planning and site layout.

4.10.2 Construction

The following mitigation measures are recommended to manage potential impacts on land uses near to construction activities:

- Access to adjoining properties should be maintained, where practicable. Where changes to access are required, alternative access arrangements are to be identified in consultation with property owners and occupants.
- Access for delivery vehicles to commercial and industrial land uses near to the Project works is to be maintained, where practicable. Where changes are required, alternative access arrangements are to be identified in consultation with local businesses.
- Safe and efficient access to major land uses such as the RNA Showgrounds, Gabba Stadium, Roma Street Parkland, Suncorp Stadium and the Queensland Tennis Centre is to be maintained during major events.
- Impact on the amenity of land uses surrounding construction worksites should be maintained during construction through the implementation of appropriate environmental measures aimed at reducing potential construction impacts such as noise and vibration, dust, emissions and odours and construction traffic.
- Access for emergency services vehicles is to be maintained for the duration of construction works to the RBWH, PAH and Mater Hospital.
- Impacts on access to or the use of community uses should be avoided or minimised, including through the implementation of appropriate environmental management measures and ongoing consultation with the owners/ managers of the community uses.

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Appendix A District, Local and Neighbourhood Plans

Clayfield/Wooloowin District Local Plan

The Clayfield/ Wooloowin District Local Plan generally includes the suburbs of Clayfield and Wooloowin. The local plan encompasses predominately residential areas situated within close proximity to the Wooloowin and Eagle Junction stations.

The local plan does not propose significant changes to the existing development pattern within that area covered by the study corridor.

The local plan recognises the importance of the area's pre-1946 low density timber and tin residential development, which constitutes the predominant residential form. The local plan proposes that any higher density development within this area is to be focussed around transport nodes.

Limited works are proposed for Project within the Wooloowin/Clayfield area. However, improvements to rail capacity would increase rail movements through these areas and may further drive demand for intensification of residential development around Wooloowin station.

The planning and land use intent for each of the relevant local and neighbourhood plans is outlined below.

Grange District Local Plan

Grange District is a large area that generally includes the suburbs of Alderley, Grange, Newmarket, Lutwyche, Gordon Park and Windsor. A small area to the west of Breakfast Creek is within the study corridor.

The local plan aims to reflect the area's development history through protection of 'timber and tin' or 'timber and tile' residential developments.

Natural areas, including the waterways of Kedron Brook and Enoggera/Breakfast Creek, contain habitat value and ecological processes and provide a range of recreational opportunities.

As no works are proposed to be undertaken within the Grange district, the Project is considered to be consistent with the planning intent of the local plan.

Albion Neighbourhood Plan

Albion Neighbourhood Plan generally includes the suburb of Albion and covers the area within the study corridor that surrounds the existing Albion station.

This neighbourhood plan emphasises the need for development to be focussed around, and capitalise on, existing and future transport and employment opportunities available at this location. Densification and intensification of uses is planned to occur surrounding the rail station and to the east of Albion Village.

Development and intensification of uses is also projected to occur within southern areas of the neighbourhood plan area, specifically the raceway precinct and areas surrounding Hunt Street. The need to improve the movement system between open spaces, public transport nodes, Breakfast Creek and the Brisbane River is also an important driver for this neighbourhood plan.

It is unlikely that the Project would assist in driving demand for the intensification of uses in the southern areas of the Albion Neighbourhood as these areas are outside Albion rail station's pedestrian catchment. In order for the Project to act as a potential driver for the intensification of development within these southern areas, the pedestrian movement systems between these areas and the Albion rail station would need to be improved.

Intensification of uses along the rail corridor in Albion is likely to support planning intent to revitalise the station precinct and increase commercial activities adjacent the rail corridor.

Milton Local Plan

The Milton local plan area primarily covers the suburb of Milton and is included within a small area of the central section of the study corridor.

The vision for Milton is to be a high standard urban mixed use environment containing office development, small retail outlets, restaurants, other small scale commercial and industrial development, and medium to high density residential areas.

While it is recognised that the Milton area provides a number of opportunities for further development of commercial and industrial uses, the values of the existing residential developments have been identified in the local plan and the amenity of these area's is to be protected.

Development within this area is to capitalise on the availability of existing public and active transport networks. While the major road networks of Coronation Drive and Milton Road adequately service this area, the presence of Milton train station and Bicentennial Bikeway ensure that a range of transport options are available.

The Project would not be located within the Milton local area and as a result, is considered to be generally consistent with local planning in these areas as there are no surface impacts and changes to future planning would not be affected.

Kangaroo Point Peninsular Neighbourhood Plan

The Kangaroo Point Peninsular Neighbourhood Plan covers the northern area of Kangaroo Point.

Development within the neighbourhood plan is to be primarily high density residential development. A small area of the neighbourhood planning area is earmarked for mixed residential, retail and tourism activities. This area is focused around the Dockside area.

Development within the area is to be supported by efficient public and active transport networks to minimise private vehicle use.

The Project would be tunnelled through the Kangaroo Point peninsular area and as a result, is considered to be generally consistent with local planning as there are no surface impacts and changes to future planning would not be affected.

Kangaroo Point South Renewal Strategy

A neighbourhood plan is currently being developed for the southern area of Kangaroo Point. The neighbourhood plan is to be informed by the Kangaroo Point South Renewal Strategy (released May, 2010). Overall, the key focus of the strategy is to retain character residential areas, capitalise on strong connection to Woolloongabba and the Brisbane CBD, increase densities fronting major transport corridors and maximise opportunities associated with the areas proximity to the river for example active transport.

The Strategy identifies six key development directions that will guide development within the area, these include:

- preserved and enriched timber and tin character precincts – retain intact pockets of 'timber and tin' housing by concentrating development along major corridors
- an east to west green spine – create a well connected open space system and provide recreational and linkage opportunities that are of significance to the wider city
- a corridor and edge based strategy – revitalise and redevelop the edges of the several major streets that frame (and bisect) the study area, concentrating change and intensity along corridors
- connected nodes of activity – several 'points' or nodes of heightened activity, tied together by a network of high quality pedestrian and public transport connections
- transition in intensity from north to south – concentrate the tallest and most intense forms of development in the south of the precinct in proximity to the Vulture Street corridor and gradually transitions this scale downward toward the north
- strong subtropical boulevard as the organising spine – Main Street to be developed as a boulevard of city-wide significance whilst not reducing vehicular capacity

The Project would be tunnelled in this area and as result, is unlikely to generate any significant change to the local planning. Future development is likely to be consistent with the local and neighbourhood planning intent. However, areas near to Woolloongabba station may experience densification and intensification of land uses.


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