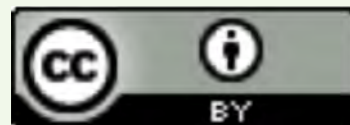




Yeerongpilly Transit Oriented Development Detailed Plan of Development

December 2016

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Part A:

Introduction and background

1. Introduction

1.1 Project background

The Queensland Government, through the Department Infrastructure, Local Government and Planning (DILGP), and Brisbane City Council are working to deliver the Yeerongpilly Transit Oriented Development (TOD).

The focus of the Yeerongpilly TOD is the former Animal Research Institute site on Fairfield Road opposite the Yeerongpilly railway station and next to the Queensland Tennis Centre. The activities of the former ARI have been relocated to new premises elsewhere and the site is now vacated.

This area has been identified as ideal for a TOD. It will comprise a mix of different uses such as shops, commercial offices, parks, plazas and residential apartments, including homes for key workers such as nurses, teachers and police.

This Detailed Plan of Development will guide the site's future development. It takes into account the site's unique opportunities and constraints, accommodates growth demand, addresses local needs and provides the foundation for a high quality urban environment that is economically viable.

1.2 Transit oriented development

TOD is a planning concept that promotes the creation of a network of well-designed, higher density urban communities focused around public transport facilities with higher levels of service.

While there are various definitions used around the world, there is common agreement that TOD is characterised by:

- a rapid and frequent transit service
- high accessibility to the transit station
- a mix of residential, retail, commercial and community uses
- high quality public spaces and streets, which are pedestrian and cyclist friendly
- medium to high-density development within 800 metres of a transit station, and
- reduced private car parking.

The term TOD is often used incorrectly to describe a single development adjacent to or above a transit station. TOD refers to the planning principles applying to the broader precinct surrounding the station, rather than any individual development within it.

TOD precincts generally include the neighbourhood within a comfortable 10-minute walk of the transit station (a radius of about 800 metres depending on local circumstances and topography).

The concept of TOD is, in some ways, a return to traditional walkable neighbourhoods and village communities of the pre-war years. Unlike residential suburbs and car-reliant developments, TOD provides a mix of different land uses and community services and facilities so people can live, work, shop and socialise within a short walk, cycle or public transport trip of their homes.

1.3 Project objectives

The project partners, the Queensland Government and Brisbane City Council, have identified the following objectives to be achieved by this project:

- implement an example of high quality TOD outcomes
- expedite development of the TOD to meet demand for housing
- help stimulate the property and construction industries, attract investment and drive economic development in the region
- help reduce regulatory red tape and streamline assessment processes by making all appropriate land uses on the site code assessable
- contribute to community wellbeing by providing tangible community benefits such as parkland and recreation space
- provide a range of housing options
- promote active and public transport to help reduce private vehicle dependency
- increase the attractiveness of walking and cycling
- consider and manage the impacts of future events similar to the January 2011 flood, and
- facilitate any future expansion of the Queensland Tennis Centre and integrate with adjacent development.

1.4 Purpose of this report

The Detailed Plan of Development for the Yeerongpilly TOD is a result of refining the earlier concept plan following feedback from the community, government and other stakeholders. The report documents the overall structure for development of the Yeerongpilly TOD. It describes the background to the project and the site, the analysis and identification of opportunities and challenges, and it documents key strategies for:

- land use
- access and movement
- public realm and open space
- built form
- heritage
- integrated water cycle management
- infrastructure.

This report represents the final stage of the Detailed Plan of Development phase of the project. While the Detailed Plan of Development does not have any statutory force or effect, it has informed the preparation of a State Planning Regulatory Provision (SPRP) that provides the statutory framework for assessing development in the Yeerongpilly TOD.

2. The Yeerongpilly TOD site

The Yeerongpilly TOD site and its surrounds are a varied landscape of new and old buildings, pastures and transport infrastructure.

2.1 The site

The Yeerongpilly TOD site is located on Lots 4–6 on SP238983, Lots 6–10 on SP267624 and Lots 500 and 4 on SP241867. The site has an area of approximately 14 hectares as shown in Figure 1.

In 2012, demolition works across the site removed a range of office and scientific research buildings that became redundant after all former ARI staff were moved to other sites. Four key buildings and their supporting curtilage (the area around the buildings) remain on site as they were identified as having heritage significance. These buildings occupy higher ground in the centre of the site. Following the removal of most buildings, the site is characterised by a topography of cleared green pastures.

The site is bordered to the south and east by power easements, major roads and rail infrastructure. The west is bound by the Queensland Tennis Centre and the apartments of the Tennyson Reach development. The north is bound by the Brisbane River and established residential areas. The site is traversed by King Arthur Terrace, leaving small sites to the north and disconnecting the precinct from the river. The site has some significant trees and riparian vegetation. There are two key pieces of infrastructure that define the site—the Queensland Tennis Centre to the west and Yeerongpilly railway station to the east.

The existing railway provides excellent public transport to the site. The Ken Fletcher Park on King Arthur Terrace provides district riverside recreation for local residents and visitors to the tennis centre.

2.2 Site history

The first land sales in the area began in the 1850s when arrowroot and cotton were initially grown. This was replaced by sugar cane before the industry moved north following a series of cold winters. Development of the railway line in the 1880s encouraged residential development. This slowed in the late 19th century following the 1893 floods, which submerged much of Yeerongpilly, and the financial depression of the 1890s. In the early 20th century, development increased and the majority of the area was connected to electricity by the 1920s.

Hayslope was the name of a beautiful two-storey mansion built by Thomas Martin in 1889 that sat on the land that would one day be occupied by the Tennyson Power Station until 1939. The old Hayslope site was acquired by Brisbane City Council in 1947, who built the Tennyson Power Station, which operated from 1953 to 1986. Located directly on the riverfront with easy access to Ipswich coal via rail, the site was identified as an ideal place to produce energy for the growing city of Brisbane.

The ARI at Yeerongpilly was established in 1909 by the state government as a stock experiment station by the then Department of Agriculture and Stock. It was the first facility of its kind in Australia and its work was primarily to research and control diseases in livestock, develop vaccines and improve animal health and production.

When the station first opened, the offices and laboratories were housed in a timber building with four rooms and surrounding verandahs along with support structures and animal yards. This building is identified as the Stock Experiment Station Main Building, shown in Figure 1. Additional buildings have been developed over the years to allow expansion of the research facilities.

In the 1930s, the station carried out the first husbandry research studies in Queensland with nutritional experiments on pigs and poultry. In 1936, the faculty of Veterinary Science was established within the University of Queensland to provide local training for veterinarians, and used the existing facilities at Yeerongpilly. The brick building in which the university activities were housed is known as the Veterinary School Main Building, shown in Figure 1. This building, including the circular garden bed and flagpole in front of it and associated Hospital Block, the Stock Experiment Station Main Building, Stables, Animal Morgue and a surrounding curtilage area are currently listed on the Queensland Heritage Register for their significance in association with the animal research activities.

The Veterinary School suspended its activities during the Second World War and in 1941 the United States Army took over the Veterinary School Main Building, which was used to prepare the bodies of deceased servicemen for return to the United States.

Work carried out by the ARI over the years includes testing to diagnose diseases of cattle, sheep, goats, horses, deer, pigs and poultry. It is famous for its research into cattle tick fever and for the development of vaccines for stock diseases. Many diseases of livestock were first diagnosed and described at Yeerongpilly, with the research leading to the development of effective control measures. The research undertaken by the ARI has been a major factor in the development of primary industry in Queensland.

Since 2008, the activities of the ARI have been progressively relocated to new facilities at Boggo Road, Coopers Plains, St Lucia and Gatton. Relocation is now complete and former buildings without heritage value have been demolished and removed.

2.3 Recent development activity

In 2011, a SPRP was approved by the then Minister for Planning allowing the development of an urgently required South Regional Business Centre (SRBC) for Brisbane City Council. The SRBC was completed and opened in early 2012 along with a surrounding area of public realm that incorporates all-hours access from the Yeerongpilly railway station to the Queensland Tennis Centre, through the SRBC site and then along King Arthur Terrace. The SRBC site was subdivided from the balance of the site and is now identified as Lot 4 on SP 241867.

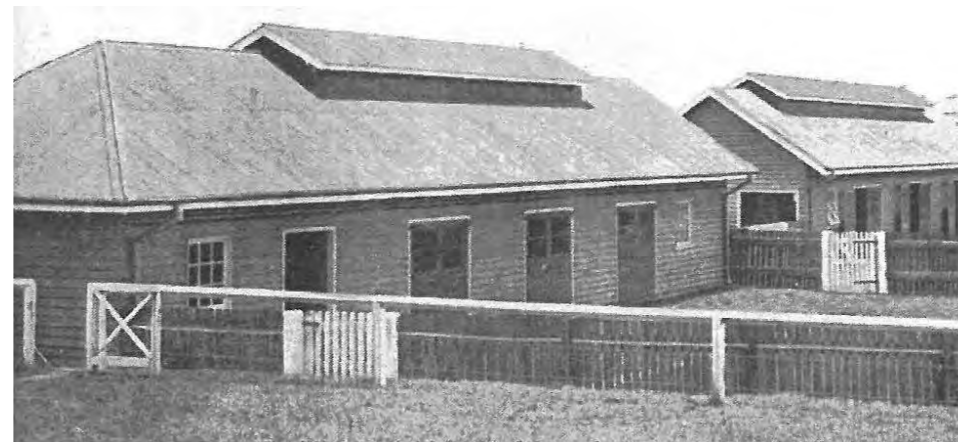
Queensland Rail has also constructed a pedestrian overpass connecting the broader site to the Yeerongpilly railway station. The stair and lift structure of the overpass lands within a small site that has also been subdivided and is identified as Lot 2 on SP238983.

Work is underway to prepare a site on the corner of Ortive Street and Fairfield Road for future development. One of Queensland's oldest children's charities, MontroseAccess, had its development application approved by Council in late 2013. An innovative new respite centre for children and young adults with a physical disability is expected to open in late 2014.

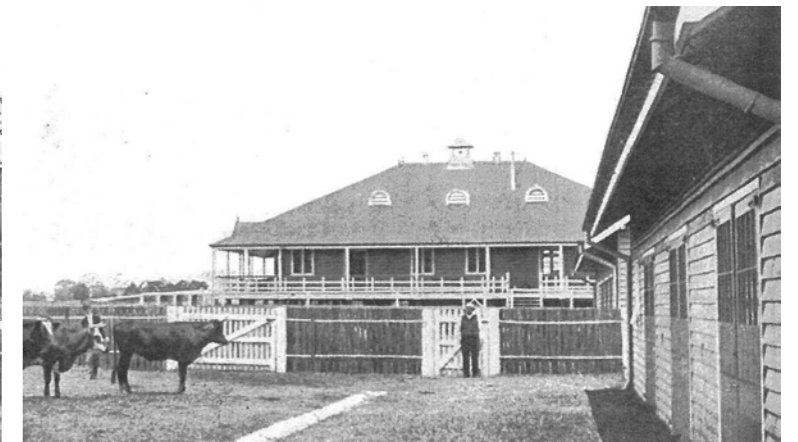
These are all shown on the site plan in Figure 1.



The Yeerongpilly Stock Experimentation Station, 1910



The Stables, 1910



Northern view of the Stock Experimentation Station Main Building, with Stables in the foreground, 1910

(images sourced from Department of Agriculture and Stock Annual Report, 1910)



Figure 1: Yeerongpilly site aerial view

2.4 Site photos taken in 2010



View north to the Brisbane CBD from former Block F



View of site near Ortive Street



View of Queensland Tennis Centre and Tennyson Reach from the site



View of Pat Rafter Arena at the Queensland Tennis Centre



View north-west along King Arthur Terrace



View west along King Arthur Terrace



Veterinary School Main Building (heritage building)



Stock Experiment Main Building (heritage building)



View west to Stock Experiment Station Main Building (heritage building)

2.5 Context

The Yeerongpilly TOD site is well located (see Figure 2), adjoining the Queensland Tennis Centre, the Brisbane River and the Yeerongpilly railway station. It is close to transport networks, recreation opportunities and employment areas.

Significant business and industry uses line either side of the rail corridor immediately south of the Yeerongpilly railway station, extending to the Moorooka railway station.

Mirvac's Tennyson Reach, a series of high-rise residential towers, is located adjacent to the site and overlooking the Brisbane River. Low- to medium-density residential areas surround the railway corridor north of the Yeerongpilly railway station and extend through the suburbs of Yeronga and Fairfield.

Fairfield Road offers connectivity for Tennyson, Yeerongpilly, Yeronga and Fairfield before connecting with Annerley Road and the Brisbane CBD.

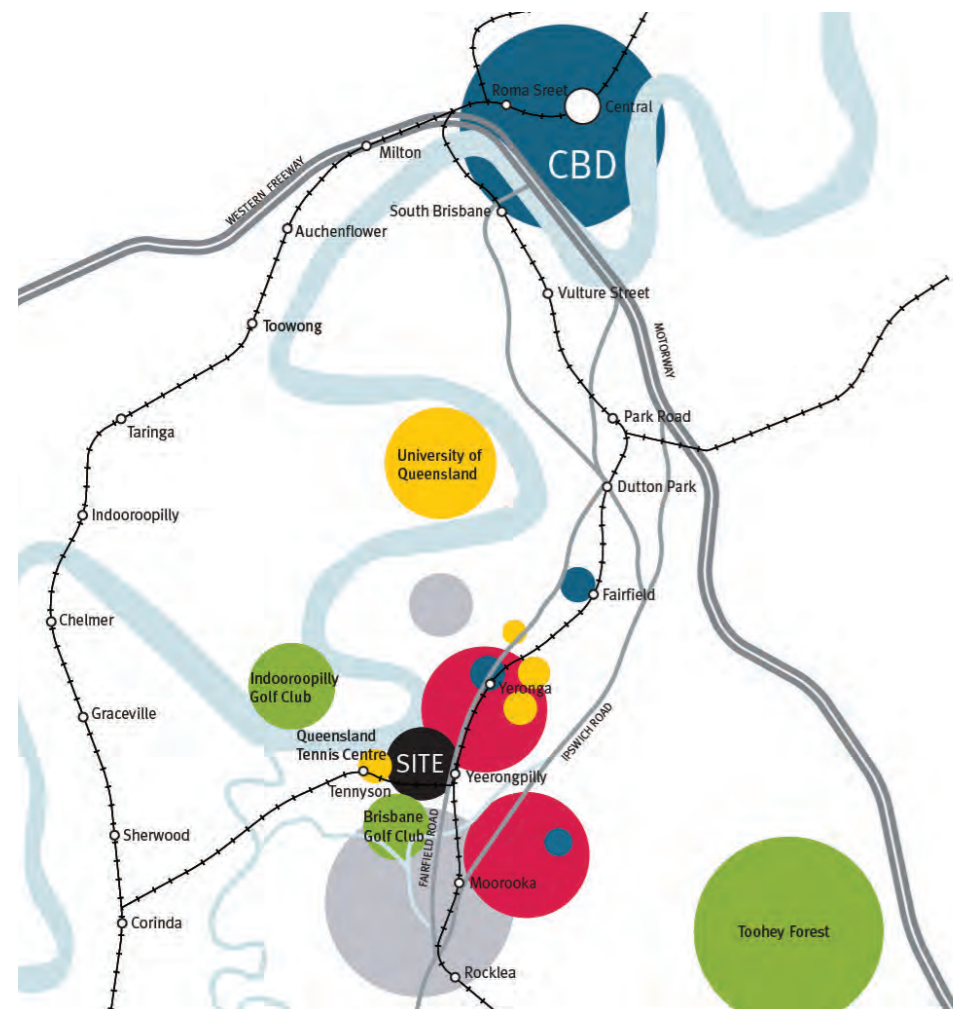


Figure 2: Context map



View north-east to Tennyson Reach apartments



View of the Brisbane River on entering the site from the west on King Arthur Terrace



Ken Fletcher Park opened in January 2013 provides for local recreation



View north to the Brisbane CBD from former Block B



View along Fairfield Road travelling north with Yeerongpilly railway station to the right



View east to Tennyson Memorial Avenue fly-over along the rear boundary

3. Site analysis and research

3.1 Technical issues

A number of issues were identified as part of the initial site analysis and background information review, including:

- traffic, movement and access
- open space and parkland
- heritage
- stormwater, flooding and wetlands/waterway corridors
- interface with the surrounding neighbourhoods
- environmental noise impacts
- visual amenity and views
- vegetation
- potential future Queensland Tennis Centre expansion
- easements
- site contamination and remediation planning.

As a result, a series of technical studies and investigations were undertaken to fully understand the implications of these issues for the Yeerongpilly TOD.

A summary of these issues, the studies and results are outlined in this section of the report and Figure 3 provides a visual summary.

Traffic, movement and access

King Arthur Terrace extends through the Yeerongpilly TOD site from Chelmer in the west to Fairfield Road in the east. It provides access to the Queensland Tennis Centre and Tennyson Reach.

Local access to a small pocket of housing to the north is provided via Mooney Street which connects to Ortive and Paragon Streets. Paragon Street also provides a connection to Fairfield Road, however sight lines are restricted for vehicles egressing Paragon Street.

King Arthur Terrace is a district access route and attracts through traffic in both the morning and evening peak periods. At times during the morning peak period, traffic congestion from the left-hand turn into Fairfield Road blocks the Mooney Street roundabout and encourages 'rat-running' through the residential areas to the north.

The curved layout of King Arthur Terrace does not provide a direct and clear entry into the site from Fairfield Road. The curve creates irregular shaped sites adjacent to the road, with dimensions that create difficulties for achieving efficient and cost effective development.

King Arthur Terrace also creates a visual and physical barrier between much of the TOD site and the Brisbane River.

Access from the Yeerongpilly railway station to the Queensland Tennis Centre

A primary objective of the development of the Yeerongpilly TOD is the need to provide a direct pedestrian connection from the Yeerongpilly railway station to the Queensland Tennis Centre. The most direct route runs through the centre of the site and past the heritage buildings. The establishment of this key pedestrian spine will create a highly trafficked pathway through the site, providing opportunities for retail and community uses.

Open space and parkland

A review was undertaken to consider the supply of open space in the area. It was found that the existing public open space, including the newly constructed Ken Fletcher Park, and new open space proposed in the Detailed Plan of Development is more than adequate to serve the future population of the Yeerongpilly TOD and exceeds Brisbane City Council's Desired Standards of Service for parkland provision and accessibility. The Ken Fletcher Park was established in 2013 and consists of 2.4 hectares just outside the Yeerongpilly TOD while the proposed development includes an additional 2.5 hectares of public green space and parkland alongside an additional hectare of plazas and other public open space. The extent of facilities provided in Ken Fletcher Park means that the main park in the Yeerongpilly TOD development will be more open and grassed in nature providing a large space for active recreation and for outdoor events, possibly associated with the Queensland Tennis Centre major events program.

Heritage

The ARI site recently celebrated its centenary in 2009. During its history, it played a vital role in the development of primary industries within Queensland and is associated with important scientific advancements in diagnostic research and the prevention and treatment of diseases in livestock, the development and supply of vaccines and the education of both veterinary scientists and stock owners. The early establishment of the Yeerongpilly facility reflects the importance given to primary industries in Queensland.

In June 2008, the ARI was identified as a place of cultural significance and listed on the Queensland Heritage Register (QHR) (Place ID: 602598). The original QHR citation identified the original Stock Experiment Station Main Building (Block D) and the former University of Queensland Veterinary School Main Building (Block A) as historically significant and specified a heritage curtilage around, and linking, these buildings.



South-eastern corner of the Stables with skillion extension



Stables interior



The concrete Animal Morgue erected in 1934



Animal Morgue interior with benches and other fittings intact



Western wing of the Hospital Block with stalls for larger animals



Figure 3: Constraints and opportunities analysis

The Stock Experiment Station Main Building was purpose built as offices and laboratories for the earliest stock research station in Queensland and the first facility of its kind in Australia. Although it has been extended and modified over time, it is largely intact and the original intent of its design is still clear.

The Veterinary School Main Building is important for its role in the development of veterinary training in Queensland and for the functions of the research facility with which it was closely linked.

As part of the initial site analysis, a review was undertaken to assess the impact of the proposed TOD on heritage values. While the previous QHR referred to these two buildings of significance, it did not refer to any other significant buildings on the site. However, this project's heritage review undertaken in 2010 identified the Stables, Animal Morgue and Veterinary School's Hospital Block as additional historically significant buildings on the site. It also identified the circular garden bed and flagpole as having historical significance.

The Stables were erected as part of the original development of the site and are located to the north of the Stock Experiment Station Main Building. The Stables building is significant as it provided an integral function of the initial development of the Yeerongpilly Stock Experiment Station.

The first separate post mortem building was erected in the 1920s but by the early 1930s a new building was required. Post mortem facilities were an integral part of the Stock Experiment Station or as it was known by 1934, the Animal Health Station. A new Animal Morgue was erected in 1934 to designs prepared by the Department of Works architect and was a 'state of the art' facility at the time. The Animal Morgue remained in use until the 1950s when a new necropsy unit was erected as an extension to the Veterinary School Main Building. The Animal Morgue is a significant example of a purpose-built animal post mortem building.

The Hospital Block at the rear of the Veterinary School Main Building was not discussed in the previous QHR entry although part was included in the curtilage boundary. The building is L-shaped and forms a courtyard at the rear of Veterinary School Main Building. It provided accommodation for cattle, horses, dogs, cats and other small animals. A two-storey fodder room is located on the south-western corner and a blacksmith shop is on the eastern end of the southern wing. The Hospital Block is significant as it demonstrates that an integral part of veterinary training was treating sick and diseased animals. The form and original fabric remain substantially intact.

The circular garden bed and flagpole at the front of the Veterinary School Main Building provide the only evidence of the occupation of the ARI site by the United States Army during World War II.

As a result of the heritage review, amendments have been made to the QHR entry and the curtilage boundary. These are discussed further in Section 5.5. An amended entry was registered with the QHR on 11 May 2011.

Flooding

The Yeerongpilly TOD site is located beside the Brisbane River and includes some relatively low-lying areas. The risk of flooding has been well understood right from the outset of planning for the TOD. However, an awareness of the likelihood of different sized floods occurring is important to help assess the level of flood risk and how development might occur in low-lying areas.

The likelihood of a flood event can be described using a variety of terms, but the preferred method is to use an Annual Exceedance Probability (AEP) rather than the Q100 (or Q50, Q25 etc.) terminology. A flood with a 1 per cent AEP (equivalent to a Q100) has a 1 per cent chance of occurring in any given year. A 1 per cent AEP flood event has been traditionally considered to be an acceptable risk for planning purposes and until early 2011, was the Defined Flood Level (DFL) in the Brisbane City Council planning scheme.

Following the January 2011 floods, Brisbane City Council introduced a Temporary Local Planning Instrument (TLPI), later replaced by the Brisbane Interim Flood Response in the Brisbane City Council City Plan 2000, which included a new Interim Residential Flood Level (IRFL) for development. The IRFL is the surface of floodwater in either the January 2011 flood or the existing DFL (1 per cent AEP), whichever is the higher. This requires new developments to have habitable floor levels at least 500 millimetres above the IRFL. Commercial and retail development can be constructed at the IRFL. The IRFL is now reflected in the new City Plan 2014 as the Residential Flood Level (RFL) but has retained the same requirement for habitable floor levels.

In January 2011, over half of the Yeerongpilly TOD site was affected to varying degrees. Consistent with the remainder of Brisbane, this area can be developed subject to Brisbane City Council conditions including the requirement for habitable floors in residential development to be at least 500 millimetres above the RFL. The remainder of the site can be developed at current ground level.

As part of the new City Plan 2014, Brisbane City Council has developed a new flood overlay map which outlines five Flood Planning Areas (FPAs) for Brisbane River and creek flooding. Development requirements are tailored to each FPA. For example, FPA1 would be subject to the highest development assessment requirements for any future development within that area. This overlay is intended to guide future building and development in flood prone areas. This code also requires development to demonstrate that it has no adverse effect on flooding upstream, downstream or adjacent properties. Requirements also include a flood risk assessment to address a range of matters including procedures to conduct emergency flood management, evacuation and rescue operations.

This provides a balanced outcome which recognises the need for new development but which deals with protecting the safety of the community and minimising property impacts from flooding — while not imposing unnecessary costs on builders and developers.

As with the remainder of Brisbane, future development applications lodged over the Yeerongpilly TOD site will need to comply with these and any future Brisbane City Council requirements relating to development in flood prone areas.

To provide a greater level of flood immunity to the development, the Detailed Plan of Development requires that all new roads south of King Arthur Terrace (with the exception of some transitional roads to existing infrastructure) will be constructed to provide flood free access to all associated lots. Subject to Brisbane City Council conditions, these lots can be filled to allow habitable floor levels to be above the IRFL or alternatively, developers could use this space as basement or semi-basement car parking for their building.

Following the January 2011 floods, independent hydrological modelling was undertaken based on this model of construction for roadworks and earthworks (including any on-site fill required) to understand if there was any adverse impact on surrounding areas and/or the level of the Brisbane River in a flood event up to and including that experienced in January 2011.

The study showed that while development will remove some floodplain storage from the catchment of the Brisbane River, due to the site's proximity to the river and the capacity and flow of the river at this point, the loss of flood storage at this location had no measurable impact on the timing, notification for or levels of flooding adjacent or up to three kilometres upstream or downstream of the site.

Expert advice has suggested that the hydraulic analysis completed to date is appropriate for the purposes of finalising the SPRP and Detailed Plan of Development. To address local flow behaviour, further detailed hydraulic modelling on a site-by-site basis will be undertaken by the developer of each site once the actual form of development on each site is known. This will be assessed by Council in the development application phase. Expert advice considers it unlikely that any further hydraulic analysis would conflict with the existing analysis.

Economic Development Queensland (EDQ), the state government's streamlined business unit for residential, urban and industrial development, will be the future developer of the Yeerongpilly TOD site. They have committed to install a backflow prevention device on the stormwater outlet from Ortive Street as well as investigate the ability to provide a berm along King Arthur Terrace to help mitigate some existing localised flooring in Ortive Street. This will be done as part of the first stage of infrastructure works on site, subject to future Council approval and consultation with relevant landowners.

Stormwater, wetlands and waterway corridors

An assessment was undertaken to consider stormwater quality and quantity treatment measures required to satisfy water management objectives for the future development of the site. Stormwater quality modelling was undertaken to demonstrate that Brisbane City Council's water quality objectives could be achieved using the proposed conceptual treatment measures such as bioretention basins and gross pollutant traps.

A model of the stormwater treatment system was formed, simulating the anticipated environment of the future development. The assessment demonstrates that the proposed residential development can satisfy the requirements to ensure an 80 per cent reduction for suspended solids, a 60 per cent reduction in the total phosphorus and a 45 per cent reduction for total nitrogen, where the recommended treatment devices are properly installed and maintained. Stormwater quantity calculations and modelling were carried out to assess the capacity of the existing drainage and stormwater infrastructure, both onsite and downstream, and to determine whether onsite detention is necessary. The modelling demonstrated that the existing estimated discharge capacity at these pipes is greater than the 1 per cent AEP (i.e. Q100) discharge rate from each catchment, indicating that no detention is required.

Brisbane City Plan 2014 mapping currently indicates a remnant waterway corridor and wetland area within the central/north-west portion of the site. Historic land uses, previous development works and filling have significantly altered the landform, such that the area retains none of its previous natural waterway/wetland function. Section 5.6 of this plan discusses how it is proposed that wetlands and waterways will be managed in the future TOD.

Interface with the surrounding neighbourhoods

The areas surrounding the Yeerongpilly TOD site have a range of development forms and scales. To the north, the suburb of Yeronga includes a mix of houses and low-rise apartments in a low-to medium-density residential zoning. Along the river, the Tennyson Reach development comprises apartment buildings of up to 12 storeys. To the south and east are significant power easements, major roads and rail infrastructure, whilst the west is bound by the Queensland Tennis Centre.

The scale and form of the Yeerongpilly TOD development will seek to integrate with surrounding areas. It will provide a transition from the compact mixed use urban core near the railway station to the lower intensity residential neighbourhoods north of King Arthur Terrace as well as to the Brisbane River north-west of the site and Queensland Tennis Centre to the west. This will be achieved by a transition of development intensities and the introduction of pedestrianised corridors, public open spaces and shared traffic zones.

Environmental noise impact

The Queensland Development Code (QDC) 'Mandatory Part 4.4—Buildings in transport noise corridors' applies to state and local government controlled roads and railways that have been designated by the relevant state or local government. The QDC provides specific building shell treatments to mitigate transport noise in internal areas of residential buildings. The local noise environment is dominated by road traffic from Fairfield Road and passenger and freight trains on the Beenleigh and Tennyson railway lines. In the Brisbane City Council City Plan 2014, Fairfield Road is designated as a transport noise corridor and as such, the QDC will apply to future development at the site.

Activities associated with the Queensland Tennis Centre and commercial enterprises to the south of the site influence the local noise environment, but to a lesser extent. A preliminary assessment of the noise impacts from the future potential Queensland Tennis Centre expansion was commissioned by the DILGP. This assessment concludes that building shell treatments can be incorporated into new structures to sufficiently mitigate tennis noise impacts. Additionally, the standard requirements of the QDC MP4.4 will apply to the TOD in mitigating the impacts of rail noise and these will most likely exceed the requirements necessary for mitigating the tennis noise impacts. As such, there would be no increase in the requirements for noise reduction arising from proposed tennis activity noise emissions above those already prescribed for the existing rail corridor.

Under the QDC there is an option for the developer to have an acoustic impact assessment undertaken on each dwelling unit to determine specific acoustic building shell treatments for transport noise mitigation. This is an alternate solution to applying the blanket acoustic building shell treatments detailed in the QDC and could result in a reduction in the levels of acoustical treatments required for the building shell, relative to the standard or default requirements. Under these circumstances, it may be necessary to undertake more detailed noise assessments at the time of the future Development/Building Application that also consider impacts from the tennis facility expansions and the final proposed built form.

The impacts of road and rail noise can be mitigated by the placement of buildings on the site. Future applications for buildings will require detailed noise assessments to meet requirements. A number of potential acoustic treatments are available and summarised in Section 5.4.

Road traffic noise

Based on a worst case scenario (i.e. no buildings incorporated into the noise model), buildings within 180 metres of Fairfield Road will be impacted by road noise above the adopted noise criterion. Therefore future buildings within this area will require additional noise impact assessment to ensure compliance can be achieved.

Rail traffic noise

Based on the worst case scenario (i.e. no buildings incorporated into the noise model), buildings within 125 metres of the Yeerongpilly railway line and 110 metres from the Tennyson railway line would be impacted by rail noise above the adopted level. Therefore future buildings proposed adjacent to railway lines should have additional noise impact assessment undertaken to ensure compliance can be achieved. Once railway lines are designated as transport noise corridors, any residential buildings will need to meet the construction requirements of the QDC.

Additional rail impacts

It is considered that the applicable zone, overlay and key sustainable built form outcomes from the SPRP and City Plan 2014, will appropriately regulate the development impacts of rail noise, vibration and pollution. This regulation is to be conducted in partnership with appropriate engineering design and approval processes as well as certification of the relevant building work through the Building Code of Australia and QDC.

In March 2013, the Department of Science, Information Technology, Innovation and the Arts undertook an investigation into particle levels along the Western and Metropolitan Rail Systems. These rail lines are used by trains hauling coal from mines west of Brisbane to the Port of Brisbane. Coal dust monitoring was undertaken at six locations including the former Tennyson railway station. The Queensland Department of Health concluded that, for people living along the rail corridor, the dust concentrations, resulting from all particle sources, measured during the investigation are unlikely to result in any additional adverse health effects.

Visual amenity and views

The site sits within an existing urban area characterised by a diverse range of uses that include residential, open space, recreation, sporting facilities, industrial and, in part, the riparian zone of the Brisbane River. It is bounded by major road and rail infrastructure.

The site, as a result of its use, has retained a relatively unique landscape of open paddocks and landscaping, with a collection of specific-purpose buildings.

The open space area of the site borders the river and offers views down two of its reaches and to the Indooroopilly Golf Course on the northern bank. From the (now demolished) four-storey laboratory building on the site, the views to the north and south were expansive. To the west, the views include distant mountain ranges.

The preservation of views and vistas on site has been considered as part of the Detailed Plan of Development and any development is to include a provision such that the viewsheds towards green space are preserved where possible. These add value to the built, landscape and natural environments.

Vegetation

The existing vegetation onsite has been surveyed and assessed by a qualified arborist, identifying the specific values of individual specimens in accordance with Australian Standards. The arborist reports that the site has a large collection of trees, however many are not native to the local area and the majority have been planted by the ground staff over the past 25 years.

Of 300 specimens onsite, approximately 10 per cent have been identified as having significant value for retention and protection in future development works; 15 per cent of the specimens are defined weed species that should be removed.

Protection of significant trees is specified in the statutory planning framework where possible and will be assessed in the development process. Where significant trees cannot be retained in their current location due to the development footprint or required easements, development should allow replacement with advanced stock or relocation where possible. Cut and fill activity associated with development may make retention of existing trees difficult in particular areas.

Potential future Queensland Tennis Centre expansion

The Queensland Tennis Centre is a significant sporting venue. The planning for the site has accommodated an expansion of the facilities to enable larger tournaments in the future. The expansion could include additional show courts, practice courts and playing courts. The area allowed for expansion is located adjacent to the existing facilities. No commitment has been given to fund any future expansion of the tennis centre, but planning for the Yeerongpilly TOD has made allowance for this possibility nonetheless. Any future development in adjacent precincts should be mindful of the possibility of a large-scale land use in this precinct, especially in regard to potential future amenity impacts such as noise or light. To ensure future owners and developers are aware of this possibility, a potential form of expansion has been included on all plans in the Detailed Plan of Development.

The proximity to the Tennyson spur rail line mean that much of the built form on the site require an element of noise attenuation. This will assist in the attenuation of any noise emanating from the potential future tennis centre expansion. It is considered that no additional provisions are required to manage this potential impact. Other impacts such as light emissions from the future proposed tennis centre will need to comply with Council's City Plan 2014 requirements.

Easements

To the south of the Queensland Tennis Centre is a large electricity substation. There are easements across the site for underground power lines. Other easements provide access to a sewerage pumping station and provide pedestrian access from the station to the Queensland Tennis Centre. Electricity easements cannot have structures built over them

at ground level, such as buildings or tennis courts. They may be able to accommodate surface car parking, open space or cantilevered buildings on one side, provided these do not encroach upon the clearance areas required by Energex for maintenance. Future development applications will also need to be referred to Energex for consideration. Any works not requiring a development application and occurring within the easements granted in favour of Energex must be referred to Energex as an easement enquiry. These easements will be an encumbrance on, and divested, as part of the adjacent lots.

Site contamination and remediation planning

The Yeerongpilly site has been investigated for soil and groundwater contamination on a number of occasions since 2000. The most recent Environmental Site Assessment in 2010 has informed the plans showing proposed remediation areas, depths and the contamination identified by type and concentration.

The type, concentration and amount of contamination identified is generally low. Contamination identified includes heavy metals, pesticides and asbestos as a result of the prior use of the site as a power station and an animal research facility. No issues were found with groundwater or with the movement of groundwater across the site towards the river.

In late 2010, a more detailed investigation was undertaken for the proposed early release sites and Stage 1 infrastructure works area. While the area to become part of the realigned King Arthur Terrace was found to be 'clean', the early release sites required some remediation. A detailed remediation plan was prepared for these sites and remediation of the early release sites is complete. The balance of the site will be investigated in more detail and remediation plans will be prepared prior to the release of land parcels.

Development works to allow the construction of the SRBC and to prepare the site for MontroseAccess required remediation works to be undertaken to remove contaminated soil from the area. The works were all undertaken under the control of an approved Remediation Plan and the supervision of a properly qualified Environmental Scientist. All activity was formally reported on and reviewed and approved by a third party reviewer.

3.2 Community

Community input

The Queensland Government and Brisbane City Council have placed a strong focus on seeking community input, feedback, ideas and concerns for the Yeerongpilly TOD. The local community have been kept up to date on the project and invited to participate in the process on a number of occasions. Newsletters have been delivered to over 1500 households in the local area at key milestones in the project.

At the outset of the project, between July and September 2010, the broader community were encouraged to provide feedback through a newsletter and online survey. Feedback was generally positive with over half of the respondents expressing support for the direction of the Concept Plan of Development. The key ideas and concerns raised during this time included:

- support for additional retail and dining opportunities
- desire for additional parkland and associated facilities
- need for high quality, frequent public transport—rail, bus and CityCat or ferry
- improved connections and facilities for pedestrians and cyclists
- initiatives to strengthen the community including the provision of community facilities, a mix of housing types and demographic diversity
- concerns about impacts on traffic, particularly along King Arthur Terrace.

In addition to this feedback, a community planning representatives (CPR) group was established through self-nomination to provide local knowledge and input into plans for the future development of the Yeerongpilly TOD. The CPR comprises 26 individuals including employees of the former ARI and people who live and work locally including business representatives, landowners and community organisation representatives who have direct links or knowledge of the local area.

Since 2010, key recurring ideas and concerns raised throughout the community engagement include:

Building height and form

- provide a mix of building heights and dwelling types to suit a range of people and lifestyles
- restrict building heights (no higher than the Tennyson Reach development of 12 storeys)
- locate taller buildings in the southern part of the site with buildings reducing in height towards the north—this would maximise northerly orientation of buildings and limit overshadowing of open space and nearby residential areas
- ensure attractive, high quality buildings and public realm
- provide ample green space between buildings, including tree-lined streets
- take advantage of views towards the river, the city, mountain ranges and golf courses.

Movement

- support for an east-west pedestrian boulevard to connect the Yeerongpilly railway station and the Queensland Tennis Centre
- mixed opinions about options to close part of King Arthur Terrace
- general support for open space links to the river
- desire for a CityCat terminal
- mixed opinions about moving Mooney Street to align with the unnamed street between Ortive and Paragon Street (incorrectly referred to as Stevens Street).

Open space

- desire for public open space and recreation areas
- support for community gardens
- desire for high quality open space
- concern about providing an extended area for possible future expansion of the Queensland Tennis Centre.

Community and heritage

- strong desire for additional pedestrian connections between the TOD site and the surrounding community
- mixed opinions about the need to preserve heritage buildings.

Aspects that people liked most included:

- mixed-use, particularly additional retail and dining
- integration of new development with public transport, walking and cycling options
- new open space

- redevelopment of what is currently an under used site
- stepped building heights
- new community facilities
- improved access to the river for the public
- a mix of homes that will suit a diverse range of households.

People were concerned about:

- flooding impact on surrounding areas
- impacts of extra traffic and parking demand
- tall buildings being out of character with the area
- need for improved public transport services
- need for more open space and community facilities than those shown in the plan
- need for better facilities for cyclists
- sewer overflow issues in Allawah Street.

The Detailed Plan of Development has considered and responded to community feedback, balancing this input with technical requirements and the project objectives.

Social needs assessment

The development of the Yeerongpilly TOD site provides an opportunity to address social issues and needs specific to Yeerongpilly and the surrounding community. Part of this work involved an assessment by Brisbane City Council identifying a range of community facilities needed for the district, including arts, indoor sports centre and community meeting spaces.

Over the course of this project, a number of new community facilities have been built or are planned to help address the social needs of the existing local community and future residents of the Yeerongpilly TOD, including the Yeronga Community Centre and Moorooka



Community planning representatives meeting attendees

Community Hub. The new Ken Fletcher Park also features a public performance open-air amphitheatre and accessible and inclusive play areas. As a result, specific areas have not been allocated as community use in this Detailed Plan of Development. However the statutory framework for the Yeerongpilly TOD still permits community-based land uses.



Figure 4: Demographic catchment area (Chelmer-Graceville SA2 and Yeerongpilly SA2)

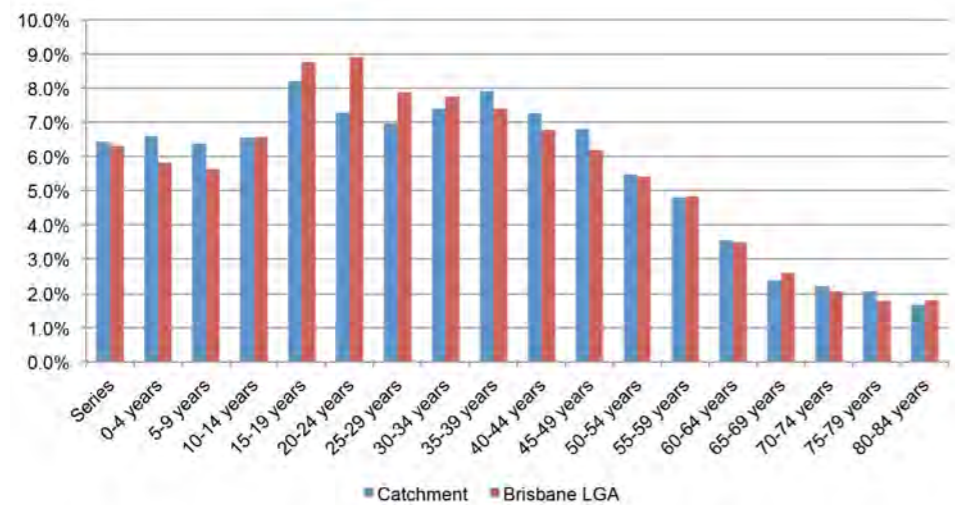


Figure 5: Age distribution

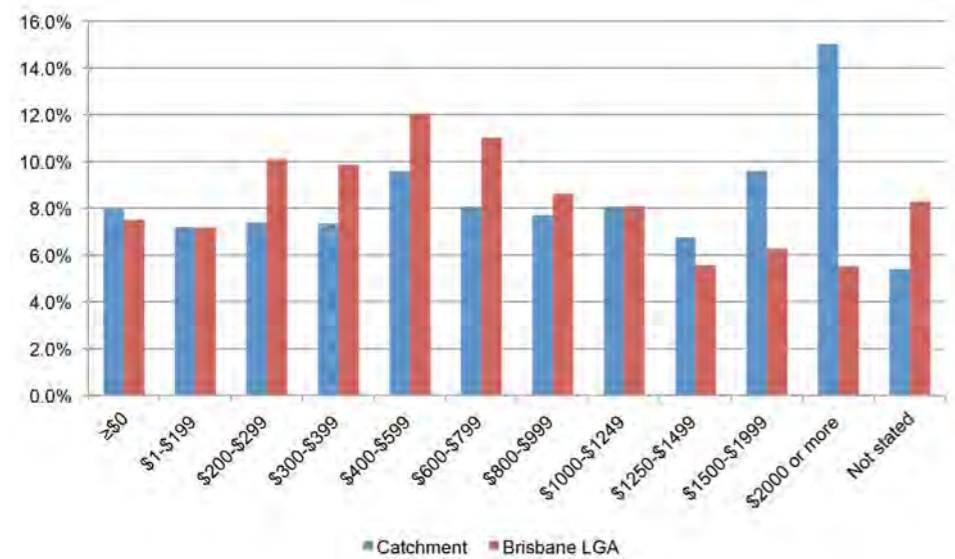


Figure 6: Average household income

3.3 Queensland Government and Brisbane City Council input

Planning for the Yeerongpilly TOD has involved input from a wide range of Queensland Government agencies and Brisbane City Council divisions. Involvement from relevant areas was sought early in the process to help identify technical issues and opportunities to consider.

Key points and items raised include the following:

- wetland, waterways and flooding were identified as issues on the site. Innovative solutions are required to address these site characteristics
- Energex power assets are highly valuable and costly to alter. Existing easements are to be retained as per current arrangements
- heritage listed buildings, structures and their curtilage need to be appropriately considered
- major roads and railway services (passenger and freight) are a barrier to connections to the east and south of the site. Noise impacts from this infrastructure need to be addressed in the new development
- a need was identified to accommodate possible future expansion of the Queensland Tennis Centre
- further investigations regarding listing on the Environmental Management Register and an environmental management plan to deal with issues such as land contamination should be undertaken
- opportunities to demonstrate climate responsive building design and to create a clean energy community should be pursued.

3.4 Market demand

Catchment demographics summary

Demographic analysis has been undertaken on the Yeerongpilly TOD local catchment to provide an overview of the key characteristics of the population as they relate to the development opportunity. The catchment area is shown in Figure 4.

The catchment region has recorded an average annual growth rate that is slightly below that achieved within the Brisbane Local Government Area (LGA) but this is considered to be largely due to the relative lack of opportunities to develop increased residential density, which has contributed to a limited level of supply of new dwellings in the region.

The primary catchment generally exhibits a similar age profile to the broader Brisbane LGA, with a strong representation of young families (see Figure 5). The number of young professionals in similarly developing markets within Brisbane has grown strongly, with this market typically seeking proximity to the range of employment, education facilities and strong retail/recreational amenity offered by the Yeerongpilly TOD.

At the time of the 2011 Census, the average annual household income within the catchment was well above both the Brisbane LGA and Queensland averages, which suggests there is an opportunity for the market to deliver a strong and diverse mix of product, from affordable through to mid and high end dwellings within the TOD, particularly in areas with views to the Brisbane River (see Figure 6).

Retail demand

From a retail perspective, the Yeerongpilly TOD site highlights a number of unique and positive attributes, including high quality public transport connections, extensive public open and recreational spaces and proximity to the major leisure and sporting hub of the Queensland Tennis Centre. Additionally, the residential development provides a captive market supported by an affluent local demographic profile.

The broader southern catchment area is considered to currently have a significant market gap in offerings of higher-end retail destinations with such centres being either west to Indooroopilly or the Brisbane CBD and Fortitude Valley. This presents a significant opportunity for the Yeerongpilly TOD to deliver a destinational, unique retail offering that provides both strong market appeal and retail amenity, leveraging the many unique attributes surrounding the site such as the Queensland Tennis Centre, high quality public transport connections and public open and recreational spaces.

The heritage listed buildings are also considered to have strong potential to form a significant part of the retail identity for the town centre. For example, the Stock Experimentation Main Building provides opportunities to be positioned as one of the major anchors of the town centre as a use such as entertainment based venue, creating a strong sense of local connection to the history of the area. Leveraging the format of this heritage

building to provide for open-air recreational spaces, utilisation of the adjacent former stables and incorporating extensive surrounding landscaped open space would provide a strong complementary use and catalyst for accelerated residential development by creating a significant point of difference to most urban renewal areas in Brisbane. This would further leverage the strong activator of the Queensland Tennis Centre by increasing the quality of the visitation experience to the complex.

Commercial demand

As Brisbane continues to undergo strong population growth and achieves a level of critical mass and density, suburban office representation will become more important for business. With over 3.3 million square metres of stock in the CBD and near-city markets, the push towards suburban office accommodation has become more compelling. Consequently, the long-term demand outlook for suburban office markets in Brisbane is considered to be strong.

With the CBD and the near-city having moved to high pricing points, affordability for some smaller businesses and some lower-value operations (such as 'back-office' functions) has seen some tenants explore alternative suburban locations. Corporate tenants are also looking for cost efficiencies in their businesses which have seen many groups source more affordable accommodation solutions. In a more cost sensitive environment, suburban office markets will retain an important role for corporate occupiers.

Suburban locations that have superior public transport options will be those that attract the highest level of tenant interest, as evidenced by Council's decision to locate the 5 000 square metre SRBC at Yeerongpilly TOD. This convenience factor, as well as the high quality amenity that will be part of Yeerongpilly TOD, in combination with proximity to Brisbane largest industrial precinct, is likely to serve as catalysts for further commercial development.

Part B:

Detailed Plan of Development

4. Detailed Plan of Development

The vision and principles for the Yeerongpilly TOD outline what the TOD needs to achieve to make it a great place for people to live, work and play.

4.1 Vision

The Yeerongpilly TOD will deliver on the intent of the South East Queensland Regional Plan 2009–2031 to:

- promote economic activity through development
- achieve a more compact urban form and diversity of housing supply
- reduce car dependency
- create liveable communities and desirable new places.

4.2 Principles

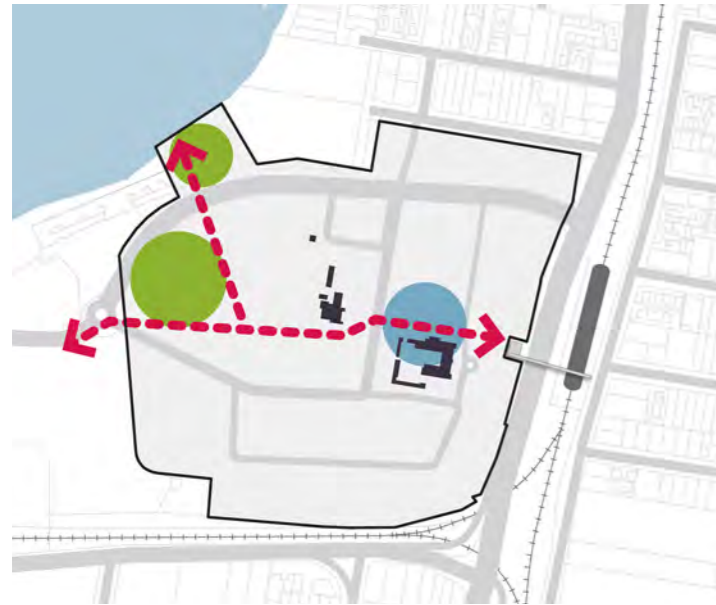
The Yeerongpilly TOD will demonstrate how a place can:

- encourage walking and cycling through improved infrastructure and connections to the surrounding community
- be well connected to public transport to encourage its use
- give priority to pedestrians and cyclists while accommodating vehicles
- be a safe and welcoming place to call home for a variety of lifestyles, ages and backgrounds
- provide a wide range of high quality, liveable housing options
- integrate with its setting, including the surrounding community, Brisbane River and the Queensland Tennis Centre
- respect its history while embracing its future
- encourage sustainable living (environmental, social and economic)
- incorporate a vibrant hub with a mix of uses including well designed retail, commercial, community, residential and recreational facilities
- provide high quality public places including parks and plazas for the community to enjoy
- incorporate high quality and sustainable development that takes advantage of views, responds to the sub-tropical climate and minimises noise impacts
- be an attractive development and investment proposition.

4.3 Key design principles

The principles have been used to inform and underpin the design response. Four planning themes describe the design, as listed below and illustrated on the adjacent page:

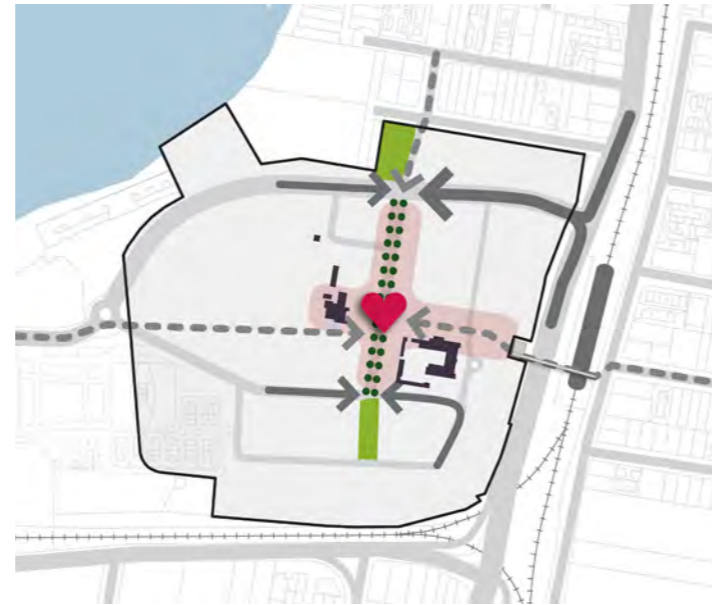
- an integrated place
- a heart for the community
- varying development intensities
- sustainable development pattern.



An integrated place

An east-west open space and civic spine forms a central focus for community activities in the Yeerongpilly TOD. It creates a strong link of activity and high amenity with a pedestrian rather than vehicle focus connecting Fairfield Road near the station to the Queensland Tennis Centre and the river. Where the pedestrian corridor crosses King Arthur Terrace, a broad pedestrian crossing point is provided to connect physically and visually to the river and to act as a slowing device to deter through-traffic.

The spine incorporates the pedestrian bridge over Fairfield Road and enables easy access to public transport, heritage buildings, the retail centre and central open space. The open space accommodates passive and active recreation, while also managing and treating stormwater before it enters the Brisbane River.



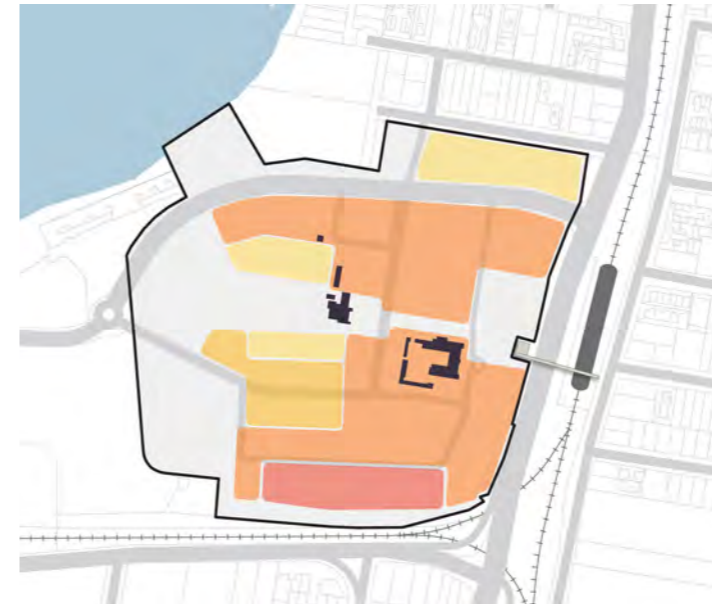
A heart for the community

The commercial active heart of the Yeerongpilly TOD is located on a north-south Main Street. This axis crosses between the heritage buildings and helps integrate them into the centre of the TOD precinct.

King Arthur Terrace is straightened from the current intersection with Fairfield Road. This creates a more direct route to the Main Street, improves traffic flow and creates more appropriate shaped parcels of land for development.

There are two small green spaces at either end of the Main Street. The northern space is on low ground and accommodates stormwater treatment. The space to the south could be used as a community garden and provides an outlook for the buildings in the southern precinct of the TOD.

The new retail and community uses will draw people into the Yeerongpilly TOD. Local streets allow direct access to the centre. Strong east-west and north-south pedestrian movements connect to Tennyson Reach, the Queensland Tennis Centre and land east of the Yeerongpilly railway station.



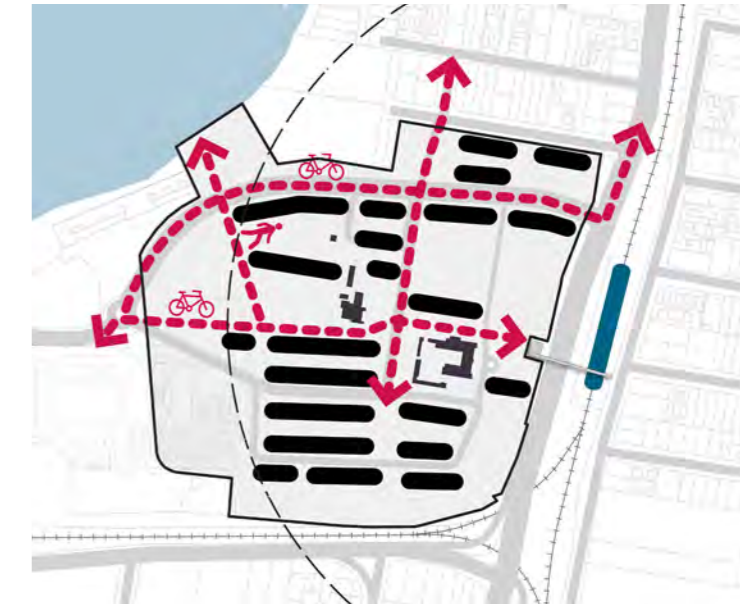
Varying intensities of development

A number of housing types are proposed in a range of development forms and densities, from 2 to 12 storeys, to encourage a diverse community. Dwelling types include row houses and low-rise apartments as well as higher density apartments to suit people from a range of lifestyles.

Low-rise, as well as some low-medium density, development is proposed north of King Arthur Terrace, as a transition to the existing development to the north and adjacent to the central green spaces to create a more human-scale interface. A zone of medium intensity development from 4 to 9 storeys is located along the north-south Main Street, south of King Arthur Terrace and extending towards Fairfield Road and the Queensland Tennis Centre.

The highest buildings (up to 12 storeys) are located at the southern boundary of the site taking advantage of excellent north-facing views across the development to the river, Indooroopilly golf course, University of Queensland and the city.

The location of dense, tall buildings in the south-east part of the site also provides a buffer to reduce the impacts of the adjacent busy roads and railway infrastructure.



Sustainable development pattern

The development pattern of the Yeerongpilly TOD enables residents and visitors to minimise their personal energy demand. The topography, location of employment, recreation, community services and active movement networks makes exercise easy and attractive. The convenient location of bus and rail encourage sustainable transport choices for outside trips. The street network of the Yeerongpilly TOD is aligned, where possible, on east-west axes. This allows most buildings to orientate to the north for optimal passive solar and subtropical design, with shorter sides of buildings exposed to the east and west. Buildings with less ideal orientation will include sun-shading in their facade design.

4.4 Summary of Detailed Plan of Development

Changes since the Concept Plan of Development and Draft Detailed Plan of Development

A number of changes to the plan for the Yeerongpilly TOD have occurred since the Concept Plan of Development was issued. These result from community input, additional site investigations and technical reviews, as well as consideration about how to obtain the best value for the land and promote economic development. The changes are summarised below:

- additional heritage buildings—Stables, Animal Morgue and Veterinary School’s Hospital Block—have been retained as well as the circular garden bed and flagpole in front of the Veterinary School Main Building. This has resulted in changes to the residential mixed-use and local road layout in this location
- the adaptive reuse of heritage buildings is now intended for commercial purposes, not community facilities, following subsequent discussions with Brisbane City Council
- the Veterinary School Main Building requires significant investment in order to be retained and reused. However, this building offers a unique opportunity for a commercial entity and could suit small offices, medical services or aged care services. The use of this building and surrounds have been changed to suit
- the entry plaza at the landing of the pedestrian bridge has been expanded and modified to maximise views from Fairfield Road to the heritage buildings
- the circular garden bed and flagpole in front of the Veterinary School Main Building have been relocated to accommodate traffic movement
- the opportunity for an indoor sports centre is still permitted; however, a specific site has not been identified. Construction of such a facility would be subject to funding availability and demonstrated need in the district
- the four-way intersection where Main Street meets the East-West Connector has been modified due to potential traffic conflicts. The open space has shifted west to create a T-intersection and ensure pedestrian connectivity to the south from Main Street is preserved
- the alignment of the East-West Connector, west of Main Street, has been changed to accommodate a broader range of forms for the expansion of the Queensland Tennis Centre. A subsequent public plaza and shared zone has been included to accommodate large events. This change in geometry has increased the extent of residential development north of the East-West Connector
- the vehicular connection from the station plaza to Main Street is now pedestrian only. In order to accommodate vehicle movements, an additional north-south street on the eastern side of the Veterinary Building Medical School, parallel to Main Street has been added
- the 2–3 storey residential parcel between King Arthur Terrace and Ortive Street has been expanded to the west
- added the Brisbane City Council SRBC and MontroseAccess sites to the plan

- reduced amount of open space provided due to the proximity and amenity of the new Ken Fletcher Park
- increased density on the south-west side of King Arthur Terrace to compliment the high rise form and pattern of the Tennyson Reach development immediately to the west of the site
- the shared zone on King Arthur Terrace has been replaced with isolated traffic signals to help with pedestrian movements and manage traffic on King Arthur Terrace
- added the potential form of expansion for the Queensland Tennis Centre to ensure future owners, or developers, are mindful of a potentially large scale use in this area.

Key elements of the Detailed Plan of Development

The Detailed Plan of Development (Figure 7) describes the key elements of the Yeerongpilly TOD including:

- street location and block network
- movement for pedestrians, cyclists, cars and buses
- land uses
- built form and development intensity
- public realm and open space locations.

The illustrative master plan (Figure 8) and associated artist’s impression provide no statutory weight, but aim to demonstrate the anticipated built form and public realm outcomes for the Yeerongpilly TOD.

The key elements of the Detailed Plan of Development are summarised below and shown in Figure 7:

- 1 The mixed-use core is convenient to Fairfield Road and easy for people to get to. The mixed-use core incorporates a mix of uses including offices, shops and apartments.
- 2 The new Main Street, a lively shopping and dining precinct, extends from King Arthur Terrace through the centre of the site.
- 3 Realignment of King Arthur Terrace improves access to the Yeerongpilly TOD site and provides a level of flood mitigation to the development. Traffic signals will improve pedestrian crossings and traffic flow.
- 4 Low-rise (2 to 3 storey) apartments and townhouses provide a mix of housing options and a transition to established residential suburbs.
- 5 Relocation of Mooney Street will allow access for residents of Paragon and Ortive Streets. The park between Stevens and Paragon Streets will remain, with the existing path providing connectivity for pedestrians and cyclists only.

- 6 Existing heritage buildings are retained and the associated curtilages are incorporated into the public realm and open space network.
- 7 Direct, safe and clear pedestrian pathways connect the Yeerongpilly railway station and Queensland Tennis Centre through a series of public plazas and open spaces.
- 8 Commercial and retail development is located close to the railway station and provides activity around the public plaza.
- 9 Extensive parkland accommodates stormwater treatment as well as allowing a range of recreational activities to occur.
- 10 A pedestrian and cyclist pathway connects the open space with the Brisbane River. Isolated traffic signals have been confirmed in place of a shared zone at the crossing of King Arthur Terrace to provide additional safety for pedestrians in this location.
- 11 Attractive and safe local streets provide access for pedestrians, cyclists and vehicles.
- 12 Medium-rise (4 to 9 storey) mixed-use residential development provides a transition between the surrounding low-rise residential to the north, high-rise development in the south of the site and the Tennyson Reach development west of the site. A gradual stepping of building heights also maximises views to the central open space, Brisbane River and the Brisbane CBD.
- 13 High-rise (9 to 12 storey) mixed-use residential development is located in the south of the site, facing north away from the railway corridor and taking advantage of parkland and river views. Building designs minimise impacts of noise, dust and vibration from nearby transport routes.
- 14 Opportunity for a possible future pedestrian connection to the area south of Tennyson Memorial Avenue.
- 15 Opportunity for future expansion of the Queensland Tennis Centre.
- 16 Fairfield Road pedestrian overpass.
- 17 A community garden, as part of the associated development, is provided allowing public access for residents of the Yeerongpilly TOD.



Figure 7: Yeerongpilly TOD Detailed Plan of Development



Artist impression—showing possible streetscape treatment along pedestrian corridor



Figure 8: Illustrative master plan (Note: The illustrative master plan provides no statutory weight, but aims to demonstrate the anticipated built form and public realm outcomes for the Yeerongpilly TOD)

5. Design strategies

5.1 Land use

The Yeerongpilly TOD incorporates a mix of uses, creating a vibrant community in which people can live, work and play. There are five precincts in the TOD, each with a distinctively different land use focus and character (see Figure 9). The design strategies here are articulated in the statutory framework and Brisbane City Plan 2014. These precincts are as follows.

1. Mixed-use core precinct

This precinct is the focus of the TOD and is easily accessible from King Arthur Terrace and the surrounding areas, which it will also serve. The precinct is highly visible from Fairfield Road. It contains the primary concentration of retail and commercial uses for the TOD, mixed with residential uses in buildings of differing types and scales.

Commercial offices are located facing onto Fairfield Road, taking advantage of exposure and proximity to the Yeerongpilly railway station. Commercial uses also frame the plaza between the pedestrian overpass and the Veterinary School Main Building, activating this important public space and providing a sense of entry to the precinct.

The focus of the precinct is the north-south oriented Main Street, which provides connections to the TOD residential area from the south and from the residential areas to the north. The location of this street ensures the development receives maximum exposure from passing traffic. It also reduces the impact of vehicle traffic on residents of the Yeerongpilly TOD by providing a primary thoroughfare. The blocks along this street will have a retail mixed-use focus with retail and commercial uses at ground and lower levels and residential dwellings at higher levels. The ground floor spaces along this street are the most active in the TOD. There is opportunity for a supermarket in this precinct and it will be designed to be located behind smaller retail uses fronting the streets. Service areas and car parking are to be set behind street-facing uses, in basements or at roof level to reduce impacts on the streets. Carpark access points will be consolidated and located on the rear lane, and the southern side of the Veterinary School Main Building.

The majority of the heritage buildings are located in this precinct. It is intended that they will be given new life with a range of commercial uses. Development will be compatible with their heritage values and although located on private land, all curtilages are linked directly to public space. This will allow retail and commercial uses to directly connect to and activate public spaces around the heritage buildings, bringing the history of the site into the future development and creating a strong community heart for the development.

Although passing through private land, the east-west public plaza to the immediate north of the Veterinary School Main Building will remain an 'all hours' access connection for the public. It completes a vital pedestrian connection between the tennis centre, the open space precinct, and the pedestrian overpass from the railway station.

2. Residential mixed-use precinct

A range of residential dwelling types, sizes and price points will be offered in the Yeerongpilly TOD, delivering a wide range of housing options to suit a variety of lifestyles. This precinct will accommodate primarily residential uses in a number of buildings of differing scales, types and intensities. The precinct is characterised by a connected network of streets with large-scale street trees and on-street parking for visitors. Buildings are set close to streets with relatively small front setbacks and continuous frontages are delivered through the use of rear lanes.

A mix of building heights up to 12 storeys is envisaged, with row houses, low-rise and medium-rise apartments providing choices of accommodation for different family types and rental and ownership options. Taller buildings located towards the south of the site provide a buffer to railway noise and will take advantage of views to the river and CBD. Generally buildings step down towards the edges, to make a place that appears as a collection of individual buildings, not a wall of development. Stepping forms create a more varied and dynamic skyline. Medium density residential along King Arthur Terrace takes advantage of amenity from the park and river and a transition to the heights of the Tennyson Reach development to the west. The lowest scale buildings border the central open space and help to create the sense of a vast open space and offer safe activation of park edges.

Buildings have generous balconies, prominent roof forms and sun screening appropriate for each orientation, taking advantage of the subtropical climate. This design approach is complemented with substantial landscaping and large shade trees that contribute to the subtropical character of the TOD.

The residential mixed-use precinct provides flexibility to offer opportunities for small-scale shops and offices, so that people can run businesses from their homes.

Car parking is contained within building footprints and basements. Ground floor levels are slightly raised above the street to enhance residential privacy and allow overlooking of the street for casual surveillance.

The former Animal Morgue building is located in this precinct and its heritage value is intended to be preserved and brought to life with a new use. Although located on private land, its curtilage will be linked directly to a publicly accessible pedestrian link and street. This will reconnect the history of the site into the future development and create a community focal point for the surrounding uses.

The community garden to the south of this precinct will become an alternative amenity and community focal point. Although developed on private land, its tenure will enable public use of the garden and allow this space to provide future access to the wider pedestrian network and potential future bridge over the railway line to the south of the site. Issues around ownership and tenure will be further investigated during the divestment process.

3. Low-rise residential precinct

This precinct comprises a range of lower intensity residential uses in the form of row houses, low-rise apartments, as well as a respite centre for disabled children. Heights of development are a maximum of 2 to 3 storeys, consistent with the existing scale of development in surrounding established residential areas. Sites that are to be filled to achieve flood immunity will provide sensitive and attractive landscape edge treatments providing a compatible transition to Ortive Street and the relocated Mooney Street connection.

4. Open space precinct

This precinct sits on the western side of the site and will become an important amenity for the surrounding community. It includes a series of plazas and parkland areas and acts as an important driver of pedestrian movement from the station to the main street and onto the tennis centre via the key pedestrian spine. The central open space precinct is a key feature of the Yeerongpilly TOD and provides a pleasant outlook for both Tennyson Reach and Yeerongpilly TOD residents. The open space also provides a strong physical and visual link from the main street and mixed-use core to the Brisbane River across King Arthur Terrace.

The parkland on the low-lying land forms a generous active open space area and focus for the TOD community and residents of surrounding areas. It also provides a stormwater function by treating runoff from the urban areas. The open space is accessible and bounded on all sides by pedestrian and cycle routes.

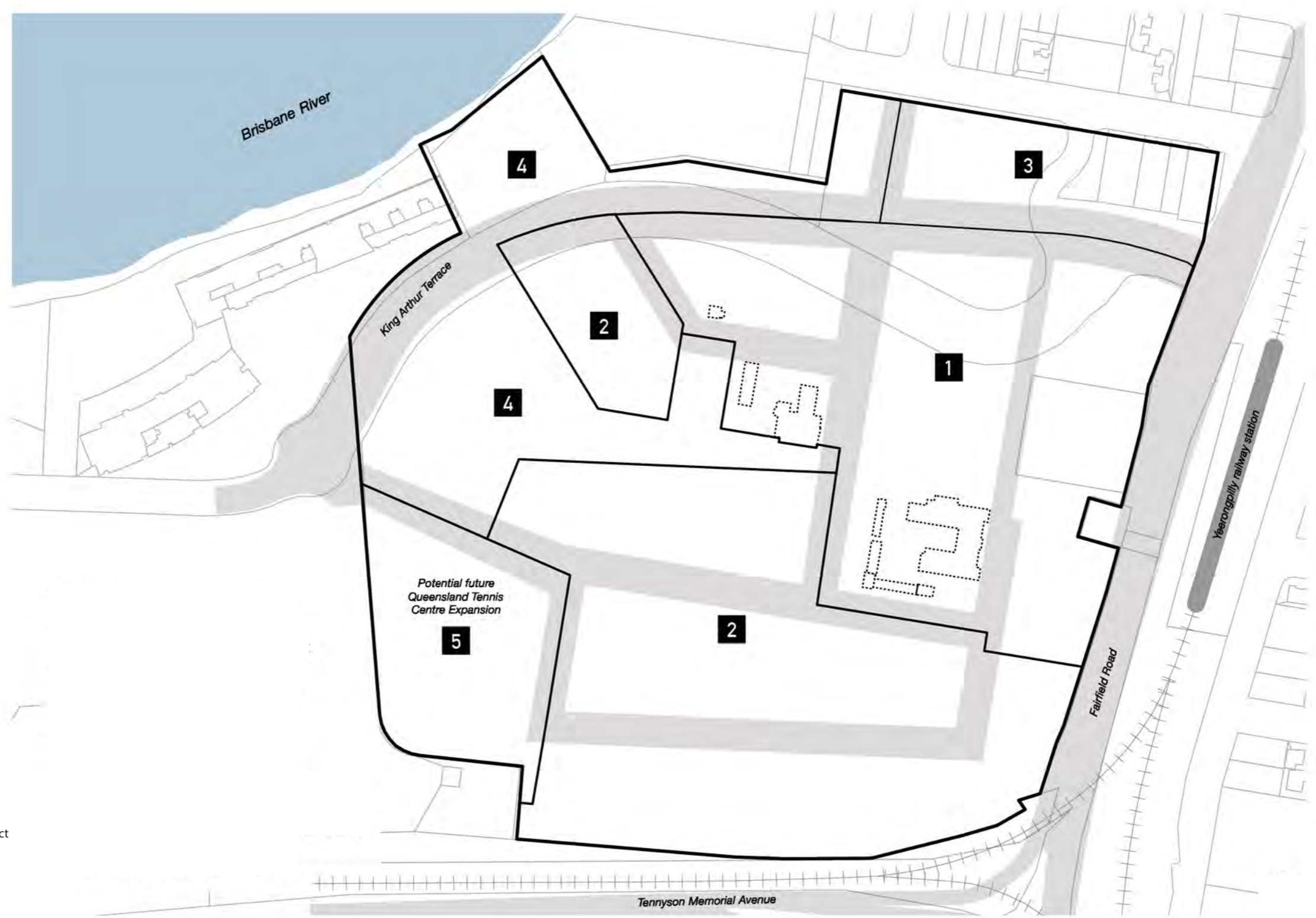
A mix of uses located on public and private landholdings adjacent to parts of the open space precinct will help activate the central spine between the Yeerongpilly railway station and the proposed expanded Queensland Tennis Centre.

The urban plaza to the south of the main park will assist with the conveyance of spectators to the future expanded arena of the Queensland Tennis Centre. A shared zone on the East-West Connector street will allow the space to operate as a larger 'breakout space' and bus pick-up zone on major event days when the East-West Connector street will be closed to the public subject to approval of a traffic management plan.

The small park to the west of the relocated Mooney Street connection accommodates stormwater functions and civil work in the strip of open space connecting to park adjoining the river will help mitigate flood impacts to Ortive Street residences.

5. Major sports venue precinct

The land in the south-west corner is allocated for the potential future expansion of the Queensland Tennis Centre. The configuration of this area can accommodate a range of different development forms including additional show courts, practice courts and playing courts. No funding is currently allocated to expand the Queensland Tennis Centre but any future development in adjacent precincts should be mindful of the possibility of a large-scale land use in this precinct in regard to noise and other amenity impacts.



- 1** Mixed-use core precinct
 - 2** Residential mixed-use precinct
 - 3** Low-rise residential precinct
 - 4** Open space precinct
 - 5** Major sports venue precinct
 - Heritage buildings
 - Site boundary
- 0 20 40 60 80 100m

Figure 9: Precinct plan

5.2 Access and movement

The Yeerongpilly TOD will be easily accessible through a range of transport modes, particularly public transport, walking and cycling. The local road network will focus on providing attractive and safe paths for pedestrians and cyclists as well as accommodating cars.

Public transport

The Yeerongpilly TOD is well connected to public transport. The Yeerongpilly railway station is located within 500 metres walking distance of the entire site.

Local buses run along Fairfield Road and there is opportunity to extend bus services into or through the site the TOD site from both the eastern and western sides, subject to further consultation with the local community. To improve the bus servicing of the new Yeerongpilly TOD, Translink and Council have provided in-principle support for running existing bus routes 104/105/108 via King Arthur Terrace rather than Tennyson Memorial Avenue with a new stop along King Arthur Terrace.

Extension of the CityCat service past the University of Queensland has been investigated previously and is not considered viable for a number of reasons. The travel times and capacity of the CityCat would not offer a level of service that would be comparable with existing bus and rail options. Additionally, this area is environmentally sensitive and is used for numerous recreational water sports.

Pedestrian and cycle network

New streets will be designed to give pedestrians and cyclists ample space and facilities to encourage walking and cycling throughout the TOD. Connections to the surrounding communities will be improved and enhanced over time. The pedestrian and cycle paths through the precinct from east to west will provide excellent connectivity from the Yeerongpilly railway station to the Queensland Tennis Centre. Cross block links are

designated within the TOD. These provide 'all hours' access and connectivity where routes occur through privately-owned and developed sites. A strong and efficient network encourages active transport and assists in creating a safe environment for users.

A possible future pedestrian and bicycle bridge is allowed for on the southern boundary of the site to take this traffic over the rail line and connect the Yeerongpilly TOD to the existing development areas to the south. It is not considered that any further links over Fairfield Road are likely to be constructed, but the plan does not stop these occurring should they eventuate.

Street network

The street network is interconnected to enable appropriate access through the site. Streets have different reserve widths and sections to suit their location and hierarchy within the precinct, pedestrian and cycle movements and the need for vehicles (Figure 11). These are summarised in Figure 10.

The street network creates blocks and addresses the development of different scales and intensities that will enable easy implementation of the precinct on a staged basis.

It is important to note that the area is subject to changed traffic conditions on occasions, particularly around the Queensland Tennis Centre on major event days, which could cause localised inconvenience.

King Arthur Terrace

King Arthur Terrace will be realigned to create a more legible street network in the precinct. There is a need to maintain this road as part of the traffic network in the area to allow suitable access to and from the Queensland Tennis Centre and Ken Fletcher Park, from the east and west. It is expected that as new development generates its own traffic, the route will become less attractive to external users as a short cut.



Pedestrian bridge over Fairfield Road to Yeerongpilly railway station



View along Fairfield Road travelling north with Yeerongpilly railway station to the right



View north-west along King Arthur Terrace

- 1 King Arthur Terrace
 - 2 Main Street
 - 3A Neighbourhood street 1
 - 3B Neighbourhood street 1
 - 4 Neighbourhood street 2
 - 5 Neighbourhood street 3
 - 5 Service lane
 - ◻ Signalised intersection
 - ◻ Possible future signals
 - ↪ Turning/traffic movements
 - ➔ Primary cross block link (15 m wide)
 - ➔ Primary public pedestrian/cycle route
 - ⋯ Secondary public pedestrian/cycle route
 - ➔ Possible future pedestrian/cycle over bridge
 - ⋯ Designated cycle route
 - ▲ Indicative location and number of car park or rear lane access points
 - Open space - local informal recreation park
 - Public plaza - local corridor link park
 - ▨ Calmed shared zone
 - ⋯ Indicative revision to State Heritage Place sub-category
 - ◻ Existing State Heritage Place sub-category
 - State Heritage Place (existing)
 - State Heritage Place (revised)
 - ⋯ Heritage buildings
 - Site boundary
- 0 20 40 60 80 100m
1:2500 @ A3

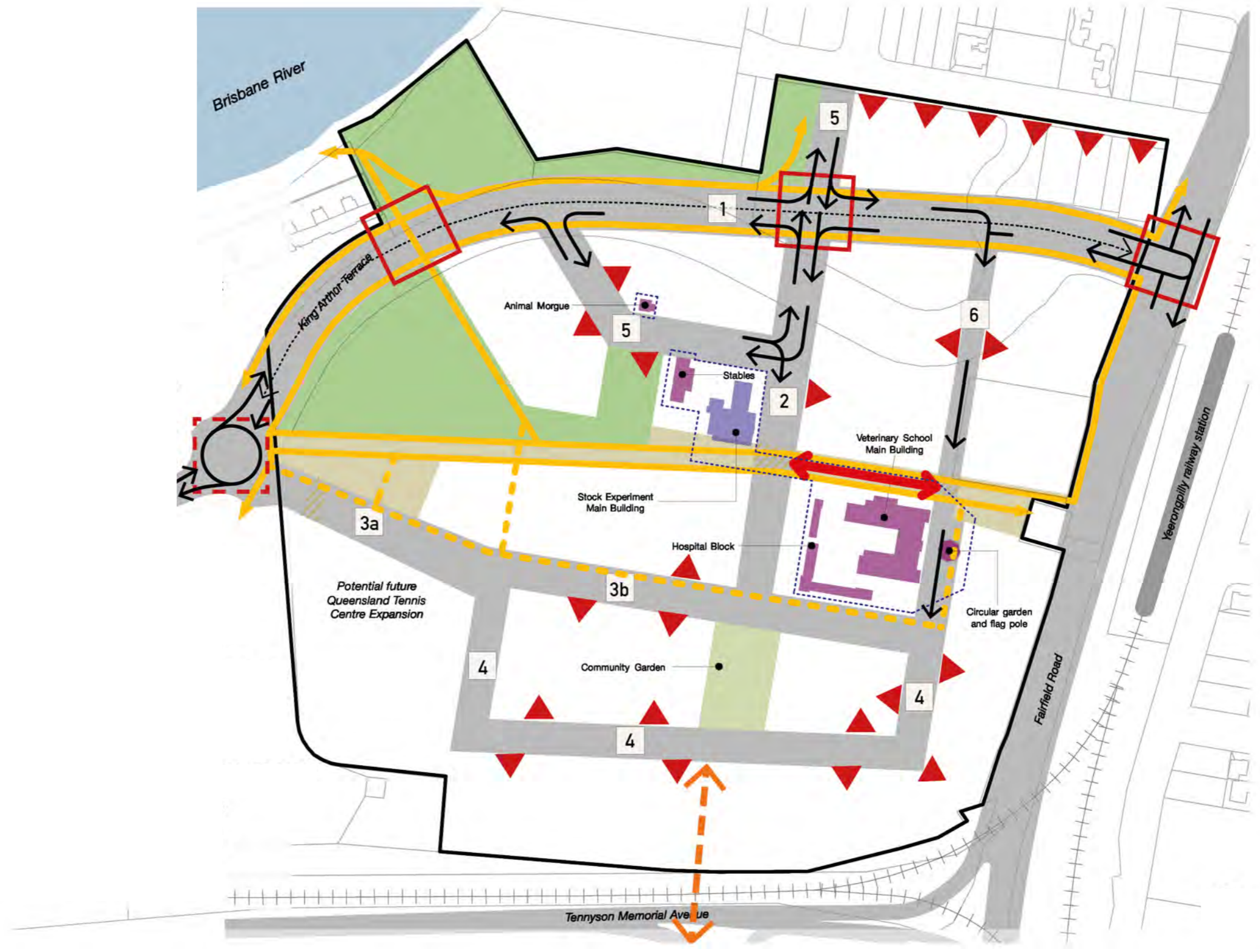


Figure 10: Access and movement plan

Measures proposed to control speed and reduce attractiveness of this route include:

- signalised intersections within the TOD precinct
- increased landscaping to present a more boulevard feel.

The intersection of King Arthur Terrace and Fairfield Road will be maintained in its current location to achieve adequate sight lines.

Main Street

Main Street is the focus for the Yeerongpilly TOD. It is a generous street with two lanes of movement, on-street parking on both sides in the southern portion of the street, street trees in the parking bays and shared use on-street cycle lanes.

This key street is highly pedestrianised and provides the focus for the retail and commercial activity. The street extends from King Arthur Terrace through the centre of the site.

East-West Connector

The East-West Connector links Main Street to the Queensland Tennis Centre. It is a key link in the movement network but intended to be a low speed environment. The eastern end of the street forms a residential address providing high amenity streetscape and a good quality pedestrian and cycling environment. The western end includes a shared zone, which allows for crowd queuing and bus pick-up and drop-off on major tennis event days when this connection may be closed.

Neighbourhood streets

Neighbourhood streets provide local connections to areas in the south of the TOD. These are predominantly residential access streets providing a quieter environment for residents.

Service lane

The service lane is one-way street providing vehicle, pedestrian and service vehicle access to developments within the more intense heart of the TOD. While the geometry of the roads can accommodate an articulated vehicle in an emergency situation, they are designed to accommodate large rigid vehicles and service delivery on a regular basis.

Rear lanes

Rear lanes are not shown in Figure 8 but will be required to ensure development meets frontage requirements. Rear lanes provide direct vehicular access to the rear of residential lots, allowing the buildings to address and activate the key street frontages and parkland within the TOD.

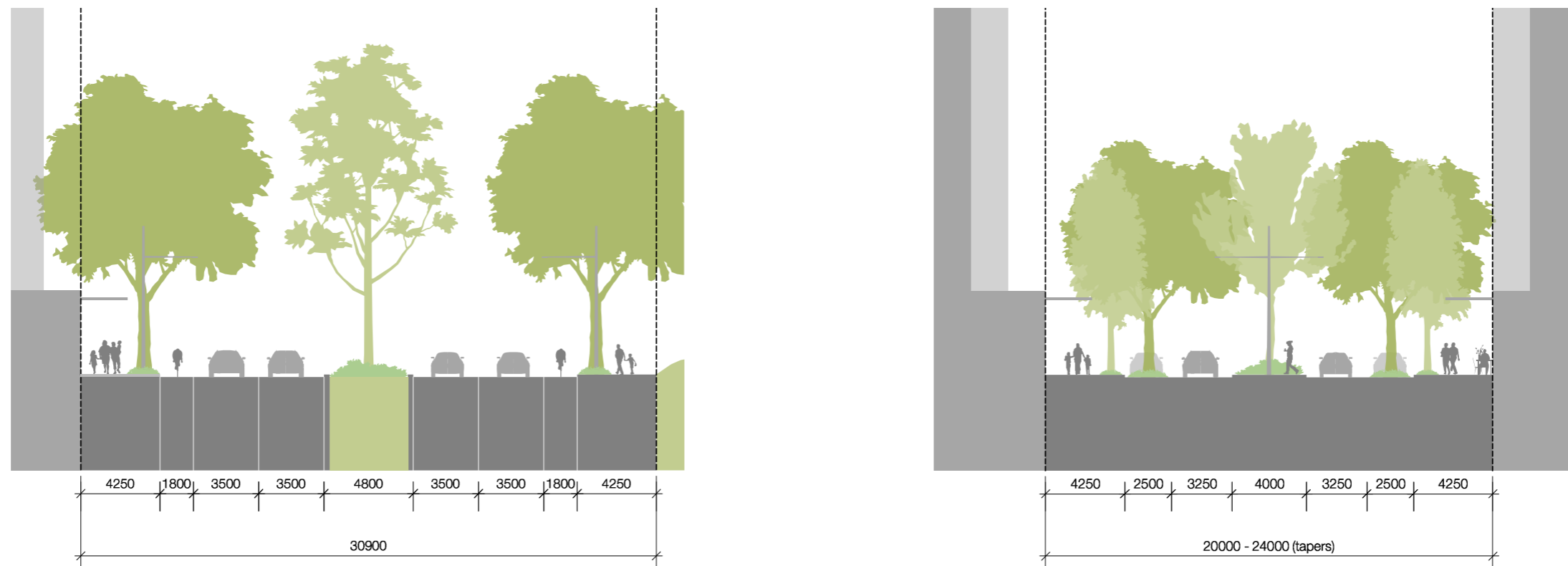
Mooney Street

Mooney Street is proposed to be relocated to alleviate existing traffic queues that result from the proximity of this street to the Fairfield Road and King Arthur Terrace intersection. It is relocated to align with the existing unnamed road between Ortive and Paragon Streets to:

- achieve a sufficient distance from the Fairfield Road intersection
- create practical development parcels with a secondary road access, appropriately distanced to encourage safe traffic flow
- avoid offset intersections which are unsafe and undesirable
- improve access for local residents of these two streets.

There are no plans to extend Stevens Street, as the existing cycleway provides appropriate access for pedestrians and cyclists and does not allow vehicular access.

Street cross-sections



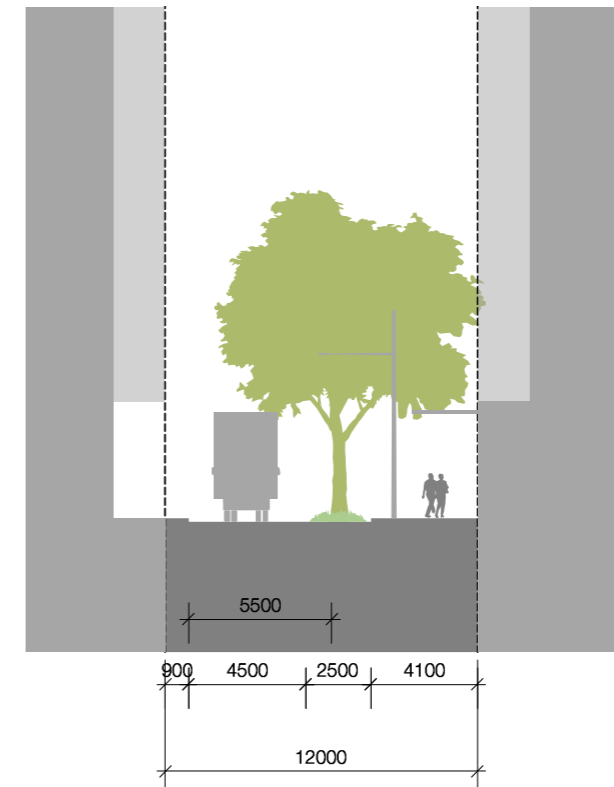
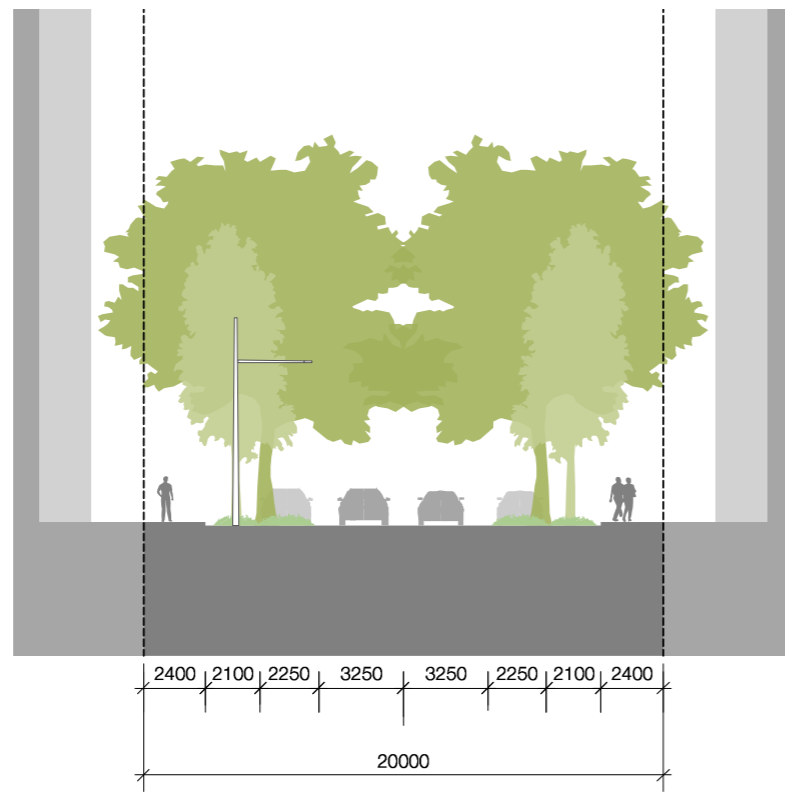
	STREET 1 - KING ARTHUR TERRACE (DISTRICT ROAD)	STREET 2 - MAIN STREET (NEIGHBOURHOOD ROAD)
Character and role	King Arthur Terrace is a district road providing the main access to the Yeerongpilly TOD linking Fairfield Road in the east to the western portion of King Arthur Terrace, and onto Graceville Avenue, in the west. It also provides important access to the Queensland Tennis Centre, existing residential development and Ken Fletcher Park from both directions. The road has been realigned to allow for legible traffic movements through the precinct. The cross-section is taken on the western side of the Main Street and provides for turning lanes as well as cyclist and pedestrian movement. On-street parking is incorporated in the western end of the realigned King Arthur Terrace as well as the existing portion of King Arthur Terrace closer to the Queensland Tennis Centre. The existing portion of King Arthur Terrace remains one lane in each direction.	This key street within the Yeerongpilly TOD is highly pedestrianised and provides the focus for the retail and commercial activity. The street extends from King Arthur Terrace through to the central plaza space on Main Street. This cross-section allows for a central median and right turn lane at the intersection of Main Street and King Arthur Terrace. The Road Reserve for Main Street tapers from 24 metres at the northern intersection with King Arthur Terrace, to 20 metres at the southern end of the street at the central plaza.
Reserve	30.9 m	24 m (northern end) - 20m (southern end)
Parking	Designated parking lanes provided on the realigned portion of King Arthur Terrace where the parking does not impact on turning lane movements. On-street parking is incorporated closer to the Queensland Tennis Centre and is retained.	Designated parking lanes provided on the realigned portion of King Arthur Terrace where the parking does not impact on turning lane movements and the King Arthur Terrace intersection.
Cycle lanes	Designated 1.5 m cycle lanes.	Shared vehicle and cycle lanes.
Landscape	Trees planted at regular intervals within the verge.	Trees planted at regular intervals within the verge.

Figure 11: Street cross-sections



	STREET 3 - NEIGHBOURHOOD STREET 1 - EAST-WEST CONNECTOR (LOCAL ROAD)	STREET 4 - NEIGHBOURHOOD STREET 2 - SOUTHERN LOOP (LOCAL ROAD)
Character and role	<p>The East-West Connector links the Main Street to the Queensland Tennis Centre and provides street access for the tennis facilities and sewerage pumping station. It is a key arm of the movement network. Part of the street forms a residential address providing high amenity streetscape and a good quality pedestrian and cycling environment. The road pavement is designed to encourage slow speeds to allow shared cycle/car use.</p> <p>The part of the street from the intersection of King Arthur Terrace to the intersection with the Southern Loop comprises a central median, in addition to the traffic lanes, on-street parking and verge. The part of the street from the intersection of the Southern Loop to the intersection with the Laneway does not comprise the central median and includes a wider verge on the northern side of the road.</p>	<p>Neighbourhood streets provide local connection to areas in the south of the TOD and the north-west side of King Arthur Terrace. These are predominantly residential streets, providing a quieter environment for residents.</p>
Reserve	20.0 m	18.0 m
Parking	2.5 m wide designated parking lanes on both sides of the street.	2.25 m wide designated parking lanes on both sides of the street.
Cycle lanes	Shared vehicle and cycle lanes.	Shared vehicle and cycle lanes.
Landscape	Trees planted at regular intervals within the verge.	Trees planted at regular intervals within the verge.

Figure 11: Street cross-sections (continued)



	STREET 5 - NEIGHBOURHOOD STREET 3 - BOOMERANG STREET AND ORTIVE STREET CONNECTION (LOCAL ROAD)	STREET 6 - SERVICE LANE (LOCAL ROAD)
Character and role	Neighbourhood streets provide local connection to areas in the south of the TOD and the north-west side of King Arthur Terrace. These are predominantly residential streets, providing a quieter environment for residents.	The service lane is a one-way street providing vehicle, pedestrian and service access to developments within the more intense heart of the TOD. It has been designed to accommodate articulated vehicles in the event of an emergency only, but can accommodate large rigid service vehicles and anything smaller.
Reserve	20.0m	12.0 m
Parking	2.25 m wide designated parking lanes on both sides of the street.	Some designated loading and parking bays may be accommodated in the detailed design.
Cycle lanes	No designated cycle lanes.	No designated cycle lanes.
Landscape	Trees planted at regular intervals within the verge.	Treated to create a low speed environment. Trees are planted at regular intervals within the verge.

Figure 11: Street cross-sections (continued)

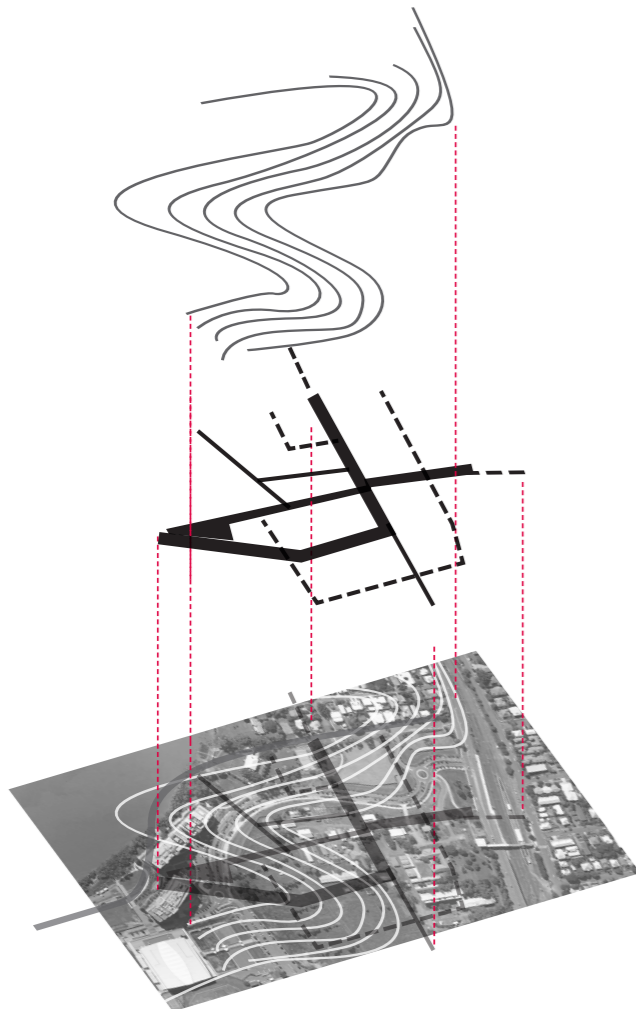
5.3 Public realm and open space

Structure

The key organising structure of the proposed layout is the combination of two site grids based on the ARI buildings and the pattern of existing residential development to the east. This layout provides clarity to the site, works well with existing facilities and lends itself to an intuitive public realm. In addition to this structure the landscape open space overlay acknowledges the influence of the river and explores the intersection of these two systems.

Where the grid provides visual and directional certainty—the overlapping folds of the riverbank and its flood terraces create a more complex landscape.

The public realm concept can be read as a transition (at human scale) from a tightly organised series of spaces atop the ridge to a more free-form arrangement to the west.



Conceptual diagram — river meets grid

Design strategies

Three key design strategies have been developed to extend the river/grid concept across the site. They focus on the social, ecological and spatial dimensions of the site and are developed further below—sustainable design, legibility and connectivity and authenticity.

Sustainable design

An important opportunity exists to establish a benchmark for sustainable urban development—particularly given Yeerongpilly railway station's close proximity. Many initiatives will necessarily be established within private sites but the public realm represents a high-impact canvas upon which to demonstrate and interpret contemporary design strategies.

Key concepts include:

- successful, vibrant places are memorable, social experiences where visitors and locals mix freely. An adaptive, well serviced public realm designed to support the local area's economic viability can support a variety of commercial offerings and can earn a reputation as a highly desirable commercial address. Successful public places are those that are easily accessible, are full of activities, are comfortable, have a strong identity and are sociable.
- energy and materials efficiency is maximised through the recapture of site material and the evaluation of material production processes and life-cycle costs. Materials palettes could include environmentally smart concrete, cold rolled asphalt with a high recycled content, rumbled site material as inorganic mulch and pavements that allow stormwater to permeate directly into the subgrade. Low power, long-life LED street lights are also recommended.
- integrated ecological processes can be achieved by introducing water and fauna movement corridors, target food species and niche habitats into the urban footprint. Urban water elements provide a key opportunity to develop this concept by connecting water, soil and vegetation cover in a manner that can be readily interpreted.

Legibility and connectivity

This site is well contained by existing infrastructure to the south and east and by the river and Queensland Tennis Centre to the west. The proposed built form and density program outlined in the Detailed Plan of Development will bring many new residents and users to the site with expectations of a high quality public realm.

The proposal is to ensure that a diverse range of experiences are on offer here—from large places for gathering through to more intimate places for relaxation. It is therefore critical that each of the places on offer are visually and physically well connected and that any distant views beyond the site are capitalised on for contextual wayfinding. This mix of spatial experiences and the provision of multiple options for navigating around the site all work with the Detailed Plan of Development's underlying grid structure and emphasises the importance of the 'spine'.

Figure 12 identifies some of the key vistas and orientation points that will be critical to navigating across the site.

Authenticity

The approach to defining a distinctive public realm for the site involves working with the most contiguous element of the Detailed Plan of Development—the east-west 'spine' path. As a transect through the site from the high ground close to the Yeerongpilly railway station to the river, this central spine is the one element that links together public transit, existing heritage fabric, the Brisbane City Council SRBC facility and Queensland Tennis Centre plaza across King Arthur Terrace via a new public park.

This central ordering element introduces the most compelling location to develop a distinctive, landscape-based narrative reflecting the site's cultural, topographical and hydraulic processes. Key elements to the spine include:

- a planting approach using a mix of endemic and culturally significant species—in keeping with the site's existing cultural landscape. The 'mix' of species along this spine will change to reflect either the high point of the ridge (eucalyptus spp.) through to the lower levels within the western parkland (melaleuca spp.)
- a linear artwork opportunity that explores key events/discoveries made onsite as a time line embedded into the ground plane. This concept is expressed as the linear, multi-colour, banded element shown on the public realm and open space plan arranged in a controlled, organised manner. It is proposed that this piece could reflect the disciplined, scientific processes that have been undertaken on site over the years, much like a series of microscope slide cases laid end to end. Furniture is also proposed in this location potentially incorporating recycled material and 'found objects' from site. Solar-powered LED lights provide low-level pedestrian lighting.

The active integration (i.e. program and occupation) of the many heritage structures woven into the public realm present the opportunity to further reinforce the unique nature of this site.



Cross block access, view towards Stock Experiment Station Main Building



Figure 12: Public realm and open space plan

Landscape and open space concept plan

In exploring the river/grid concept for Yeerongpilly a landscape and open space concept plan layout has been developed that integrates each of the design strategies outlined. Key elements of the landscape and open space concept plan are as follows.

The spine

This central element has been developed as the site's primary linking element—joining together the many public places and development sites across the precinct. Cross block linkages occur on private land and are secured by 24-hour access easements. They may also include elements such as:

- planting—group planting of mixed local species ranging from Eucalypts along the ridge through to Melaleucas within the lower areas of the park
- interpretive element—a key opportunity is a linear element connecting the overpass tower with the western connection with King Arthur Terrace. This element reinforces the journey along the spine and is an opportunity to reveal the site's rich scientific history and significant milestone events
- urban furniture—there is an opportunity for bespoke furniture elements along this axis using a combination of site materials and new elements.

Streetscape hierarchy

To further reinforce legibility across the site a clearly defined streetscape hierarchy has been developed to complement proposals for the 'spine'.

Primary (Main Street)

Designed to complement the mass-planted nature of the spine, this equally important north-south link completes the other half of the 'cross' at the centre of the site's urban grid. It takes on more traditional characteristics than the spine with the following elements:

- tree planting—regularly spaced avenue planting of native tree species
- integrated art—an opportunity exists at the intersection with King Arthur Terrace in the form of urban shade canopies (where trees can't be located due to sight lines)
- urban furniture—incorporation of integrated and 'off the shelf' furniture elements to provide public amenity
- WSUD—bioretention gardens located against the kerb
- pavements—in-situ coloured concrete, with recycled aggregate—mix of broom and washed finishes, concrete kerbs and recycled AC road pavement.

Secondary streets and lanes

- cross block links on private land are secured through easements for public access
- tree planting—irregularly spaced avenue planting of street trees known to thrive in the area, potential to including productive trees
- integrated art—low-key, 'discovery' pieces suit this part of the network
- urban furniture—off the shelf
- pavements—in-situ coloured concrete with recycled aggregate—mix of broom and washed finishes.

The key public realm and open space areas are shown in Figure 13 and summarised below:

Key spaces

- 1 Feature bioretention garden—a major demonstration bioretention garden.
- 2 Park 'The Green'—an undulating lawn will take advantage of the existing topography and form the site's main gathering and kick-a-ball space. Lawn mounding and tree planting to the Western park edge will provide enclosure and informal seating/picnic opportunities. High points at the river interface and park edge provide view lines to the water and across the development. Shade structures incorporating power and AV connections and provision for an event screen are also envisioned. BBQ and picnic shelters will accommodate small gatherings and providing residents with a 'backyard' in the park.
- 3 Terraced amphitheatre—a terraced seating edge will transition from organic parkland forms to an urban grid form and will provide amphitheatre type seating for smaller gatherings or as part of a larger park wide event.
- 4 River park—this park will form part of the expanded river walk pathway. It will also feature key views to the water.
- 5 Pocket park—this pocket park includes a major stormwater treatment bio basin.
- 6 Heritage buildings—the significant heritage buildings on site comprise the Animal Morgue, Stables, Stock Experiment Station Main Building and Veterinary School Main Building.
- 7 Forecourt—a forecourt to the east of the Stock Experimentation Station Main Building introduces an appropriate contextual buffer to the historic building.
- 8 Pedestrian link—an outdoor dining and retail zone will activate the central linear pedestrian spine.
- 9 Arrival plaza—the eastern end of the 'spine' expresses the ridge line through species selection, and provides shade and a number of interpretive elements.
- 10 Landscaped courtyard.
- 11 Retail 'hub'—this is the site's major retail precinct and will include an anchor retail tenant and speciality stores among other uses.
- 12 Commercial buildings—these parcels will be developed to accommodate commercial, office and related uses.
- 13 Brisbane City Council SRBC—the site's first major occupier.
- 14 Community garden—a plot garden provided as a communal resource.
- 15 Potential future connection—provision has been made for a long-term link to the south across Tennyson Memorial Avenue.
- 16 Potential future Queensland Tennis Centre expansion.





Figure 13: Landscape and open space concept plan

5.4 Built form

In order to establish an urban precinct with a sense of place, which is safe and welcoming, the public realm of streets, open spaces and plazas are strongly defined by built form and articulated by the arrangement of the uses within them. The key components of built form within the Yeerongpilly TOD are made statutory through the SPRP and City Plan 2014 codes. The key components are:

- structure and intensity
- use mix and typology
- building envelope (height and setbacks)
- frontages.

Structure and intensity

Where possible, the street and open space networks are aligned on east-west axes. This structural arrangement optimises access to desirable views to the north (Brisbane River, Indooroopilly Golf Course, the university and Brisbane CBD). It also maximises the number of building forms oriented to the north for optimal passive solar and subtropical design response and minimises east and west exposure. In addition, the structure supports the predominant east-west movement patterns across the site. Limiting north-south movement also encourages intensification of movement activity around the Main Street, helping create the mixed-use 'heart' for the community. A range of built form intensities can then occur along this key street.

The heart of the Yeerongpilly TOD is reinforced by an increase in built form intensity, with larger mixed-use blocks and more dense building typologies (mixed-use retail and commercial office uses). The east-west pedestrian spine and central urban plaza create a break in the urban intensity, signifying its importance as a meeting place or entry point when moving south along this axis into the residential mixed-use. Here, medium- to high-density built forms mark an alternative residential intensity, which increases to the south to provide

views and a buffer to noise sources on the southern boundary.

Built form intensity is determined by building size, shape and use. This is governed by building envelope (height and setbacks). It is expected that the project will deliver 930 dwellings to cater for a population of between 1500 and 1700 residents.

Building height

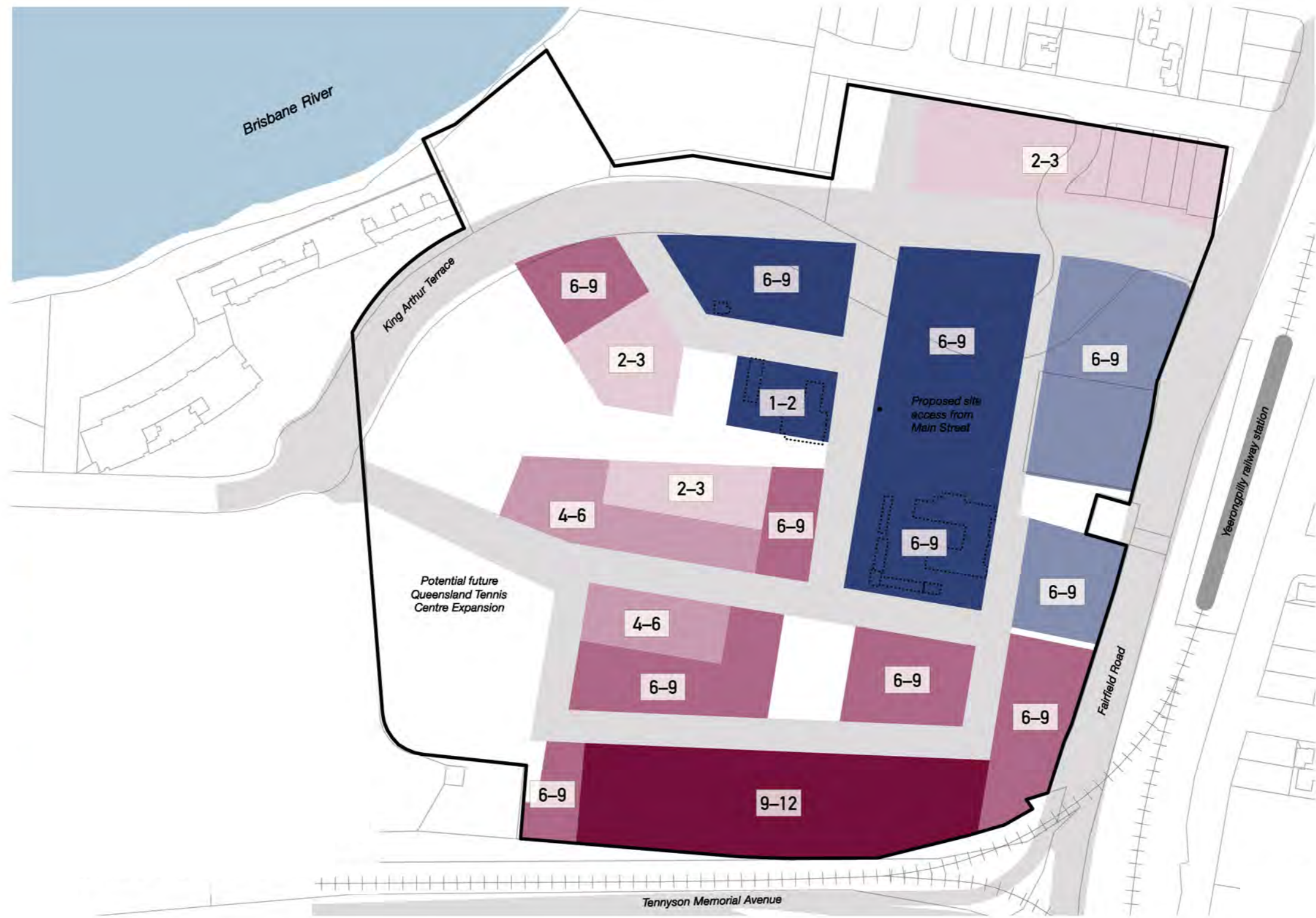
The proposed building heights provide opportunities to suit people from a range of lifestyles and allow them to live and work within a five-minute walk of the rail station. Building heights (from 2–12 storeys) are arranged across the site to:

- frame paths and view lines from public spaces
- provide access to views, breezes and sunlight
- define boundaries and transitions between areas of intensity
- mitigate noise
- create landmarks
- provide a connection with the Tennyson Reach development building form and mass.

The tallest buildings to the south and east (6–12 storeys) mitigate noise from outside and within the site. The design of the buildings will incorporate acoustic treatments to provide amenity for residents. A gradation of building heights across the site (see Figure 14), from 12 storeys on the south to two storeys on the north, provides a transition from a more intense form around the new centre to the existing residential area north of Ortive Street. The 6–9 storey buildings on King Arthur Terrace frame the street and take advantage of amenity from the park and river and a transition to the heights of the Tennyson Reach development to the west. A mix of taller and shorter buildings within the site is intended to facilitate maximum access to breezes, sunlight and views to local open space, the Brisbane River, Indooroopilly Golf Course and the Brisbane CBD.



Primary active frontage—Portside Wharf, Hamilton, Brisbane



- Retail/mixed-use
- Office/mixed-use
- Residential
- Residential
- Residential
- Low-rise residential
- Heritage buildings
- Site boundary

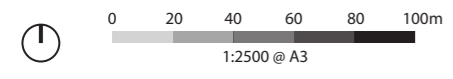


Figure 14: Building heights (in storeys)

Landmark buildings in the mixed-use core precinct around King Arthur Terrace and Fairfield Road will be expected to display exceptional architectural design, marking the importance of the site as a destination within the local community.

Use mix and typology

A variety of commercial, retail and residential uses within the site ensures a suitable mix and intensity of population within a five-minute walk of the Yeerongpilly railway station. Several built form typologies are required to combine uses in a compatible manner, deliver a range of street activation and amenity and support differing intensities. There are two general categories—residential and mixed-use—and these are further divided into seven main building typologies (Figure 16) across the site:

- 9–12 storey residential
- 6–9 storey residential
- 4–6 storey residential
- 2–3 storey low-rise residential
- 6–9 storey retail/mixed-use
- 6–9 storey office/mixed-use
- 2 storey retail/mixed-use.

Residential typologies

The housing diversity offered in the Yeerongpilly TOD is driven by a need to generate a critical mass of population and maximise land efficiency. Residential built form will be comprised of two housing types—residential units (apartments) and attached terrace houses. Medium-to high-density residential typologies will deliver the majority of the 1, 2 and 3-bedroom units at Yeerongpilly TOD and are arranged in 9–12 storey, 6–9 storey and 4–6 storey apartment typologies. Low-to medium-density residential typologies deliver 2–3 storey walk-up

apartments, unit blocks and attached terrace houses.

All buildings will be designed to form strong streetscapes, shape views and maximise street activation and casual surveillance. Building typologies will vary from site to site creating diversity and interest in the built form. Car parking is located beneath buildings in basements or at the rear of buildings sleeved by other uses to manage the visual impact and maximise private open space for residents within sites. The use of a semi-basement car parks in some parts of the site can help manage excavation costs and allows for a grade change between street and habitable levels of up to 1 m.

Where semi-basements are used the development will be required to incorporate landscaping and design measures to ensure an attractive appearance to the street. Single-loaded apartment buildings are preferred to maximise access to a range of views and deliver cross-flow ventilation and natural light consistent with subtropical design principles. This design will also help satisfy acoustic solutions when located near noise sources. Home offices and small retail premises are also allowed in residential precincts.

Two to three storey residential dwellings will be located close to the front property boundary to encourage activation of the street and car parking will be sited in concealed locations. Continuous frontages are delivered through the use of rear lanes. These low-rise apartments are located adjacent to the central open space and King Arthur Terrace, where a lower intensity of development is required.

Mixed-use typologies

Built form in the core of the site consists of two typologies—retail mixed-use and office mixed-use. These buildings will deliver the greatest mix of uses on the site, providing housing and employment (retail and office) and servicing needs for the centre. They are intended to be the most active and intense built form at the Yeerongpilly TOD. This building intensity will mark the heart of the centre and provide a destination for surrounding residents, visitors and commuting workers.

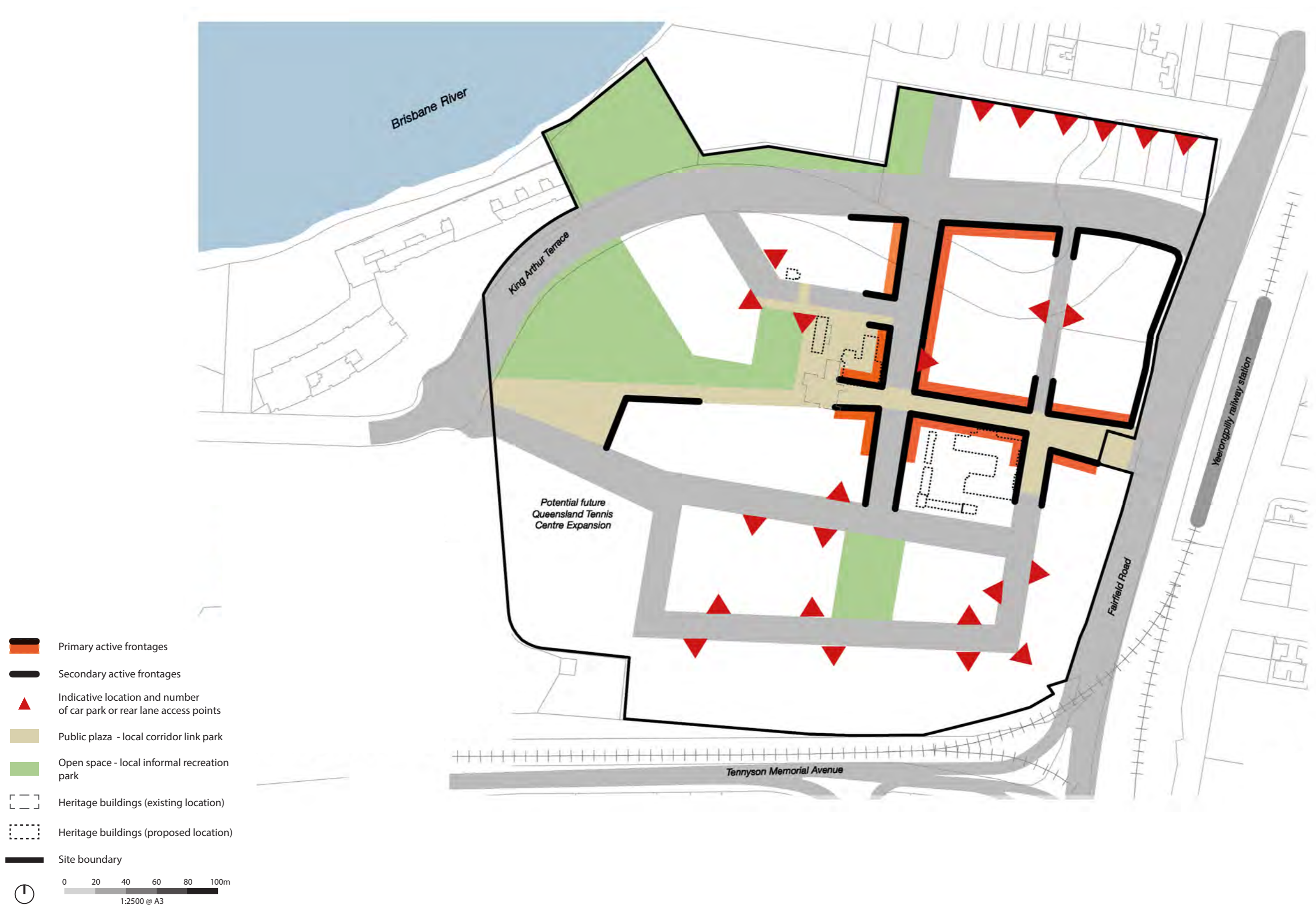
The retail mixed-use typology combines large and small retail uses at ground level with residential apartments above. This typology can successfully integrate large-format retail, such as a supermarket, into the main street environment by sleeving them with small-scale shops, which directly access and activate the street. Servicing of all retail occurs at the rear of the buildings, allowing a continuous built edge along the street with no driveway crossovers on primary active frontages. Customer and residential car parking will be located in basement (or podium where possible) parking accessed from secondary and tertiary frontages. This provides shared car parking for residents, employees and visitors to the TOD.

Residential uses in the mixed-use core precinct are expected to be predominantly in a perimeter form up to nine storeys in height. This format allows for thin, passively cooled



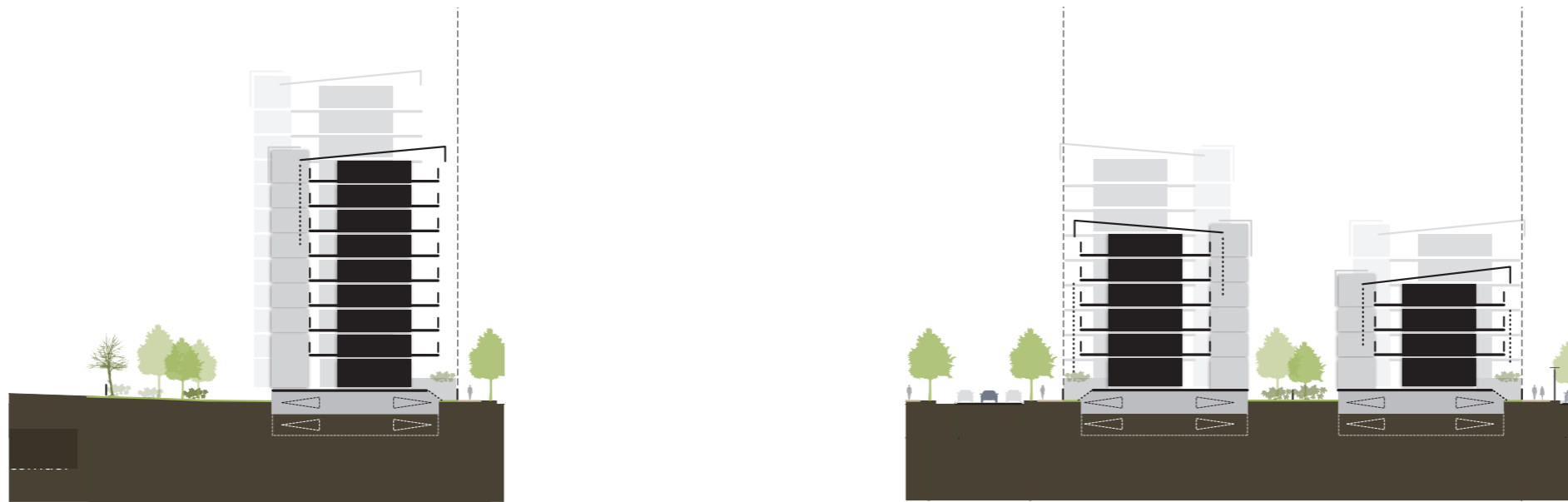
Examples of secondary frontages

Example of an other frontage



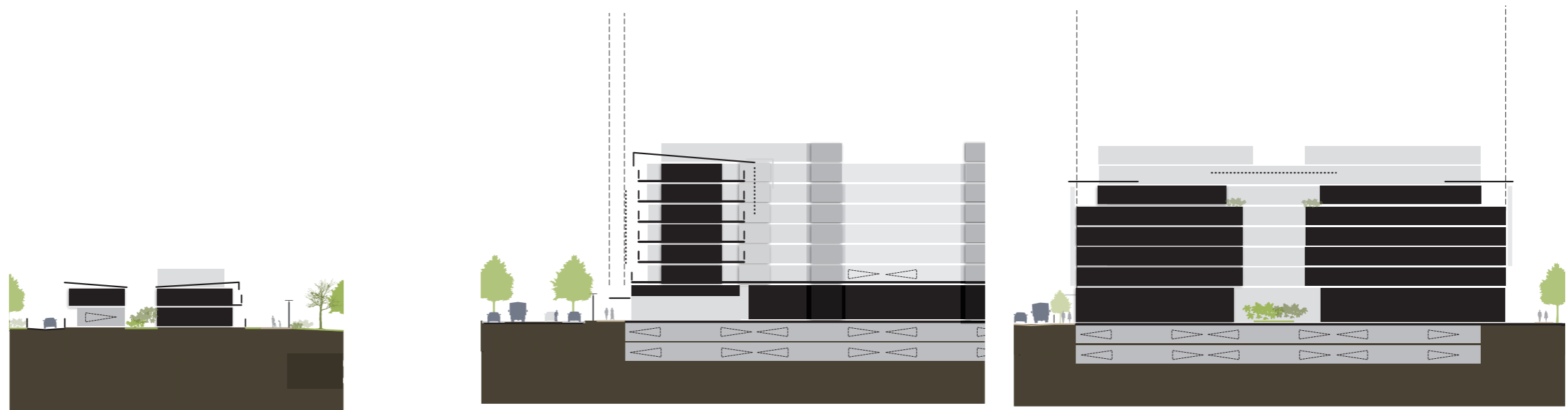
-  Primary active frontages
 -  Secondary active frontages
 -  Indicative location and number of car park or rear lane access points
 -  Public plaza - local corridor link park
 -  Open space - local informal recreation park
 -  Heritage buildings (existing location)
 -  Heritage buildings (proposed location)
 -  Site boundary
-  0 20 40 60 80 100m
1:2500 @ A3

Figure 15: Frontages plan



	9–12 STOREY RESIDENTIAL APARTMENTS	6–9 STOREY RESIDENTIAL APARTMENTS	4–6 STOREY RESIDENTIAL APARTMENTS
Precinct	Residential mixed-use precinct	Residential mixed-use precinct	Residential mixed-use precinct
Description	Higher density residential, 1, 2 and 3-bedroom apartments, home offices	High density residential, 1, 2 and 3-bedroom apartments, home offices	Medium-density residential, 1, 2 and 3-bedroom apartments, home offices
Indicative gross floor area	2.5	2.1	1.5
Building height	9–12 storeys maximum Variety of heights required	6–9 storeys maximum Variety of heights required	4–6 storeys maximum Variety of heights required
Frontage setback (minimum)—ground, levels 2–9	2 m to balcony 4 m to wall	2 m to balcony 4 m to wall	2 m to balcony 4 m to wall
Side setback (minimum)	0 m to side boundary where built to boundary wall permitted and is constructed up to a maximum of 3 m (refer to Multiple Dwelling Code and Dual Occupancy Code) Otherwise: 3 m to side boundary where up to 5 storeys 9 m to side boundary where 6 storeys or above	0 m to side boundary where built to boundary wall permitted and is constructed up to a maximum of 3 m (refer to Multiple Dwelling Code and Dual Occupancy Code) Otherwise: 3 m to side boundary where up to 5 storeys 9 m to side boundary where 6 storeys or above	0 m to side boundary where built to boundary wall permitted and is constructed up to a maximum of 3 m (refer to Multiple Dwelling Code and Dual Occupancy Code) Otherwise: 3 m to side boundary where up to 5 storeys 9 m to side boundary where 6 storeys or above
Rear setback (minimum)	9 m to rear boundary	9 m to rear boundary	9 m to rear boundary
Car parking—configuration	Basement or semi-basement parking required	Basement or semi-basement parking	Basement or semi-basement parking

Figure 16: Building typologies



	2-3 STOREY RESIDENTIAL DWELLINGS	RETAIL MIXED-USE	OFFICE MIXED-USE
Precinct	Low-rise residential precinct	Mixed-use core precinct, residential mixed-use precinct	Mixed-use core precinct
Description	Dwellings, home businesses, studio apartments above garages	Residential dwellings over retail at ground floor, offices	Offices and retail
Indicative gross floor area	1.0	2.0	2.5
Building height	3 storeys, 10.5 m	6-9 storeys	6-9 storeys
Frontage setback (minimum)—ground, levels 2-9	2 m to balcony 4 m to wall	0 m to active frontage (on ground) 2 m to balcony, 4 m to wall (levels 2-9)	0 m to active frontage (to level 5) 3 m above 6 storeys
Side setback (minimum)	0 m to side boundary where built to boundary wall permitted and is constructed up to a maximum of 3 m (refer to Multiple Dwelling Code and Dual Occupancy Code) Otherwise: 1.2 m to side boundary for a wall up to 7.5 m high 2.5 m to side boundary for a wall over 7.5 m high	Residential: 0 m to side boundary where built to boundary wall permitted and is constructed up to a maximum of 3 m (refer to Multiple Dwelling Code and Dual Occupancy Code) Otherwise: 3 m to side boundary where up to 5 storeys 9 m to side boundary where 6 storeys or above Non-residential: 0 m to side boundary where up to 5 storeys 3 m to side boundary where 6 storeys or above	0 m to side boundary where up to 5 storeys 3 m to side boundary where 6 storeys or above
Rear setback (minimum)	As prescribed in applicable Brisbane City Council City Plan 2014 code for relevant use	Residential and non-residential: 9 m to rear boundary	0 m to rear boundary where up to 5 storeys 3 m to rear boundary where 6 storeys or above
Car parking—configuration	Garage accessed from rear lane or internal driveway	Shared basement parking	Shared basement parking

Figure 16: Building typologies (continued)

units to access private open space on the roof of the supermarket. Some two to three storey terrace houses may face neighbourhood streets and lanes and define the edge of the retail centre.

An office mixed-use typology is the most bulky form due to the large floor plates of commercial office space. Such a built form is ideal for fronting Fairfield Road and King Arthur Terrace, as it provides an effective acoustic barrier to other sensitive uses and offers attractive exposure to commercial tenants. Ground floor uses will house active office entry points and supporting retail (e.g. cafes, shops) and car parking is located in basements.

Commercial and retail floor space targets have not been locked in as part of the statutory framework. However, the mixed-use typologies are expected to deliver approximately 25 000 square metres of office space, inclusive of the SRBC, and 9000 square metres of retail use.

Frontage types

Two frontage types are proposed to deliver built form with a graduation of definition and activity from high to low. The frontage types are primary active frontages and secondary active frontages. See Figure 15.

Primary active frontages

These frontages are the most active, defining the key streets and public spaces within the TOD. Primary active frontages have street facing uses including building entrances, retail and commercial tenancies and entries to other public buildings. Walls are generously glazed with openings every 10 metres. Setbacks can vary from 0–3 metres for building entries, landscaping and outdoor dining. These frontages have continuous pedestrian shelter.

On key corners, frontages can be set back from the street to create small semi-public

plazas. Additional short and open arcades can be incorporated to provide access to the large format retail, located behind smaller shops. These arcades could form mid-block links between streets and public spaces. No vehicle crossovers are allowed through these primary frontages.

Existing heritage buildings fronting public space are well suited to primary active frontage activation, but the delivery of necessary pedestrian shelter must not occur at the expense of heritage values.

Secondary active frontages

Secondary active frontages have similar characteristics to the primary active frontages but have less retail focus. Walls are generally glazed with openings into building entrances and commercial tenancies well spaced to provide an appropriate level of activity. Continuous pedestrian shelter is preferred along key active streets, at gathering spaces and where entries are grouped together. Setbacks vary from 0–3 metres and could be wider at entries and corners to create gathering spaces. More intense, small-scale retail uses should be located on corners.

Other frontages

Other frontages throughout the site create a desired residential interface to the streets and open space. They align with the street and lot boundaries and have windows and balconies overlooking. There may be fewer pedestrian entrances and more variety of building setbacks along these frontages. Setbacks vary from 2–4 metres. Shelter on the street is provided at entries only.

Residential dwellings on the ground floor may be raised above the street by up to 1 m. Additional dedicated entries to all ground floor apartments is desired which also encourages home businesses in these locations.

Where the building facades do not need to reinforce the street edge, there are no specific frontage requirements. However, interface with adjacent areas, surveillance, building presence and safety are still important issues that will need to be considered. These include areas with interfaces to car parks, to Fairfield Road against the elevated road structure and the southern boundary of the site facing the rail corridor. There are no specific activation or surveillance requirements in these locations except where a pre-existing Energex easement requires setbacks.

Setbacks

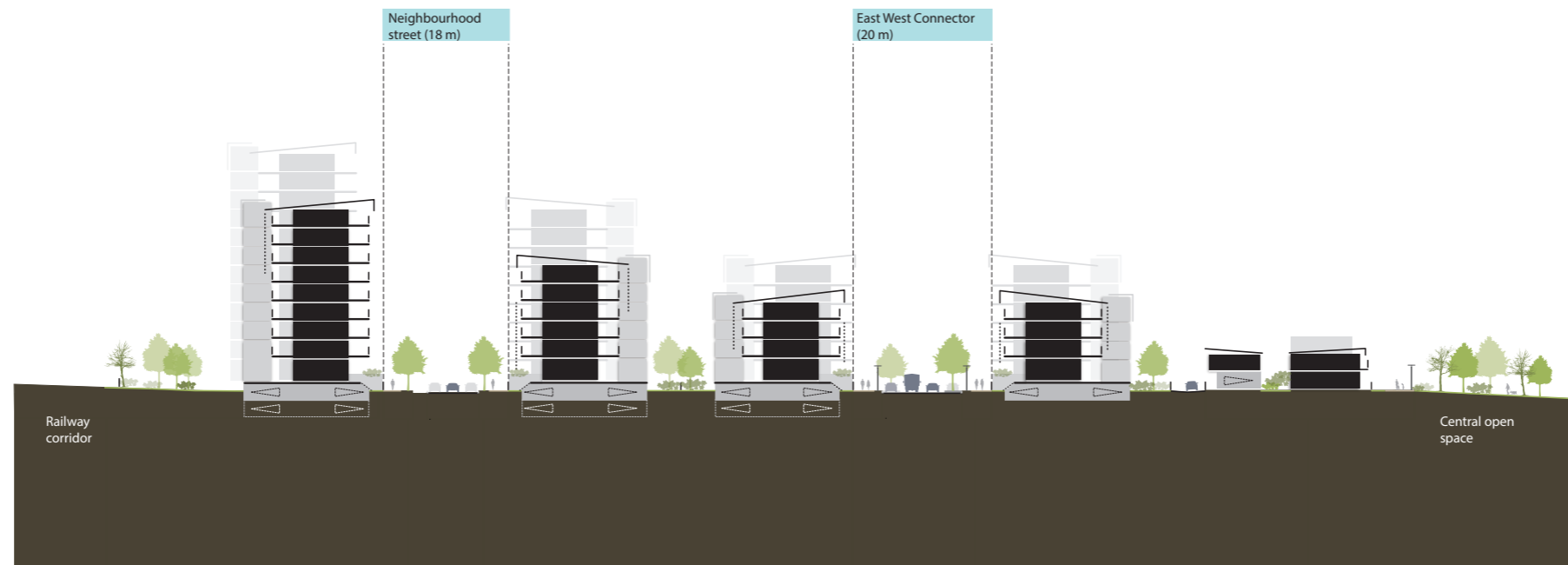
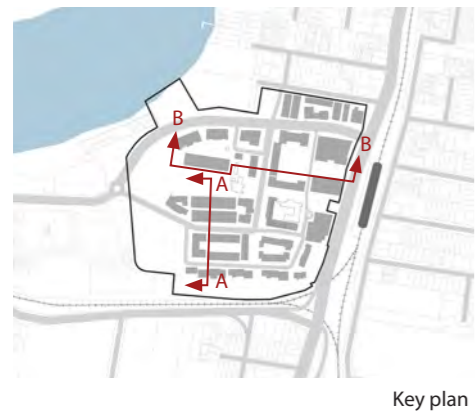
A simple approach to building setbacks is employed across the site to maximise flexibility for developers and for ease of development assessment. Setbacks to frontages are generally tightest in the core to maximise urban intensity and define views along key pedestrian linkages; 0 m setbacks are preferred at ground level for retail and office uses. 3 m setbacks on all sides above 6 storeys is intended to soften the bulk of office buildings. Residential uses in the core are situated above ground level; the front setbacks, of 2 m to balconies and 4 m to the building face, help maintain a strong and active streetscape while providing amenity for residents. A 9 m setback is required where residential uses face rear boundaries.

In residential precincts the same frontage setbacks apply for the full height of the building—2 m to balconies and 4 m to the building face. Privacy from the street is managed by vertical separation from the street of up to 1 m rather than by fences or screens.

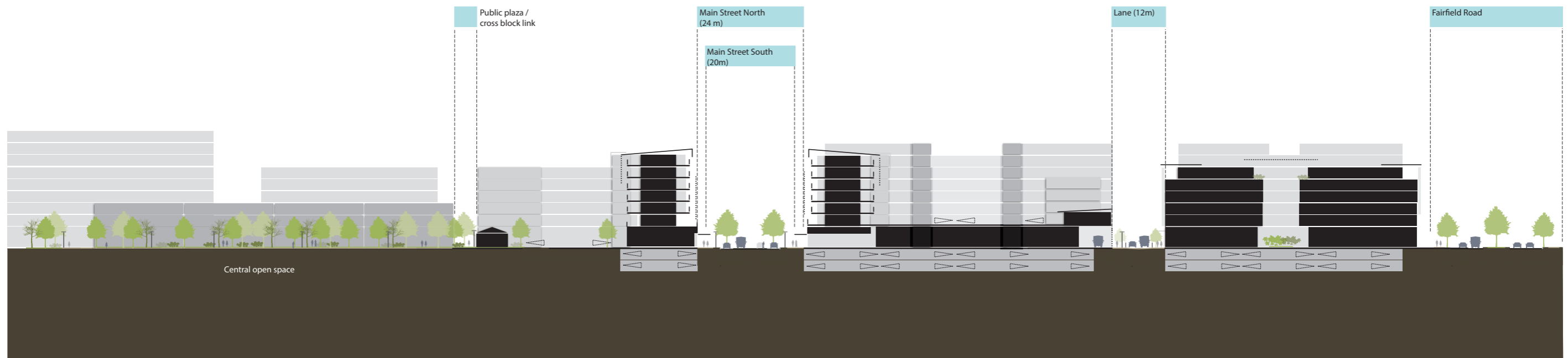
A 3 m side boundary setback up to 6 storeys will create car access points and facilitate breezes and light entry. A 9 m setback above the sixth storey helps reduce the vertical impact of the tallest buildings and limit overshadowing. A 9 m setback is required to rear boundaries to help manage privacy and create opportunity for on-site vegetation.



Indicative perspectives



A-A Indicative south-north cross-section



B-B Indicative west-east cross-section

Figure 17: Indicative site cross-sections

5.5 Heritage

The ARI has played a vital role in the development of primary industries within Queensland and is associated with important scientific advances in diagnostic research and the prevention and treatment of diseases in livestock, the development and supply of vaccines and the education of veterinary scientists and stock owners.

The historical significance of the site's former role is recognised and referenced through the Detailed Plan of Development. Four specific buildings are proposed to be retained on-site in their current location and incorporated into the public realm:

- the Stock Experiment Station Main Building
- the former University of Queensland Veterinary School Main Building and associated hospital block to the rear
- Stables
- Animal Morgue.

These significant buildings comprise two distinct groups—the 1909 animal research buildings and the 1938 veterinary school complex.

New development has been deliberately planned to respect the heritage buildings with building height controls and amendments to the curtilage around the each of the buildings introduced as part of the amended heritage citation.

The heritage buildings form key elements within the open space network. Public art and embellishment of the public realm will reflect the unique history of the site as a reminder to be experienced by residents, workers and visitors of the Yeerongpilly TOD.

The street network, pedestrian spine and forecourt of the Stock Experiment Station positions this building as a focal point and quasi town centre, appropriate to its pre-eminent role in the history of the site. The positioning and extent of curtilage retained around each of the Stables and Animal Morgue buildings allows the three buildings to be appreciated as a group, which is appropriate to their historical relationship in the development, testing and post-mortem investigation of cattle tick treatment. The amendments will protect access and views to and between the buildings and ensure they are preserved in their current form. It is proposed that the Stock Experiment Station Main Building, Stables and Animal Morgue be retrofitted and reused with low impact uses that are compatible with the preservation of the buildings themselves.

The Veterinary School Main Building is a larger and more significant building. It is anticipated this may be retained and form part of a larger mixed-use development.

The location of the heritage buildings and their associated curtilage is shown in Figure 18.

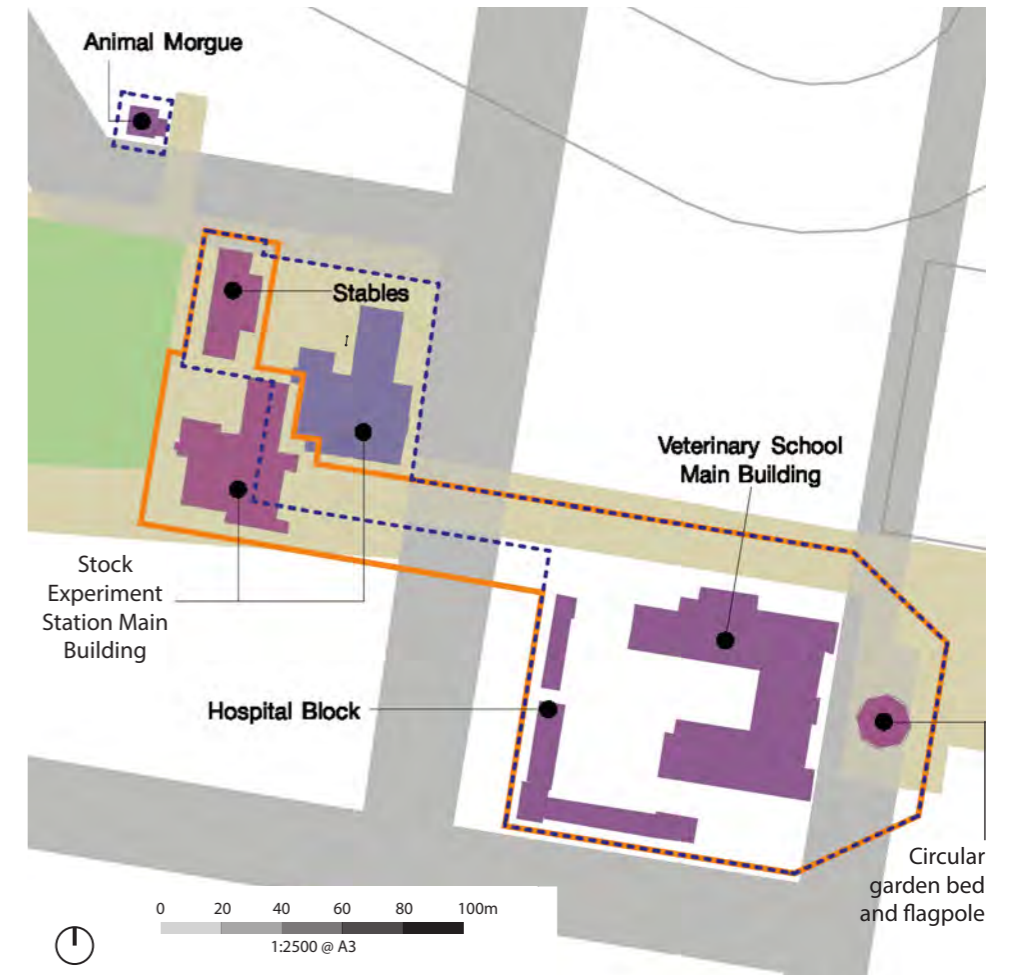


Figure 18: Heritage buildings and curtilage



Adapted re-used heritage structures in the Prince Henry development at Little Bay, Randwick City Council area, New South Wales

5.6 Integrated water cycle management

Stormwater treatment measures will be incorporated into the Yeerongpilly TOD to safely convey stormwater through the development and ensure appropriate discharge to the Brisbane River. Initial stormwater quantity calculations and modelling indicate there is sufficient discharge capacity in the existing stormwater pipes and no on-site detention is required.

However, a number of measures are proposed to ensure the runoff meets the current water quality objectives for the Brisbane River and minimises the disruption and public use of open space areas during and following stormwater runoff events. These measures include a combination of larger bioretention basins in swale and plaza formats and gross pollutant traps.

Bioretention, basins and plaza area

Two major bioretention areas are proposed as shown in Figure 20. One basin is located in the lower Ortive Street precinct and a vegetated plaza-based version is included at the western end of the East-West Connector street, positioned to be a highly visible statement of water quality treatment for the precinct.

These vegetated non-conveyance bioretention basins are provided to treat runoff from the site before it discharges into the river. It is envisaged that the basins would be generally dry however during (and for a short time after) rain, they may be filled with water.

The bioretention basins have a filter section, filled with sand to filter the water, and a depression to pond water about the filter so that the volume of treated runoff is maximised. Vegetation in the depression would include appropriate shrubs, rushes and grasses. The sand in the basin section allows stormwater to infiltrate, be treated, then drain through an agricultural pipe to the outlet. A typical bioretention basin layout is shown in Figure 19.

Gross pollutant traps

Gross pollutant traps are located upstream of the bioretention systems. Usually referred to as sediment traps, these incorporate a litter or trash rack and have the ability to remove sediment, litter and hydrocarbons.

There are a wide range of gross pollutant traps available and they may be proprietary or purpose-designed and built to suit the particular conditions. Either way, their removal efficiency must achieve the performance characteristics listed below:

- 50 per cent removal suspended solids
- 10 per cent removal total phosphorus
- nil removal total nitrogen.

Waterways and wetlands

A remnant waterway corridor and wetland area are identified in the Brisbane City Plan 2014 mapping of the site. The construction of King Arthur Terrace as part of the Queensland Tennis Centre development significantly altered the landform, wetland and waterway corridor to an extent that they no longer exist or function. The mapping in the City Plan 2014 is proposed to be updated to reflect the loss of these features from the site.

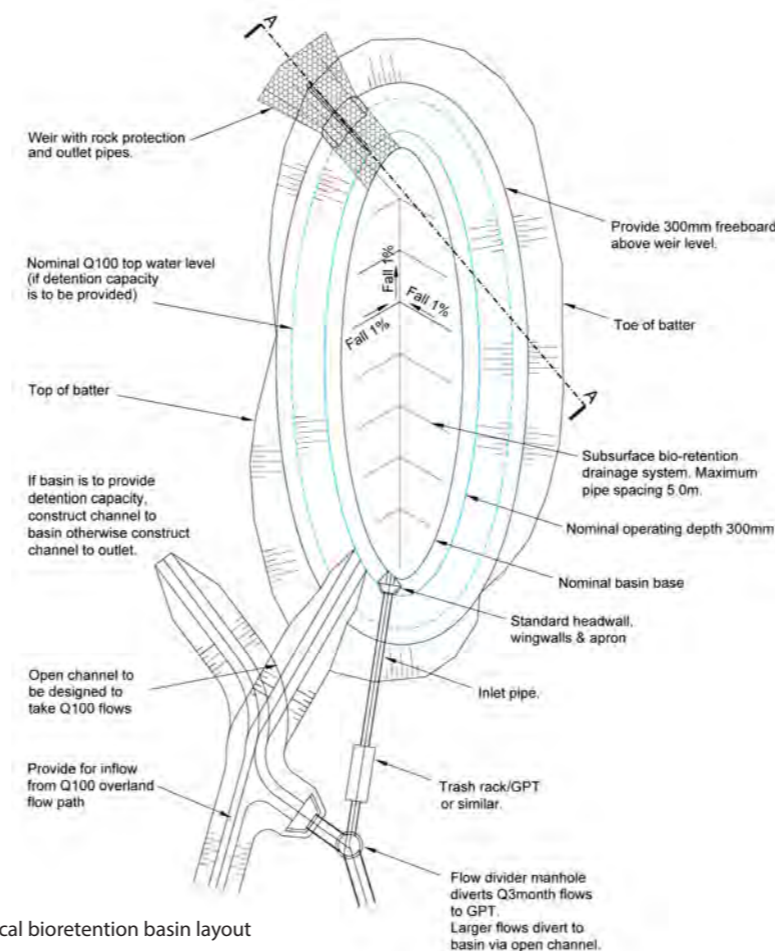


Figure 19: Typical bioretention basin layout

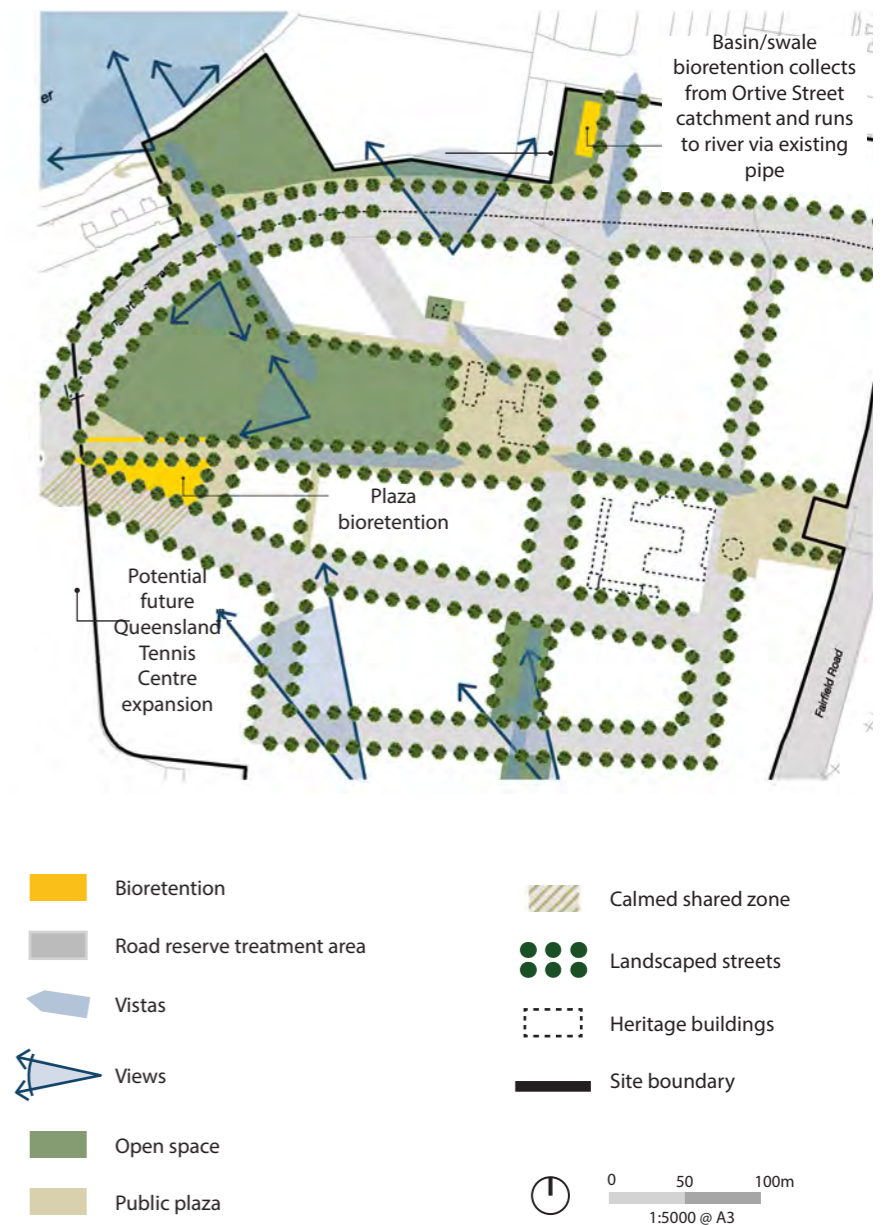


Figure 20: WSUD treatment areas

5.7 Infrastructure

Roadworks

The roadworks required for the Yeerongpilly TOD include new road infrastructure within the development site, as well as augmentation to the existing road network surrounding the site. This includes:

- new roadways within the development site, accessed from King Arthur Terrace
- realignment of King Arthur Terrace
- upgrades to Fairfield Road to provide additional turning lanes and cycle lanes.

All new internal roadworks will consist of flexible asphalt pavement and will be designed in accordance with Brisbane City Council Subdivision and Development Guidelines and the Brisbane Interim Flood Response to ensure they are at a level that provides flood-free access. Road widths and profiles will be defined by both a traffic engineer and urban designer, to determine the desired outcome.

With the exception of some sections of road required to transition to existing road infrastructure and levels, all new roads and development on the TOD will be built above the January 2011 flood level.

Earthworks

Significant earthworks within the site will be required to provide road levels that achieve flood immunity as well as the desired design outcome. Indicative site levels have been determined and concept road grading has been prepared for the TOD site. A preliminary earthworks plan of the site has been prepared to show the required road levels and to determine approximate earthworks quantities necessary for the development. It is assumed earthworks will only be provided within the roadways. Individual developers of the allotments will provide additional fill if required. This will minimise any additional fill required and also allow lower levels for basements of future developments. This plan shows the existing and developed flood storage for the pre-January 2011 flood level. It is expected that the overall flood storage for the Yeerongpilly TOD will be less than the current situation. Due to the site's proximity to the river and the capacity and flow of the river at this point, this reduction will have a negligible impact on future flooding risk.

Stormwater management

New stormwater infrastructure

A Conceptual Stormwater Drainage Layout has been prepared for the site, indicating preliminary pipe locations and sizes. The outlet pipes will connect to the existing 1350 millimetre diameter drainage lines crossing through the site and discharge to the Brisbane River.

Stormwater infrastructure required for the Yeerongpilly TOD includes a reticulated drainage system that filters run-off through bioretention basins before discharging into the Brisbane River as noted above.

In accordance with Brisbane City Council Subdivision and Development Guidelines and the Queensland Urban Drainage Manual, the piped drainage system has been designed to cater for the minor Q10 storm event. Hydraulic analysis has shown that the existing and proposed new stormwater reticulation system has the capacity to accommodate stormwater run-off to the requirements of the same Brisbane City Council Subdivision and Development Guidelines and the Queensland Urban Drainage Manual.

Changes to existing infrastructure

Development of the Yeerongpilly TOD will require a number of changes to the existing stormwater infrastructure. During realignment of King Arthur Terrace, the existing 900 millimetre diameter drainage line, crossing through this area, will be diverted within the road reserve, reducing the impact on future allotments. It is expected that the existing 1350 millimetre diameter stormwater line crossing through the western section of the site can remain, as per existing conditions.

Sewer infrastructure

Existing sewerage infrastructure

There is some sewer infrastructure on or in the vicinity of the site. This includes:

- a 150 millimetre diameter line within Ortive Street, close to the development site
- a private pump station within the site, servicing former development uses—it is expected that this will be decommissioned as part of the development of the Yeerongpilly TOD
- a pump station servicing the Queensland Tennis Centre and SRBC—it is understood from discussions with Queensland Urban Utilities (QUU) that this has been designed to cater for the original extent of the Tennyson Reach development, which will not now occur beyond the three buildings that have been constructed. It will be investigated as to whether this pump station has any ability to assist with the future development of the Yeerongpilly TOD
- a sewer line from the SRBC to the existing pump station south-west of the site.

Sewer loading

The total equivalent persons expected for the Yeerongpilly TOD has been calculated at between 2800 and 3000 equivalent persons. This figure is not indicative of the number of potential future residents but a cumulative figure which takes into account the commercial and retail demand on the sewer system as well.

Required sewerage infrastructure

It is acknowledged that the Allawah Street/Moolabin Crescent precinct has experienced significant wet weather sewage overflows in the past. In 2010, an investigation by QUU indicated that the surcharging originated from downstream in the Moolabin Creek trunk sewer. This then backed up into the local sewer reticulation. As a result of this finding, a new overflow structure was installed in May 2012 to protect the properties in the lower areas in the Allawah Street/Moolabin Crescent precinct. Following construction, QUU advised they have not recorded any sewage overflow complaints from this precinct.

Notwithstanding this advice, local resident concerns expressed during the consultation phase of the Yeerongpilly TOD in early 2014 prompted a request to QUU and consultant engineers to try to find alternate solutions to manage the impact of the sewer load from the Yeerongpilly TOD on the Allawah Street sewer.

This investigation concluded that there are no other suitable alternative connection points to the local trunk sewer system other than to the Moolabin Creek trunk sewer in the Allawah Street/Moolabin Crescent precinct. However, the future developer of the TOD site will be required to construct a new higher-capacity 300/400 millimetre diameter gravity sewer line from the site to the Moolabin Creek trunk sewer line via Palomar Road and Moolabin Crescent. QUU have advised that this solution, along with the existing overflow structure will accommodate the additional flows from the TOD, maintain QUU's Level of Service Standard for the area and provide satisfactory future sewer performance in wet weather in the Allawah Street/Moolabin Crescent precinct. A small portion of the development fronting Ortive Street and King Arthur Terrace will discharge to the existing 150 millimetre diameter sewer within Ortive Street that drains north to Yeronga.

Water infrastructure

Existing water infrastructure surrounding the site includes:

- a 300 millimetre diameter ductile iron trunk water main crossing through the eastern section of the site—this approximately follows the alignment of Fairfield Road
- a 200 millimetre diameter water main on the southern side of King Arthur Terrace.

It has been demonstrated that the existing water infrastructure surrounding the site is of sufficient capacity to service the proposed development. It is proposed that a network of 150 and 200 millimetre diameter water mains are provided within the site. These will connect to the existing 200 millimetre diameter water main and the existing 300 millimetre diameter water main within the site. It is expected that during the subdivision, both the existing 200 and 300 millimetre diameter mains will be diverted. A full hydraulic model of the site will be prepared during detailed design to determine final pipe sizes. This will be based on projected demands per allotment and boundary conditions supplied by QUU.

6. Implementation

The development of the infrastructure, and therefore improved lots, at the Yeerongpilly TOD is expected to occur in three main stages as shown in Figure 21. EDQ, a state government streamlined business unit, are tasked with the development, marketing and sale of infrastructure and land at Yeerongpilly TOD.

The SRBC building was opened in July 2012 and some of the in-ground services for Stage 1 have been installed as part of this project.

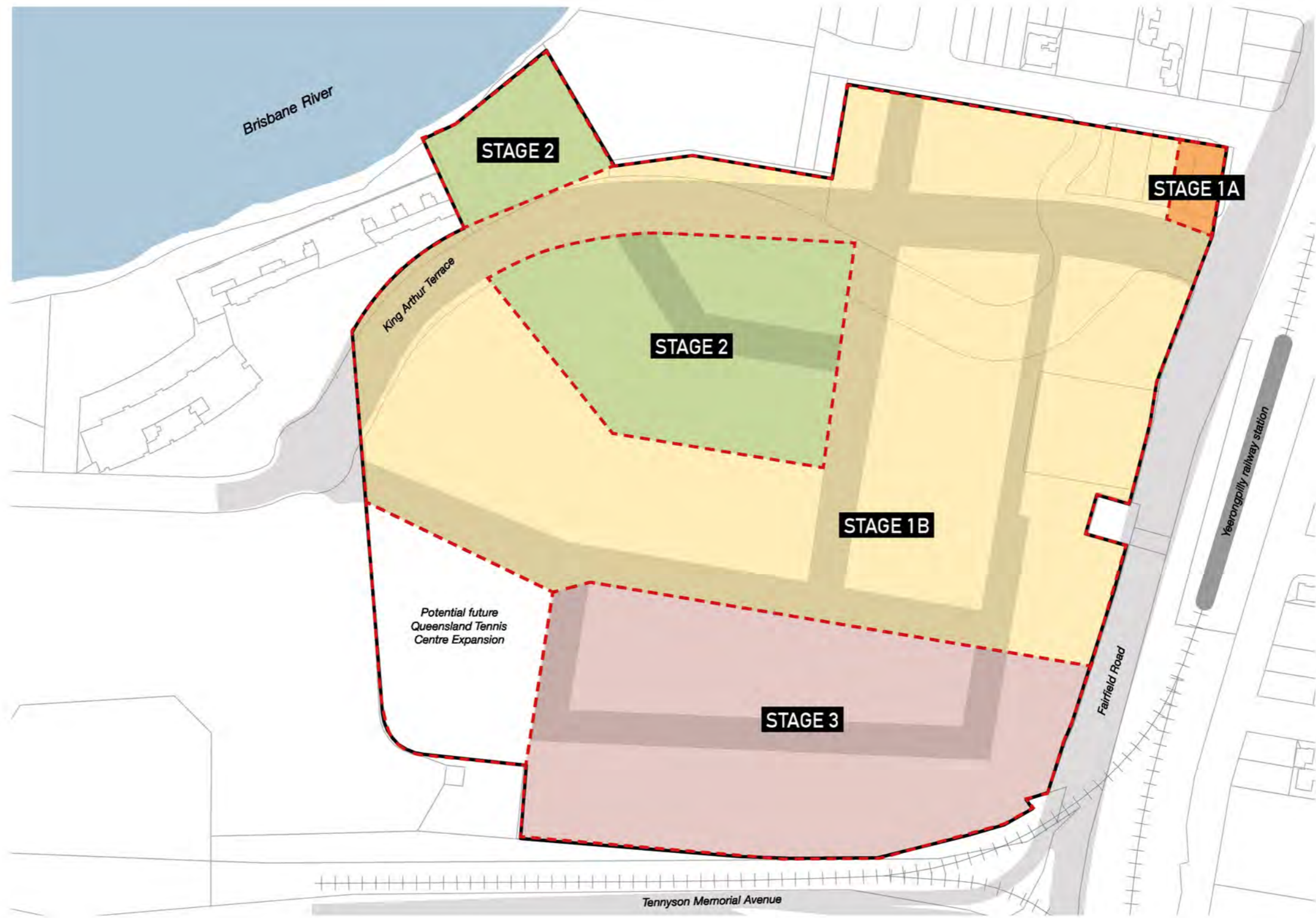
Stage 1A is a site proposed to be developed as a respite centre for children and young adults with a physical disability by the MontroseAccess organisation.

The realignment of King Arthur Terrace will occur as a part of Stage 1B. This stage will include development of the large park in the west of the TOD, Main Street and parts of the East-West Connector street. This stage will deliver at least eight major development sites totalling over 30,000 square metres of developable land. The improved sites will be sold to and developed by the private sector.

Stage 1B will allow the release and development of the retail core and spine of the TOD and this will deliver significant amenity to the new residents and those existing residents in the surrounding area.

Stages 2 and 3 will follow with timing dependant on market demand. At this stage the development horizon for the project is beyond 2020.

Although the Detailed Plan of Development has allocated land in the south-west corner of the site for the potential future expansion of the Queensland Tennis Centre, no commitment has been given to fund the development of these facilities and any such expansion would occur independently of the other stages identified above.



 Stage boundary

 Site boundary

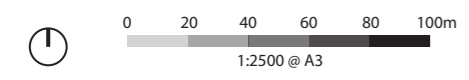


Figure 21: Staging plan

Abbreviations

AEP Annual Exceedance Probability

AHD Australian height datum

ARI Animal Research Institute

BSD Brisbane statistical district

CBD central business district

CPR community planning representatives

CPTED crime prevention through environmental design

DFL defined flood level

DILGP Department of Infrastructure, Local Government and Planning

EDQ Economic Development Queensland

GFA gross floor area

LGA local government area

LRV large rigid vehicle

SPRP state planning regulatory provision

SRBC South Regional Business Centre

TAPS Transport, Access, Parking and Servicing (Policy)

TOD transit oriented development

QDC Queensland Development Code

QHR Queensland Heritage Register

