FINAL SEPTEMBER 2022

Designing Leppington Town Centre

URBAN DESIGN & LANDSCAPE REPORT

Status	Amendments	Checked By	Date
First Draft	-	CM	15.10.2021
Second Draft	As per Council Storyboard	CM	14.01.2022
2.1 Draft	Map updates to reflect revised Height Strategy	CM	21.01.2022
Final Draft	As per Council comments 09.02.2022 and clarifications 09.03.2022	CM	24.03.2022
Final	As per Council comments 28.08.2022 and 29.08.2022	CM	12.09.2022

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Acknowledgement of Country

We acknowledge the Dharawal people as the traditional custodians of this land and pay our respect to their Elders past, present and emerging.

Contents

1. The Vision

In 2021 Camden Council undertook preliminary community engagement to compare consultation and work by the Department of Planning and Environment to local community needs. This preliminary community engagement, and the strategic context of the town centre, helped form the Vision for Leppington Town Centre.

The vision for Leppington Town Centre is:

Leppington Town Centre will grow into a transit-oriented strategic centre within the Western Parkland City. A public domain green network will focus on the existing natural creek lines and connect to the main town centre core and railway station. The built form will be high quality with a range of densities and building heights increasing with proximity to the Centre/ Station. Both the public domain and built form of Leppington Town Centre will reflect, acknowledge and celebrate its connection with Country.

Active and people focussed

The vision for the Leppington Town Centre is for it to become a major new strategic centre within the Western Parkland City of Sydney. In close proximity to the Western Sydney Aerotropolis and with a station providing direct access to Liverpool and Sydney CBD, Leppington Town Centre will be a people and lifestyle focused place, transit oriented and highly convenient with major shopping, cultural and recreation facilities. It will have a multiple education and health facilities, as well as convenient industrial and urban services space on its fringe. Both the public domain and built form of Leppington Town Centre will reflect, acknowledge and celebrate its connection with Country.

A green urban centre

A public domain green network will be focused on the existing natural creeklines and be connected to the town centre core and railway station. The built form will be high quality with a range of densities and building heights increasing with proximity to the Centre and Station. Streets, public and private open spaces will be lined with green tree canopy and have cool outdoor spaces. Leppington will be resilient to urban heat and known for its highly sustainable buildings, spaces and lifestyle.

Convenient and connected

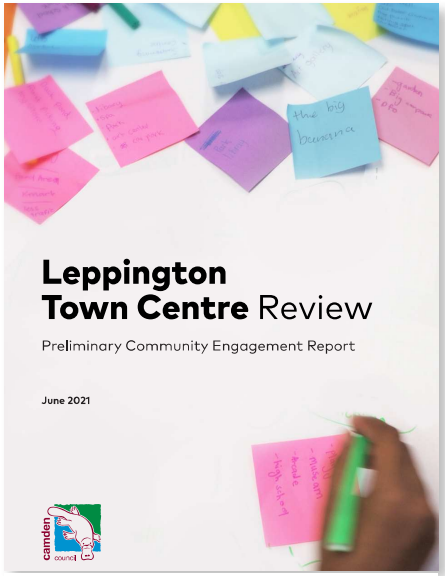
As a strategic centre in the Western Parkland City, Leppington Town Centre will provide much needed homes, jobs, services and a civic hub with high frequency trains and rapid bus to Bradfield in the Aerotropolis, to Liverpool CBD and to greater Sydney, complementing the concept of a 30-minute city. Convenience is never far away with fine grain retail, eat streets, entertainment and excellent transport connections to the station at the heart of the centre, and the surrounding area. The range of active transport options through permeable streets and spaces will be a key feature of Leppington, providing access from the outer areas to the centre core. Services, schools, community education and cultural activities will be all within walking distance and people of all ages will feel safe riding bikes through leafy streets on a network of separated cycleways within a 10-minute neighbourhood.

A well-designed built environment

The centre will be known as a smart and innovative city with architecturally designed, sustainable and diverse buildings that open to a vibrant public domain. Streets of varying nature and function will be leafy, human scaled and lined with active and engaging building frontages. A linear high street is planned with fine grain retail and entertainment activated by eat streets, parks and plazas with events and interactive public art including indigenous art. Active and engaging street frontages offer access throughout the town centre for cyclists and pedestrians while also creating a sense of place. Above street level, rooftop spaces with shared views to cityscapes and landscapes will act as places to relax and connect with others.

Complementary to its natural environment

The built environment is to be complemented by a local open space network focused on three restored and enhanced natural creeks (Kemps, Scalabrini and Bonds Creeks). Urban plazas, parks, sports fields, bush reserves and walking trails will connect kilometres of local open space to the Western Sydney Parklands and the regional open space network creating a green grid. Streets, planned in detail will provide desirable tree planting of indigenous tree species and an environmental function, as well as their transport function.



Community engagement

PLACEHOLDER FOR 3D RENDER (VIRTUAL IDEAS)

Figure 1: Artist Impression of Leppington Town Centre

2. Introduction

Leppington Town Centre is located in the South West Priority Growth Area focused around Leppington Station. It comprises a range of land use zones including mixed use, residential, business, industrial, open space and infrastructure across the Local Government Areas of Camden and Liverpool.

Leppington Town Centre was originally rezoned for urban development in 2013 as part of the Austral and Leppington North Precincts under the State Environmental Planning Policy (Sydney Region Growth Centres) 2006. An Indicative Layout Plan (ILP) for the Leppington Town Centre was prepared together with site specific development controls (Schedule Two – Leppington Major Centre).

Despite the new train station and upgrades to Bringelly Road and Camden Valley Way, the take up of development opportunities in Leppington Town Centre since its rezoning in 2013 has been limited due to fragmented land ownership and constraints in the provision of other enabling infrastructure and services (Greater Sydney Commission, 2020).

In 2017, NSW Department of Planning, Industry and Environment initiated a review of Leppington Town Centre in response to the lack of development within the Precinct and the change in strategic context following the release of the Western City District Plan and the announcement of the Western Sydney Airport and Aerotropolis.

In 2019, in accordance with DPIE's New Approach to Precincts, the project was handed over to Camden and Liverpool Councils to progress the review and rezoning process.

This report, ***Designing Leppington Town Centre***, sets out the vision and the urban design and landscape intent that underpins Council's Draft Planning Package, specifically the Draft Indicative Layout Plan, Draft SEPP provisions and Draft DCP controls.

The structure of this report is as follows:

1.	**Vision**	Sets out the vision for Leppington Town Centre.
2.	**Introduction**	Provides the background for the project, impetus for the Town Centre review and precinct planning process to date.
3.	**Urban Design Principles**	Outlines the key design principles which have informed the Draft ILP.
4.	**Draft Indicative Layout Plan**	Outlines the key changes from the current ILP.
5.	**Designing for Amenity**	An overview of urban design testing undertaken to ensure key spaces in the public domain are not adversely impacted by overshadowing.
6.	**Open Space**	An overview of open spaces and their connection to the regional blue green grid.
7.	**Public Domain**	An overview of the key principles and elements of the public domain.
8.	**Urban Form**	Explains the height strategy, setbacks and key site specific design controls in the Draft DCP.
9.	**Conclusion**	Summary of the above elements.
Appendices		The full suite of urban design and landscape drawings incorporated in the Draft DCP.

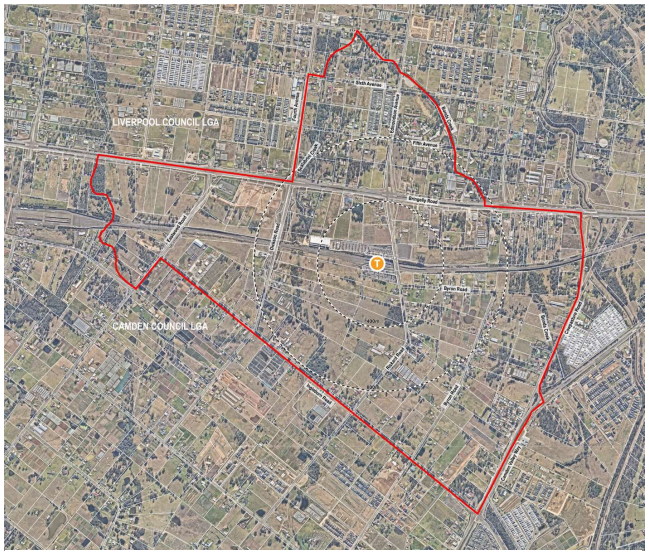


Figure 2: Leppington Town Centre

Figure 3: Leppington Station

3. Urban Design Principles

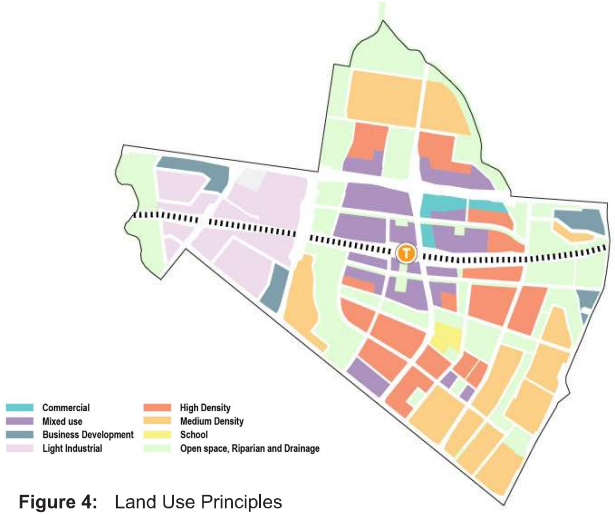


Figure 4: Land Use Principles

Land Use

- Land uses are structured in response to Country and its waterways and landscape as well as Leppington Station.
- Within walking distance of Leppington Station, provide for a range of high order employment, civic, health, education, community and recreational uses commensurate to Leppington Town Centre's role as a Strategic Centre.
- Establish a major retail core immediately south of Leppington Station, as well as a 24-Hour Zone focused around the station, to create a vibrant day time and night time economy.
- Provide for medium to high density residential uses around the mixed use core that can accommodate a diversity of housing types, including affordable housing.
- Retain light industrial uses to the west of Dickson Road as a buffer to the train stabling yards. Locate less noise-sensitive uses such as commercial, light industrial and business development uses along Bringelly Road and Camden Valley Way as a buffer to mixed and residential uses.
- Within the town centre core, concentrate retail, commercial and community uses at the ground level to encourage street activity. Where residential uses are located at ground level, they should be designed to maximise access to the street to contribute to street activity.

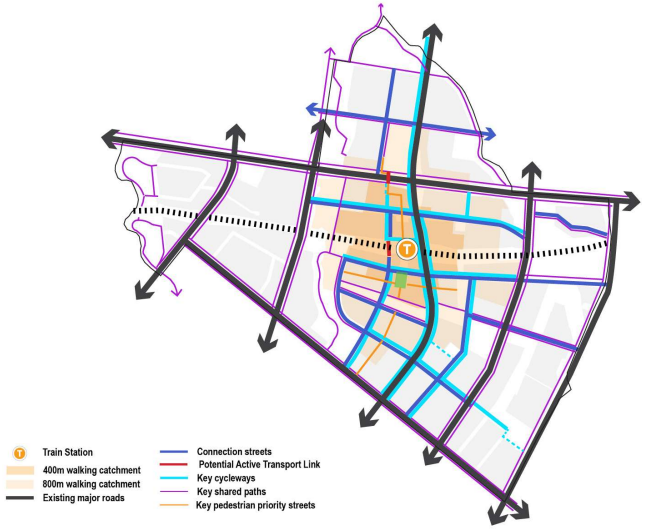


Figure 5: Access and Movement Principles

Access and Movement

- Establish a high level grid network by reinforcing existing north-south streets that provide connectivity across Bringelly Road and the railway line, and by providing new east-west streets that provide connectivity between Kemps Creek, Scalabrini Creek, Bonds Creek and Camden Valley Way.
- Provide a permeable grid of streets that integrates pedestrian, cycle and public transport networks with direct links to key public places and recreational assets.
- Establish a legible hierarchy of streets comprising a range of street types including transit boulevards, boulevards, town centre streets, local streets, laneways, and pedestrian priority streets.
- Reinforce the role of Leppington Station as an important transport interchange node by maximising connectivity with bus routes, commuter car parking, cycle routes and key pedestrian streets.
- Encourage active transport via the provision of an interconnected network of dedicated uni directional and bi directional cycleways, shared paths, and pedestrian priority streets that connect to Leppington Station, regional active transport corridors and key destinations such as Western Sydney Parklands and Leppington Park.
- Locate commuter car parking at the periphery of the town centre core and within 400m of Leppington Station (rather than immediately adjacent to it), to encourage street activity, economic activity and vibrancy between the carpark and the station entry.
- Provide a system of pedestrian priority streets and laneways that connect to key destinations within the Town Centre to encourage street activity.

Figure 6: Urban Form Principles

Urban Form

- A density pyramid approach to urban form is to be adopted with the highest densities concentrated around Leppington Station (the Core), medium to high densities within the 800m walking catchment (the Periphery), and medium densities towards the edges (the Frame).
- Building heights are to be articulated (not uniform) to emphasise corners, be at human scale and minimise overshadowing impacts, particularly to key open spaces. Generally taller buildings are to be located along north-south streets and lower buildings along east-west streets.
- Landmark buildings are to be located at key locations, such as gateways and along/terminating important vistas.
- The ground floor of buildings is to be designed to contribute to street activity and amenity, safety and surveillance.
- Rooftops are to be designed as multi-functional spaces, catering for a range of activities, from active uses such as rooftop bars and playing courts to passive uses such as community open space, gardens and solar harvesting.
- Built form should be designed for adaptability and resilience, such that it can respond to future social, environmental, technological and economic transformations as well handle environmental shocks and stresses (such as bushfire and flooding).

Figure 7: Public Realm Principles

Public Realm

- Connection to Country, the landscape and waterways are to be the key structuring elements of the master plan.
- Establish a blue-green grid that reinforces existing north-south spines Scalabrini Creek, Bonds Creek and Kemps Creek (as natural green spines). Compliment the existing north-south spines with a new north-south pedestrian spine (as an urban spine). Ensure linear parks, parks and streets act as east-west spines to create an integrated open space network.
- Provide a diversity of public open spaces that cater for various uses and reflect the existing local/desired future character of the town centre. Open spaces will range from large gathering and recreational spaces such as the Civic Park and sporting fields, to riparian corridors, urban parks, linear parks, local pocket parks and landscaped reserves for passive recreation and as movement corridors.
- Create active and safe streets by connecting key urban, social and recreation destinations; providing for active ground floor uses within the town centre core; ensuring high quality streetscape design and maximising opportunities for passive surveillance from residential buildings.
- Co-locate social infrastructure (aquatic / indoor recreation centre, education, community centre, health facilities) with key public open spaces and public transport to provide hubs for social interaction.
- Establish visual connections between key public spaces and social infrastructure to enhance perception of the public realm.

Figure 8: Sustainability & Resilience Principles

Sustainability and Resilience

- The design of streets and open spaces should maximise tree canopy and buildings should incorporate passive solar design to mitigate urban heat.
- Compact and efficient development forms are encouraged to minimise energy and resource consumption.
- Regenerate and conserve existing creek lines as natural assets.
- The design of streets and open spaces are to maximise safety from natural hazards such as bushfire and floods.
- Water sensitive urban design principles are to be incorporated for all new development.

Figure 9: Infrastructure Principles

Infrastructure

- As a Strategic Centre, Leppington Town Centre should be designed to support both regional and local infrastructure.
- The layout of roads and development parcels should facilitate logical staging and sequencing of infrastructure. (i.e. follow property boundaries where possible).
- Flexible use, quality embellishment and efficient sizing of public infrastructure is preferred to ensure efficient use of land and minimise costs.
- Community and education facilities should be co-located with public open spaces where possible to encourage sharing of recreational spaces and facilities.
- Tree planting and landscape vegetation are to be integrated into the design of roads.

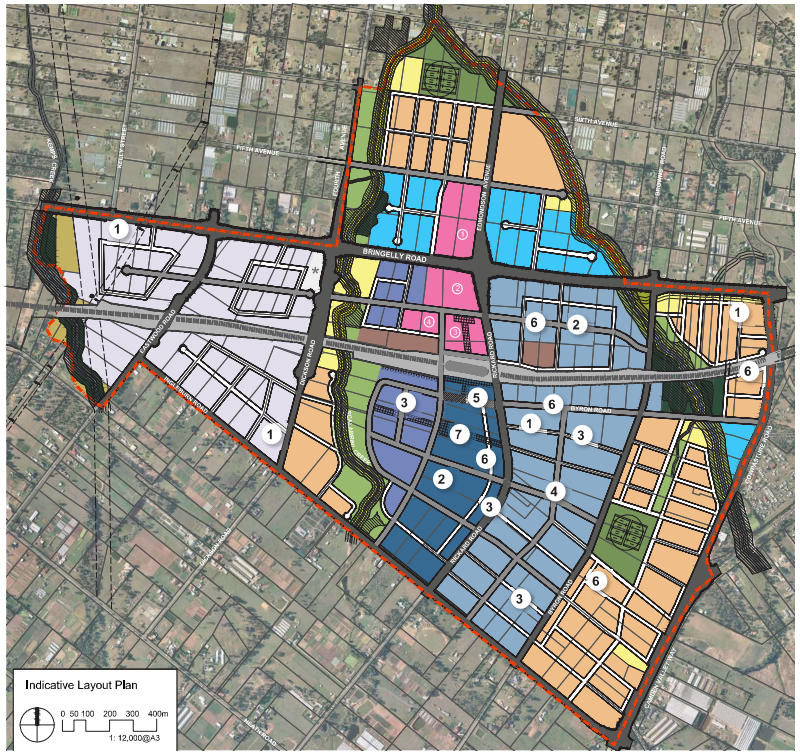
4. The Draft Indicative Layout Plan

The key changes proposed to the Indicative Layout Plan are outlined below and illustrated in Figure 10 and Figure 11.

Map Ref	Proposed Change	Rationale
1	Reallocation of employment-commercial focused land in favour of mixed and residential uses.	Due to the lack of business park development within the town centre, and the likelihood for future demand to gravitate towards Western Sydney Airport and the Aerotropolis (HillPDA, 2021), land identified as 'Business Park' in the current ILP is proposed to be replaced with a combination of mixed use, commercial, and residential uses to provide for future flexibility.
2	A finer grain urban layout	The introduction of more residential uses within the town centre requires a more permeable, walkable, and pedestrian and cycle friendly street grid, as opposed to campus-style blocks that are suited to large scale employment uses. A hierarchy of streets is proposed, incorporating pedestrian-focused and cycle-friendly street types.
3	More jobs and houses focused around the station as opposed to campus style employment	Employment uses are focused within 800m of Leppington Station, within the B3 Commercial Core zone and at the ground floor of mixed use buildings. High density residential uses are also proposed within 800m of the station to take advantage of convenient access to the station and where public amenity is at its greatest.
4	Identification of the retention of Leppington Public School and co-location of playing fields	The Draft ILP identifies the site of Leppington Public School to be retained together with land for future expansion. The playing fields at Byron Road are co-located with the school site to support state government investment in the town centre.
5	Create a more legible town centre 'heart'	The vehicular connection immediately west of Leppington Station is now proposed to be a pedestrian only connection. This creates the opportunity to shift the main north-south movement spine to the central axis of the station and realign surrounding urban plazas/spaces to anchor that movement. Given the future density of the town centre, it is proposed that a large Civic Park (approx. 8,000m^2) be located south of the station, capable of accommodating larger community events and providing a combination of green space and urban plaza space. This will create more legible and central 'heart' for the town centre.
6	New network of connected open spaces	The introduction of more residential uses within the precinct will require the provision of more public open space. An interconnected network of parks, linear parks and landscape road reserves are proposed.
7	Greater articulation in building heights	The current ILP provides limited variation in building height, ranging from 6 to 9 storeys in the core and 3 to 4 storeys in the peripheral areas. The introduction of higher FSRs within the core of the town centre (in response to the recommendations of HillPDA's Market Demand Analysis) provides the opportunity to better articulate heights in the form of a 'density pyramid' – with taller heights near the station and tapering down to the residential and light industrial edges of the precinct.

Table 1: Key changes proposed to the Leppington Town Centre Indicative Layout Plan

Leppington Town Centre ILP 2012



Key Changes

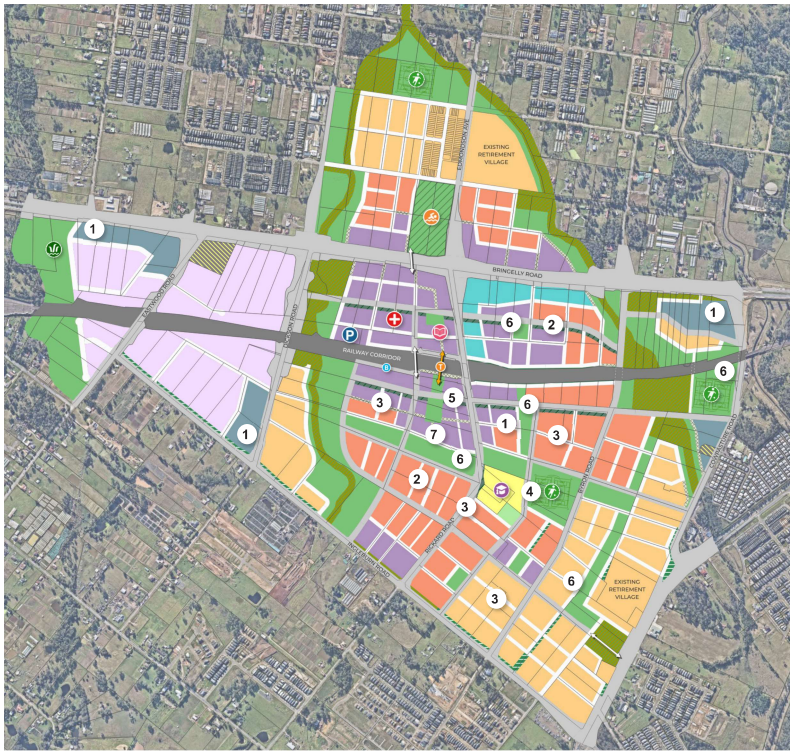
1. Redistribution of business development land.
2. A finer grain urban layout
3. More jobs and houses focused around the station as opposed to campus style employment
4. Identification of the retention of Leppington Public School and co-location of playing fields
5. Create a more legible town centre 'heart'
6. New network of connected open spaces
7. Greater articulation in building heights

LEGEND

- Site Boundary
- Existing Creeks
- Environmental Protection Overlay
- Light Industrial
- Civic Precinct : 1 - Indicative Aquatic/Indoor Recreation Location
  2 - Indicative TAFE Site
  3 - Indicative Cultural/Community Centre Location
  4 - Indicative Health Facility Location
- Mixed Use
- Commercial / Business Park
- Bulky Goods Retail
- Retail Core
- Medium Density Residential
- Rural Transition
- Passive Open Space
- Private Open Space
- Active Open Space
- Environmental Conservation
- Drainage
- Bus Interchange
- Commuter Carpark
- Indicative Substation Site
- Major Roads
- Primary Roads
- Road Subject to Flood Plain Filling Assessment
- Rail Corridor And Leppington Station
- Transmission Easement
- Plaza / Pedestrian Link

Figure 10: Leppington Town Centre ILP 2012 currently in force (Source: DPE)

Proposed Draft Leppington Town Centre ILP 2022



Legend

- Commercial
- Mixed Use
- Business Development
- Light Industrial
- Medium Density Residential
- High Density Residential
- Railway Corridor
- Public Recreation
- Private Recreation
- School
- Utilities Infrastructure
- Drainage and Riparian
- Landscaped Road Reserve
- Linear Plaza
- Road
- Pedestrian Priority Street
- Recreation Facility
- Education
- Playing Field
- Health Hub
- Nature Reserve
- Commuter Car Park
- Community Centre
- Train Station
- Bus Interchange
- Primary Active Link
- Proposed Active Link

Figure 11: Proposed Draft Leppington Indicative Layout Plan

5. Designing for Amenity

The draft plans (ILP, DCP and SEPP Precinct Plan) provide for floor space ratios (FSR) based on analysis of the recommendations of Hill PDA's Market Demand Analysis (April 2021), floor space and dwelling yields and likely built form character outcomes.

Proposed FSRs

The proposed FSRs are shown in Figure 12 and below:

- 3.5:1, 4.0:1 and 4.5:1 within 400m walking distance from Leppington Station;
- 2.5:1, 2.8:1, 3.5:1 and 4:1 within 800m walking distance from Leppington Station; and
- 1.8:1, 2.0:1 and 2.8:1 immediately outside of 800m walking distance from Leppington Station.
- 1.2:1 and 1.5:1 for employment and residential uses at the periphery of the town centre.

The draft SEPP Precinct Plan will also introduce incentive bonus FSRs for:

- Low carbon buildings: up to 0.25:1.
- Inclusionary affordable housing: up to 0.25:1 in residential zones and 0.5:1 in the mixed zone.

The densities proposed in the town centre core are of a similar scale to other strategic centres such as Green Square Town Centre and Victoria Park in Zetland. Accordingly, future development in Leppington Town Centre will require robust DCP controls to ensure optimal urban outcomes, particularly with regard to public open space amenity.

Built Form Modelling

3D modelling of built form was undertaken to:

- Identify reasonable building heights that could achieve the proposed FSRs, taking into consideration potential FSR bonuses, room for active rooftops and the application of building envelope assumptions that achieve the various desired building typologies. Further details on maximum building heights are provided in Section 8.1.
- Test the overshadowing impact of such heights on key open space within the town centre.
- Inform DCP controls to ensure adequate solar access to key open spaces in the town centre.

Key built form principles and assumptions include:

- Building envelopes comprise a podium with tower elements set back above.
- Taller street walls/podium heights along north-south streets (generally 6 storeys) and lower street walls/podium heights along east-west streets (generally 4 storeys) to minimise overshadowing beyond the street.
- Building heights are articulated with taller towers at important corners and lower built form in between.
- Tower elements have a maximum floorplate of approximately 750m².
- SEPP 65 minimum building separation distances to be adhered to.

3D modelling and shadow analysis of building envelopes was undertaken for select areas

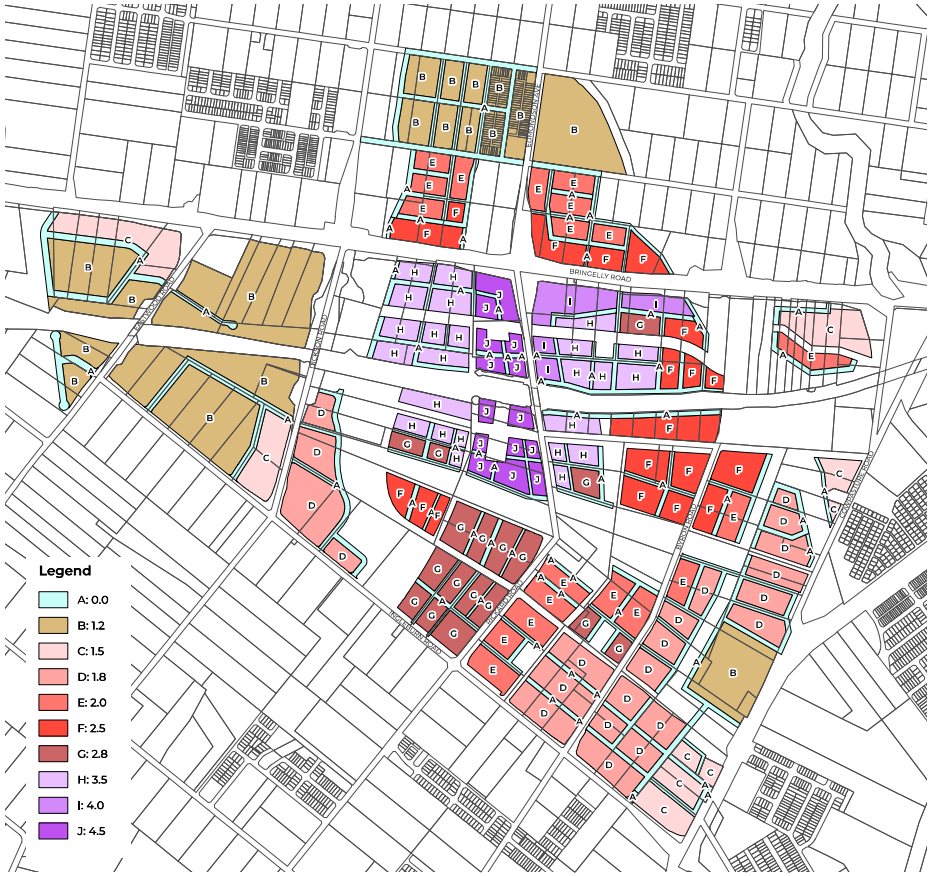


Figure 12: Proposed FSR

of the town centre to test whether adequate sunlight access to key public open spaces could be achieved with the proposed FSRs. 49 sites across 5 key areas were modelled, based on their proximity to key open spaces, as shown in Figure 13.

Modelling Assumptions

- 25-50% of potential bonuses realised in western core area (Areas A and C).
- 50-75% of potential bonuses realised in eastern core area (Areas B and D).
- 50% of potential bonuses realised in middle/ fringe area (Area E).

The modelling scenario assumes that not all bonus FSRs would likely be 'taken-up' and not all sites would be expected to achieve all bonuses in maintaining minimum sunlight access requirements to key open spaces.

Hourly shadows were modelled between 9am and 3pm on 21 June (winter solstice). The percentage of open space that receives sunlight between 9am and 3pm was then calculated for the following open spaces:

- Town Centre Plaza.
- Railway Square.
- Civic Park.
- Community Spine.

For the balance of other key open spaces, shadow diagrams were sufficient to determine (visually) that such open spaces would receive adequate solar access.

Findings

- Most key open spaces could receive more than 50% direct sunlight for 4 hours between 9am and 3pm during winter solstice, with the exception of Town Centre Park 1 and the central section of the Community Spine.
- Town Centre Park 1 and the section of the Community Spine immediately west of Rickard Road will receive 2 to 3 hours of direct sunlight during winter solstice.
- All key open spaces could receive more than 50% direct sunlight during the lunchtime period (12pm to 2pm) during winter solstice.

An overview of the findings are provided in the following sections. It should be noted that the 3D model represented in the following figures is indicative only. Refer to Appendix A for the full suite of shadow diagrams and calculations.

Figure 13: Sites subject to FSR testing and shadow analysis

5.1 Area A – Bringelly Road (west of Rickard Road)

The key open spaces in Area A include the Town Centre Plaza and the western section of Linear Park North. FSRs up to 4.5:1 have been modelled in this area.

The modelling indicates that the FSRs can generally be achieved with 4 to 6 storey podiums and 12 to 14 tower elements, with up to 18 storeys at the corner of Rickard Road and Bringelly Road.

The shadow analysis indicates that:

- Town Centre Plaza will receive more than 50% sunlight between 10am and 2pm.
- 4 storeys podiums with upper levels setback up to 6 storeys will not overshadow Linear Park North. Tower elements taller than 6 storeys will not adversely overshadow Linear Park North provided they are limited to corner sites only.

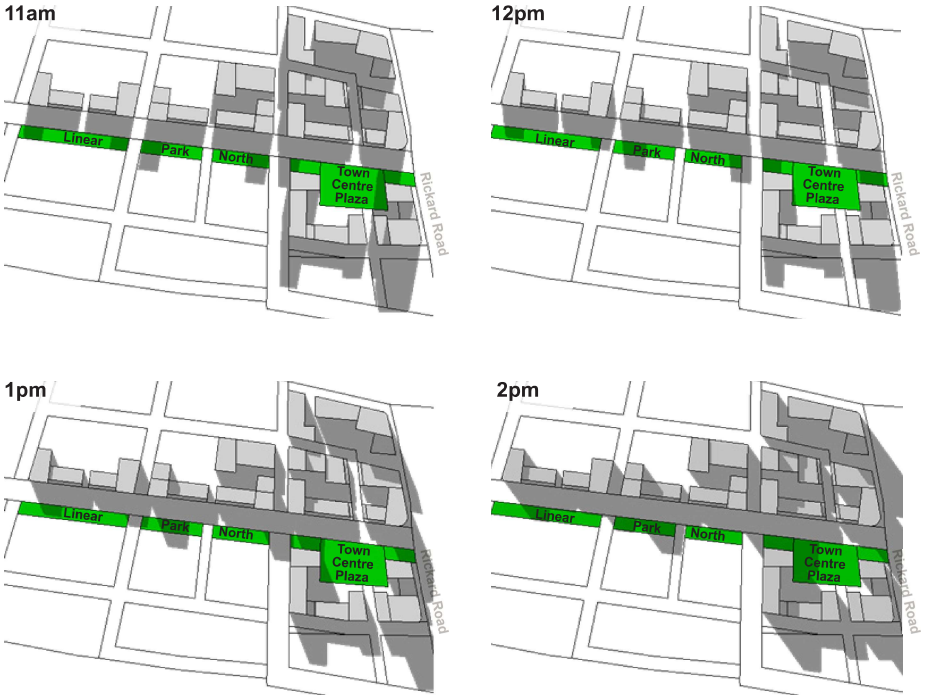


Figure 14: Shadow diagrams of Area A between 11am and 2pm winter solstice

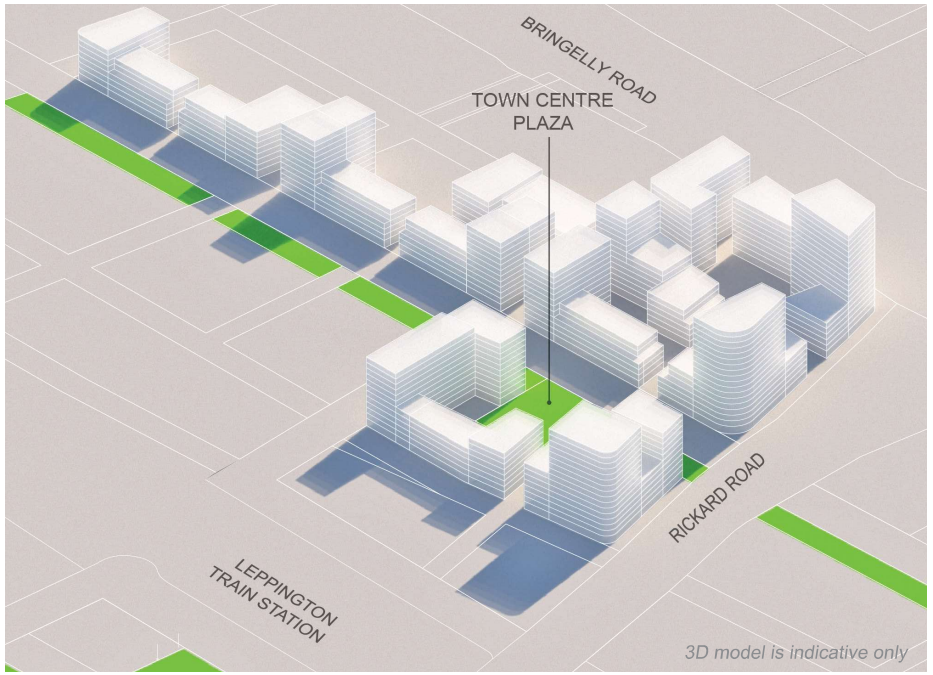


Figure 15: Isometric view across the site looking north-west

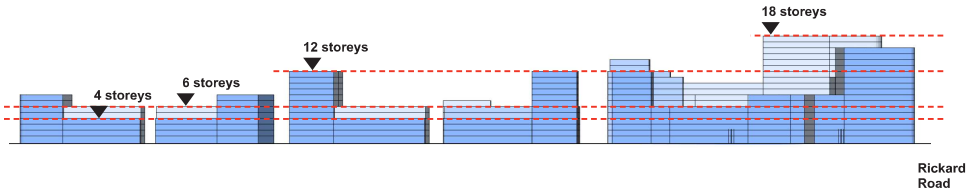


Figure 16: Southern elevation of Area A (view looking north)

5.2 Area B – Bringelly Road (east of Rickard Road)

The key open spaces in Area B include Town Centre Park 1 and the eastern section of Linear Park North. FSRs up to 4.5:1 have been modelled in this area.

The modelling indicates that the FSRs can generally be achieved with 4 to 6 storey podiums and 8 to 12 storey tower elements, with up to 18 storeys at Bringelly Road.

The shadow diagrams indicate that:

- Town Centre Park 1 will receive more than 50% sunlight between 11am and 2pm.
- 4 storeys podiums with upper levels setback up to 6 storeys will not overshadow Linear Park North. Tower elements taller than 6 storeys will not adversely overshadow Linear Park North provided they are limited to corner sites only.

Figure 17: Shadow diagrams for Area B between 11am and 2pm winter solstice

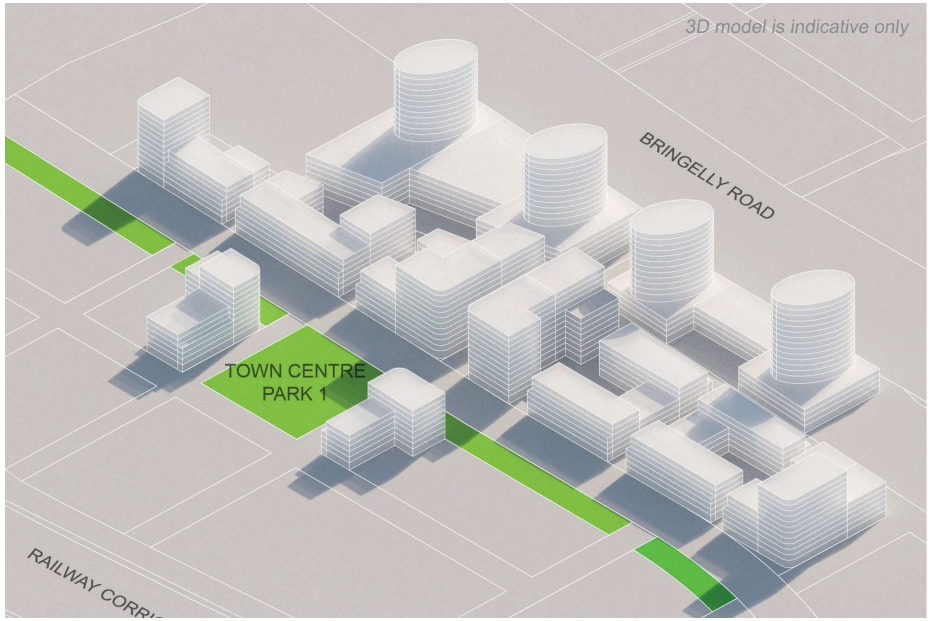


Figure 18: Isometric view across the site looking north-west

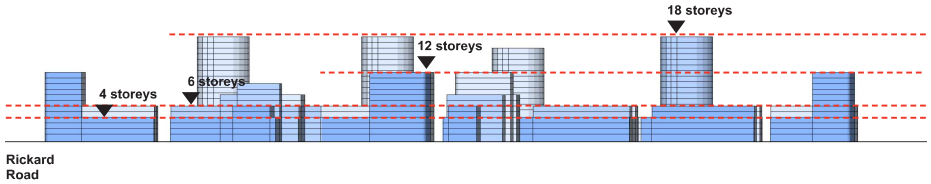


Figure 19: Southern elevation of Area B (view looking north)

5.3 Area C – Civic Park, Railway Square and Community Spine (west of Rickard Road)

The key open spaces in Area C include the Civic Park, Railway Square and the Community Spine. FSRs up to 4.5:1 have been modelled in this area.

The modelling indicates that the FSRs can generally be achieved with 4 to 6 storeys podiums and tower elements up to:

- 12 to 14 storeys along Scalabrini Creek.
- 16 storeys adjacent to the station.
- 20 storeys south of the Civic Park.

To ensure optimal solar access to the Civic Park, building height immediately surrounding the park is limited to 3 to 4 storeys

The shadow analysis indicates that more than 50% of sunlight access will be received at:

- Civic Park between 9am and 2pm.
- Railway Square between 10am to 3pm.
- Community Spine (toward Scalabrini Creek) between 9am and 1pm.
- Community Spine (toward Rickard Road) between 11am and 1pm.

4 storey podiums with upper levels setback up to 6 storeys will not overshadow Linear Park South. Tower elements taller than 6 storeys will not adversely overshadow Linear Park South provided they are limited to corner sites only.

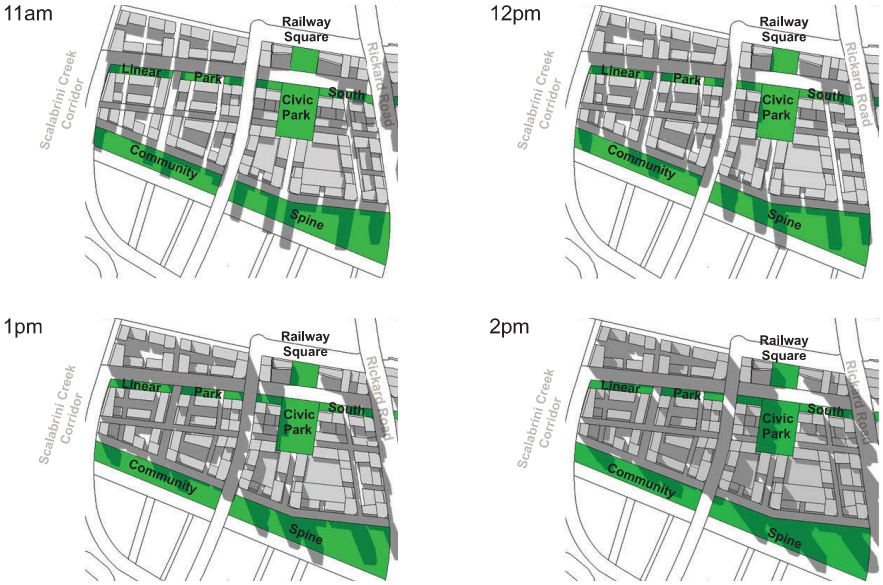


Figure 20: : Shadow diagrams for Area C between 11am and 2pm winter solstice

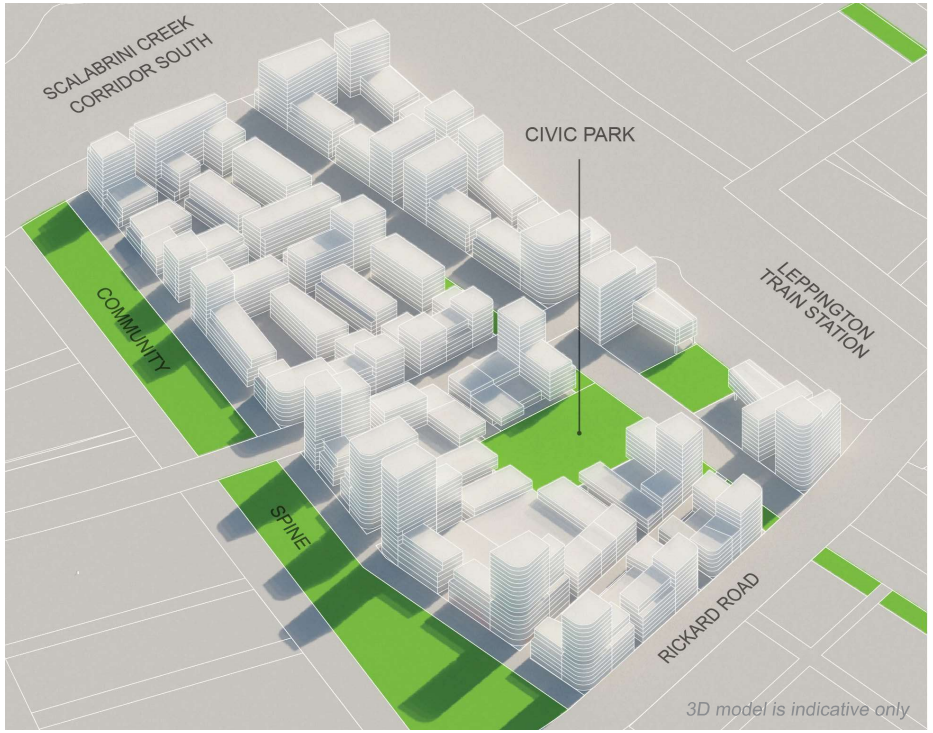


Figure 21: Isometric view across the site looking north-west

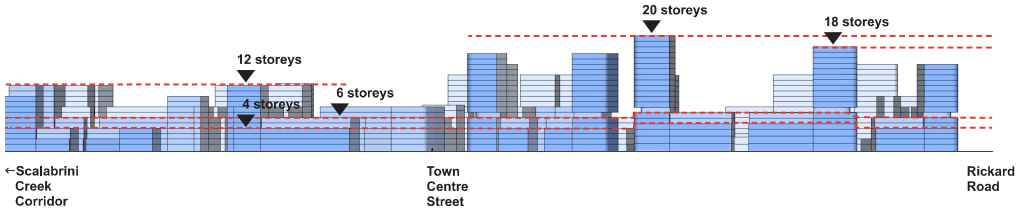


Figure 22: Southern Elevation of Area C

5.4 Area D – Town Centre Park 2, Green Corridor (East of Rickard Road) and Byron Road Sport Precinct

The key open spaces in Area D include Town Centre Park 2, Community Spine, and Byron Road Sport Precinct. FSRs up to 3.5:1 have been modelled in this area.

The modelling indicates that the FSRs can generally be achieved with 4 to 6 storey podiums and 8 to 12 storey tower elements, with up to 14 storeys at Rickard Road.

The shadow diagrams indicate that:

- Town Centre Park 2 will receive more than 50% sunlight between 9am and 2pm.
- Community Spine will receive more than 50% sunlight between 9am and 2pm.
- Byron Road Sport Precinct will receive more than 50% sunlight between 9am and 3pm.

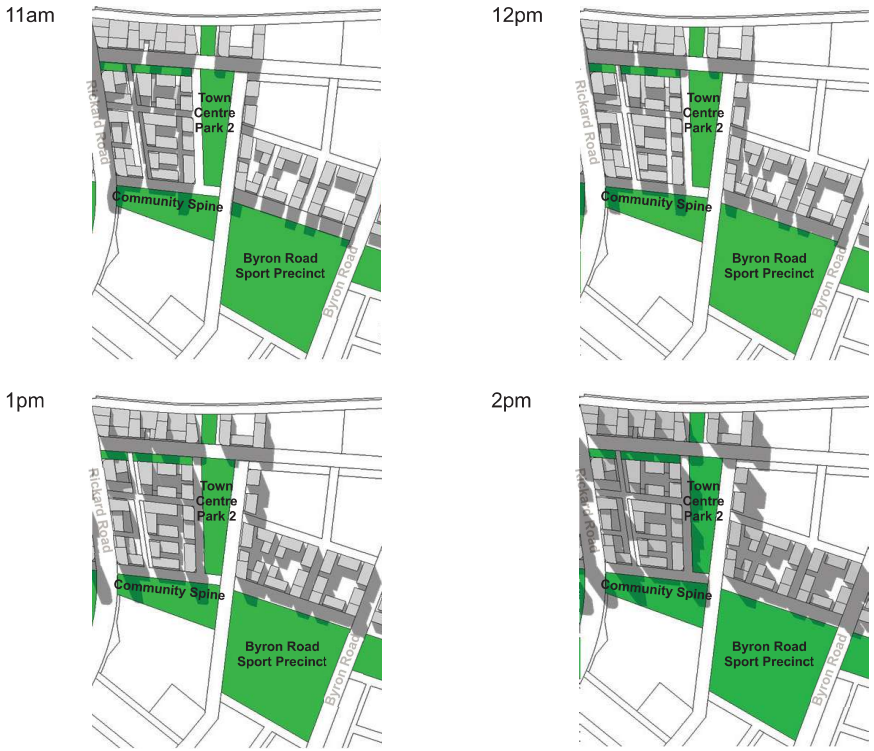


Figure 23: Shadow diagrams for Area D between 11am and 2pm winter solstice

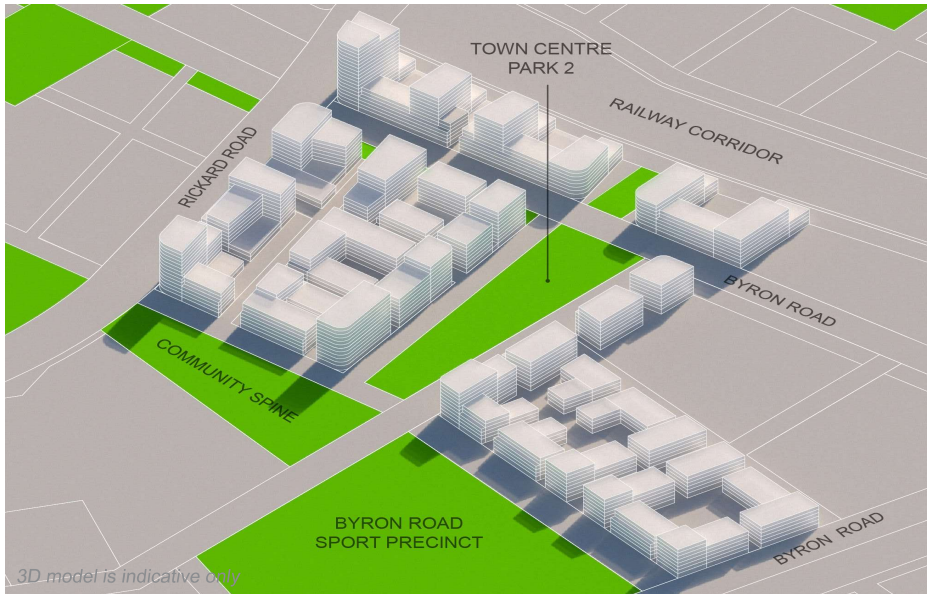


Figure 24: Isometric view across Area D looking north-west

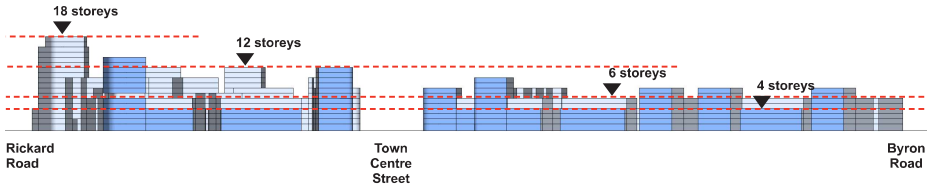


Figure 25: Southern elevation of Area D (looking north)

5.5 Area E – Byron Road Sport Precinct (East) and Green Corridor

The key open spaces in Area E include the eastern section of Byron Road Sport Precinct and Green Corridor. FSRs up to 2.5:1 have been modelled in this area.

The modelling indicates that the FSRs can generally be achieved with predominantly 4 storeys built form up to 6 storeys at the corners.

Given the orientation of this open space and the lower building heights surrounding it, the open spaces within Area E will receive optimal sunlight access (significantly more than 50% throughout the day).

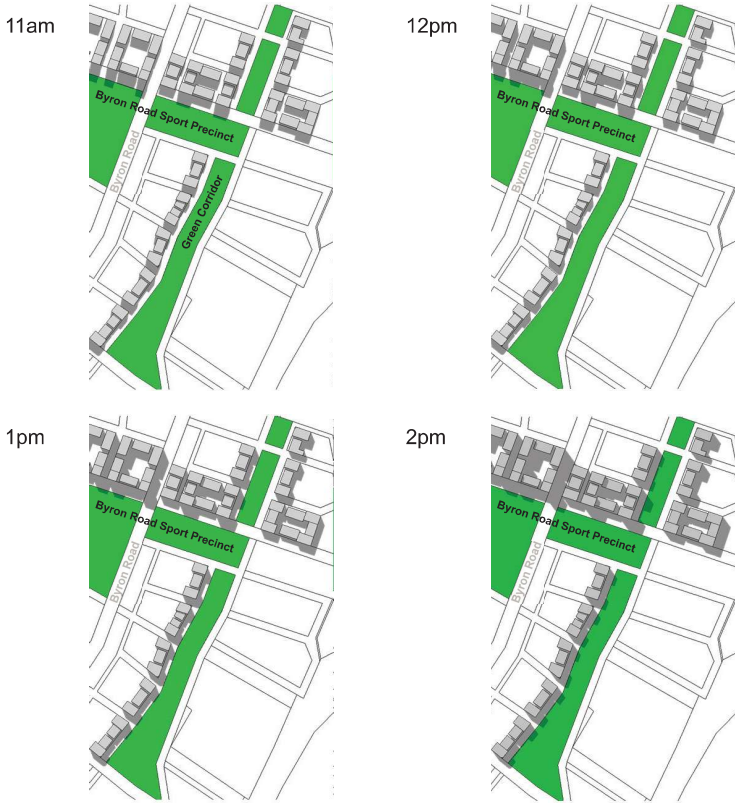
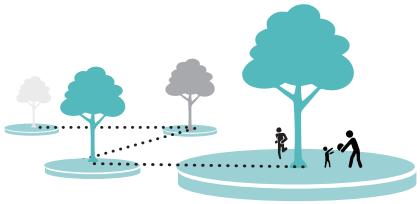


Figure 26: Shadow diagrams for Area E between 11am and 2pm winter solstice

Figure 27: Isometric view across the site looking north-west

6. Open Spaces

6.1 Open Space Design Principles



CONNECTED

A legible network of open spaces that provide high amenity connections through the town centre and encourage active transport.

INTEGRATED

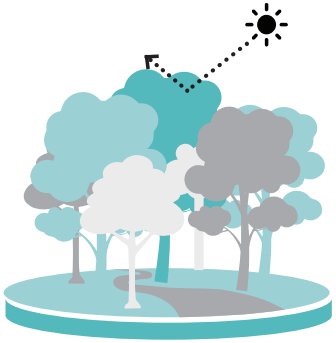
Equitable distribution of open spaces and amenity, no more than 400m walking distance, that respond to different urban needs and offer multi-functional uses.

INCLUSIVE

Equal access, safe and legible open spaces that support outdoor recreational uses for all ages and abilities. Well lit at night for safety and to optimise use.

SITE SPECIFIC

Open spaces designed to protect and enhance existing site qualities, including topography, hydrology, and vegetation (using indigenous species where appropriate and maintaining existing mature trees wherever possible).



CANOPY COVER

All open spaces designed to achieve (as a minimum) NSW Government canopy cover targets. Healthy existing mature trees are to be retained and protected to maximize shade coverage from day one and maintain existing ecological value.

DIVERSE

A large range of open space amenities and diverse palette of plant species (including existing mature trees) will create a richness of experience and resilient town centre.

QUALITY

High quality, hard-wearing materials will ensure a robust and low maintenance public domain.

6.2 Open Spaces Map

The open space design strategy creates, together with the street design, a consistent green grid to:

- Preserve and manage existing vegetation.
- Enhance habitats and biodiversity.
- Increase canopy coverage to support urban cooling and mitigate the effect of climate change.
- Facilitate connection through the town centre, prioritising active mobility.
- Enhance the value of cultural heritage, acknowledging and promoting connection with Country.
- Provide an equal distribution of various activities to engage the community and promote exercising and general wellbeing.

For further details about open spaces refer to the Appendix B

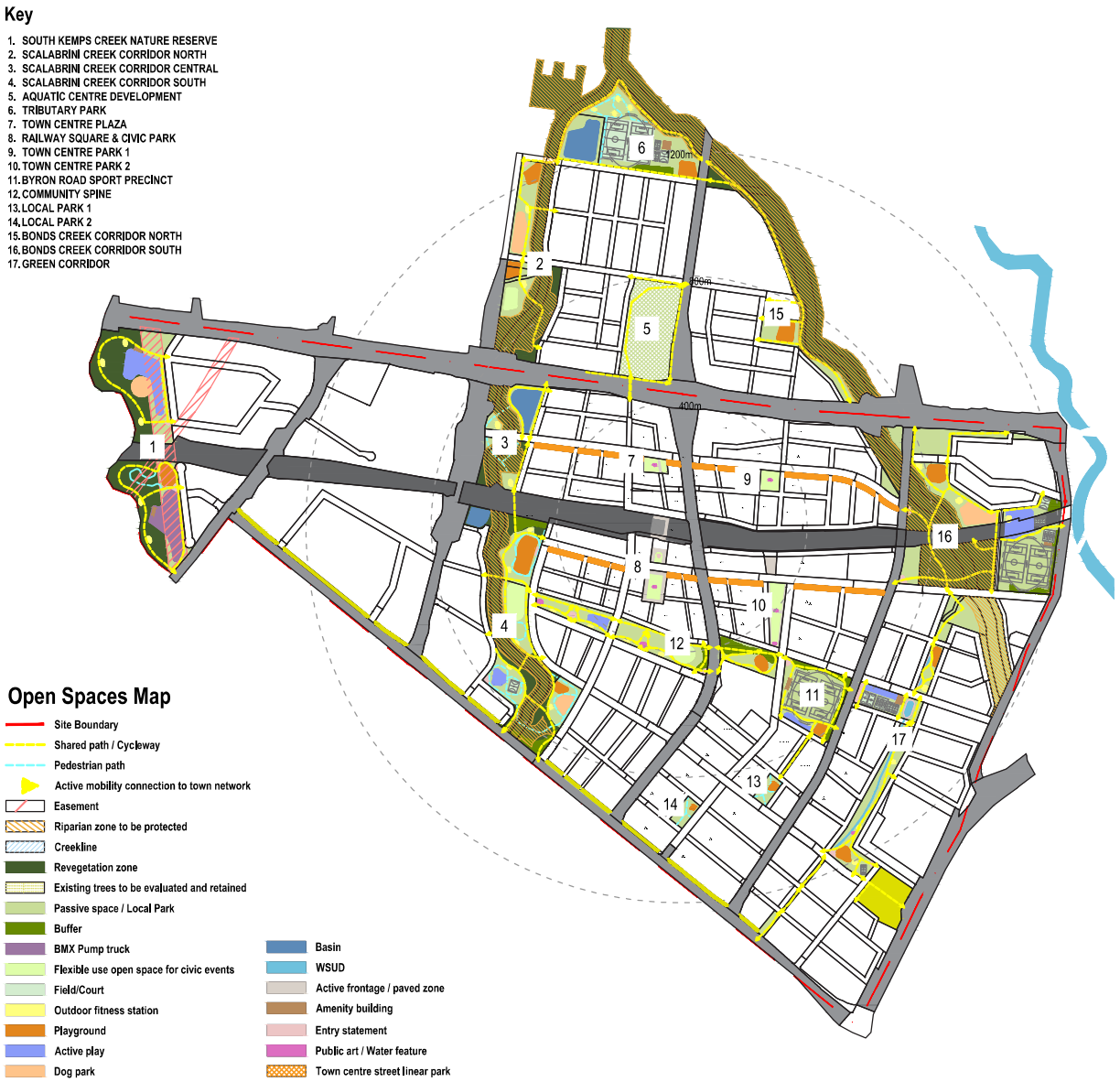
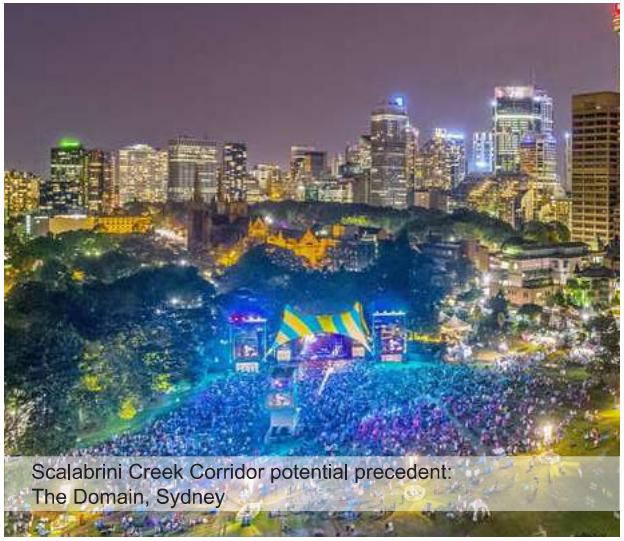


Figure 28: Open Spaces Map

6.2.1 Creek Parklands

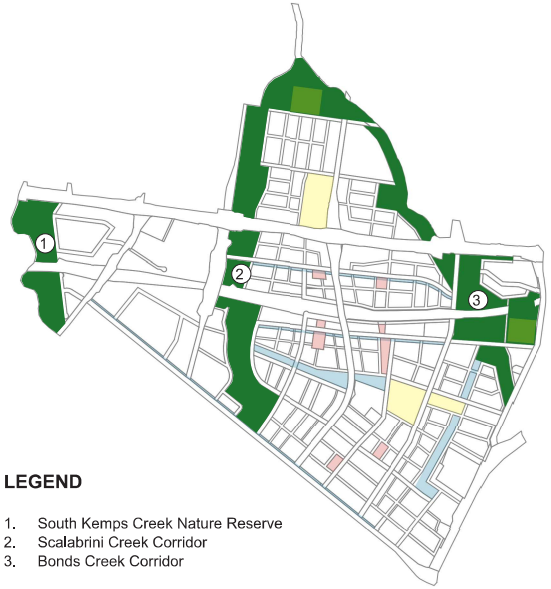
Bonds Creek Corridor potential precedent:
Skate Park Jardines de Aureà Cuadrado,Spain

Bonds and Scalabrini Creek Corridors potential precedent:
The Arninge-Ullna Riparian Park, Stockholm



Scalabrini Creek Corridor potential precedent:
The Domain, Sydney

Three Creek Corridors potential precedent:
The Lizard Log Park, Sydney



LEGEND

1. South Kemps Creek Nature Reserve
2. Scalabrini Creek Corridor
3. Bonds Creek Corridor

KEY ELEMENTS AND OPPORTUNITIES

Low impact recreational activities within the riparian protection zone to provide access and active use of the open space while enhancing and protecting ecological value and the existing biodiversity:

- Recreational shared paths.
- Educational nature walks.
- Fitness stations.
- Picnic areas.

Active play outside the riparian protection zone and / or under the railway crossing / electrical easement to maximize the open space use:

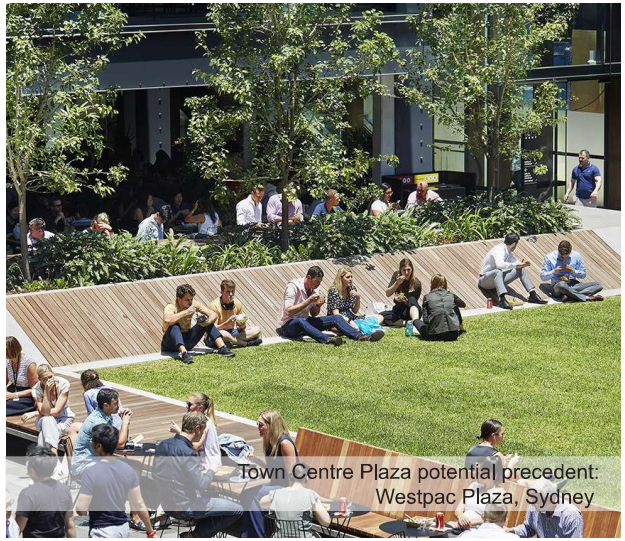
- Local and district playground.
- Dog parks.
- Open lawn flexible area - town events space.
- Multiple sport courts / field with amenity as required.
- Active play (e.g. skate park, learning to ride park, water park, BMX tracks) with amenity as required.
- Water retention basin and drainage zones.
- Nature educational and play spaces.
- Picnic areas and BBQ areas.

6.2.2 Civic Spaces and Local Parks

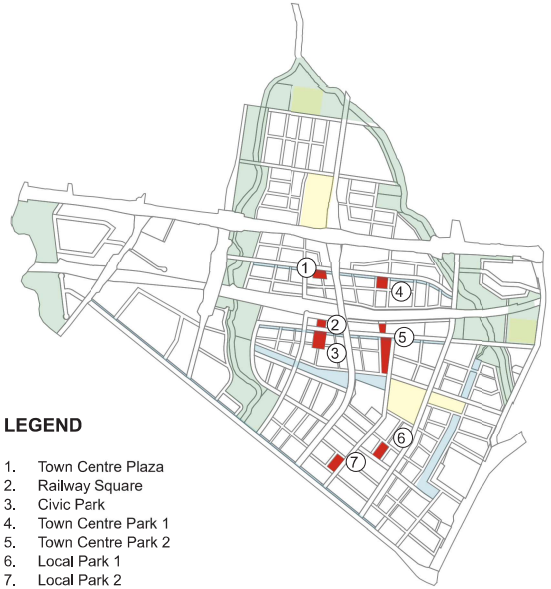
Railway Square & Civic Park potential precedent:
Bryant Park, New York

Town Centre Parks potential precedent:
Wynyard Square, Sydney

Civic Parks potential precedent:
Darling Square, Sydney



Town Centre Plaza potential precedent:
Westpac Plaza, Sydney



LEGEND

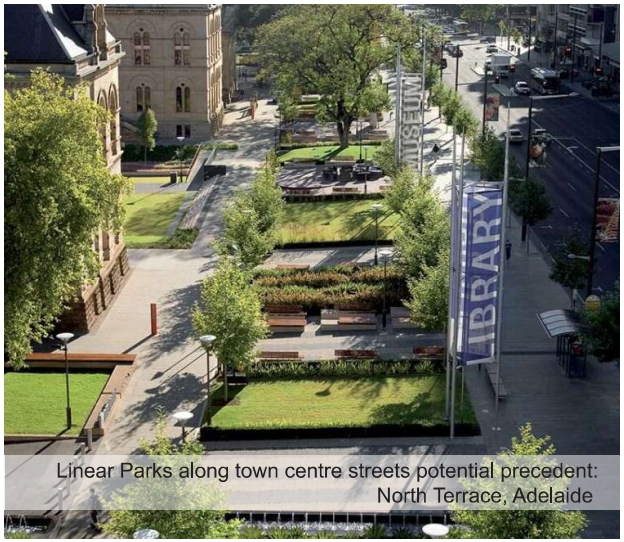
1. Town Centre Plaza
2. Railway Square
3. Civic Park
4. Town Centre Park 1
5. Town Centre Park 2
6. Local Park 1
7. Local Park 2

KEY ELEMENTS AND OPPORTUNITIES

- Direct connections with Linear Parks, Green Streets and Town Centre Streets.
- Clear links with active mobility network.
- Gathering areas.
- Public art and water features.
- Open flexible lawn areas.
- Active retail frontage on the perimeter.
- Canopy tree planting and seating to open lawn edges.

6.2.3 Linear Parks

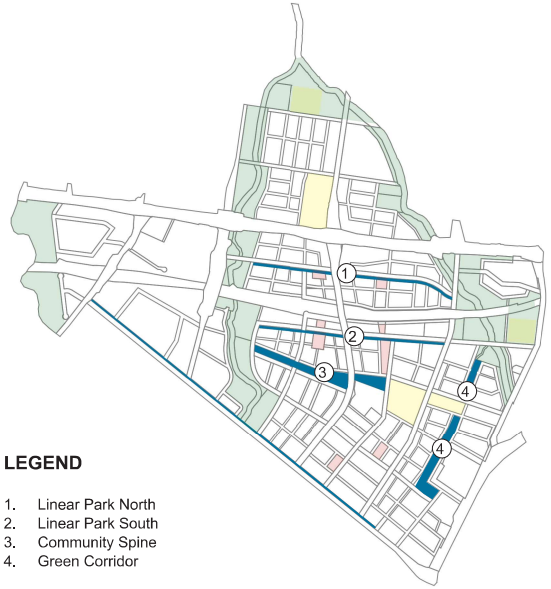
Green Corridor potential precedent:
Daldy Street Park, Auckland



Linear Parks along town centre streets potential precedent:
North Terrace, Adelaide

Linear Parks potential precedent:
Smale Riverfront Park, Cincinnati

Community Spines potential precedent:
South Park, San Francisco



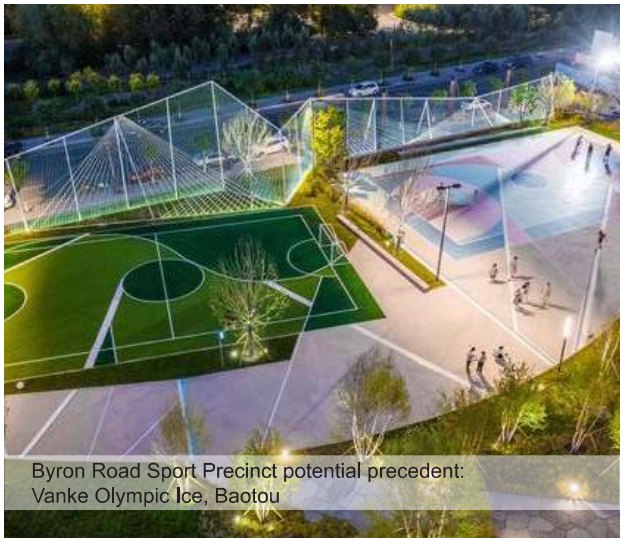
LEGEND

1. Linear Park North
2. Linear Park South
3. Community Spine
4. Green Corridor

KEY ELEMENTS AND OPPORTUNITIES

- Direct frontage with streetscape.
- Local playground and fitness stations.
- Seating areas.
- Open lawn areas.
- Community gardens.
- Water retention basin and drainage zones.
- Gathering areas.
- Active play (e.g. skate park, learning to ride park, water park).
- Multiple sport courts / fields with amenity as required.
- Entry Statements, public art and water feature.

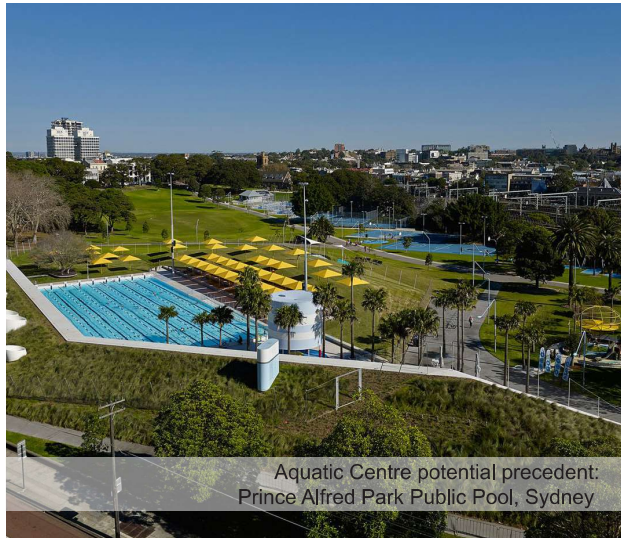
6.2.4 Sport Facilities



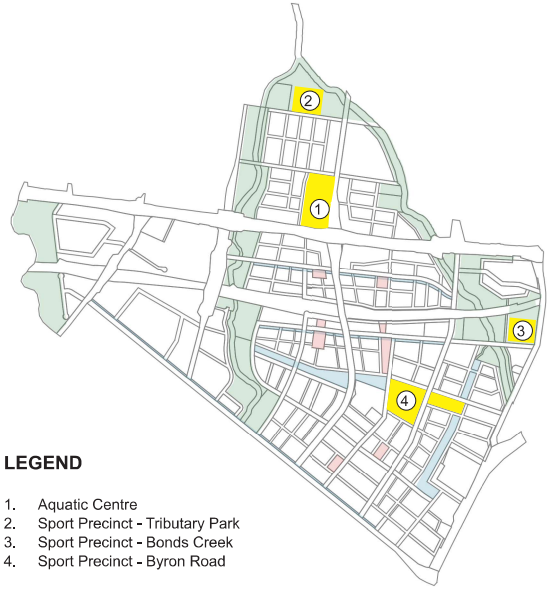
Byron Road Sport Precinct potential precedent:
Vanke Olympic Ice, Baotou

Tributary Park Sport Precinct potential precedent:
A'beckett Urban Square, Melbourne

Aquatic Centre potential precedent:
Cloud Town Exhibition Centre, Hangzhou



Aquatic Centre potential precedent:
Prince Alfred Park Public Pool, Sydney



LEGEND

1. Aquatic Centre
2. Sport Precinct - Tributary Park
3. Sport Precinct - Bonds Creek
4. Sport Precinct - Byron Road

KEY ELEMENTS AND OPPORTUNITIES

- Local to regional multiple sports courts / fields with scale and type of amenities appropriate to each site.
- Sports facilities potentially integrated into the overall open space network (e.g. accessible green roof to integrate additional sport fields and / or local park / play zone).

6.3 Open Spaces - Planting selections

KEY CONSIDERATIONS

As part of the eight local government areas included into the Cumberland Plain Conservation Plan, the plant selection refers to the Plan objectives, and in particular to the following:

- Improve long-term ecological function and resilience, expanding natural habitat and restoring connectivity.
- Managing weeds, pest animals and disease.
- Managing fire to protect biodiversity.
- Improve canopy coverage and respond to climate changes.

Native species are selected to suit the existing Sydney Coastal River-flat Forest ecological community along the creeks and in the conservation / restoration areas.

Both native and exotic species are selected considering the existing microclimate and site specific conditions.

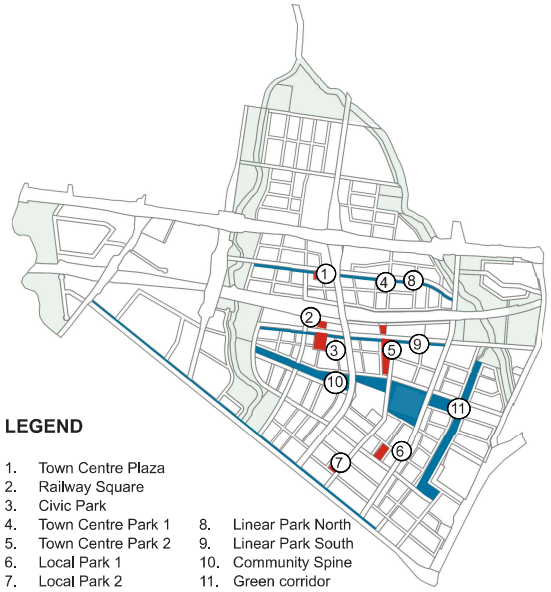
Feature planting is encouraged in particular in the town core to bring both visual interest and distinct character to the precinct.

Include Aboriginal community in the plant selection during design, to preserve the site's cultural and natural value.

Figure 29: Open Spaces - Planting selection Map

6.3.1 Creek Parklands

BOTANICAL NAME	COMMON NAME	POTENTIAL MATURE HEIGHT	POTENTIAL MATURE SPREAD	FOLIAGE
TREES				
Acer rubrum	Canadian Maple	13m	8m	Deciduous
Agonis flexuosa	Willow Myrtle	10m	5m	Evergreen
Angophora floribunda	Rough-barked apple	15m	10m	Evergreen
Brachychiton discolour	Queensland Lacebark	20m	10m	Deciduous
Brachychiton populneus	Kurrajong Tree	8-10m	10m	Evergreen
Citharexylum spinosum	Fiddlewood Tree	12m	6m	Deciduous
Corymbia citriodora	Lemon Scented Gum	20m	8m	Evergreen
Corymbia citriodora 'Scentuous'	Lemon Scented Gum	7m	4m	Evergreen
Corymbia maculata 'ST1' Lowanna	Compact Spotted Gum	10m	7m	Evergreen
Corymbia 'Summer Red'	Grafted Eucalyptus Summer Red	4-6m	4m	Evergreen
Cupaniopsis anacardioides	Tuckeroo	5-8m	5-7m	Evergreen
Eucalyptus benthamii	Camden White Gum	15-20m	15m	Evergreen
Ficus rubiginosa	Port Jackson Fig	18m	15m	Evergreen
Fraxinus excelsior 'Aurea'	Golden Ash	10m	8m	Deciduous
Harpullia pendula	Tulipwood	6m	4m	Evergreen
Lagerstroemia indica	Crepe myrtle	10m	4m	Deciduous
Liquidambar styraciflua 'Ward' Cherokee	Cherokee™ Sweetgum	12m	6m	Deciduous
Tristaniopsis laurina	Water Gum	12-15m	6m	Evergreen



LEGEND

1. Town Centre Plaza
2. Railway Square
3. Civic Park
4. Town Centre Park 1
5. Town Centre Park 2
6. Local Park 1
7. Local Park 2
8. Linear Park North
9. Linear Park South
10. Community Spine
11. Green corridor

RECOMMENDATIONS

Tree and planting selection to create public domain destinations with a distinctive identity.

A mix of native and exotic species create seasonal variation, provide shade in summer, and solar access in winter.


Acer rubrum

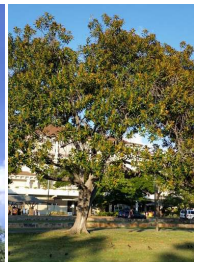

Agonis flexuosa


Angophora floribunda


Brachychiton discolour

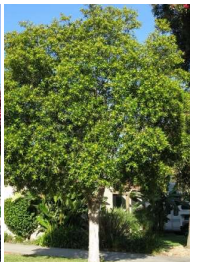

Citharexylum spinosum


Eucalyptus benthamii


Ficus rubiginosa


Fraxinus excelsior 'aurea'


Lagerstroemia indica


Tristaniopsis laurina

6.3.2 Civic Spaces and Local Parks

BOTANICAL NAME	COMMON NAME	POTENTIAL MATURE HEIGHT	POTENTIAL MATURE SPREAD	FOLIAGE
TREES				
Acer rubrum	Canadian Maple	13m	8m	Deciduous
Agonis flexuosa	Willow Myrtle	10m	5m	Evergreen
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Citharexylum spinosum	Fiddlewood Tree	12m	6m	Deciduous
Corymbia citriodora	Lemon Scented Gum	20m	8m	Evergreen
Corymbia citriodora 'Scentuous'	Lemon Scented Gum	7m	4m	Evergreen
Corymbia maculata 'ST1' Lowanna	Compact Spotted Gum	10m	7m	Evergreen
Corymbia 'Summer Red'	Grafted Eucalyptus Summer Red	4-6m	4m	Evergreen
Cupaniopsis anacardioides	Tuckeroo	5-8m	5-7m	Evergreen
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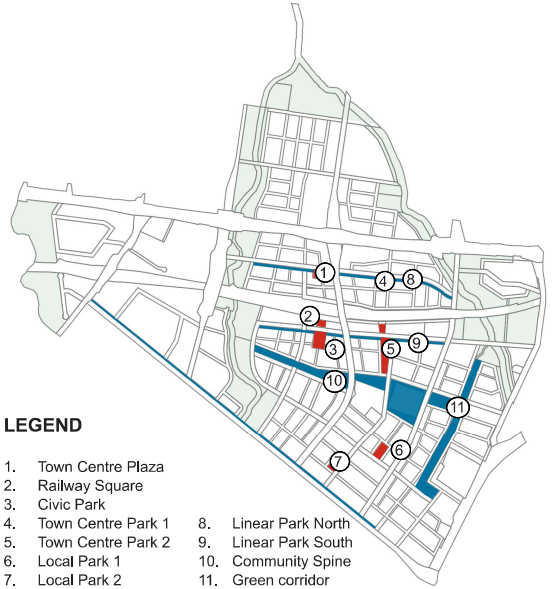
Tristaniopsis laurina	Water Gum	12-15m	6m	Evergreen



LEGEND

1. Town Centre Plaza
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8. Linear Park North
9. Linear Park South
10. Community Spine
11. Green corridor

RECOMMENDATIONS

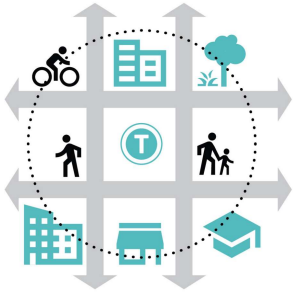
Tree and planting selection to create public domain destinations with a distinctive identity.

A mix of native and exotic species create seasonal variation, provide shade in summer, and solar access in winter.

Acer rubrum *Agonis flexuosa* *Angophora floribunda* *Brachychiton discolour* *Citharexylum spinosum* *Eucalyptus benthamii* *Ficus rubiginosa* *Fraxinus excelsior 'aurea'* *Lagerstroemia indica* *Tristaniopsis laurina*

7. Public Domain

7.1 General Urban Design Principles for the Public Domain



WALKABLE

The design of streets and public open spaces prioritises pedestrians and cyclists by incorporating dedicated paths and routes for walking and cycling. These will provide safe and attractive connections between homes, workplaces, public transport and key community and recreational destinations.

LEGIBLE

The design of streets and public open spaces will incorporate design elements that provide visual and tactile cues that guide the use of space. For example, special pavement treatments at intersections will encourage drivers to slow down; provision and spacing of street furniture will encourage pedestrians to rest and dwell; the embellishment of open spaces will indicate to users whether they are places to respite, play, exercise and so on.

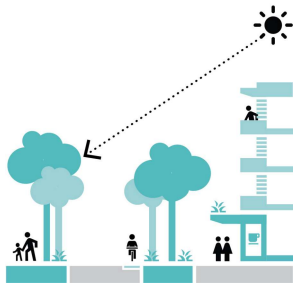
The design of built form is to clearly define streets and vistas with human-scaled street wall heights with upper levels set back from the street. Taller buildings will emphasise important corners and mark key gateways.

ACTIVATED

Leppington Town Centre will be designed as a fine-grain centre with traditionally-scaled shopfronts with active ground floor uses that provide for a range of experiences.

Residential uses will engage with the street with individual entries and in some instances flexible ground floor frontages capable of conversion to other retail / commercial uses.

Active uses will also be encouraged for rooftops, such as bars, community gardens, playing courts and the like.



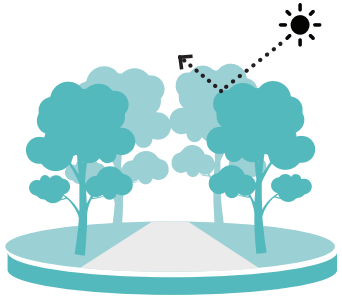
COMFORTABLE

The design of Leppington Town Centre will ensure a comfortable public domain by ensuring adequate sunlight access to key public open spaces, weather protected streets via continuous awning and cool streets with 75% tree canopy.

7.2 Street Design Principles

SHARED

Create a continuous, legible, and safe movement network throughout the Town Centre. Active transport is promoted by ensuring priority of movement wherever possible.



GREEN

Maximise tree canopy and green cover to provide more livable spaces and reduce the urban heat island effect. Canopy cover targets to align with Government policy.

DIVERSE

A range of street typologies to create an engaging public domain experience. Tree species selection responds to the scale of streets. Species diversity provides visual interest, seasonal variation, and resilience.

ACTIVE

Generous planted verges and pathway widths combine with active building frontages create a comfortable and engaging public domain experience. Flexible use of streets for a range of activities is considered in the design.

7.3 Street Types

A diverse range of street typologies combine to create an engaging public domain experience.

A clear hierarchy of street widths improves legibility, and priority is given to pedestrians and active transport wherever possible to promote health and wellbeing, and reduce car dependency in the Town Centre.

All street sections and plans are provided in Appendix B.

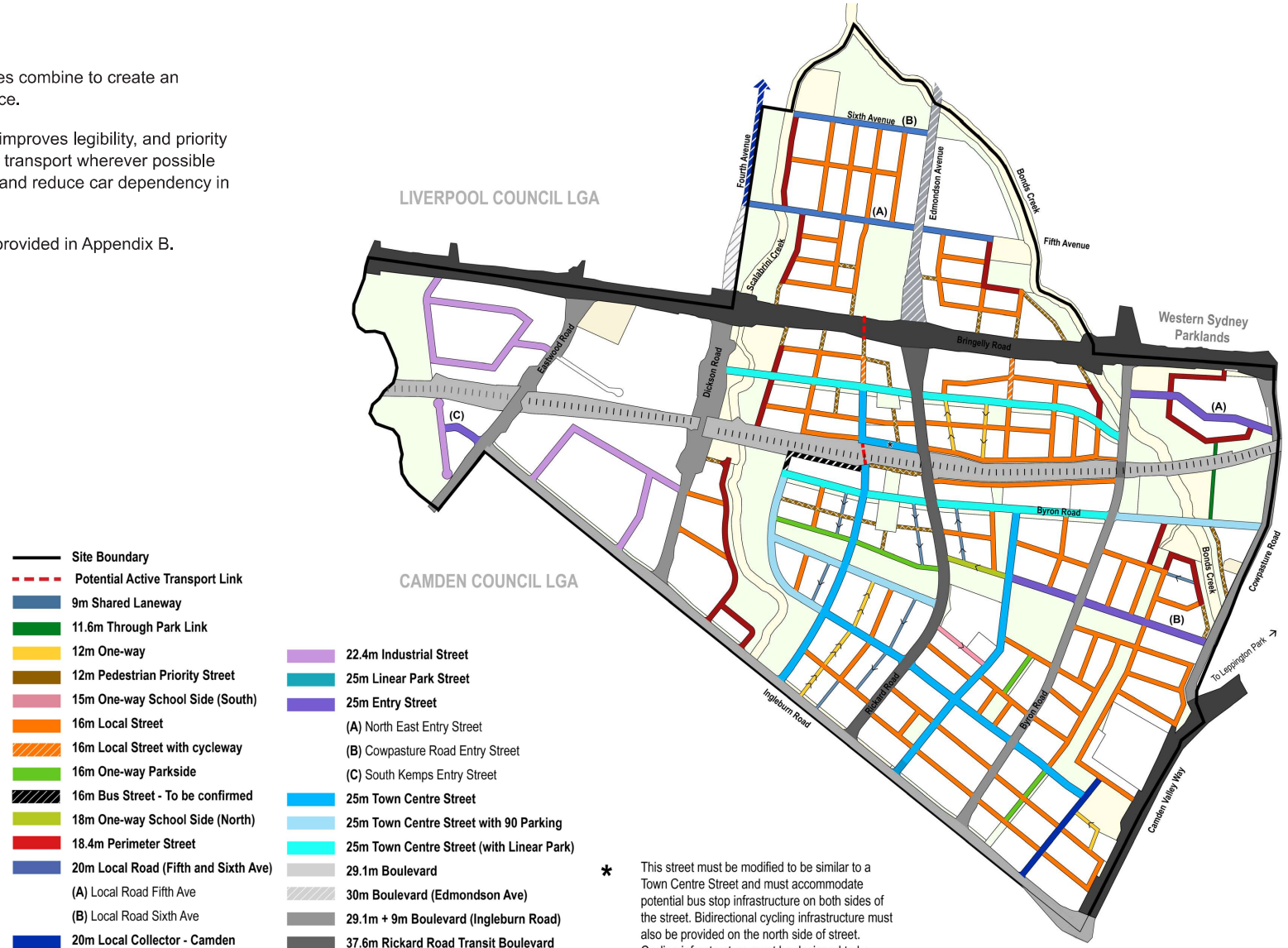
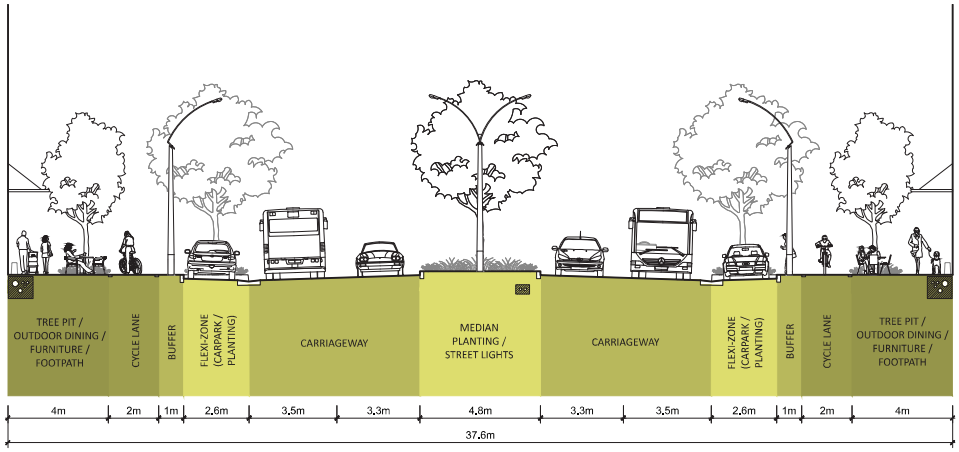


Figure 30: Street Typology Map



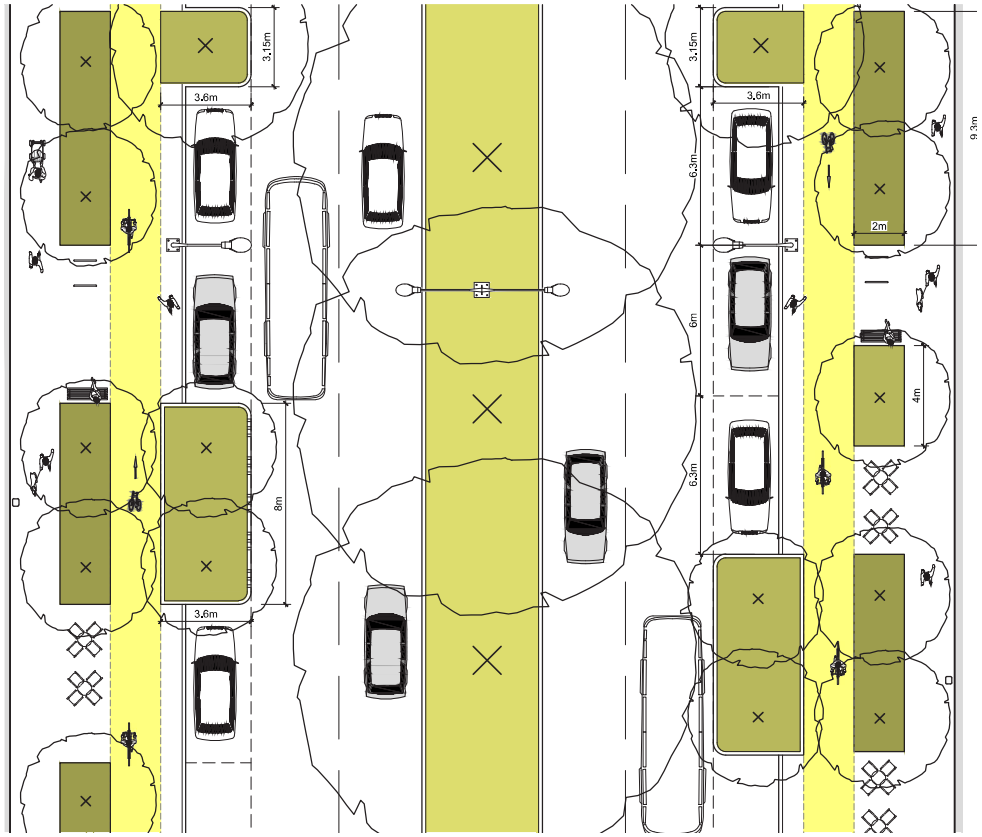


Figure 31: Rickard Road street section and plan

7.3.1 Rickard Road and Boulevards

Rickard Road and the Boulevards are the main trafficable spines of Leppington. To achieve a unique sense of place and maximise shade to these wide roadways, the central median features a line of fig trees that will achieve a continuous canopy when mature.

Dedicated uni-directional cycle lane, separated footpaths and seating nooks between the planting buffer have been designed for Rickard Road, the main transit corridor North-South. Alternatively, the Boulevards feature bi-directional shared paths on both sides of the street and have no parking lanes, enabling a reduced overall street width.


Constitution Avenue, Canberra


Bourke Street, Sydney

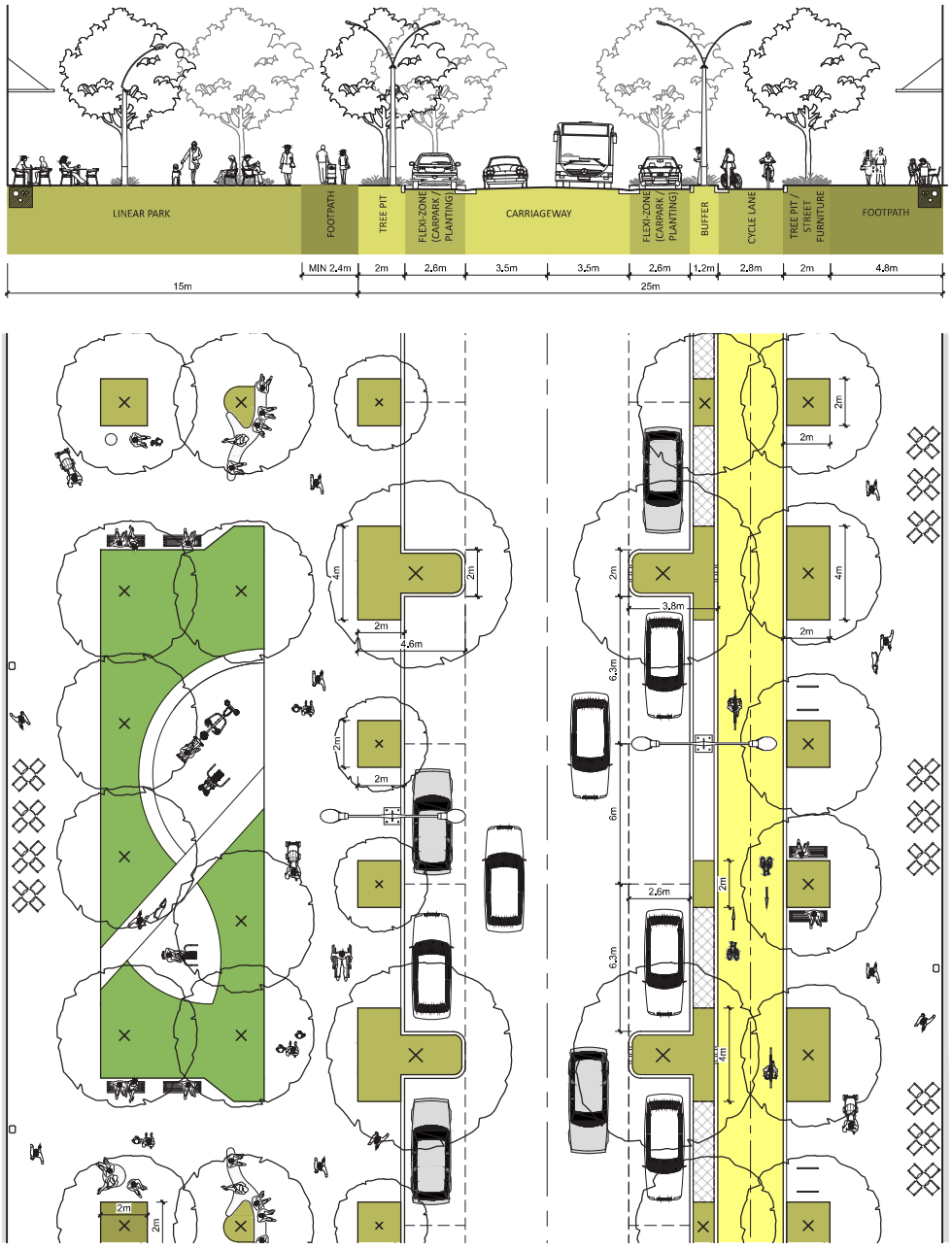


Figure 32: Town Centre Street with Linear Park section and plan

7.3.2 Town Centre Street

Town Centre Streets are high activity places at the core of city life.

Directly interacting with the building frontage, the streets feature a dedicated bi-directional cycleway and a wide footpath to allow for public seating nooks and opportunity for retail breakout, whilst maintaining clear movement paths.

A variety of street trees have been selected to provide shade and seasonal interest for a comfortable outdoor environment.

North Terrace, Adelaide

Sønder Boulevard, Copenhagen

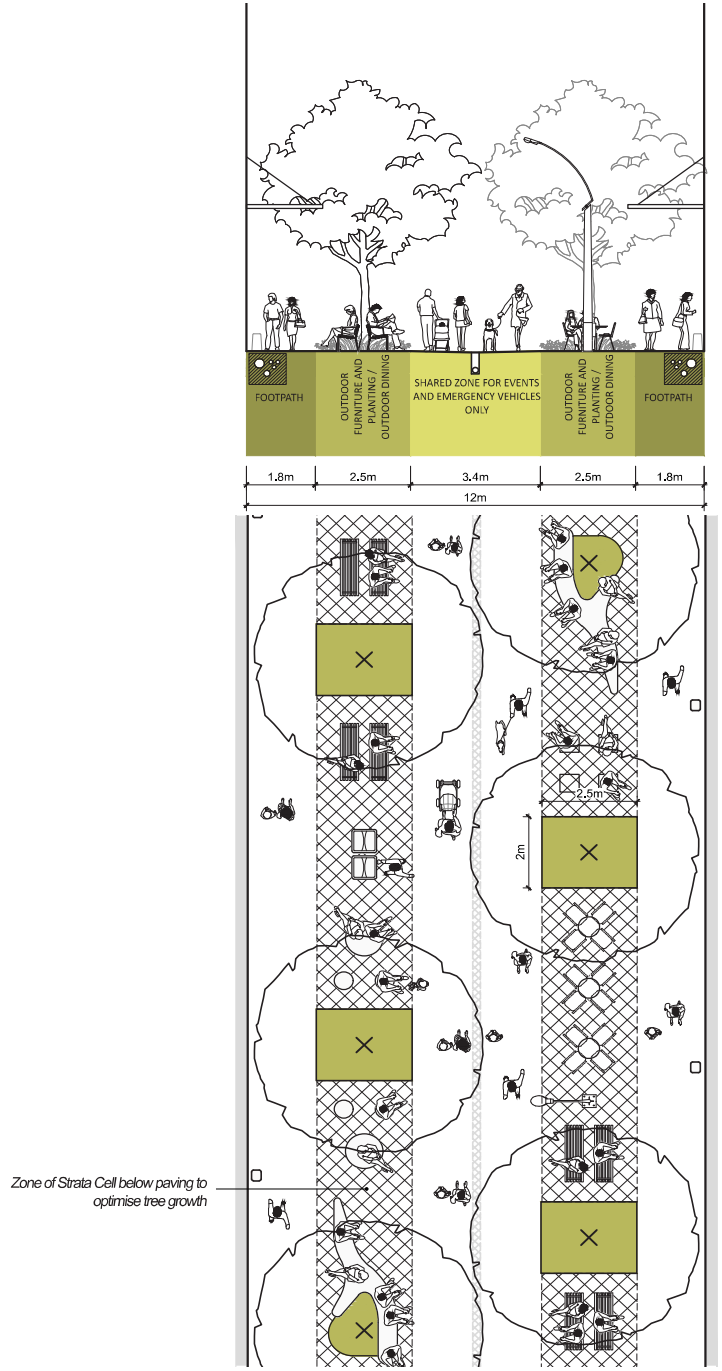


Figure 33: Pedestrian Priority Street section and plan

7.3.3 Pedestrian Priority and Shared Streets

Together with the Town Centre Streets, the Pedestrian Priority and Shared Streets activate the public realm of Leppington. The design of the street focuses on people and opportunities for various activities such as: shopping, sitting, dining, promenading or performing.

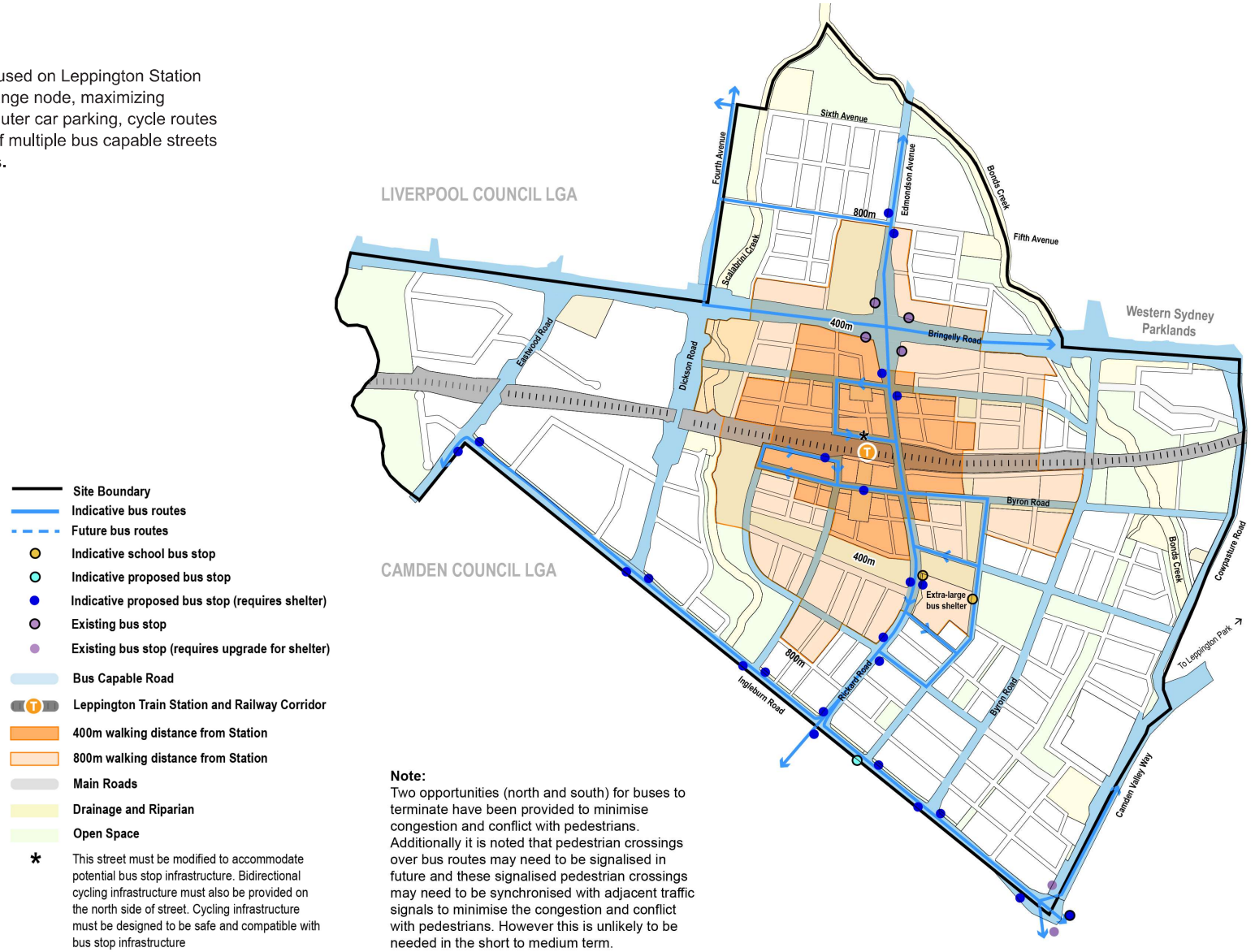
A consistent distribution of street furniture and urban elements combines with a diversity of street trees to create a comfortable and beautiful environment that changes with the seasons.


Pitt Street Mall, Sydney


Kensington Street, Sydney

7.4 Public Transport

The public transport network is focused on Leppington Station as the key public transport interchange node, maximizing connectivity with bus routes, commuter car parking, cycle routes and pedestrian streets. Provision of multiple bus capable streets allows for flexible bus route options.



Note:
Two opportunities (north and south) for buses to terminate have been provided to minimise congestion and conflict with pedestrians. Additionally it is noted that pedestrian crossings over bus routes may need to be signalised in future and these signalised pedestrian crossings may need to be synchronised with adjacent traffic signals to minimise the congestion and conflict with pedestrians. However this is unlikely to be needed in the short to medium term.

Figure 34: Public Transport Map

7.5 Cycle Routes

A continuous, legible, and safe cycleway network throughout the Town Centre promotes active transport for people of all ages and abilities, and reduces dependency on motor vehicles.

For further details on cycleways, refer to the street sections and plans provided in Appendix B.

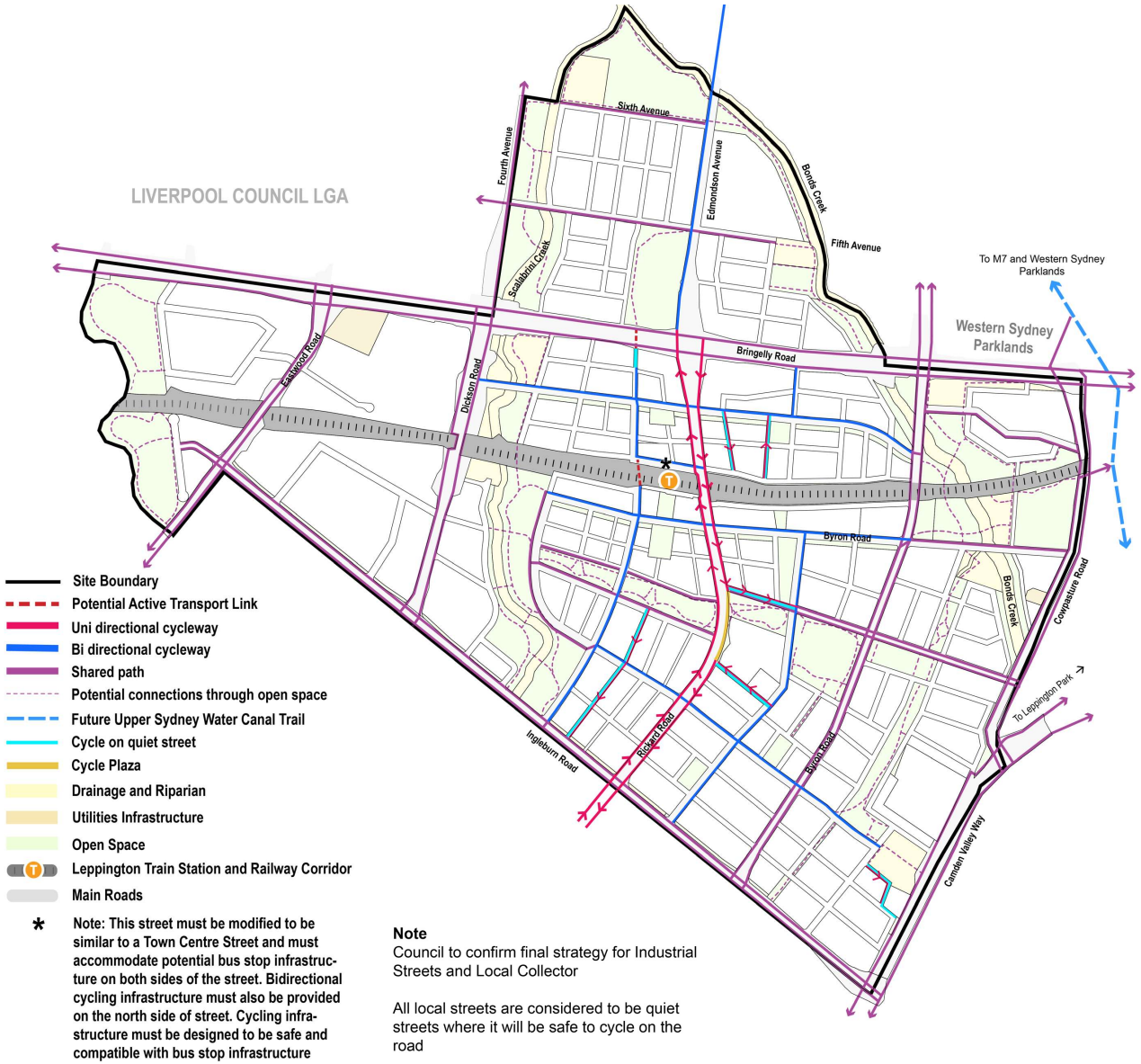


Figure 35: Cycle Route Map

7.6 Pedestrian Desire Lines

Key pedestrian desire lines have been identified, with consideration to open space connections, streets with active facades, and connection to public transport.

For further details about pedestrian routes refer to the street sections and plans provided in Appendix B.

Figure 36: Key Pedestrian Desire Lines Map

7.7 Town Centre Material Treatment on Footpath

A specific paving type is applied for footpaths to identify the core of the town centre.

For further details about materials refer to the street sections and plans provided in Appendix B.

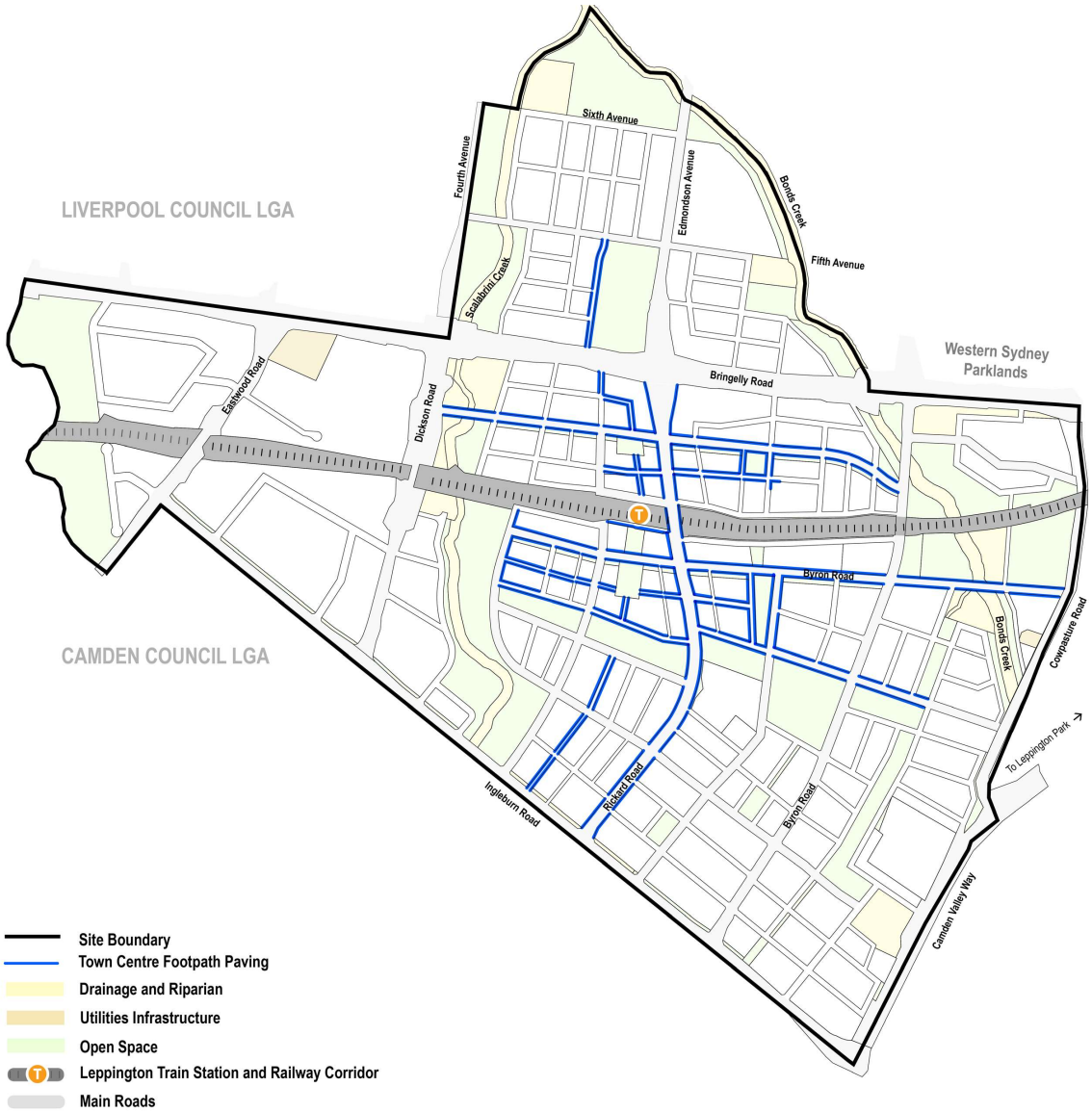
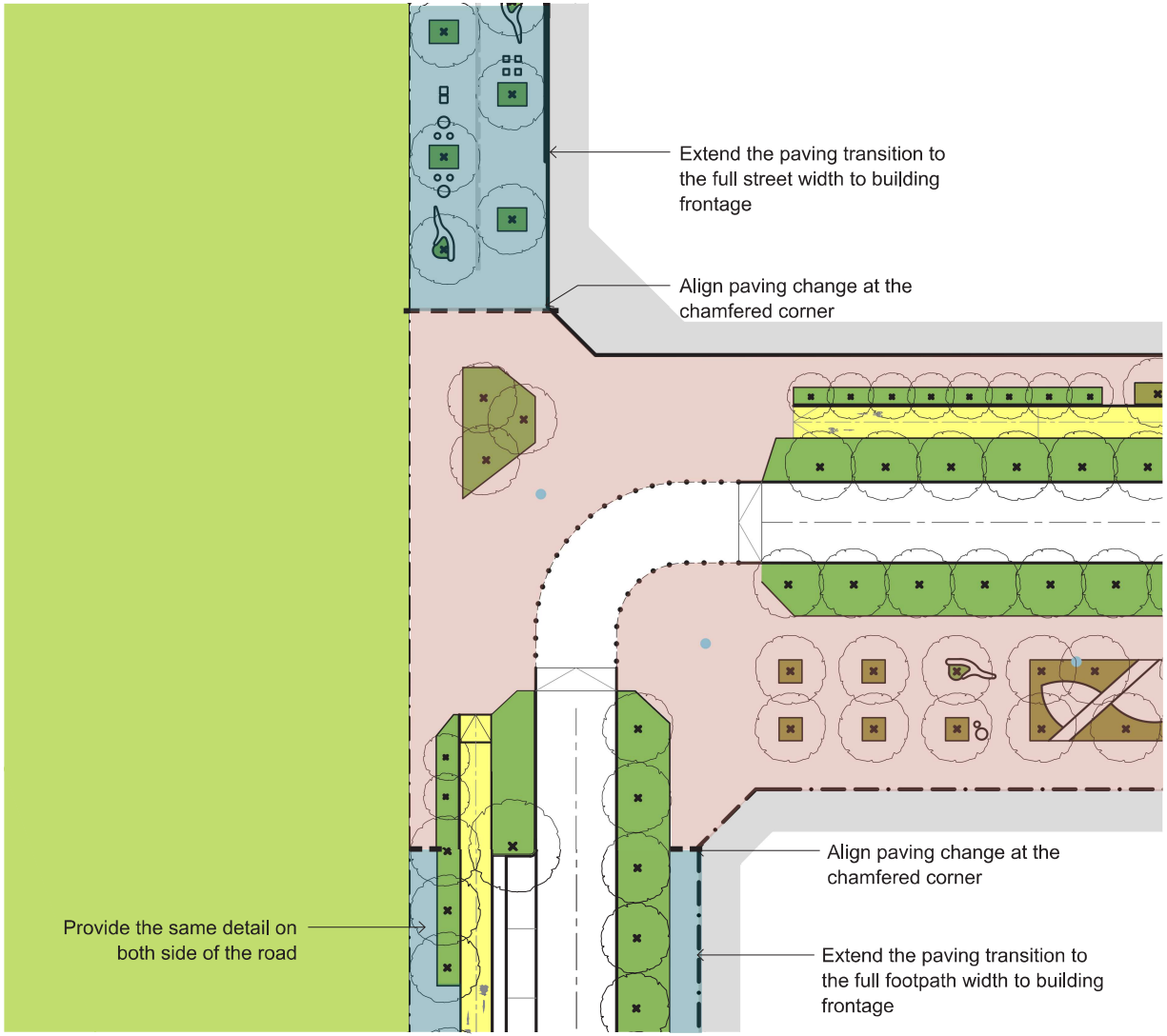


Figure 37: Town Centre Material Treatment on Footpath

7.8 Typical Material Change

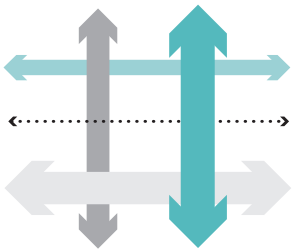


LEGEND

- Town centre footpath paving
- Standard footpath paving - type 01
- Paving transition to mark a defined line between the two materials

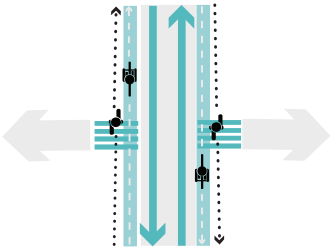
Figure 38: Typical Material Treatment on Footpath

7.9 Intersection Design Principles



HIERARCHY

Intersection design is scaled according to its context of traffic volumes and pedestrian movement. Active transport is prioritised wherever possible.



CONTINUOUS

Legibility and continuity of movement networks through intersections ensures safety and efficiency at these nodes.

ACCESSIBLE

Additional to standard requirements for signage, road marking, and signalisation, flush footpath crossings and changes of material improve visual and tactile wayfinding. Safe buffers between different types of mobility improve wayfinding and encourage use by all ages and abilities.

LEGIBLE

Clear corner zones maximise visibility of traffic approaching the intersection, and optimise wayfinding by opening views to street corners.

7.10 Intersection and Crossing Types

Intersections are the network nodes where all types of mobility interact. Clear and direct movement paths are critical to ensuring the safety of all users.

A number of important strategies will minimise conflict between users and optimise safety, including:

- Change of pavement and/or raised thresholds to slow traffic and indicate a change in roadway conditions.
- Signalised intersections where appropriate for vehicular speeds and volumes.
- Pedestrian bridge where required to optimise active transport movement.

For further details on intersections and crossings refer to the Appendix B.

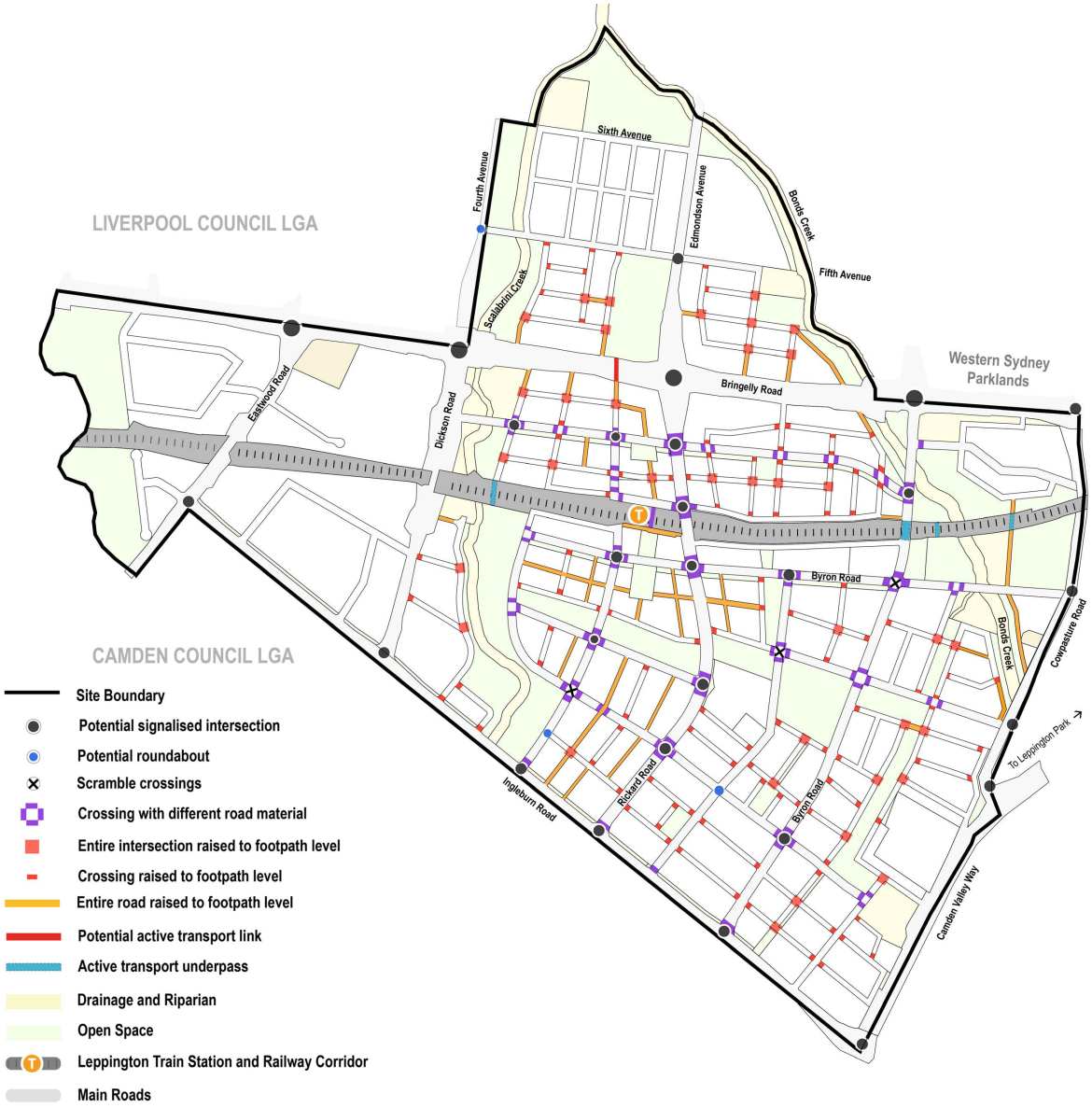


Figure 39: Intersection and Crossing Types Map

7.11 Intersection and Crossing Treatments

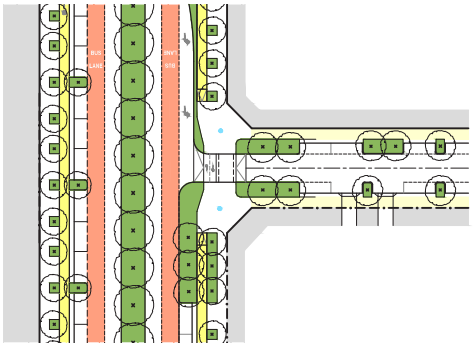


Figure 40: Raised pedestrian and cycle crossing

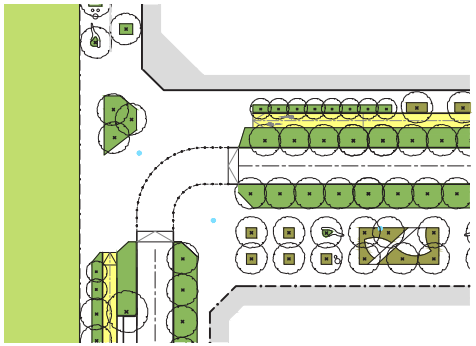
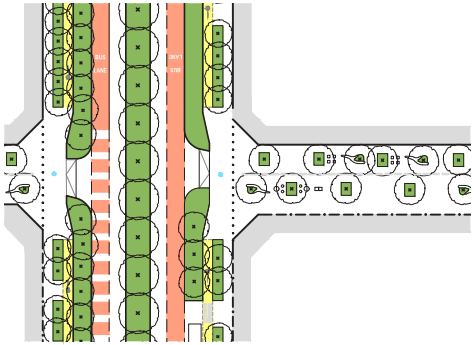


Figure 41: Raised pedestrian crossing on bend to connect plazas



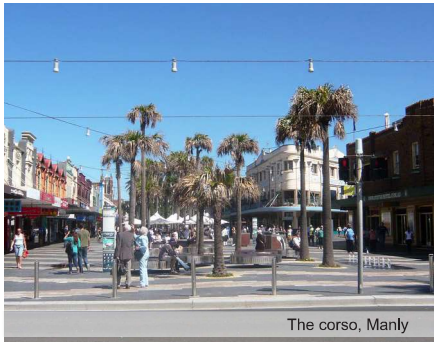


Figure 42: Pedestrian Priority Street interfacing with boulevard

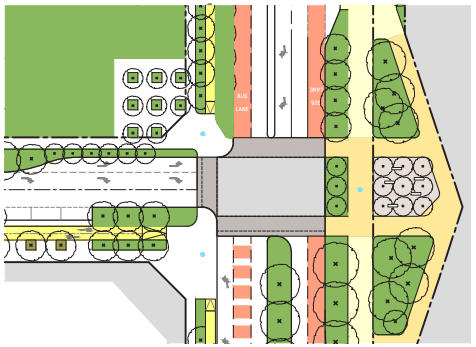


Figure 43: Special paving treatment to signalize intersections

7.12 Special Intersections

A number of intersections require bespoke design due to their unique context. These 'Special Intersections' are identified on the adjacent diagram.

For further details on intersections and crossings refer to the Appendix B.

Figure 44: Specific Designed Intersection Map

7.13 Active Frontages

Active frontage (or Street Interface) controls seek to create fine grain town centre streets that engage with pedestrians.

The Draft DCP controls are primarily intended to control the percentage of façade dedicated to driveways, fire doors, service entries, blank walls, switchboards, and the like to optimise active frontages to key streets.

7.13.1 Establishing a Fine Grain Town Centre

To establish a fine grain within the town centre core, shopfronts should range between 7.5m and 10m. Where shopfronts are greater than 15m, facades are to be vertically articulated to emulate finer grain shops. Refer to Figure 46.

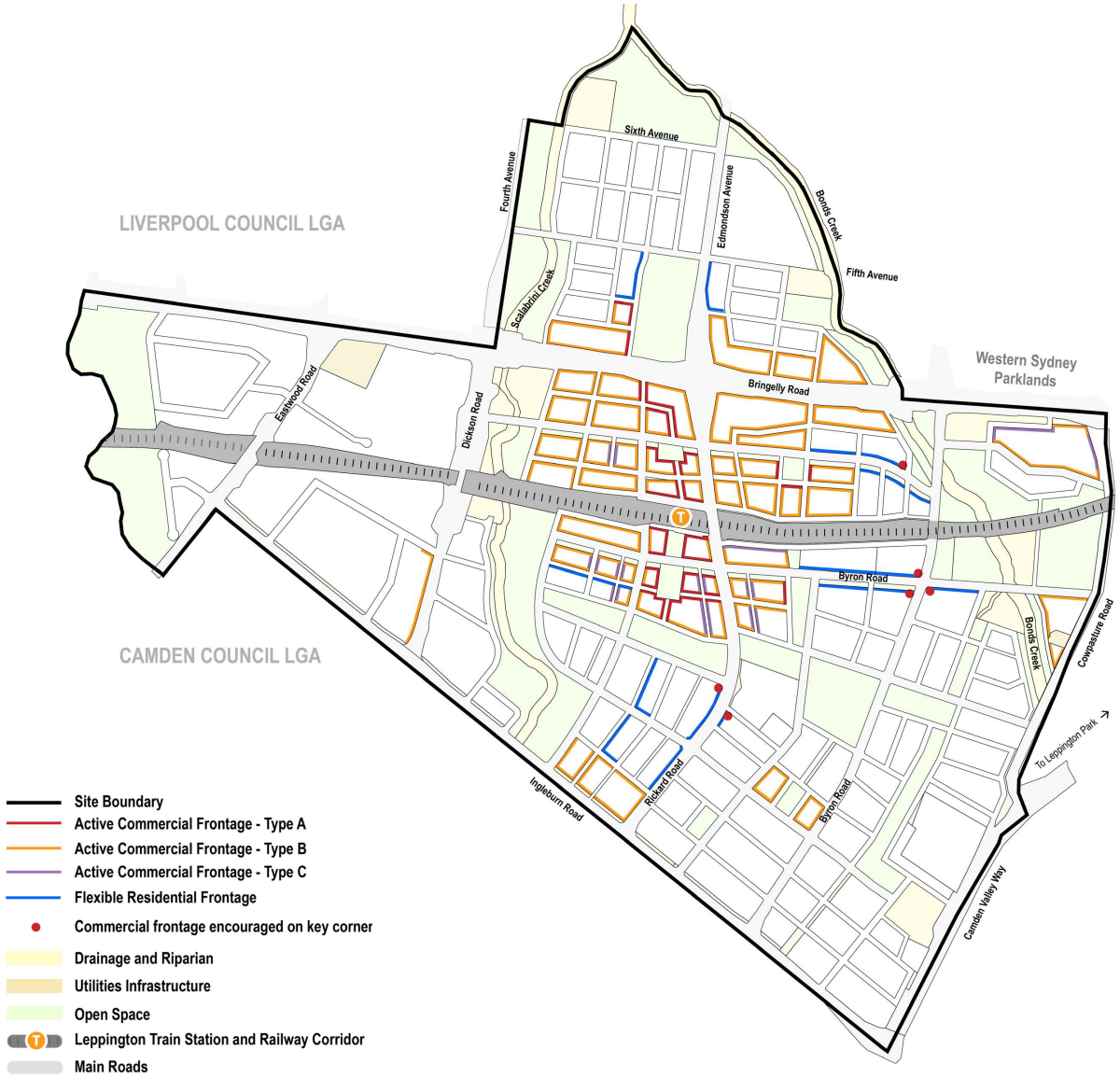


Figure 45: Active Frontages

7.13.2 Active Frontage Types

It is important that all streets are engaging and are not dominated by blank walls or facades with no activity.

Active Commercial Frontage – Type A

Located on key streets within the town centre core. To maximise engagement between pedestrians and ground floor uses, there are to be no obstructions other than columns or facade details between shops. Larger footprint retail shops should be sleeved by smaller shops to maintain fine grain.

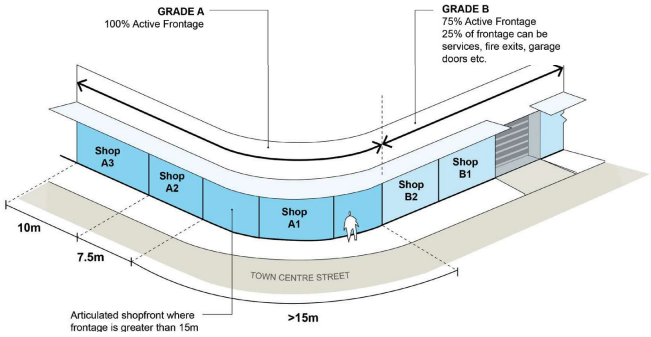


Figure 46: Active Frontage Type A and B

Active Commercial Frontage – Type B

Located on streets where vehicular access is necessary for shops and above ground uses. 75% of the street frontage to be active and 25% dedicated to driveways, fire doors, service entries, blank walls, switchboards, and the like. It is important that all streets are engaging and no streets are left with blank walls or facades with no activity.

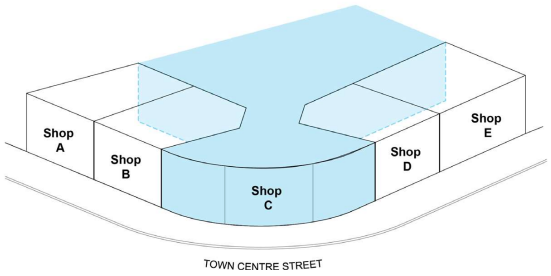


Figure 47: Example of larger retail shop with fine grain frontage, sleeved by smaller shops.

Active Commercial Frontage – Type C

Located on service lanes that will be primarily used for loading and servicing. 50% of the street frontage may be used for driveways, fire doors, service entries, blank walls, switchboards, and the like. It is important that all streets are engaging and no streets are left with blank walls or facades with no activity.

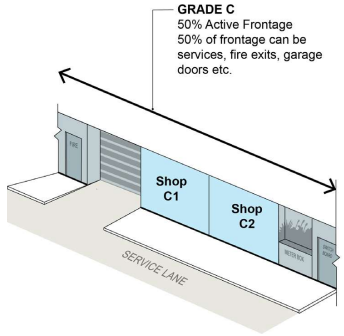


Figure 48: Active Frontage Type C

Example of Grade A frontage with articulated shopfront sleeving larger format retail (supermarket) behind (Source: Goggle Maps)

Example of Grade B frontage

Example of Grade C frontage

Residential Frontages

Located on residential streets in the R4 High Density Residential and R3 Medium Density zone. Buildings are to be designed to facilitate activity and passive surveillance between the building and the street. This is to be achieved by ensuring ground floor apartments address the street with individual entries / gates. They are to function, look and feel as though they are separate terrace houses to apartments above (typically two storeys in height).

Flexible Residential Frontage

A Flexible Residential Frontage is where Council's preference is for ground floor commercial and / or residential dwellings with a separate room at the front of the dwelling that presents to the street that could be used as a home business/office. The purpose of this frontage type is to create a transition between areas with active commercial frontages and areas with residential frontages.

Additionally, the purpose of this frontage type is to create flexibility to work from home and/or the ability to potentially convert ground floor residential uses into commercial uses in the future. Accordingly, the ground floor ceiling height must be between 3.3 to 4 metres so that ground floor residential uses can be potentially converted into commercial uses in the future.

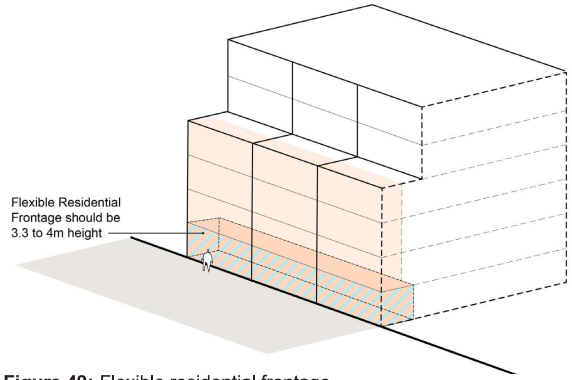


Figure 49: Flexible residential frontage

Example of Active Residential frontage

Example of Flexible Residential Frontage (Source: Apartment Design Guide 2015)

7.14 Awnings

Awning controls apply to all mixed use and commercial buildings and seek to ensure pedestrian amenity by ensuring continuous weather protection is provided along main streets. They are to be designed as integrated elements of the building facade.

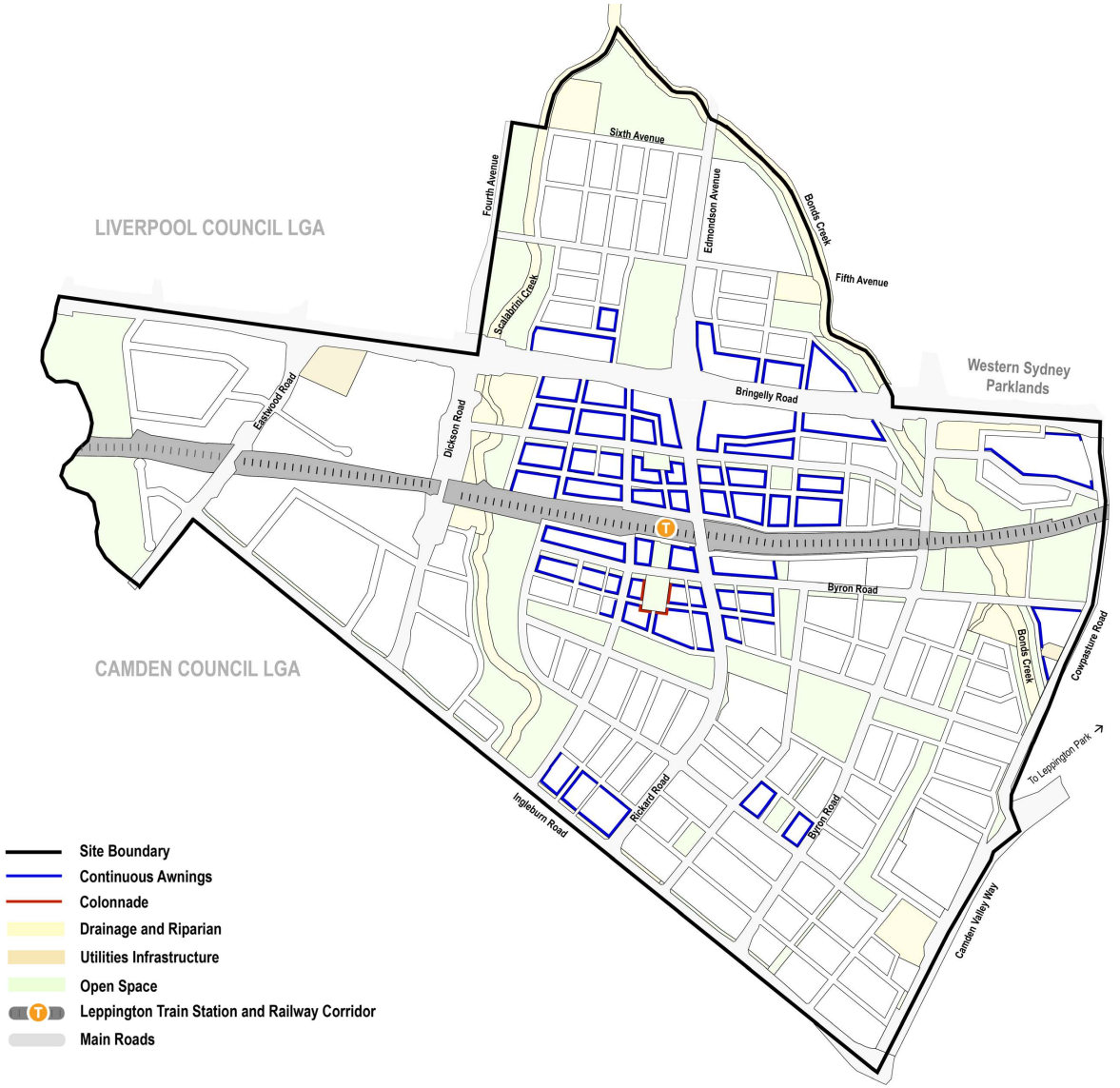


Figure 50: Awnings Map

The controls allow for awnings to:

- Be sized proportionately to the street and clear of planting, street furniture, lighting zones etc.
- Allow for transparent materials on south-facing elevations to optimise solar access to the street (e.g. residential lobbies)
- Make certain entry types more legible by height and / or design.

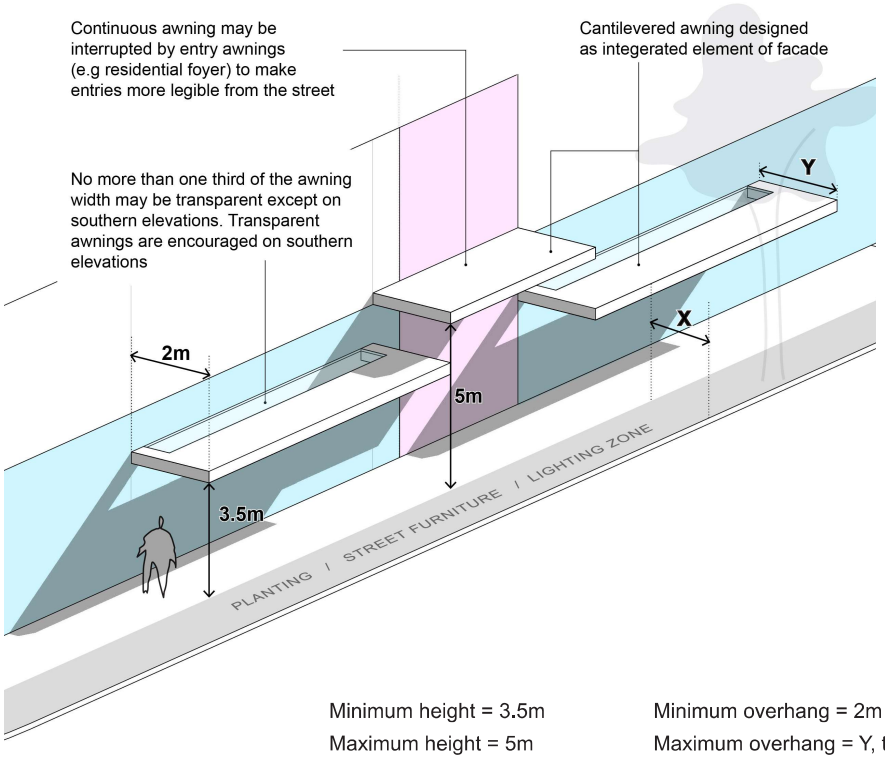


Figure 51: Awning controls

Minimum height = 3.5m

Maximum height = 5m

Minimum distance from kerb = x, to be determined by the width of the planting / street furniture / lighting zone / flex zone to the kerb.

Minimum overhang = 2m

Maximum overhang = Y, to be determined by width of planting / street furniture / lighting zone distance to the kerb, or 3.3m, whichever is the shortest*.

Example of continuous corner awning with active street frontage

Example of entry awning for residential uses

Example of a green awning designed to integrate with building facade.

Example of transparent awning

7.15 Views

Important views to key open spaces have been identified and mapped.

Key view corridors are to be defined at street level by street walls. At upper levels, tower elements should be located and angled to take advantage of views and allow for view sharing of distant views.

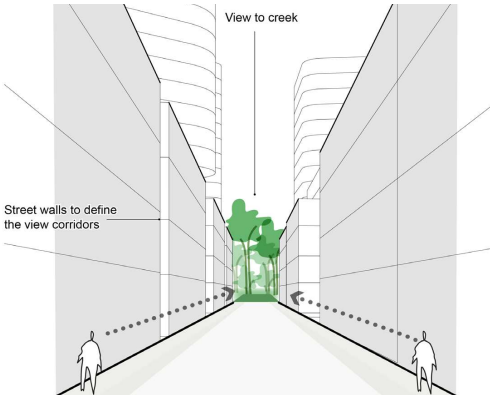


Figure 52: DCP Diagram - View

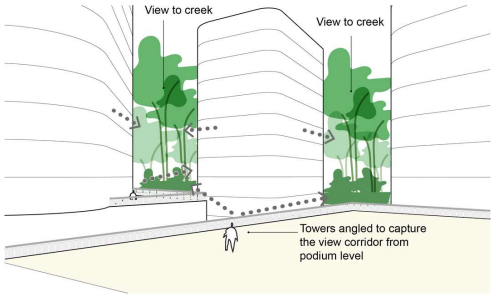


Figure 53: DCP Diagram - View

View Lines

1) View to Scalabrini Creek
2) View to Bonds Creek
3) View to through Civic Park to Community Spine
4) View to Scalabrini Creek
5) View to Scalabrini Creek
6) View to Town Centre Park 2
7) View to Byron Road Sport Precinct and Community Spine
8) View to Scalabrini Creek
9) View to Town Centre Park 2
10) View Bonds Creek
11) View to Byron Road Sport Precinct
12) View to Green Spine
13) View to Scalabrini Creek
14) View to Scalabrini Creek
15) View to Bonds Creek
16) View to Scalabrini Creek

Figure 54: View Corridor Map

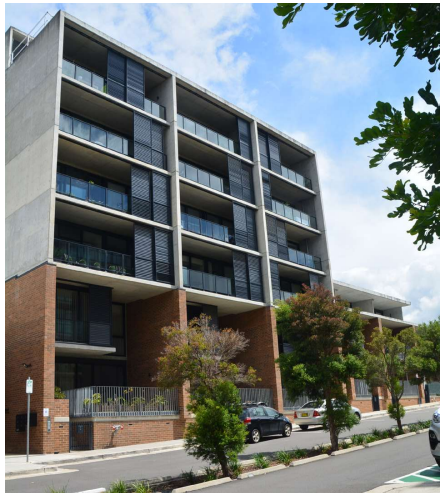
8. Urban Form

This section sets out the urban design approach to key urban form elements in Leppington Town Centre and provides a overview explanation of the Draft DCP controls.

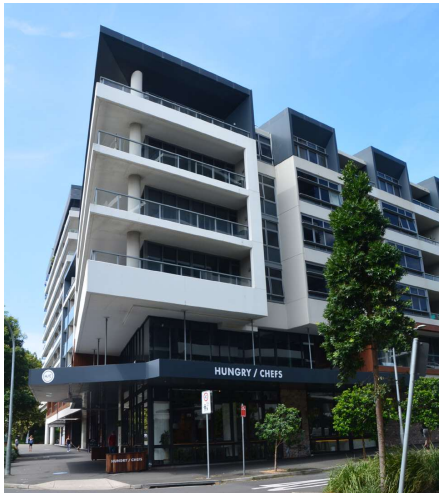
Key urban form elements outlined include:

- Heights.
- Building Setbacks.
- Car Parking.
- Local Caravan Park and Retirement Village.
- Staging for Mixed Use Developments.

4 storey residential apartments



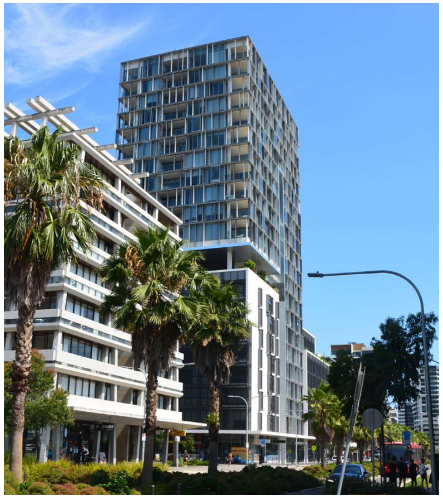
7 storey residential apartments with 6 storey street wall and double height ground floor apartments



6 storey mixed use building with corner articulation

14 storey mixed use tower

18 storey mixed use tower with 4 storey street wall (Source: Google Maps)



21 storey mixed use building with 6 storey street wall

8.1 Height Strategy

The height strategy provides a range of preferred podium and tower heights to achieve appropriate solar access and urban design outcomes in the town centre. It reflects a 'loose fit' approach in response to the proposed 'density pyramid' established by the draft FSR controls, providing for a range of building heights that can accommodate take-up of FSR bonuses and allow for diversity in building design.

The Height Strategy Map identifies:

- A range of preferred podium heights, expressed in storeys.
- A range of preferred tower heights (inclusive of podium heights), expressed in storeys.
- Areas with low scale buildings (1 to 2 storeys) that are likely to be retained in the short to medium term. Future development surrounding these areas will need to ensure appropriate height transitions.

Articulated approach to heights

Building heights are to be articulated by adopting built form with podiums with towers above. Generally, taller buildings are to emphasise key corners and tower elements are to be located to minimise overshadowing impacts. The range for variation in built form height is greater for tower components, particularly in the core of the centre.

Density pyramid

Taller heights are to be concentrated around Leppington Station, transitioning down to lower heights at the edges of the Precinct and adjacent to existing 1 to 2 storey development.

Establishing a human, urban scale

Given the range of densities proposed for the town centre, the height strategy seeks to establish an urban, human scale at street level by setting podiums at a mid-rise scale of 4 to 6 storeys. Where buildings interface important public open spaces, such as the Civic Park and Scalabrini Creek, or recently developed lower scale areas such as north of Fifth Avenue, lower street wall heights are proposed to create an appropriate built form transition.

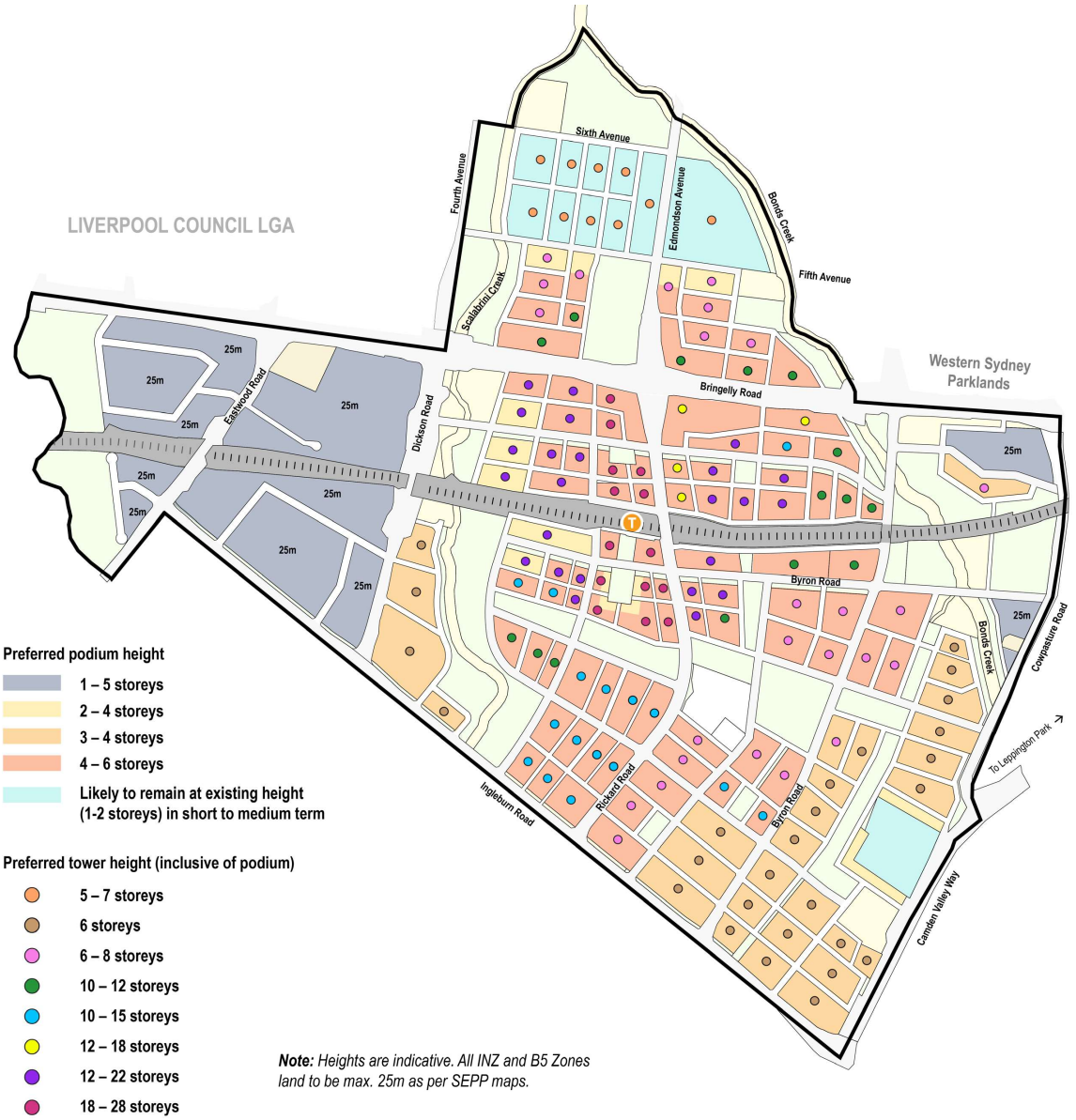


Figure 55: Height Strategy Map

8.2 Building Setbacks

The setback strategy for buildings in Leppington Town Centre seeks to:

- Clearly define streets in the town centre with zero setback street walls and upper level setbacks above the podium level to ensure an urban, human scale and minimise overshadowing impacts.
- Define important corners and where tall towers are proposed, articulate a 'break' between the podium and the tower element.
- In medium density residential areas, provide opportunities for deep soil planting to maximise tree canopy cover to residential streets.
- Clearly define a consistent street wall along Bringelly Road with allowance for landscape buffers to mitigate amentity impacts from the road.
- Provide for adequate landscaped buffers for industrial and business development uses to open spaces and residential uses.
- Enable a consistent landscape road reserve to be established along Ingleburn Road.

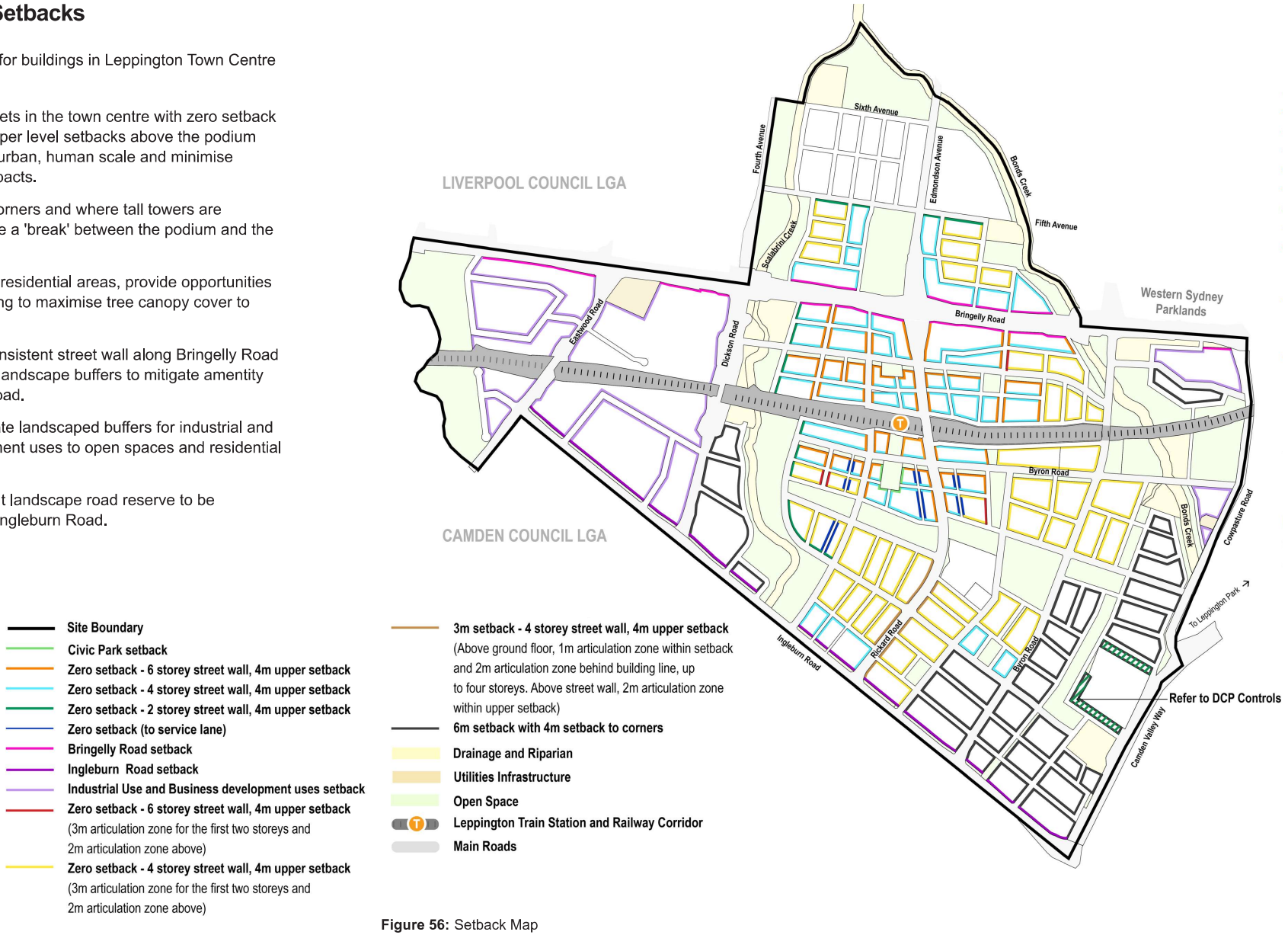


Figure 56: Setback Map

8.2.1 Key Setback and Street Wall Types

Town Centre – Zero setback, 6 storey street wall

- Generally located on north-south streets.
- Zero setback to define street edge with active frontages.
- 6 storey street wall, where such a height will not adversely overshadow the street.
- 4m upper level setback (above street wall) allows for a generous terrace.
- Zero setback for corner buildings to define and emphasise street corners. A 4m 'tower break' setback is required to distinguish the tower from the podium.

Town Centre – Zero setback, 4 storey street wall

- Generally located on east-west streets.
- Zero setback to define street edge with active frontages.
- 4 storey street wall, where such a height will not adversely overshadow the street.
- 4m upper level setback (above street wall) allows for a generous terrace.

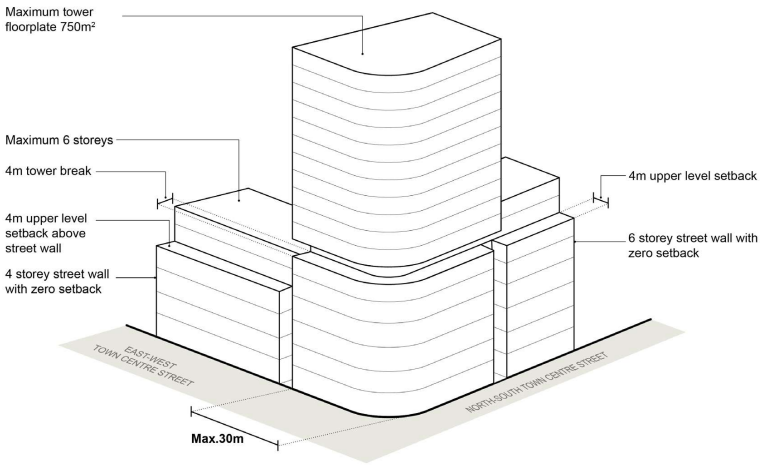
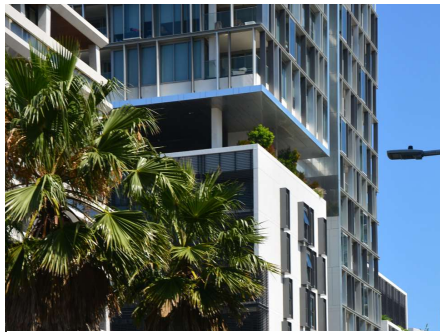


Figure 57: Town Centre Setbacks - 4 and 6 storey street wall and corner towers

Example of articulated 6 storey street wall that creates a strong street edge



Example of a 'tower break' between the podium and tower

Example of mixed use development with 6 storey street wall with upper levels setbacks to 8 storeys and a 21 storey tower to the corner

Example of mixed use development with 4 storey street wall and 18 storey corner tower (Source: Google Maps)

Town Centre 2 storey street wall

- Located along Scalabrini Creek and Fifth Avenue.
- Zero setback to define street edge with active frontages / residential frontages.
- 2 storey street wall for a lower scale, more 'open' interface to the riparian corridor.
- 4m upper level setback (above street wall) allows for a generous terrace.

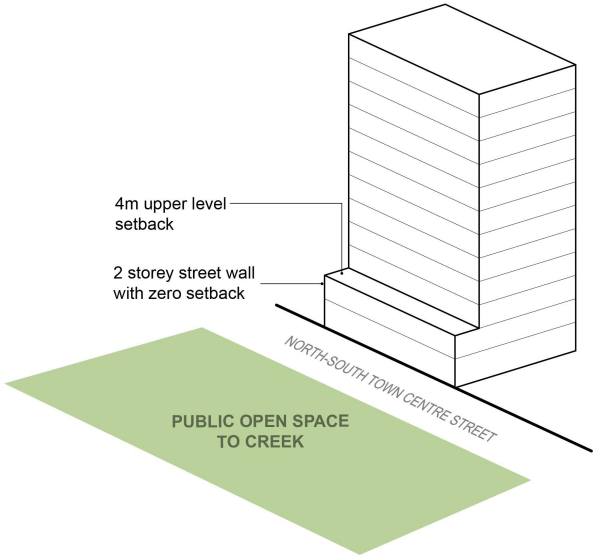


Figure 58: Scalabrini Creek setback

Civic Park Setback

- Located along Civic Park edge.
- 4m ground floor setback with zero setback above to create a semi public, colonnade-type transition space between active ground floor uses and the park. Colonnades are to be for the full length of the setback, as shown on the Setback Map.
- 4 storey street wall creates a sense of openness around the Civic Park.

Example of a ground level setback to create activated transition to open space in front, Darling Quarter (Source: Google Maps)

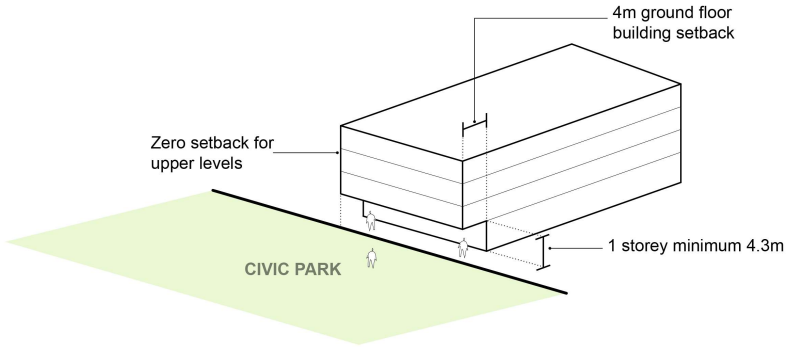


Figure 59: Civic Park Setback

High Density Residential

- Located on residential streets in the R4 High Density zone.
- Zero setback to define street edge with entry gates, fencing and blade walls.
- 3m double-height articulation zone from the street to allow for courtyard space and deeper first storey balconies (to allow for expression of terrace style housing).
- 2m articulation zone above first two storeys for balconies.
- 4m setback above the street wall.

High Density Residential setback on Rickard Road

- Located on residential streets in the R4 High Density zone with frontage to Rickard Road south of the Community Spine and school.
- 3m setback for ground floor residential courtyards and building entry.
- 1m articulation zone within building setback above ground floor and 2m articulation zone behind building line up to 4 storeys.
- 4m setback above the street wall with 2m articulation zone within upper level setback.

Medium Density Residential

- Located on residential streets in the R3 Medium Density zone, except for blocks north of Fifth Avenue where recent development has been constructed to existing DCP setback requirements.
- 6m building setback to allow for front courtyards and tree planting.
- 4m setback to the corners to allow for corner articulation and emphasis.
- 3m setback above the street wall / podium.

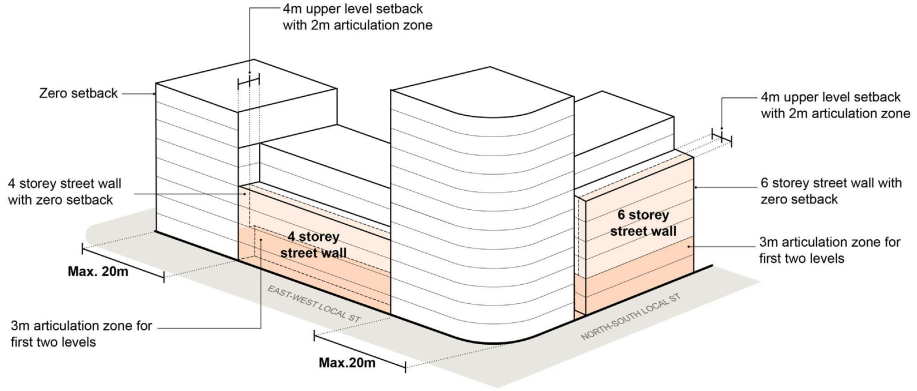


Figure 60: High Density Residential Setback

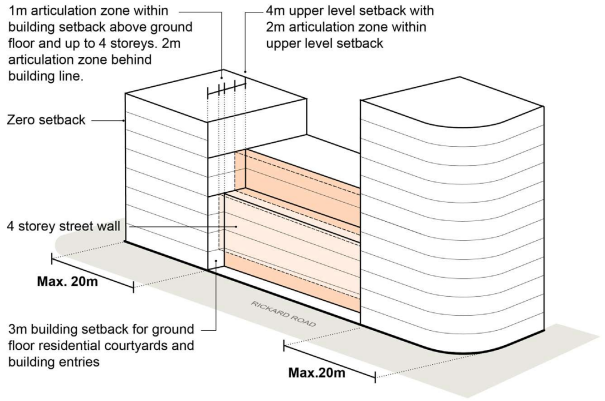
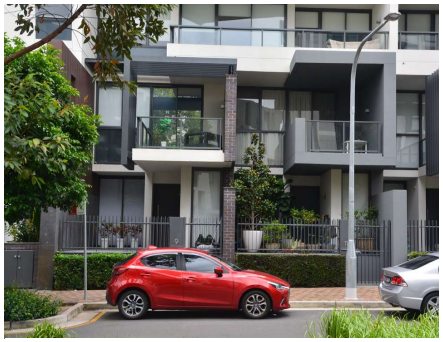
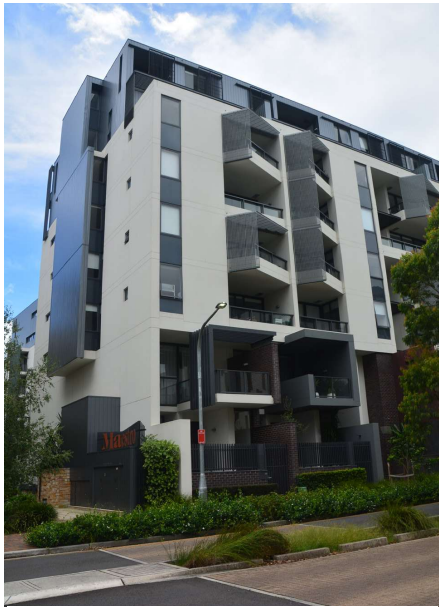


Figure 61: High Density Residential Setback on Rickard Road



Example of zero street setback with ground floor courtyard and deeper first storey balconies

Example of a 4 storey residential 'street wall'



Example of a 6 storey street wall with double-height articulation zone for first two storeys and upper levels set back

Example of a 4 storey residential podium with upper levels set back

Example of 4 storey street wall defined by strong balcony elements above ground floor up to 4 storeys and upper levels set back (Source: Google Maps)

Bringelly Road Setback

The purpose is to rationalise the alignment of buildings along Bringelly Road, given that property boundary alignments are inconsistent. A substantial proportion of the Bringelly Road interface is occupied by floodways and drainage infrastructure. This is reflected in the SP2 zoning that applies to Bringelly Road.

- 10m setback from the SP2 zone boundary to establish a more consistent street wall and allow for landscaping and tree planting.
- 6 storey street wall with 4m upper level setback.
- Zero setback for corner buildings with 4m tower break setback.

Example of built form with arterial road interface. The building facade addresses the street together with landscaping and tree planting.

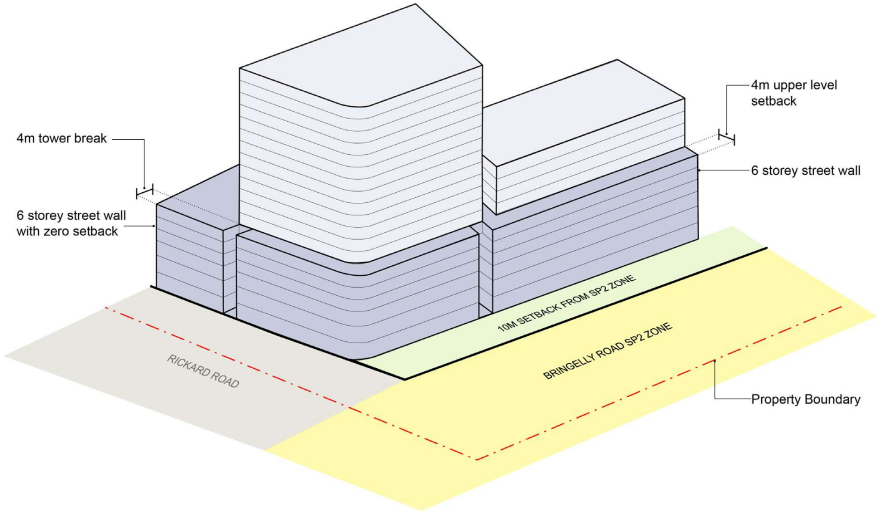


Figure 62: Bringelly Road Setback

Ingleburn Road Setback

The purpose is to facilitate the delivery of a publicly accessible landscaped reserve (Ingleburn Road Linear Park) which connects to drainage alignments on Ingleburn Road.

- 9m building setback, within which 6m is to be publicly accessible. The remaining 3m is to form either private open space, or communal open space if adjacent to the main building entry. Publicly accessible communal open space may be included towards the total requirement for communal open space under the DCP.
- 4 storey street wall height with 4m upper level setback.
- 2m articulation zone behind the building line. Deep balconies with acoustic treatment and wintergardens are proposed to address noise impacts from Ingleburn Road.

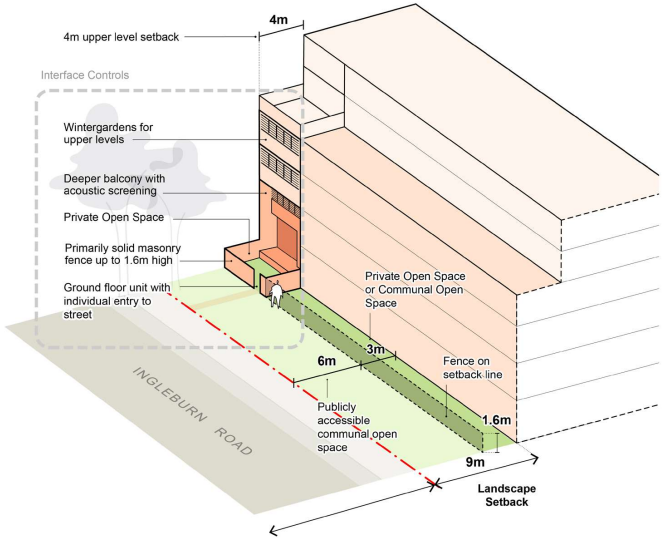


Figure 63: Ingleburn Road Setback

Industrial and Business Development use Setback

The purpose is to reduce the impact of light industrial developments on residential properties and open spaces within the Town Centre. Fencing and landscape controls are to ensure sites are clearly defined and appropriately screened from the street.

- Minimum 10m and maximum 21m building setback from the primary frontage.
- Minimum 50% glazing for the primary facade.
- The primary frontage should be activated, with uses or facade treatments such as:
  - — Active uses, such cafes and shop fronts
  - — Retail showrooms
  - — Clear glazed walls and windows to office areas, amenities, circulation stairs
- An articulated building entry can be within the setback zone by a maximum of 2m to provide for a pedestrian friendly interface to the street.
- Setback zones should incorporate landscaping and tree planting to the street to contribute to tree canopy targets.
- Provide separate pedestrian and vehicular access points to avoid pedestrian / heavy vehicle conflicts.
- Provide 1.8m high black palisade fencing to secure restricted access areas, such as car parking and loading. Palisade fences should be screened with landscaping and tree planting.
- Consider low, landscape fencing to the primary facade where the main pedestrian entry and active frontages are located to create an open transition to public open space.
- Parking and loading areas should be located to the side or rear of the building. Avoid locating parking in front of the primary facade of the building.

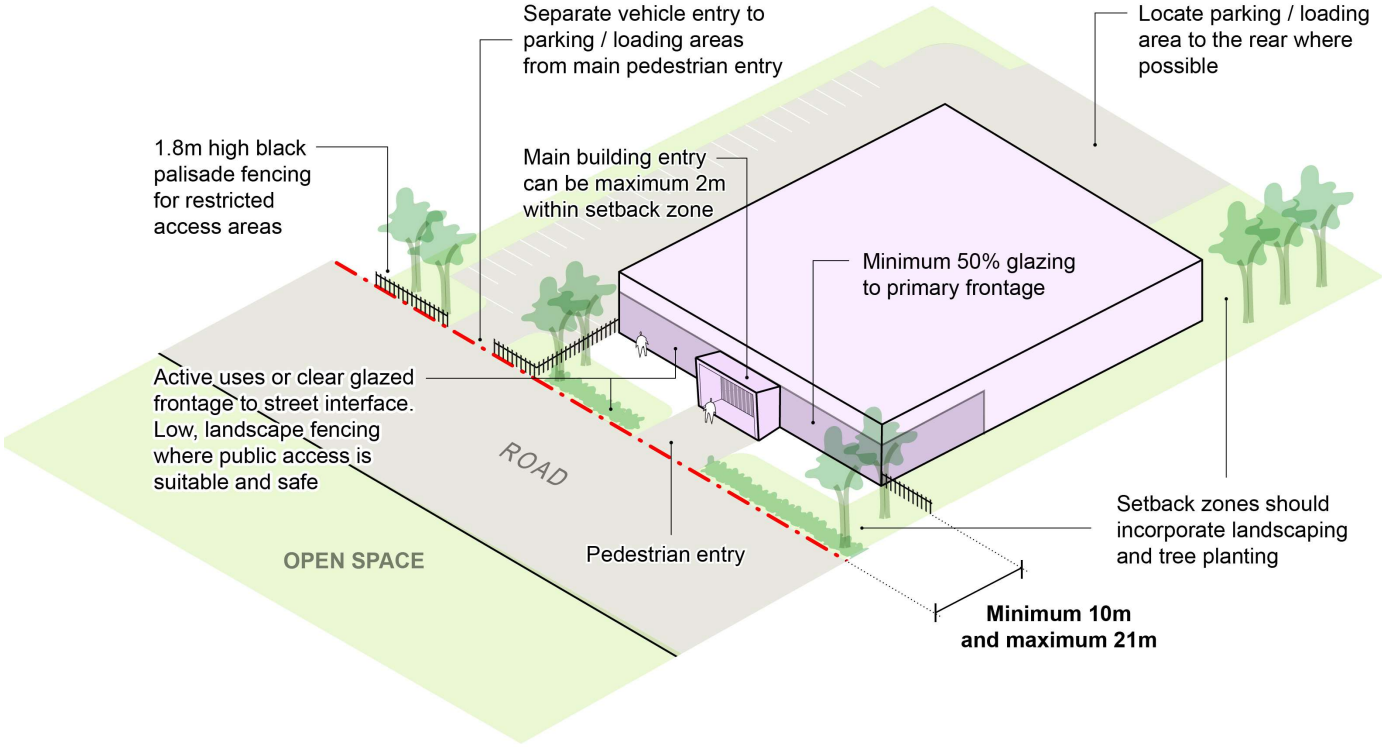


Figure 64: Industrial and Business Development Use Setback

8.3 Car Parking

To ensure at grade and above ground car parks are sleeved by other uses to ensure buildings positively address streets and open spaces.

Access

- Vehicle access ramps should be located away from main street frontages to minimise impacts on active frontages, pedestrian movement and so on. Refer to Figure 66.

Basement Parking

- Basement parking is preferred to avoid negative impacts on the public domain – particularly in the town centre core.

Ground Floor Parking

- Where ground floor parking cannot be avoided, it must be sleeved with active edges facing onto streets and open space.
- Surface or at grade parking is only suitable for areas outside of the Core, along the railway line boundary or in light industrial / business development areas. Surface or at grade parking must be located to the rear of buildings (away from the primary street frontage) to allow built form to address the street and be suitably screened with landscaping.

Above Ground Parking

- Must be located on the first floor or above and must be sleeved to street frontages. Where sleeving is not possible, the façade treatment needs to be architecturally designed to screen cars and provide an alternative solution.
- Above ground floor, including multi-storey commuter car parks, should have a floor to ceiling height of 3.2m or more (at the ground level only) to enable adaptation to other uses such as residential, commercial, or community in the future.
- Only two levels of above ground parking can be included within buildings. This is to avoid overshadowing impacts from taller buildings.

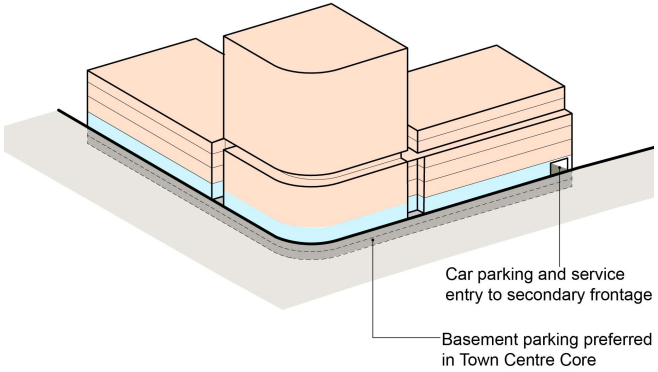


Figure 65: Basement Parking

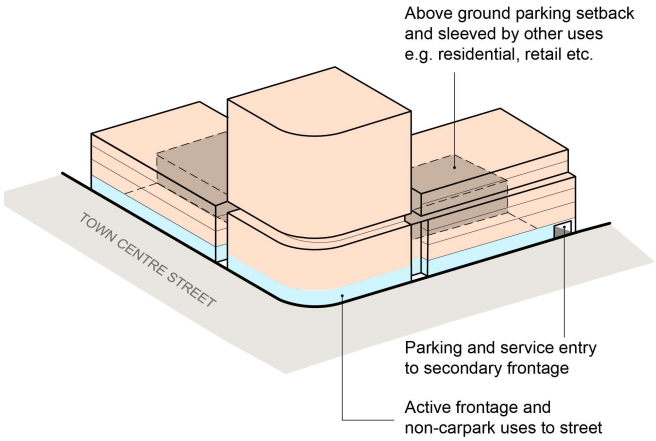


Figure 66: Above ground parking

8.4 Existing Retirement Village

The existing Retirement Village on Camden Valley Way comprises single storey dwellings that are likely to remain in place in the short to medium term.

The Draft ILP seeks to establish an interface between the existing Retirement Village and new development that is compatible with the existing built form, allowing the Retirement Village to be integrated with the new community whilst maintaining a sense of privacy.

It is proposed that the Retirement Village is sleeved by low to mid-rise residential development, comprising a mix of terrace style housing and with low to mid-rise apartments at the corners.

Minimum rear setbacks of 6m (to two storey dwellings) and 10m (to four storey dwellings) will provide adequate separation for privacy and landscape screening.

A new entry from the western side is encouraged, together with built form that addresses the street and public domain, so as to create an interface with new / future development.

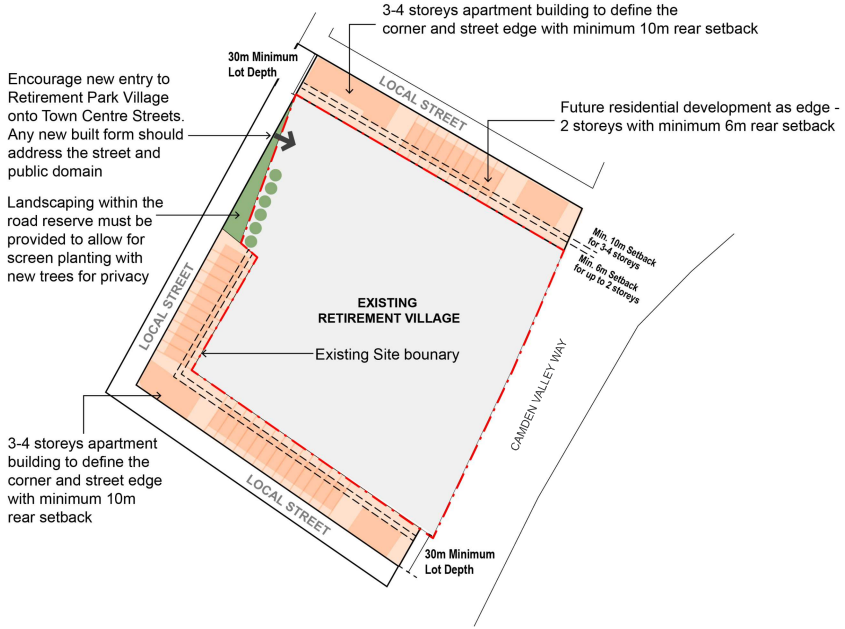


Figure 67: Indicative concept design for the interface of the Retirement Village

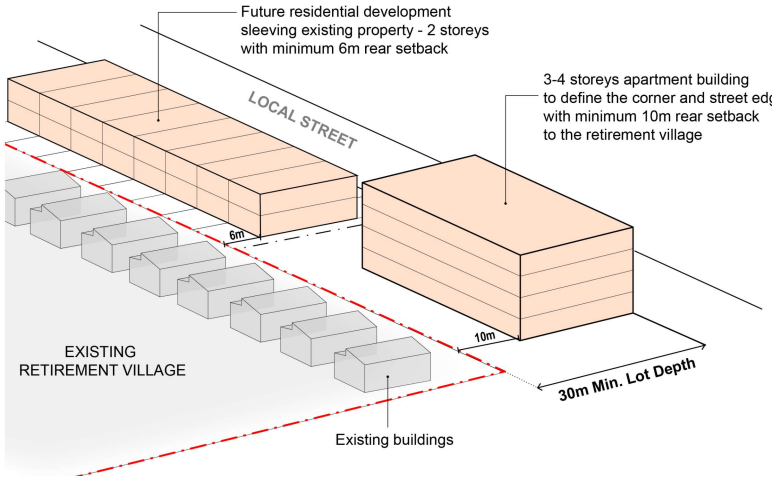


Figure 68: Interface and setback controls for new development sleeving the Retirement Village

8.5 Staging Mixed Use Developments

Mixed use developments in Leppington Town Centre are envisaged to incorporate a combination of land uses that are distributed both vertically (e.g. shop top housing) as well as horizontally (i.e. different typologies such as shop top housing adjacent to flexible frontage apartments and terraces that allow for non-residential ground floor uses).

Importantly, the distribution of commercial floor space, where required as part of an FSR control, should be considered not only at the lower levels of a building but also at the rooftop level or other levels.

In residential zones where limited retail and / or commercial uses are permitted, ground floor corner shops and home offices are also encouraged; as are a mix of building typologies, such as apartments which book-end terraces. This is to ensure Leppington Town Centre develops as a truly diverse, mixed-use, strategic centre.

Ensuring consistent street walls and upper level setbacks, as envisaged in the proposed setback controls and height strategy, will ensure that the finished appearance is compatible and integrated.

In order to avoid land use conflicts, the following design approaches should be adopted:

- For shop top housing, separate entries for commercial and residential uses are to be provided.
- For residential apartments, individual entries to ground floor units from the street are to be provided.
- Where commercial active rooftops (e.g. rooftop bars) are proposed, provide separate entry directly from the street.
- The side walls of buildings abutting future stage developments (or lower height built form) should not be left blank, but given detailed design consideration to create visual interest. e.g. articulated or artistically treated. This is also to avoid visual impacts resulting from exposure of blank walls as individual buildings are progressively developed over time.

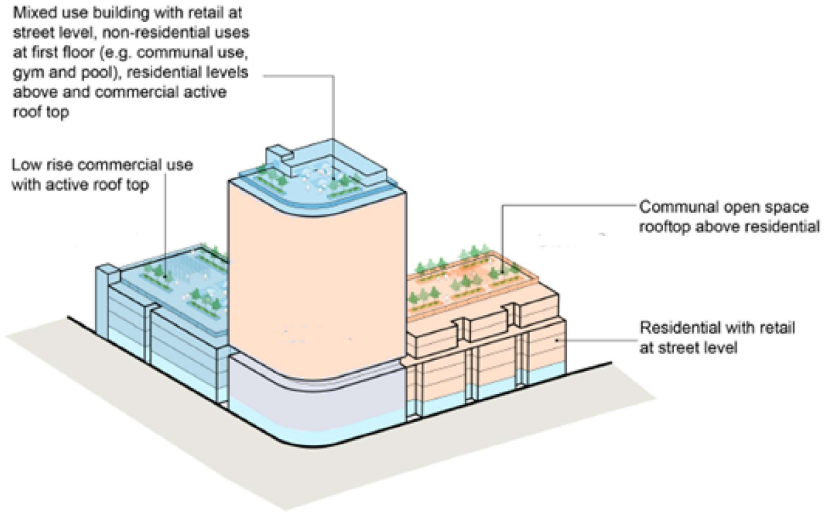


Figure 69: Example of a variety of land uses and built form typologies on a single block.

9. Conclusion

The vision for Leppington Town Centre is to grow into a convenient and connected, well-designed strategic centre within the Western Parkland City that is complementary to its natural environment and reflects, acknowledges and celebrates its connection with Country.

The revised Leppington Town Centre Draft ILP seeks to achieve this vision by re-balancing employment uses with higher density residential uses whilst providing more jobs and housing focused around Leppington Train Station. The Draft ILP provides for a more flexible and balanced mix of land uses, a more permeable and connected street grid, a diverse and well-connected blue-green network and an denser, more articulated approach to urban form. It will also provide for a more legible town centre heart focused around the Civic Park with well-defined built form that provides for active uses, jobs, housing and a 24-hour economy.

The Draft ILP is underpinned by key urban design and landscape principles which respond to Leppington Town Centre's natural setting framed by Kemps, Scalabrini, and Bonds Creeks as well as the opportunities associated with Leppington Station and the role of Leppington as a future Strategic Centre.

Open spaces and streets have been designed to integrate with the wider blue-green grid and provide for a walkable, legible, activated and comfortable public domain. This is to be achieved via the delivery of a range of open space types (sporting fields, parks, linear plazas and riparian corridors) and a variety of street types with generous tree canopy cover, as outlined in Section 6 and 7.

Built form controls, as outlined in Section 8, have been designed to maximise engagement with the street through a range of ground floor land use and interface design controls. The building height strategy and setback controls seek to articulate future urban form in a manner that expresses Leppington's role as a strategic centre whilst ensuring the solar and visual amenity of the public domain can be achieved (as demonstrated in the urban design testing discussed in Section 5).

The above principles, concepts and development controls have informed the Draft Leppington Town Centre DCP and Growth Centres SEPP Amendment. Together, this suite of design and planning controls will serve to ensure that the vision of Leppington Town Centre as a transit-oriented, strategic centre that is convenient and connected, well designed and complementary to its natural environment is achieved.