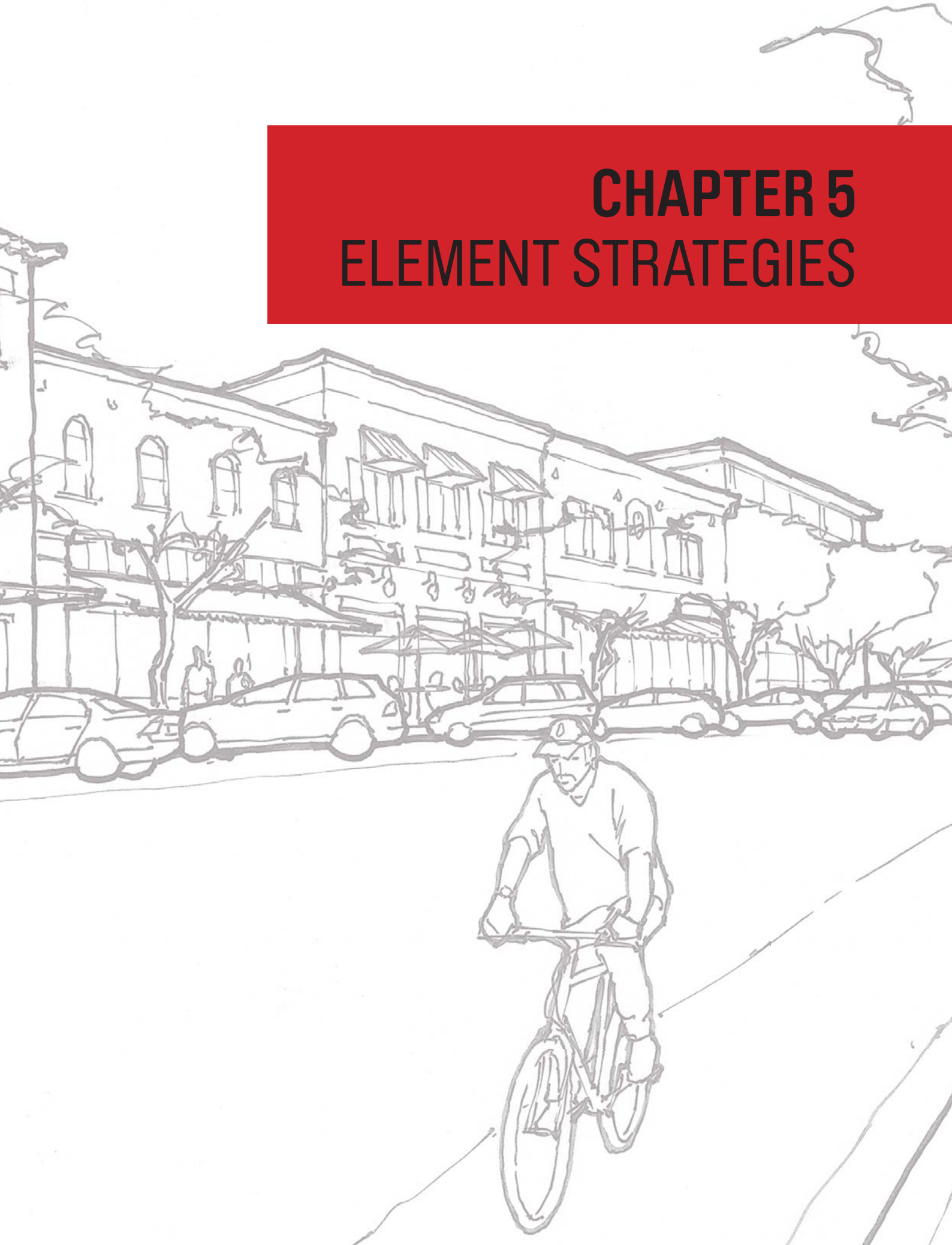
CHAPTER 5
ELEMENT STRATEGIES



THIS PAGE HAS BEEN INTENTIONALLY LEFT BLANK

TABLE OF CONTENTS

5 ELEMENT STRATEGIES

KEY POINTS OF THIS CHAPTER

- Objectives and design controls for street elements
- General guidelines on layout, selection, placement, and installation

Street elements are the essential, functional and aesthetic items the furnish our footways (between gutter and property boundary). They contribute to the street character, functionality and vitality, provide amenity and comfort to users, and respond to servicing and operational requirements.

The elements discussed in this chapter include:

- Street Trees
- Furniture
- Outdoor Dining
- Lighting
- Light Pole
- Banners

Figure 5.1 Granite Paving in Centenary Square

5.1 STREET TREES

Street trees are important to the appearance and amenity of streets. They visually unify and co-ordinate streets and precincts, and provide health and wellbeing benefits by encouraging walking and cleaning the air. Street trees are an effective way to increase shade and mitigate the urban heat island effect. When properly selected, located, planted and maintained street trees can completely transform an urban environment.

Recent research indicates that people respond most psoritively to streets that have single species dominance, larger canopies arching over the road, and regular spacing (not too close or too far apart). Streets with significant street tree planting can positivley impact property values and are often the preferred destinations for shopping and social pursuits.

OBJECTIVES

- Plant medium to large trees in the CBD,and all major urban centres.
- Create green corridors with increased tree planting in suburbs and in accordance with the Parramatta Ways Strategy.
- Increase the tree canopy in the public domain in accordance with council's tree planting policy.

Figure 5.2 A tree lined local street in Epping

Sustainable street tree planting in urban areas, such as CBD and town centre areas, is dependant on the successful implementation of a number of key factors. These need to be considered and prioritised in the design and development of vibrant city or town centre streets. They include:

- Soil volume
- Structural soil support system
- Placement and spacing
- Species selection
- Stock sizes and quality
- Planting and establishment practices

5.1.1 SOIL VOLUME

Sufficient soil volume needs to be provided for all new street trees to ensure they are able to grow at a reasonable rate and maintain vitality for the duration of their useful life. The environmental and economic benefits of street trees increase substantially if they remain viable for greater than 50 years. Street tree growth is often compromised by poor soil quality and lack of available soil volume, particularly where trees are planted over basement car parking or on podium.

Minimum soil volume requirements for small, medium and large sized street trees in Parramatta are as follows:

Table 5.1 Soil Volume Requirements for Street Trees

Tree Size	Average Crown Spread	Crown Protection	Min. Soil Volume Required (per tree)
Small (5-10m high)	5m	19.5m^2	9.3m^3
Medium (10-15m high)	8m	50.0m^2	23.8m^3
Large (15-20m high)	16m	200m^2	95.3m^3

Where possible root zone areas for trees in the public domain should be coordinated to develop large contiguous root zone areas as opposed to small separated planter boxes or tree pits.

Design controls include the following:

- The creation of continuous tree planting trenches in CBD and town centre streets where soil volumes are compromised,
- The creation of large contiguous soil zones for trees planted over basement car parking or on podium to maximise soil nutrient and moisture availability to trees.

5.1.2 STRUCTURAL SOIL SUPPORT SYSTEM

Street tree growth is traditionally compromised by soil compaction where full width pavements are required in the footway in urban areas. Soil compaction problems in urban environments can be addressed by the use of structural systems under pavements. These allow soils to retain sufficient aeration and porosity beneath pavement structures. Suitable systems include suspended concrete slabs or structural cells such as 'Strata-Vault' by CityGreen.

5.1.3 PLACEMENT AND SPACING

SIGHT LINES AND CLEARANCES

Street trees should be positioned so that they do not unduly interrupt the sight lines to oncoming traffic and impact on public safety. The following clearances can be used as a guide unless advised otherwise by Council Officers.

Table 5.2 Indicative Street Tree Clearances

Streetscape Element	Indicative Minimum Clearance
Street Intersection - approach side	10m from intersection kerb line
Street Intersection - non-approach side	7m from intersection kerb line
Traffic Signals	>10m from signal pole on approach side
Bus Stops	3m
Pedestrian Crossings - approach side	10
Pedestrian Crossings - non-approach side	7
Shared Lanes	1m
Driveways - approach side	3m
Driveways - non-approach side	2m
Stormwater Inlet/Outlet	2m
Street Light Pole	3m
Underground Service Pit	1m
Cycleways	0.5m

UNDERGROUND SERVICES

The presence of underground services may impact on the suitability of street trees. Information should be obtained from 'Dial-before-you-dig' and utility providers on the location and depth of any underground services along the street frontage. In addition advice about appropriate proximity to services may be sought from council officers.

SPACING

Street tree spacing is dependent upon the size of the tree at maturity. Generally, street trees are spaced at the following distances, centre to centre.

Table 5.3 Street Tree Size and Spacing

Tree Size	Height	Crown Spread	Spacing
Small	5-10m	3-5m	6-8m centres
Medium	10-15m	6-10m	8-10m centres
Large	16-20m	10-16m	10-15m centres

5.1.4 SPECIES SELECTION

Appropriate tree species selection ensures the healthy growth and longevity of trees, and enhances the desired streetscape character. There are often mixed species trees growing in a particular street. If the existing trees are in good condition and contribute positively

to the street, they should be retained and protected during any development process.

When planting new trees, species selection should consider the following:

- Response to any urban design objectives for the street or area (refer to **Section 3.3 - Typical Designs for General Streets Types**)
- Form, mature height, colour, and texture
- Appropriate scale for their location
- Low maintenance and resilience
- Anticipated growth rate and longevity in the local climate, soil and drainage context
- Tolerance to pests and diseases
- Potential impacts of root systems on pavement, building structure and underground utilities
- Environmental benefits

OVERHEAD POWER LINES

In most local streets overhead power lines have became a key constraint for growing healthy and well formed trees. For this reason, in areas of intense urbanisation activity, the City requires to underground overhead power lines during the development process (refer **Chapter 4 - Centre Strategies**).

The developments that will be required to underground existing overhead wires on adjacent streets are generally located in:

- B1, B2, B3, & B4 Zones; and
- R4 zone (FSR>=2:1)

Undergrounding the power line might also be required in the areas requiring significant vegetation buffer on the streets to mitigate adverse visual impacts from adjacent developments, such as Parramatta South Heritage Conservation Area.

For streets where overhead power lines remain the following species are recommended to be planted under the overhead wire subject to final approval by Council:

Table 5.4 Species for Street Verges with Overhead Wires:

Botanic Name	Common name	Mature Height	Growth Rate	Form (Mature)
Angophora costata 'Little Gumball'	Dwarf Angophora	5m	Moderate	Open
Buckinghamia celsissima	Ivory Curl Flower	6m	Fast	Open
Backhousia citriodora	Lemon-scented Myrtle	7m	Fast	Oval
Backhousia myrtifolia	Grey Myrtle	6m	Fast	Oval

Callistemon 'Kingspark Special' and other cultivas	Bottle Brush	6m	Moderate	Round
Gordonia axillaris	Fried Egg Tree	5m	Moderate	Broad
Harpullia pendula	Tulipwood	7m	Moderate	Broad
Koelreuteria paniculata	Golden Rain Tree	6m	Slow	Broad
Lagerstroemia indica 'Natchez'	Crepe Myrtle 'Natchez'	6m	Slow	Broad
Melaleuca decora	White Feather Honey Myrtle	6m	Fast	Round
Melaleuca nodosa	Prickly-leaved Paperbark	5m	Fast	Broad
Pistacia chinesis	Chinese Pistache	6m	Slow	Broad
Prunus cerasifera 'Nigra'	Purple-leaved Cherry Plum	4m	Moderate	Open
Tristaniopsis laurina 'Luscious'	Luscious Water Gum	6m	Moderate	Round
Zelkova serrata'Wireless'	Japanese Elm	7m	Slow	Broad

5.1.5 STOCK SIZES AND QUALITY

The required stock size for street trees varies depending on the location of planting. More advanced stock is required in major centres.

Minimum stock size requirements are provided in the table below:

Table 5.5 Minimum Tree Stock Size Requirements

	CBD	Town Centre & Urban Village	Neighbourhood & Village Active Strip	Other Areas	Open Space & Natural Reserve
Stock Size	400L	200L	200L	100L	Varied

Tree stock must comply with the reuqirments identified in Specifying Trees: a guide to assessment of tree quality by Ross Clark (NATSPEC, 2003). As a guide the requirements for height, calliper and branch clearance for advanced trees are as follows:

Table 5.6 Tree Stock Size Requirements

Stock Size	Height (above container)	Caliper (at 300mm)	Clear Trunk Height
100L	2.4m	50mm	1.0m
200L	3.6m	60mm	1.5m
400L	4.2m	95mm	1.8m

5.1.6 PLANTING PRACTICES AND MAINTENANCE PERIOD

SOIL MIX

Refer to City's Standard Design (DS) series and specifications.

DRAINAGE

The base of all tree pits should incorporate a drainage trench and pipe that connects to the street stormwater system.

MAINTENANCE PERIOD

A one year (52 week) maintenance and defects period is required for general public domain works including street tree maintenance and replacement to be carried out by the developer following final OC approval of the public domain works by Council Officers.

A two year (104 week) maintenance and defects period is required for any public domain works that include WSUD devices, including bio-retention tree pit, rain garden, swale etc., to be carried out by the developer following final OC approval of the public domain works by Council Officers.

5.2 FURNITURE

Street furniture contributes to pedestrian amenity and the functionality and viability of streets and public places in major centres and other active strips. This strategy outlines the principles underpinning street furniture selection and distribution in the public domain. Standard furniture palettes for each centre are identified to suit certain conditions and locations (refer Chapter 4 - Centre Strategies).

Due to resource and funding constraints, the maintenance requirements of furniture types should be a consideration for all projects. City of Parramatta seeks to streamline the range of standard off-the-shelf furniture elements for distribution throughout the LGA to contain required repair and maintenance activities. Bespoke furniture elements should be limited to special places, selected laneways and pedestrian links subject to design approval.

Selected street furniture elements include seats, bins, drinking fountains, bike racks, planter boxes, bollards, pedestrian fences and bus shelters. Refer to separate sections for guidance on street and pedestrian lighting, banners and CCTV. Advice on outdoor dining, kiosks, parking metre, telephone booths and other elements are to be addressed on an individual project basis.

OBJECTIVES

- Contribute to the overall aesthetic quality and character of streets and public places in the LGA.
- Provide functionality and comfort to all community groups.
- Provide a coordinated look and feel within precincts, streets, blocks and the entire LGA.
- Use robust, enduring products that can withstand the demands of heavy public use.
- Respond to different characters and identities in particular locations through specially designed elements.
- Select from the standard furniture palettes in the relevant locations to facilitate City of Parramatta's operation and maintenance regime.

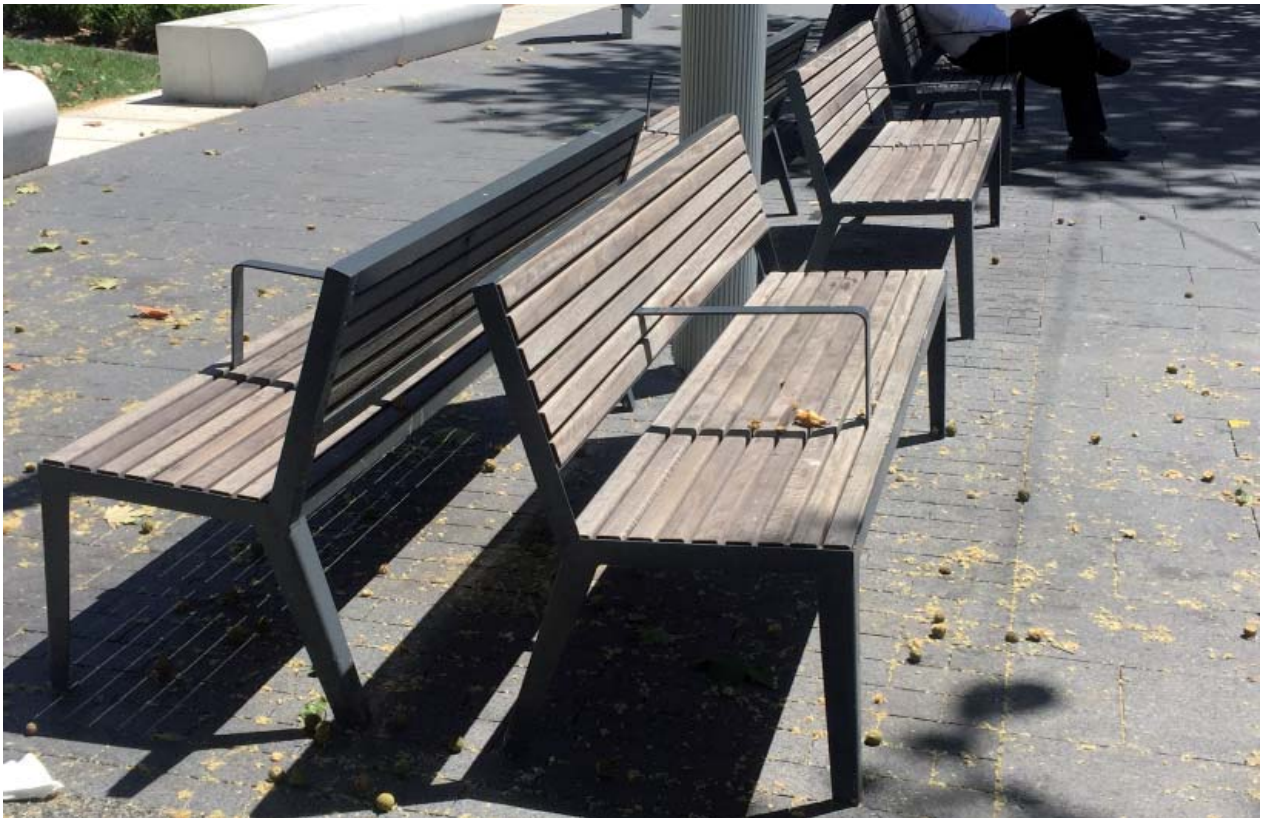


Figure 5.3 Seating furniture in Centenary Square

5.2.1 GENERAL LAYOUT

In a typical CBD or town centre street, the footpath is divided into zones to accommodate the most logical and functional arrangement of streetscape elements. Street furniture elements need to be located in a designated kerb side furniture zone, or along building frontage, (refer Figure 3.3).

Street furniture shall be located:

- Outside the clear path of travel for universal access
- In a designated furnishing zone
- In clusters where space allows to minimise clutter
- To suit street tree and street lighting layouts and building entries
- In accordance with the required Egress Zone from face of kerb to allow for car overhang and door swing, as well as access to the parked cars.
- In accordance with required setbacks from kerb ramps and driveway crossings
- In areas where pedestrians are likely to stop and linger min. 15m from the intersection unless in kerb extensions
- In kerb extensions to co-locate facilities where footpath width is constrained
- In publicly accessible privately owned areas adjacent to the street footpath, such as forecourts, setbacks and pedestrian through-site links, where footpath widths are constrained
- Near public transport and civic facilities such as libraries and community centres.
- Where particular building uses indicate a sizable need, e.g. senior living, aged care, hospitals, schools, university, etc.

When placing furniture in the Furniture zone, the following clearances are recommended:

- 600mm of Parking Egress zone from the face of kerb to allow car overhang and door swing
- Min. 1m from driveway crossings
- Min. 2m from the landing of kerb ramps
- Min. 15m from the intersection unless in kerb extensions.

5.2.2 ACCESSIBILITY

All furniture in the public domain shall be accessible according to Disability Discrimination Act 1992 (DDA) provisions, and include the following:

- Design and height to allow access for children and wheelchair users
- Adequate seats with arm and back rests that comply with DDA requirements in desired pedestrian routes and places
- Distribution of seats to provide frequent resting places for elderly people on some streets
- Maximum 65mm gap under any element (e.g. barrier, planter box or bus shelter) to pavement surface level
- Adequate hardstand around street furniture elements to allow wheelchair access where required.

5.2.3 ENVIRONMENTAL RESPONSIBILITY

The selection of furniture should priorities the use of environmentally responsible and sustainable materials as follows:

- Compliance with product stewardship policies (e.g. Forest Stewardship Council/FSC), eco-preferred content
- Ability to be recycled or reused at the end of life cycle
- Locally or regionally sourced to minimise shipping needs.

5.2.4 SEATS

Provide seats that are accessible and comfortable to all users. They should be robust and vandal proof with strong frames and battens. Seats should be selectively located throughout major centre streets, activity strips and civic spaces.

PLACEMENT CRITERIA

- Place seats in a range of shady and sunny positions
- Avoid placing seats in grass
- Do not place seats in footpath less than **3.5m** wide
- Place seats perpendicular to the kerb in the Furniture Zone when space permits
- Orient seats towards the building facade when located in the Furniture Zone (refer to Figure 5.6), and towards the street when located near building line
- Seek to buffer seats from fast and high volume traffic lanes, and place adjacent to parking lanes or with some physical separation, e.g. planter boxes.

Seating furniture in Centenary Square

COVERAGE

- High volume civic places and links – 30-50m maximum spacing of seats with arm and backrest options.
- CBD, town centre, village and neighbourhood strips – at bus stops, taxi ranks, kerb extensions and outside public buildings subject to detail design approval.
- High pedestrian volume CBD streets - 50-60m centres subject to detail design. When calculating the level of provision include seating already provided in forecourts, squares, pedestrian links and arcades outside the road reserve.
- Local streets – at bus shelters.
- Parks – subject to individual design and level of usage.

Public accessible seatings in a privately-owned area in George St

5.2.5 BINS

Bin enclosures should neatly fit City of Parramatta's standard 120L bin to suit City of Parramatta's collection service practice. Bins should be robust, flame resistant, and vandal proof with restrictive access to deter animals and birds, and to restrict dumping of large litter bags by members of the public. All the bins in the public domain requiring operation by City of Parramatta's waste team should use PCC key-alike unit lock system.

Standard utility bin on footpath

PLACEMENT CRITERIA

- Near the litter source, for example, near take away food shops and fast food outlets, and at assembly points that are near litter sources, for example, a bus stop near a park or shops
- So that they are easily accessible to City of Parramatta's waste collection vehicles
- As single units rather than multiples in streets and urban places
- To consider aspect and context. For example, a sitting and relaxing space will require bins. They should be visible but not too intrusive or close and they should not be sited between seats and a view or an activity. Bins should be sited downwind of seats or spaces where pedestrians congregate in summer conditions.

COVERAGE

- Near retail centres, recreation spaces, bus stops and other areas with high activity levels where people congregate

- At street corners in high volume pedestrian CBD streets subject to traffic and accessibility to waste collection vehicles.

5.2.6 BIKE RACKS

Provide bicycle racks that are robust and vandal proof. Use good looking durable finishes that are not damaged by constant abrasion by bicycles. Avoid narrow racks that allow bikes to jackknife in the parking position. Comply with relevant industry guidelines.


Standard bike rack used in public land

PLACEMENT CRITERIA

- At identified destinations such as transport hubs, libraries, major shopping centres, education & sports facilities, community services and other high activity locations.
- Due to spatial limitations bicycle racks are not encouraged in laneways.
- Close to entrance of identified destination places and in full public view
- In well lit, visible public areas
- Easily accessible from the cycle path, footpath and road.

COVERAGE

- Bicycle racks are normally sited in multiples of four. If the location is a small neighbourhood shopping centre and only one siting of bicycle racks is required then the rack multiple could be increased to six.

5.2.7 BOLLARDS

Provide fixed and retractable bollards options in laneways, civic places and park entrances to detailed design. They should be robust and vandal proof. Use good looking durable finishes. All retractable bollards in the public domain requiring operation by City of Parramatta's operations team should use PCC key-alike unit lock system.

Minimise the use of bollards in streets to approved design.


Standard bollards

PLACEMENT CRITERIA

- Maximum 1.5m spacing to deter vehicles unless approved otherwise.

5.2.8 DRINKING FOUNTAINS

Provide drinking fountains that are accessible and comfortable for all users and comply to relevant industry standards. Ensure a

hardstand area of 1500mm wide is provided all around for access. Use robust and vandal proof materials. Use automatic off taps to reduce water wastage.

PLACEMENT CRITERIA

- In high use areas and on the edge of mainstream pedestrian traffic.

COVERAGE

- Ideally co-located at the edge of squares, open space areas, parks and sporting facilities
- Generally only one drinking fountain in each location.

5.2.9 PEDESTRIAN FENCE

Pedestrian fences include RMS compliant pedestrian fences and bespoke non-RMS compliant pedestrian fences.

Bespoke non-RMS compliant pedestrian fences may be only installed in high profile areas, such as retail streets in centres, subject to separate design approval.

Where pedestrian fences are required to satisfy traffic engineering recommendations for the purpose of pedestrian safety, RMS compliant pedestrian fences are required.

PLACEMENT CRITERIA

- Bespoke/decorative fencing is not recommended for the public domain. These fences should only be installed with special approval on a project by project basis
- RMS compliant fences - only where required to satisfy traffic engineers' specific requirements.

COVERAGE

Subject to traffic requirements and site conditions.

5.2.10 PLANTER BOXES

Provide planter boxes that are robust and mobile so they can be moved as required for special events, emergency and utility services. Planter boxes should not include tall vertical plants or elements (e.g. trellis).

PLACEMENT CRITERIA

- To delineate special seating or dining area, and contribute to street amenity subject to City of Parramatta approval.

Bespoke planter boxes in Church St

5.3 OUTDOOR DINING

City of Parramatta encourages outdoor dining in suitable locations as a key component to activate the footpaths and building frontages, as well as stimulate local economic development.

Outdoor Dining Permits must be obtained before furniture can be planned or placed in public domain. The permit is assessed on a case-by-case basis subject to the individual traffic and site conditions.

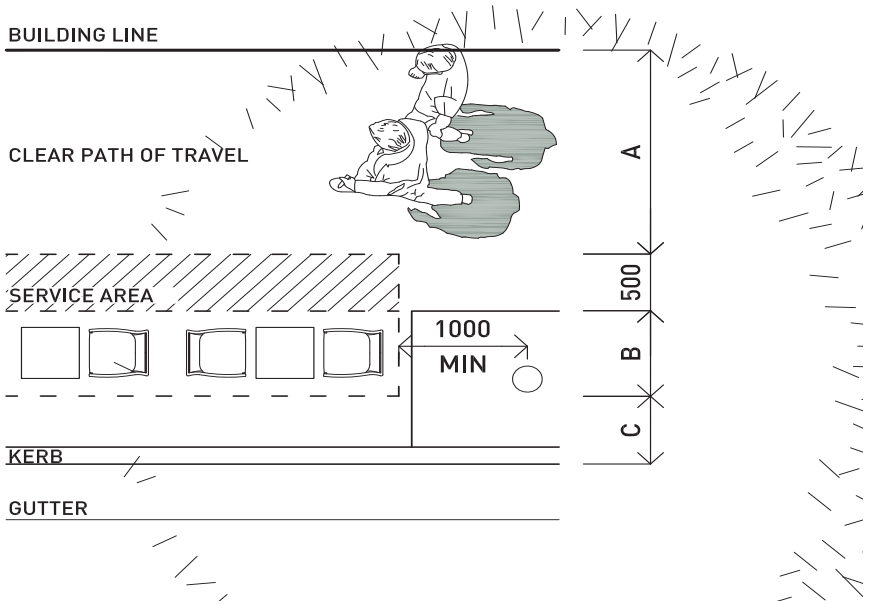
Outdoor dining furniture should comply with the following Design Controls:

- Outdoor dining furniture shall make positive contribution to the streetscape and character of the area.
- The placement of outdoor dining furniture shall not cause any clutter on public land.
- Placement of any outdoor dining furniture on the footpath shall not in any way interfere with kerb ramps, access to buildings, or access to fire escapes and service units.

5.3.1 GENERAL LAYOUT

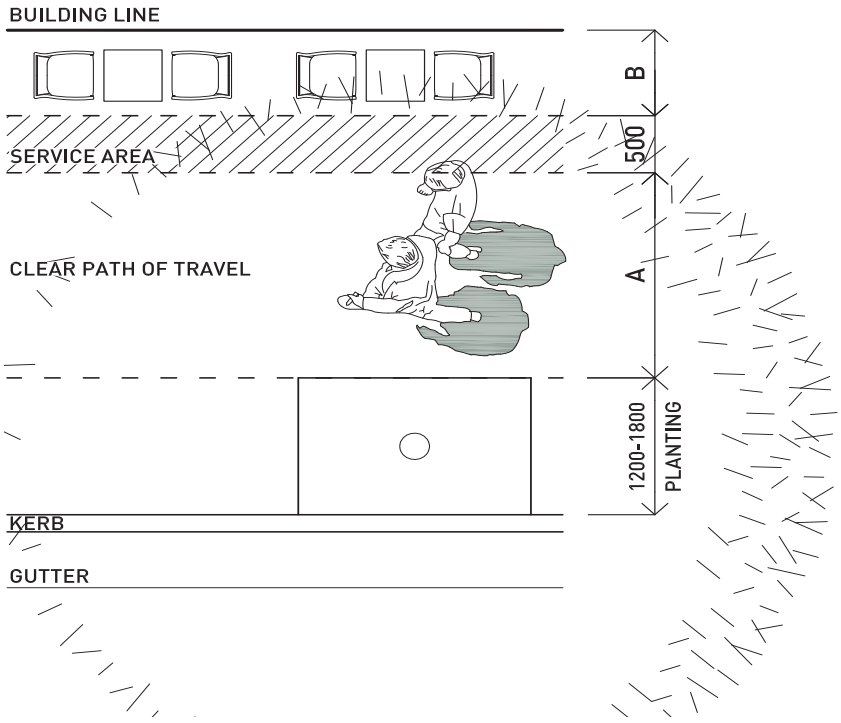
The seating area for outdoor dining may be located on either building side, or kerbside (in Furniture Zone), subject to site conditions. City of Parramatta will assess the site and advise preferred option once the permit application is received. The following diagrams indicate the basic layouts for preferred building side and kerbside seating layouts in CBD and other retail areas.

- The minimum clear path of travel must be retained as per Section 3.2.1 - Footway. This clearance must be free of any obstacles.
- A 0.5m of service area shall be provided between outdoor dining and clear path of travel.
- If the ourdoor dining is located next to a parking lane, minimum 0.6m clearance is to be provide from kerb face; while a physical separation (e.g. planter boxes) should be considered if outdoor dining is adjacent to traffic lanes.



A	B	C
Refer to ***Section 3.2.3***	2 seater: 750mm 3-4 seater: 1350mm	With parking lane: 600mm Without parking lane: subject to Council's approval

Figure 5.4 Outdoor Dining on Footpath Layout - Kerbside (in Furniture Zone)



A	B
Refer to ***Section 3.2.3***	2 seater: 750mm 3-4 seater: 1350mm

Figure 5.5 Outdoor Dining Layout Diagram - Buildingside

Outdoor dining furniture shall not cause any obstacle to safe pedestrian and traffic movements, and not in any way interfere with kerb ramps, access to buildings, or access to fire escapes and service units.

The following minimum clearances shall be provided:

STREET ELEMENTS	MINIMUM CLEARANCE
Intersection	12m
Pedestrian Crossing (including kerb ramp)	5m
Vehicle Crossing	2m
Light Pole	1.5m
Street Tree	1m

5.3.2 TABLES & CHAIRS

The outdoor dining seating elements (tables and chairs) should:

- be high quality and uniform in appearance.
- have simple designs and neatly placed in the public domain without extraordinary decorations.
- meet the seating requirements for eldlies and people with disabilities.
- be sturdy, stable and have sufficient weight so that they cannot move or be blown away in severe weather.
- be removed at the end of business hours.

5.3.3 SHADE STRUCTURES

Shade structure used in the outdoor dining area should:

- be high quality and uniform in appearance and read as part of the public domain.
- be consistent in colour and shape in any one street or town centre area.
- not include any commercial logo or advertisement.
- not be bespoke designed elements which can contribute to the perception of a privatised public domain.
- be temporary, light-weight, and modular umbrella-shaped units approved by City of Parramatta.
- be able to be removed or closed at the end of business hours or in windy conditions.
- be able to support outdoor heaters and be connected by inserts between shades to reduce run-off.

5.3.4 BARRIERS

Barriers (diverters) should be provided at the edges of the outdoor dining area if a liquor licence is granted for the area, especially in the alcohol-free zones, such as the CBD areas. The barriers should:

- not have gaps on the bottom greater than 65mm from the footpath surface.
- be sturdy, stable and have sufficient weight so that they cannot tip over or be blown away in severe weather.
- be removed at the end of business hours.
- have a consistent height between 75 and 90cm.

5.3.5 BLINDS

In general City of Parramatta does not encourage any type of blinds to be installed on the sides of shade structures in the outdoor dining areas located on the footways. The permission for the blinds will be assessed by City's outdoor dining team on a case-by-case basis.

5.4 LIGHTING

OBJECTIVES

- Provide adequate lighting for safe movement at night in all areas of the LGA.w
- Provide a well-lit pedestrian environment in which people feel secure and which enhances the appeal of the CBD and town centres.
- Upgrade pedestrian lighting to energy efficient LED light source in selected high usage pedestrian areas.
- Use a consistent and co-ordinated range of street pole types throughout the LGA to streamline maintenance and procurement processes.
- Use multi-function poles to combine streetlights, pedestrian lights, banners and CCTV cameras in selected CBD and town centre streets.

5.4.1 10M MULTI-FUNCTION POLES

- CBD and Town Centres Selected Streets;
- Selected main roads and civic spaces in CBD and town centres with highest pedestrian usage in commercial areas or roads linked to commercial areas, commuter parking or transport hubs (refer Chapter 4 - Centre Strategies).

Upgrade to multi-function poles to achieve combined energy efficient LED lighting, banner compatibility, effective CCTV coverage and future Smart City capability.

Achieve carriageway lighting and a high level of pedestrian lighting on the footpath as follows.

- Achieve a high colour rendering and a high level of vertical luminance to maximise personal safety (to detailed lighting design).
- Use a light source that emits no light above the horizontal plane.
- Use new City of Parramatta owned multi-function poles and light fittings giving character and quality in keeping with the urban environment.
- Achieve vehicular and pedestrian lighting in accordance with identified strategies (refer Chapter 4 - Centre Strategies) and AS/NZS1158.1 (subject to detailed lighting design).
- Under awning lighting to comply with minimum category P1-P3 to AS/NZS1158.3 Part 3 (subject to detailed lighting design). Floodlights or bare lamps are not to be used.
- Supplementary lighting at pedestrian crossing as required to AS/NZS 1158.4 Part 4.

5.4.2 STANDARD ENDEAVOUR ENERGY POLES

New minor roads with low traffic usage and that are lit primarily for pedestrians. These streets should be lit as a single unit to comply with the relevant categories of AS/NZS1158.3.1. Lighting should achieve a quality lit environment that is comfortable and feels safe without excessive illumination:

- Achieve a high colour rendering (to detailed lighting design)
- Use a light source the emits no light above the horizontal plane

- Use existing EE street poles. Upgrade as necessary to meet best practice standards).
- Carriageway lighting to comply with AS/NZS1158.1 Part 1 (to detailed lighting design)
- Pedestrian lighting to comply with minimum category P3 including vertical illuminance to AS/NZS1158.3 Part 3 (to detailed lighting design)

5.4.3 LANEWAYS

Laneways in the CBD and town centres shall be lit to provide adequate security.

- Undertake a security risk to determine the level of risk based on natural surveillance, visibility and distance to a point of escape from the lane.
- Achieve a high colour rendering (to detailed lighting design)
- Use a light source the emits no light above the horizontal plane and minimises glare
- Using City of Parramatta owned multi-function or selected tapered poles and light fittings that have a character and quality in keeping with the urban environment. Use wall mounted fittings to maximise available width of the lane where possible.
- Pedestrian lighting to comply with minimum category P3 including vertical luminance to AS/NZS1158.1.1. Higher lighting levels may be required depending on the risk analysis (to detailed lighting design).

5.4.4 CAR PARKS (CBD AND TOWN CENTRES)

Car parks shall be lit to provide adequate lighting for people to safely access and to provide a level of personal security without dominating or overpowering the character of the town centre.

- Assess the lighting requirements based on levels of usage and risk for category P11 lighting in AS/NZS1158.3.1.
- Achieve a high colour rendering (to detailed lighting design)
- Use selected tapered poles and light fittings that have a character and quality in keeping with the urban environment.
- Use wall mounted fittings where possible.
- Use a light source that emits no light above the horizontal plane and minimises light spill onto adjacent residential properties.

- Consider AS4282 'Control of the obtrusive effects of outdoor lighting'.

5.4.5 PARKS AND OPEN SPACES

Parks and open spaces in the LGA should be unlit to discourage them as gathering places which may prompt anti-social behaviour. Where there are paths that are used as a thoroughfare, the paths should be lit to comply with the relevant category in AS/NZS1158.3.1. It is important that lighting is comfortable and has minimal glare to maximise the field of vision. This can be achieved by:

- achieving a high colour rendering (to detailed lighting design)
- using a light source that emits no light above the horizontal plane
- using City of Parramatta owned park pole or selected tapered poles and light fittings that have a character and quality in keeping with the urban environment.
- designing path lighting to category P3, including giving vertical luminance. Where there is a high density of night traffic or a higher risk of crime the category should be increased to category P2.

5.4.6 CIVIC SPACES

Civic spaces in CBD and town centres with highest pedestrian usage in commercial areas or roads linked to commercial areas, commuter parking or transport hubs.

Achieve combined energy efficient LED lighting, banner compatibility (to design) and effective CCTV coverage. Achieve a high level of pedestrian lighting on the footpath as follows.

- Achieve high colour rendering and a high level of vertical luminance to maximise personal safety (to detailed lighting design).
- Use a light source that emits no light above the horizontal plane.
- Use new multi-function poles or selected tapered pole and light fittings giving character and quality in keeping with the urban environment.
- Pedestrian lighting to comply with category P1-P3 to AS/NZS1158.3 Part 3 (subject to detailed lighting design).
- Under awning lighting to comply with minimum category P1-P3 to AS/NZS1158.3 Part 3 (subject to detailed lighting design). Floodlights or bare lamps are not to be used.

5.5 LIGHT POLES

Light pole specification should consider the following features to be determined in consultation with council officers.

5.5.1 CCTV

- Storage of CCTV equipment inside the pole casing in all proposed pole types in CBD and town centres.
- Second hatch opening in poles to provide space to work.

5.5.2 ANIMATION AND EVENTS

- Double GPO in all multi-function poles (minimum 240v/10amp, preferably 240v/20amp).
- 3-phase power outlets at strategic locations to support major CBD events.
- Separate power supply for lighting, power and CCTV and ability to isolate power and lighting to individual poles.
- Fixtures and structural support for Christmas decorations and catenary lines.
- Rigging points, fixtures and structural support for catenary lines and other incidental attachments to suit special event and animation requirements according to agreed design aspirations.
- Provision of engineering certification of load bearing capacity on a street by street basis according to agreed design aspirations.
- Spare conduits for possible future power supply needs.
- Install all light poles in the public domain with footings and bolt assemblies buried below the finished pavement surface.

OBJECTIVES

- Use a consistent and co-ordinated range of street pole types throughout the LGA to streamline maintenance and procurement processes.
- Use multi-function poles to combine streetlights, pedestrian lights, banners and CCTV cameras in selected CBD and town centre streets.
- Use multi-function poles in village and neighbourhood centres to allow multi-function capability.
- Use sleek tapered poles in laneways and small spaces where banners are not required.
- Provide maximum flexibility for events in CBD and town centres by providing power and engineering flexibility to suit possible fixtures in light poles in streets.

5.6 BANNERS

Use banner sizes that proportionally suit pole heights whilst still allowing flexibility for addition of extra fixtures from time to time. Agreed preferred sizes include:

- Large 4.5mx1.5m for 10m poles (assuming MFP's) on single or dual pole arms
- Medium 3.0mx1.0m for 8m poles (assuming MFP's) on single or dual pole arm.

OBJECTIVES

- Enhance the attractiveness of the CBD and town centres.
- Convey a sense of activity and creativity in the Parramatta LGA and promote the image of CBD and town centres as a great place to live, work and invest.
- Facilitate revenue generating commercial marketing and advertisement in high volume vehicular traffic streets, along local bus routes and in transport hubs/interchanges in CBD and town centres.
- Facilitate event marketing, celebration and beautification in high volume pedestrian traffic streets and squares in CBD and town centres.
- Facilitate City of Parramattalor, business and community requests for celebratory banner use.
- Minimise the number of banner sizes and shapes to facilitate graphic design, production, procurement and installation of banners.
- Discourage banner use in narrow laneways, intimate places, natural settings, and along the Parramatta River shoreline.