



IPSWICH STREETScape *Design Guideline*

A guide for Council, Developers and the Community



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Front Cover: Springfield Lakes Boulevard

Disclaimer

The concepts and information contained in this document are the property of Ipswich City Council. The 'Ipswich Streetscape Design Guidelines' have been developed in conjunction with Deicke Richards and in consultation with other specialist teams in Ipswich City Council.

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Ipswich City Council is committed to the provision of quality streets and streetscapes within the city to expand the city's urban forest and support the growing community.

introduction

PART 1

-  Ipswich Central
-  Urban Centre
-  Rural Centre



1.1 VISION

As Ipswich's population increases, the streetscape will increasingly become a key component of the public open space. Population growth and development also necessitates the provision of functional and safe roads. With the constant expansion of the city's transport network comes an opportunity to deliver quality streetscapes that provide the community with attractive public spaces.

The implementation of the Ipswich Streetscape Design Guidelines will assist in enhancing the urban forest and improve transport planning and design within Ipswich. This design guideline aims to provide the supporting information necessary to achieve the following:

Promote an attractive Ipswich

- Promote Ipswich City as an attractive, progressive, clean and green city that actively encourages investment.
- Support the development of distinctive centres, each with their own character, role and cultural features.

Diversity and character

- Promote pedestrian, cyclist and public transport as priority modes of transport particularly in centres and at urban nodes and provide a flexible approach to road corridor design.
- Include appropriate plant species and maximise biodiversity in the streetscape.

Respect the environment

- Respond to the local climate, soils and topography.
- Manage impacts of climate change and avoid negative impacts on the total water cycle.
- Improve air quality, carbon sequestration, energy efficiency and the use of appropriate materials.

Enhance the urban environment

- Recognise the value of urban planting and the need for minimum planting standards to be met.
- Maximise the planting of appropriate plant species throughout the city.
- Utilise an appropriate palette of materials and furniture which respond to the local character as well as the present and future needs of the community.
- Provide appropriate maintenance for the streetscape
- Utilise the expertise and skills of multi-disciplinary professionals and craftsmen.
- Develop healthy vital streetscapes that provide: physical and psychological comfort and shade; are stimulating and accessible; and safe and secure.
- Maintain and enhance the distinctive character and heritage, including both the built and green components.

1.2 PURPOSE OF THIS DOCUMENT

1.21 About this Document

The Ipswich Streetscape Design Guidelines replaces the 2007 Street Tree Strategy and has been developed for Council, developer and community use. This guideline aims to provide a coordinated approach to the design and implementation of streetscapes within Ipswich. It informs the selection of hardscape and softscape elements to be used in a variety of streetscapes, which can vary from urban centres to rural areas.

1.22 How to Use this Document

This guideline aims to provide direction to the development industry, planning and design professionals, Council officers and the Ipswich community to ensure the street landscape meets a minimum standard. It outlines the investigation, planning and design outcomes that Council requires to be undertaken on streetscape projects.

The outcomes of the design process have significant impacts and cost implications for the community. There may be a need to engage the services of a multi-disciplinary design team for the design of roadways and corridors from concept through to implementation, to ensure the streetscape and, in particular, the needs of the community are addressed in a holistic way. Each street shall be approached individually and recognition should be given to the compromise between competing elements. These design teams may include:

- Registered landscape architect
- Registered horticulturist
- Certified arborist
- Registered traffic engineer
- Urban designer

1.23 Streetscape Planning and Delivery Process

The diagram below (Figure 1) summarises Council's development process, the implementation and delivery process and the various Council reference documents and supporting information.

Chapter 4 of this document provides further detailed information regarding the design process and the necessary design requirements to achieve successful streetscape design.

1.24 External Reference Material

In addition to Council's reference material, the following external planning and design documents should be consulted as part of the streetscape design process:

- Austroads: Guide to Road Design
- Department of Transport and Main Roads: Road Planning and Design Manual 2nd Edition July 2013.
- Department of Transport and Main Roads: Guideline for Road Design on Brownfield Sites July 2013.
- MUTCD - Manual of Uniform Traffic Control Devices.

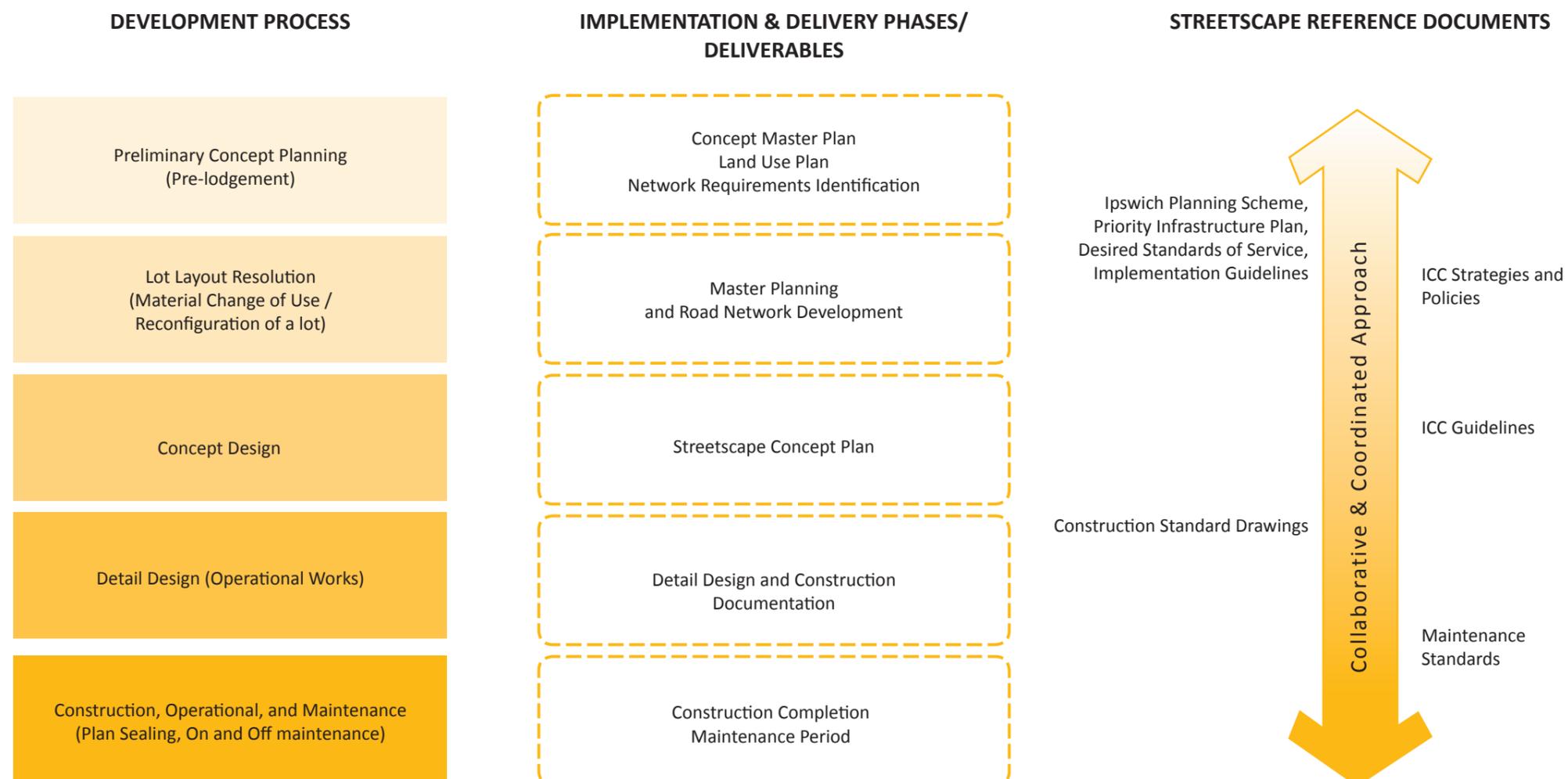
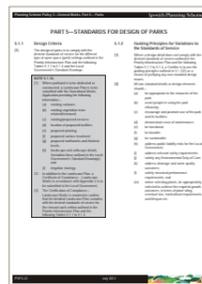


Figure 1: Typical development and road planning, design and delivery phases.

1.25 Document Map

The following document map summarises Council's various supporting documents and reference material relevant to streetscape planning and design.

IPSWICH PLANNING SCHEME



Planning Scheme Policy 3—General Works, Part 5—Parks



Implementation Guideline 28: Dispersive Soil Management



Planning Scheme Part 13 - Infrastructure



Planning Scheme Part 12 - Division 3 Traditional Neighbourhood Design Code



Implementation Guideline 17 - Springfield Lakes Design Manual

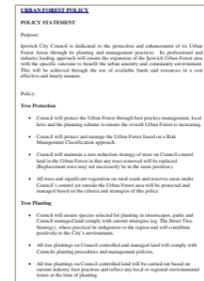
POLICIES AND STRATEGIES



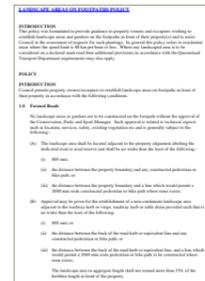
Waterway Health Strategy 2009



Parking Strategy



Urban Forest Policy



Landscape Areas on Footpath Policy

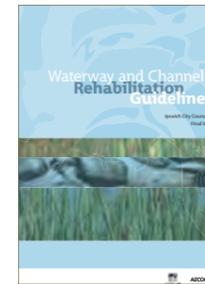


Design of Safe Urban Roadsides - Clear Zones and Achieving Balance Between Urban Amenity and road Safety

GUIDELINES



Riparian Corridor Revegetation Guideline



Waterway and Channel Rehabilitation Guidelines



Ipswich Streetscapes Design Guidelines

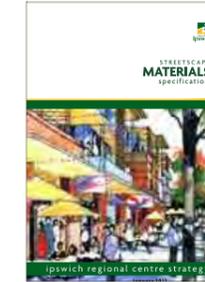
STANDARDS



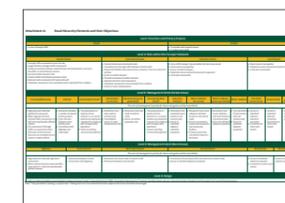
Asset/Landscape Maintenance Standards



Parks and Reserves Signage Manual



Ipswich Regional Centre Strategy Streetscape Materials Specification 2012



Council's Road Hierarchy



Standard Drawings

1.3 VALUE OF STREETSCAPES

All streetscapes provide inherent value to the community in a variety of ways. Streetscapes are an important part of a city as they provide a mental image of a place observed through the eyes of pedestrians and motorists. Increased visual amenity is not the only value that streetscapes provide. The following section outlines the key values and benefits which streetscapes provide to our community.

1.31 Economics

The ideal of an economically resilient city relies on the design of high performing streetscapes and what they contribute to the community. This is particularly important in urban areas. These are the spaces that our community spend time in; a 'home' away from home. The provision of infrastructure, services and amenity within a streetscape provides significant economic value to businesses and the broader community.

Street Trees and Vegetation

Vegetation is one of the most valuable assets to a city and is often described as 'green assets'. Vegetation can change the image of a city and encourage investment. Trees are associated with a monetary value, often requiring developers to pay for significant trees lost. Large trees, due to their size and longevity, provide a high return. As an example, a mature Hills Fig (*Ficus microcarpa var hillii*) can have a value of \$200,000 to \$350,000 depending on its age, size, health and location.

The economic benefits of shaded, green streets include:

- Improved public health and wellbeing.
- Provide water quality benefits.
- Cooler streetscapes and surrounding areas.
- Provide shade and protection from the sun and rain.

Aesthetic Appeal

Attractive cities encourage investment and visitation. A tidy and well maintained streetscape demonstrates civic pride and a dynamic, organised, financially secure and caring place.

The economic benefits of attractive streets includes:

- 'Clean and green' streetscapes encourage local investment.
- Increased community pride and 'ownership' over streetscapes result in less graffiti, damage and maintenance.
- Well maintained and regularly utilised streetscapes improve the property value of the surrounding neighbourhood.
- Modern or character driven streetscapes encourage economic development and improve the aesthetic appeal of adjoining retail and commercial frontages.
- Attractive environments also encourage visitors and residents to spend longer within the space, which increases spending in nearby shops.
- A safe, enjoyable and memorable streetscape encourages users to gather and return often.

1.32 Inclusive Community

Well designed streetscapes have the following community benefits:

- Accessible and safe environments for people of all ages.
- Attractive places that encourage walking and cycling, which in turn promotes active and public transport.
- Inclusive streetscapes ensure adequate access for persons with disabilities.
- Highly valued streetscapes generate pride, appreciation and ownership of community spaces.

1.33 Public Health

Well planned streetscapes accommodate for the way people react to and use a space. The benefits for public health is considerable and includes not only the physical comfort of users but also their emotional needs.

Physical comfort relies on thoughtful design. Vegetation within the streetscape can modify our experience of temperatures. Large shade trees provide canopies that protect from harmful ultra violet rays and assist in cooling the city during summer months. Similarly, the provision of sheltered areas with deciduous tree plantings allow for sunshine and warmth on cold winter days.

- Successful streetscapes also benefit the psychological needs of pedestrians in a variety of ways. Interaction with the natural environment, plants and animals provides pleasure and well-being benefits. The use of colour, texture, smell and tactile surfaces provide stimulation and excitement. The use of planting, art or furniture adjacent to the kerbside can also reduce the unnerving impacts of passing traffic, providing a visual barrier that increases the feeling of separation and security for pedestrians.

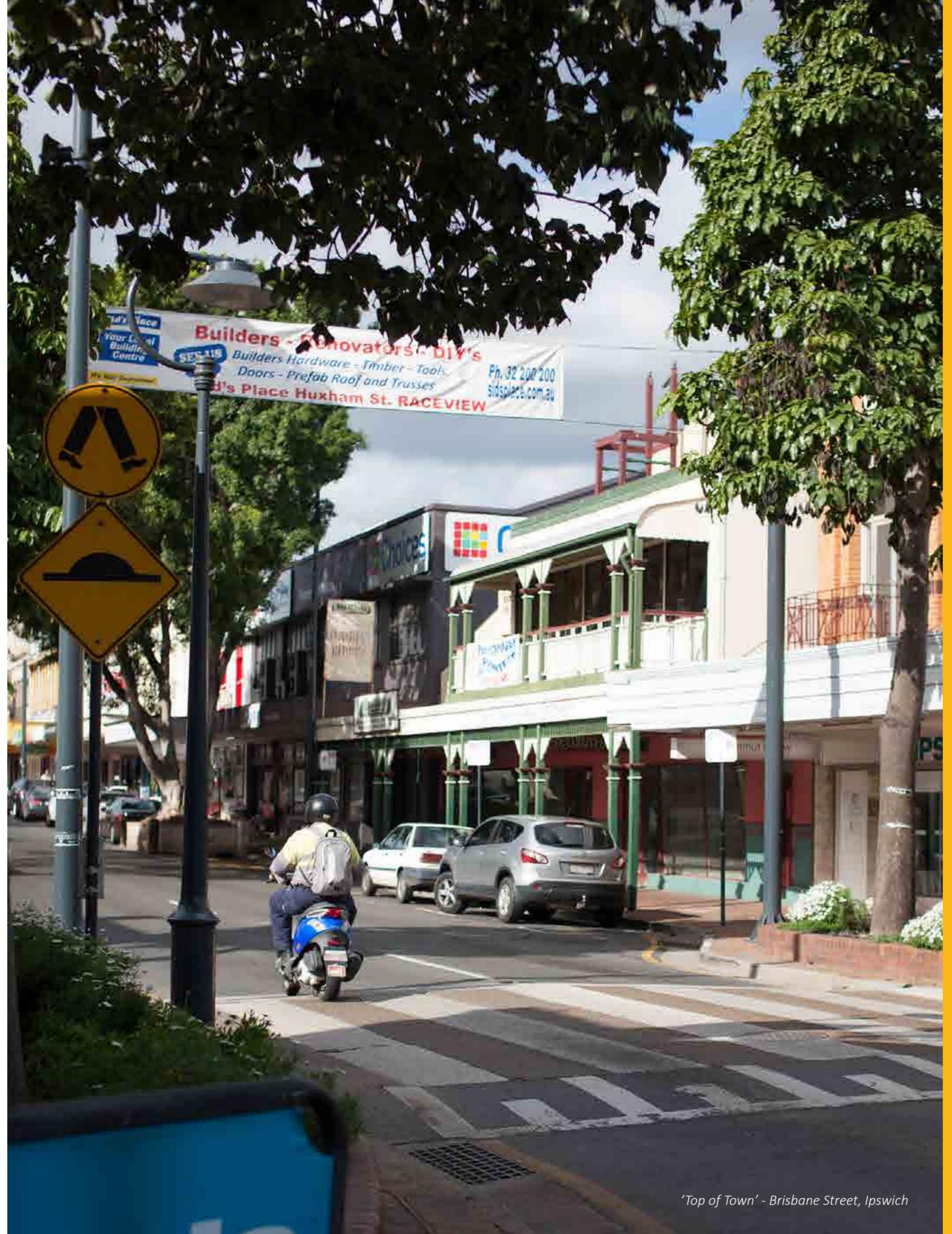
1.34 Tourism

Streetscapes are the key to the image of a city. They play a large role in tourism and the associated economic benefits. Many famous streets attract people from all over the world.

Tourists identify with streets upon arrival and use them to navigate their way by identifying landmarks, nodes and attractions. The creation of attractive, enjoyable new streets and the protection of existing unique, character filled streets is important to establishing a meaningful city that tourists can enjoy exploring.

Ipswich has the potential to increase tourism - not just from the wider community, but from interstate and overseas visitors. In high use areas there is a need to provide streetscapes of high amenity to support this.

More than anything, streets are places for people to live, work, and play. Memorable and enjoyable streets encourage people to explore, stay longer, spend more, bring friends and family, and to return often.



1.4 BEST PRACTICE IN STREETSCAPE DESIGN

Streetscape design is all encompassing and must consider an extensive range of elements, from soils and stormwater to vegetation and furniture.

Designers, developers and other stakeholders play a large role in delivering streetscapes that respond to vehicular flow, public transport access, pedestrian movement and comfort, amenity and local character issues. This responsibility requires a commitment to best practice in streetscape design and a considered approach to design, construction and maintenance.

The following key elements should be explored to ensure best practice is achieved.

1.41 Place and Movement

The principles that determine streetscape design outcomes within Ipswich are encapsulated within the place and movement matrix. Each street has a place and movement function and can be characterised on this basis. Streets within the city's centres have a naturally higher place function because of the many uses and activities that occur within any centre.

There is a direct inverse relationship between the movement function and place function of streets. When the movement function is high, and the place function is low, vehicle movement is given priority. Conversely, when the place function of a street is high and the movement function is low, the pedestrian environment is given priority in the streetscape.

For further information refer to Part 2: Ipswich Streets.

1.42 Streetscape Design Principles

Ipswich has many examples of attractive streetscapes. Ipswich Central has pleasant, shaded streets surrounded by heritage buildings; Rosewood and Marburg are traditional rural centres; and the Jacaranda-lined streets of Goodna are spectacular when in flower. There are some simple principles that make streetscapes pleasant places to visit:

Size

Good streetscapes don't have to be large, however they need to be wide enough to serve their desired function, particularly in urban centres, and robust enough to support diverse uses. This includes accommodating street furniture, moveable chairs and tables and retail displays. They also need to be large enough to accommodate the roots that support various types of vegetation (Refer Part 4 & 5).

Safety

Perceptions of a safe environment are often based on the quality of the streetscape, the level of maintenance and an absence of graffiti, litter, vandalism and damaged street elements. Graffiti can be reduced through the planting of screening trees, shrubs and climbers in front of walls and barriers.

Crime Prevention Through Environmental Design (CPTED) is a multi-disciplinary approach to reducing crime in public areas and should be adopted when designing streetscapes. Key principles include passive surveillance, natural territorial reinforcement, maintenance and activity.

Activation

Streetscapes can be activated in a number of ways. Permanent retail areas such as cafes and shops provide active frontage. Other permanent elements include furniture or built form embellishments, lighting and interactive artwork. Temporary uses such as market stalls, food vendors and coffee stands are also good generators of activity.

Shade

Shaded streetscapes are more comfortable and attractive to the community than unshaded streets. The spreading canopy of a shade tree or a vine-covered pergola provide excellent spaces for people to gather and talk.

Clean and Green

Clean and green cities incorporate vegetation throughout the public domain, featuring shaded avenues, massed streetside plantings as well as lush roundabouts, medians and traffic islands. Clean and green cities encourage investment and visitation. These environments also encourage visitors and residents to spend longer within the space.

Furniture

There must be plentiful seating at transport nodes and in neighbourhood and regional centres. Retaining walls can be designed to include seating. Individual small bench type seating should be avoided. Other furniture elements to be considered include bins, drinking fountains, bollards, shelters, trellises, bike racks and tree grates. For further information refer to Part 4.

Signage

Signage is a significant part of navigating the streetscape and exploring different elements. Streetscape design should consider the appropriateness of signage and what is relevant for each street type or as part of a wider strategy. Signage may include gateway markers, informational signs, street and transit signs, neighbourhood signs, interpretive signs and directional signage.

Art

Art is often overlooked as a streetscape element but can have a profound impact within urban nodes and streets with a high 'place function'. The benefit of art integration into streetscapes is the activation of senses as users experience colour and texture, light, shade and patterning. The incorporation of art by local artists is a great way to establish civic pride and inspire the community.



Artwork in Tower Central Arcade, between Brisbane and Limestone Streets

1.43 Biodiversity

Biodiversity is a significant indicator of environmental health. Best practice for streetscape biodiversity includes using a variety of plant species within the streetscape. This has numerous benefits:

- Minimises pest and disease incidence.
- Adds interest and variety to the cityscape.
- Provides a range of food and shelter for wildlife.
- Increases wildlife diversity.

Where possible, incorporating appropriate native plant species that may be restricted, vulnerable, endangered or extinct in the wild will help with biodiversity.

Soil biodiversity can also be achieved and maintained by maximising organic matter in and on the soil and avoiding the use of harmful pesticides, fungicides and herbicides in landscape areas.



Metrosideros species in streetscape, Springfield

1.44 Water Cycle

The streetscape contributes in multiple ways to the urban water cycle. Ipswich City Council is committed to planning for its future in a way that considers the way activities impact on the water cycle and maximises opportunities for improved financial, environmental and social outcomes.

Development in urban areas results in increased impervious areas, such as paving, buildings, roads and structures, which limit infiltration of water into the soil and result in increased run-off into waterways during rain events. The runoff water (stormwater) collects pollutants such as nutrients, sediment, litter and metals, and can erode and pollute our waterways. Streetscape design can help to reduce modifications to the water cycle by retaining water within the landscape through the use of plants, permeable paving and rain gardens.

The selection of plant species can also impact on the water cycle through the demand for water for supplementary watering (irrigation) to support plant growth within the streetscape. As part of plant selection, consideration should be given to the climate and rainfall in Ipswich, plants that are tolerant of the extreme drought and flood events that occur within Ipswich should be favoured.

1.45 Urban Heat Island Effect

An urban heat island is an urbanised area which is significantly warmer than the surrounding suburban or rural areas. As cities grow and become more urbanised, the cityscape becomes increasingly dominated by buildings and paved surfaces which absorb heat during the day and reflect it back into the atmosphere during the day and night. This is coupled with general heat emissions associated with heating and cooling buildings, running vehicles and other machinery. In addition to increased temperatures, other impacts include lowered rainfall and increased humidity. Temperatures remain higher overnight and for longer periods of time than in non-urban areas.

Southern Queensland is particularly vulnerable to health impacts caused by extreme heat. The risks are higher in high density areas of the urban heat island. (Commonwealth Government 2011: Protecting Human Health and Safety During Extreme and Severe Heat Events – A National Framework).

Streetscapes are the perfect environment in which to reduce heat island impacts, primarily through the incorporation of vegetation. Vegetation can be used to shade paving and walls to minimise heat absorption and reflection. The process of transpiration, by which plants release water through their leaves, helps to cool the surrounding area. The street tree canopy provides cool relief from the sun. Turf is also noticeably cooler than paving or road surfaces. This is particularly true in subtropical areas such as Ipswich where rainfall is highest over the hottest months and plants are actively growing and transpiring.

1.46 Carbon Sequestration

The streetscape can contribute to carbon sequestration in our cities, reducing CO² in the atmosphere and the ensuing climate change impacts. Carbon is sequestered in the soil and in plant tissues.

Increasing the organic material in the soil is the most effective method of sequestration. This also enhances plant performance, reduces water needs and enhances soil biology. Carbon remains in the soil on average for 35 years; it remains in plant biomass on average for 10 years.

Soil humus is generally depleted in the city due to past land management practices. Plants fix carbon dioxide in plant tissue during the process of photosynthesis and store the carbon in woody tissue. It is estimated that 40% of the world's carbon stock is stored in forests.

Road corridor design has a large impact on travel mode and the quality of the streetscape. In the past vehicular traffic flows have driven road design. Where appropriate, prioritising pedestrians, cyclists and public transport, particularly in centres and at transport nodes, can deliver better outcomes for the community.

Ipswich streets

PART 2



Little Stanley Street furniture and alfresco dining, South Bank.

2.1 PLACE VERSUS MOVEMENT MATRIX

2.11 Balanced Design Outcome

Council recognises the need to deliver streetscapes which provide balanced urban design outcomes for all users. A balanced streetscape outcome is a product of three road design functions: place, movement and safety. A successful streetscape achieves the appropriate balance of all three elements.

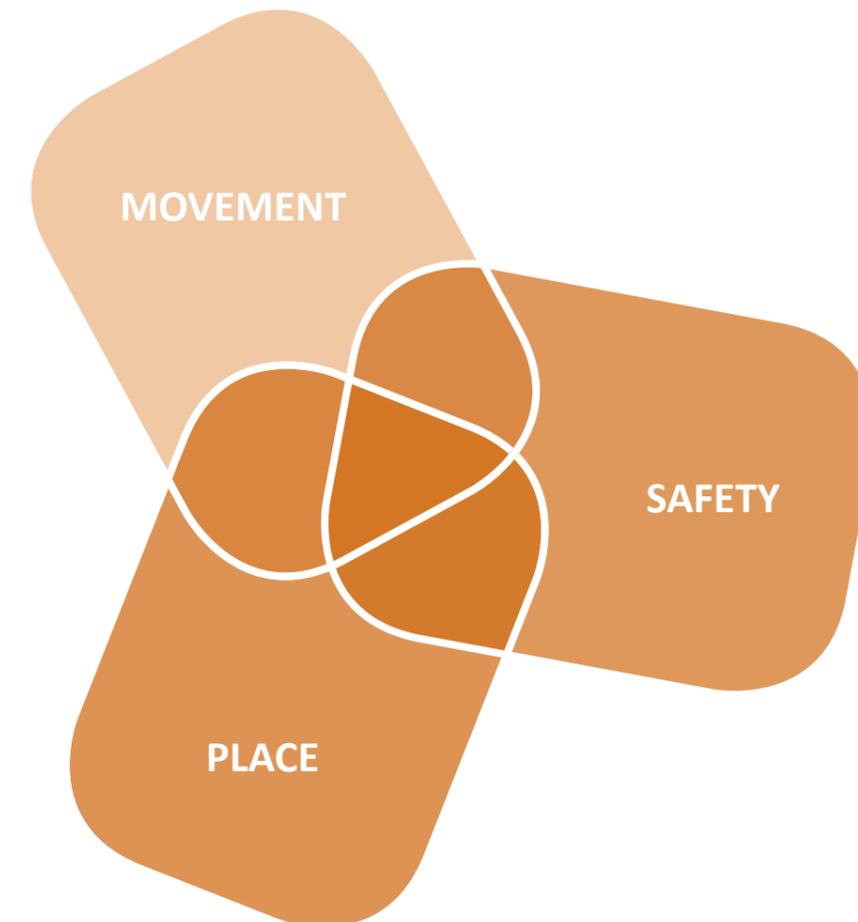


Figure 2: Balanced streetscapes are a function of three design functions: Place, Movement and Safety.

2.12 The Matrix

Ipswich City Council acknowledges that road safety, for all users, is paramount in road planning and design. The relevant documents and standards for road safety and design should be considered when planning and designing Council and State controlled roads in Ipswich. However, this Guideline also acknowledges that streets can have multiple functions and therefore aims to establish a clear direction and process for the appropriate design and embellishment within the various road types that exist in Ipswich.

When designing for the provision of planting and landscaping embellishments along Council roads in urban areas, Council's position to accept design outcomes that address these multiple functions is supported through the adopted Memorandum: Design of safe urban road sides - clear zone and achieving balance between urban amenity and road safety.

The 'place movement matrix' has been developed to illustrate the direct inverse relationship between 'place' and 'movement'. This matrix identifies which street function takes priority in each zone in response to the road hierarchy and function. The primary objective of the matrix is to identify where priority is to be given to the pedestrian environment (place) or car environment (movement) within the streetscape.

Place Function

The place function relates to the relative significance of a street and public places within a street in human terms. The most important places will usually be near the centre of any settlement or built-up area, but important places will also exist along arterial routes, in district centres, local centres and within neighbourhoods.

The choice of surface materials, planting and street furniture plays a large part in achieving a sense of place. Inappropriate provision or location of furniture, signage or landscape treatment has a negative impact on the success of the street as a place.

Movement Function

The movement function of a street can be expressed in terms of traffic volume and the importance of the street, or section of street, within a network for through traffic. It can vary along the length of a route, such as where a street passes through an urban centre. Streets can have a significant role within the greater road network. The road function, traffic volumes and future road network demand need to be considered when establishing the movement function of a road.

PRIMARY FUNCTION: PLACE
Where the pedestrian environment is the primary function, streetscape embellishment and placement of planting, street furniture and embellishment conducive to enhancing the streetscape is supported in the verge and clear zones.



PRIMARY FUNCTION: PLACE
In some instances, while the pedestrian environment is typically the primary function, the movement function may necessitate a specific design response by which pedestrian embellishment needs to be flexible.



PRIMARY FUNCTION: EQUAL
In some instances, both place and movement functions will have equal priority. Therefore, both the pedestrian and vehicle functions need to be equally considered and a coordinated approach to road design and streetscape design is required.



PRIMARY FUNCTION: MOVEMENT
In some instances, while the vehicle environment is typically the primary function, the pedestrian environment and place specific design requirements may require a flexible design approach to road planning and design.



PRIMARY FUNCTION: MOVEMENT
Where the vehicle environment is the primary function, road planning and design takes priority over the pedestrian environment.

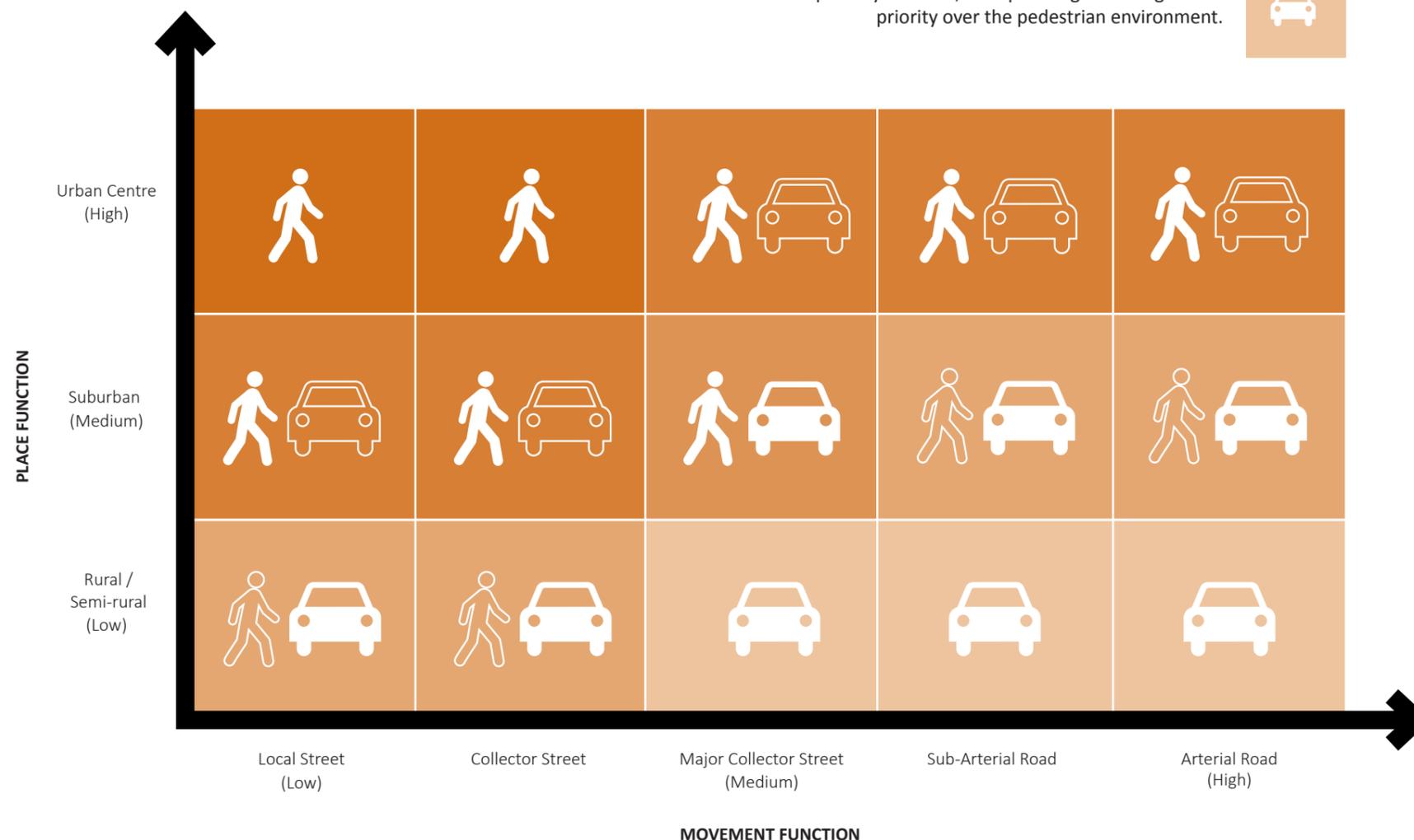


Figure 3: Place Movement Matrix

2.2 STREET ELEMENTS

Within Ipswich there are 5 typical road types:

- Arterial Road
- Sub-arterial Road
- Major Collector Street
- Collector Street
- Access Street / Access Place

More information concerning each road type can be sourced from Council's Road Hierarchy and Council's Standard Drawings. Council's Standard Drawings take precedence over this Guideline.

The following section is a typical street scenario and provides guidance on where specific information can be found in this document for the various streetscape treatments and embellishments. The information in this diagram applies to all the road types within Council's road hierarchy.

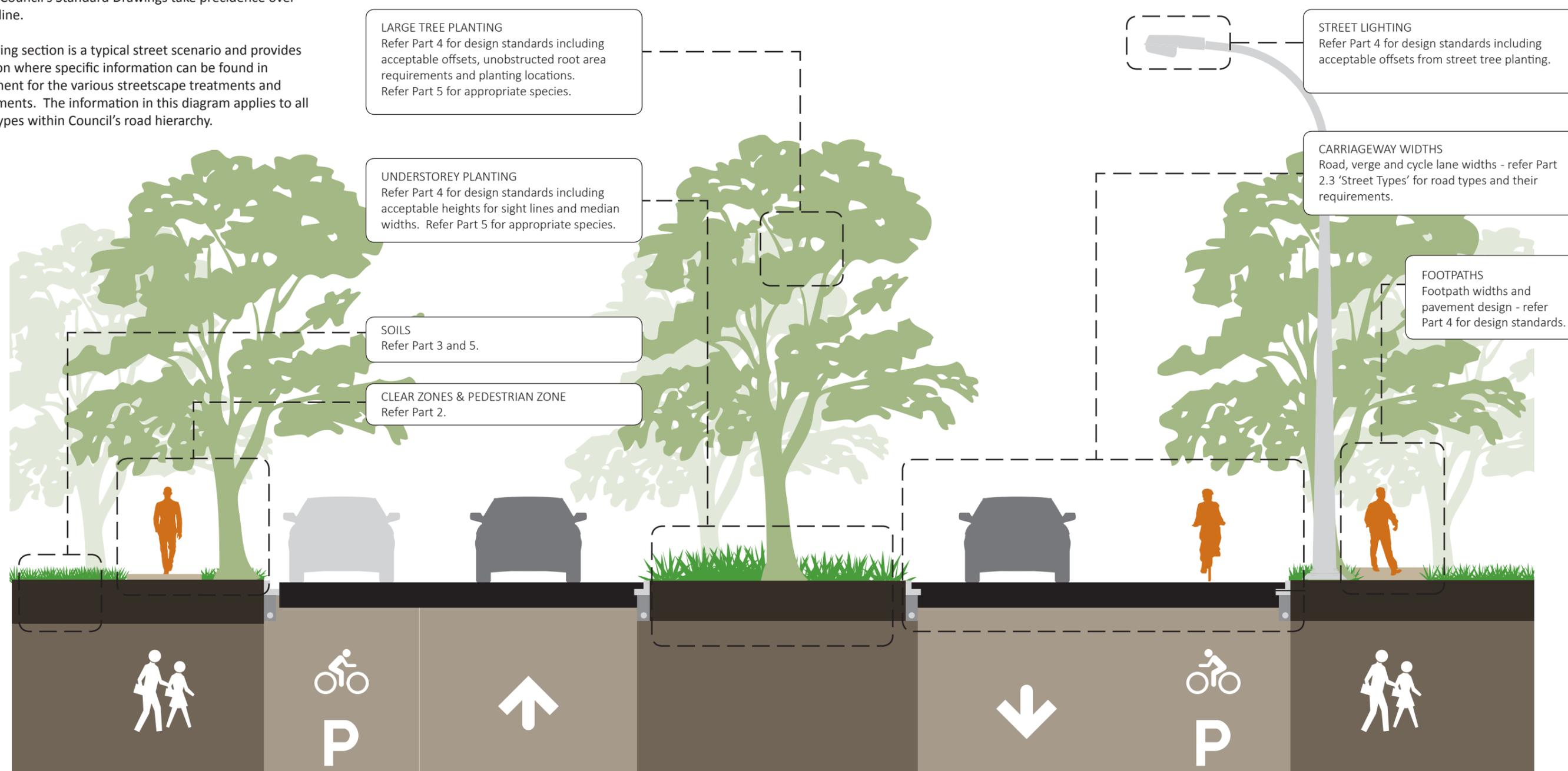
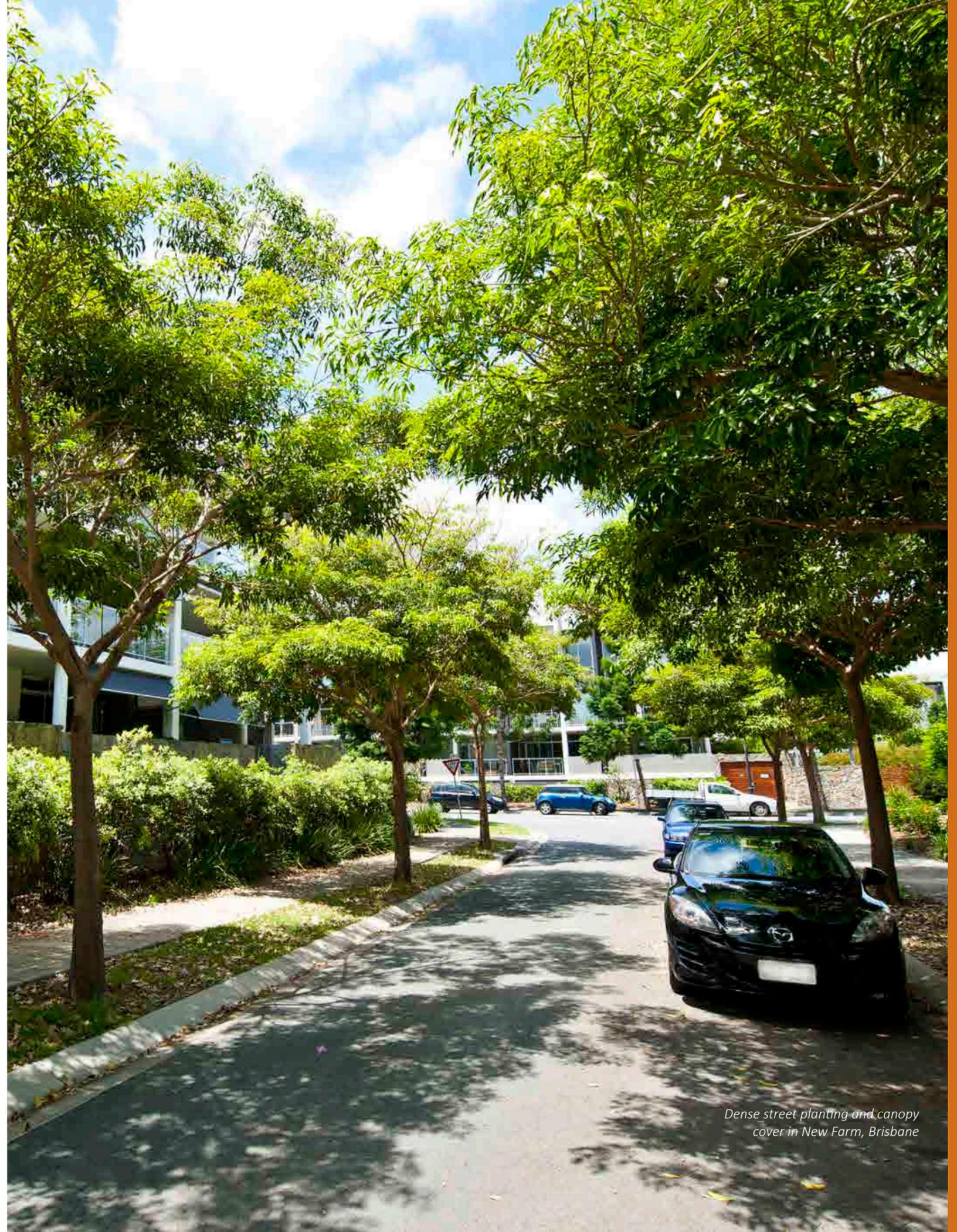


Figure 4: Typical street section and document reference guide.

2.3 STREET TYPES

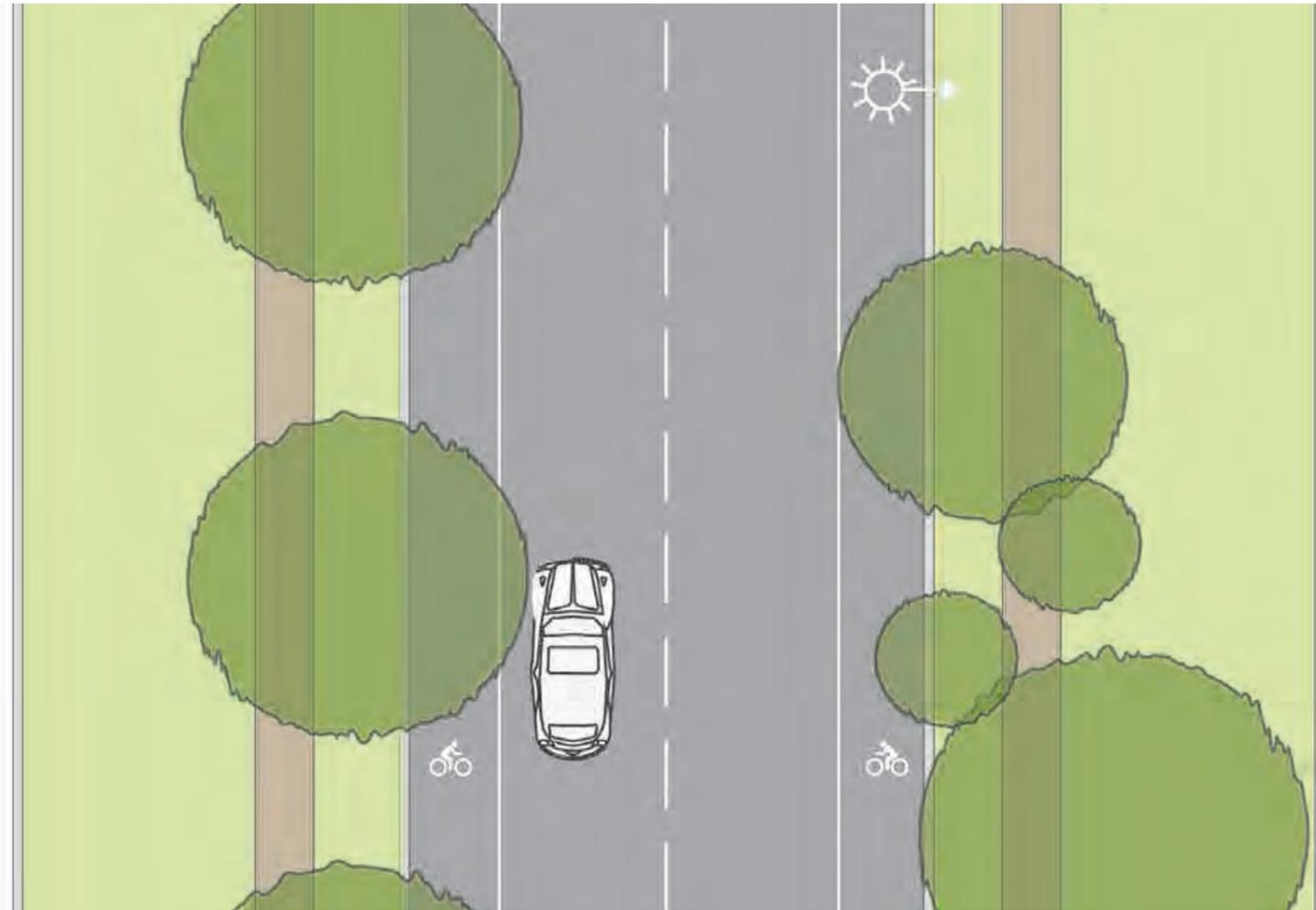
The following section includes plans and sections of the various road types to illustrate the typical profiles and treatments for each street.



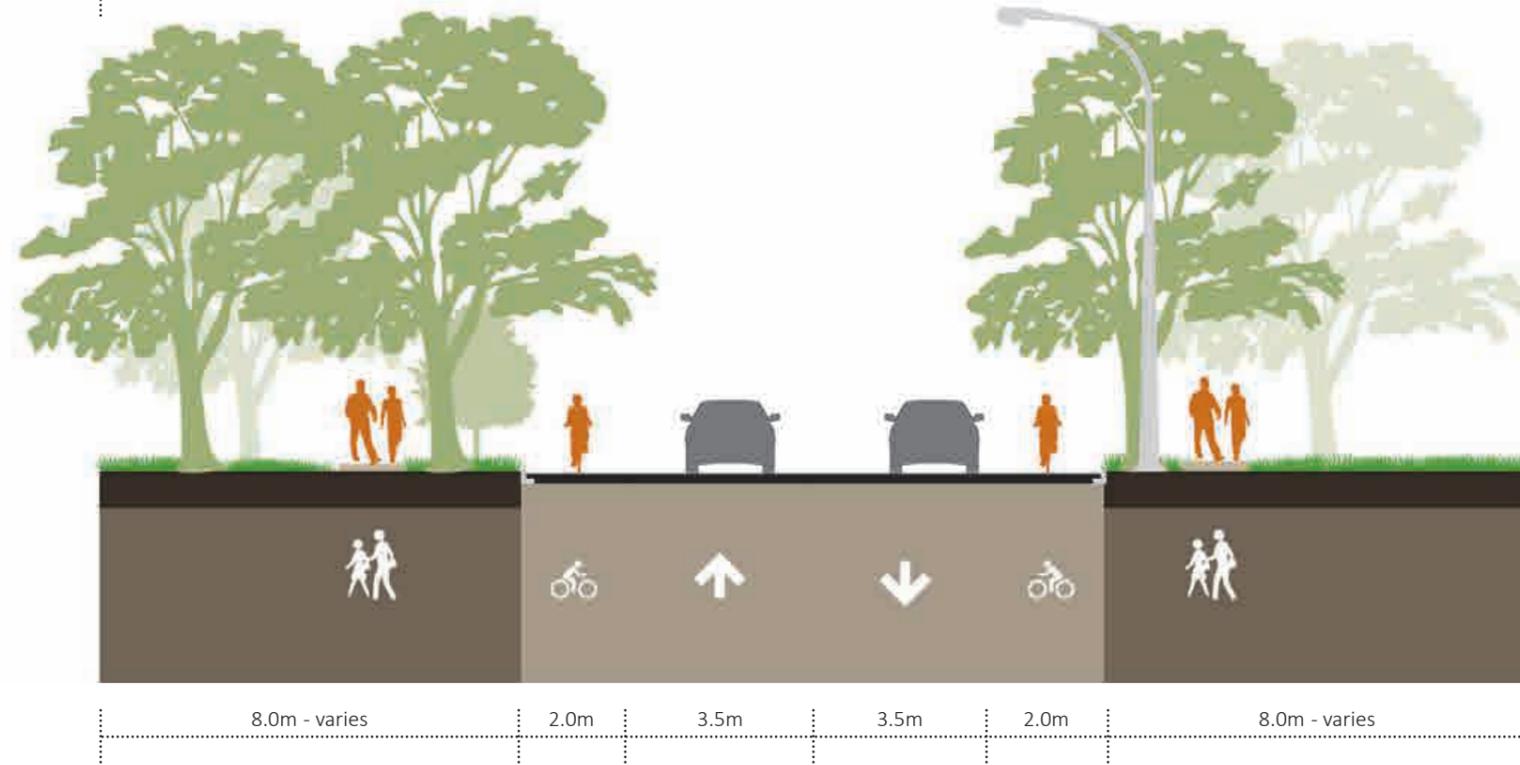
Dense street planting and canopy cover in New Farm, Brisbane

2.31 Arterial and Sub-arterial

Two-lane, two-way road



27.0m - Varies



8.0m - varies

2.0m

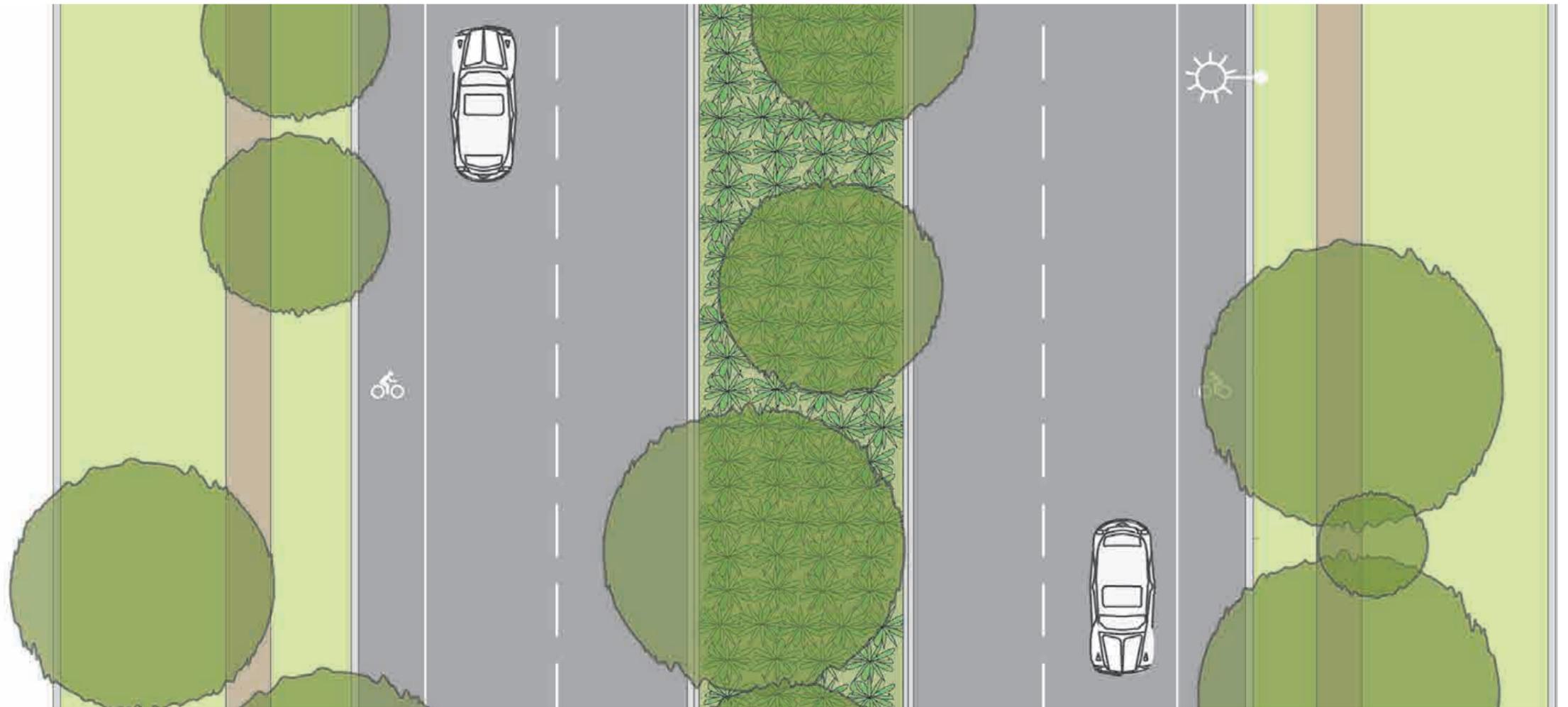
3.5m

3.5m

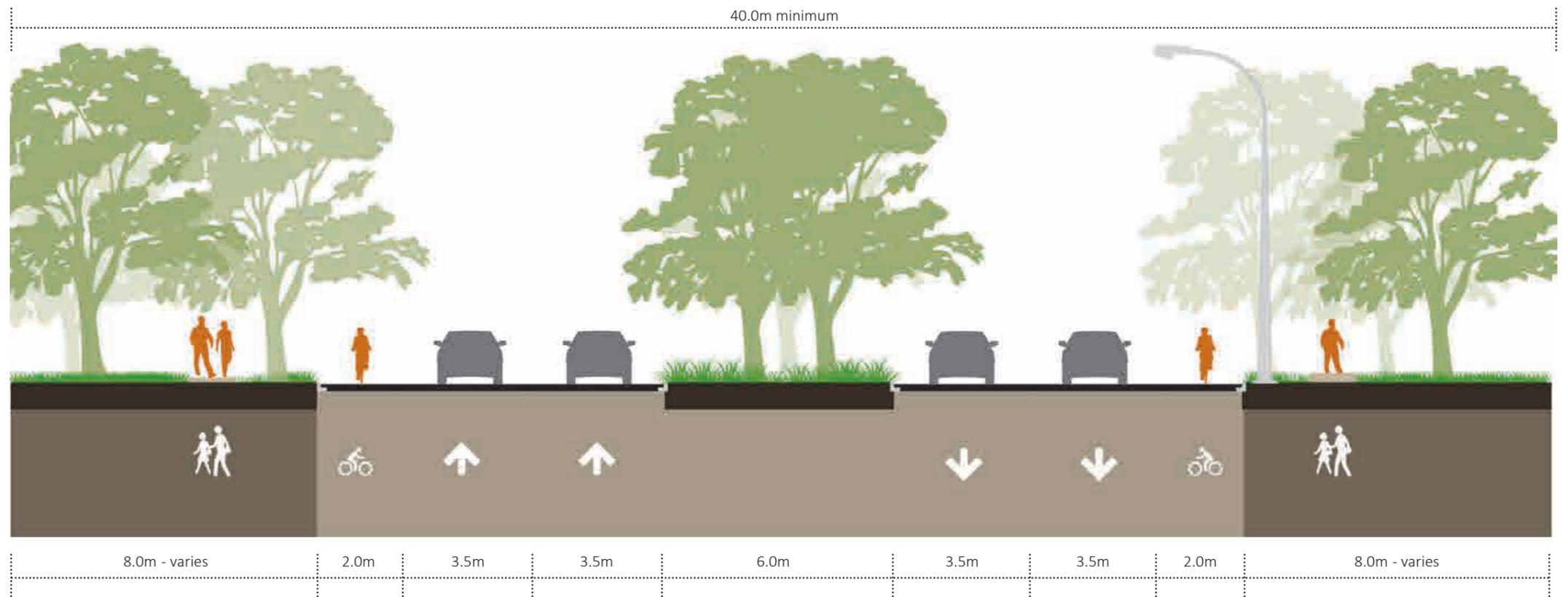
2.0m

8.0m - varies

Multi-lane road

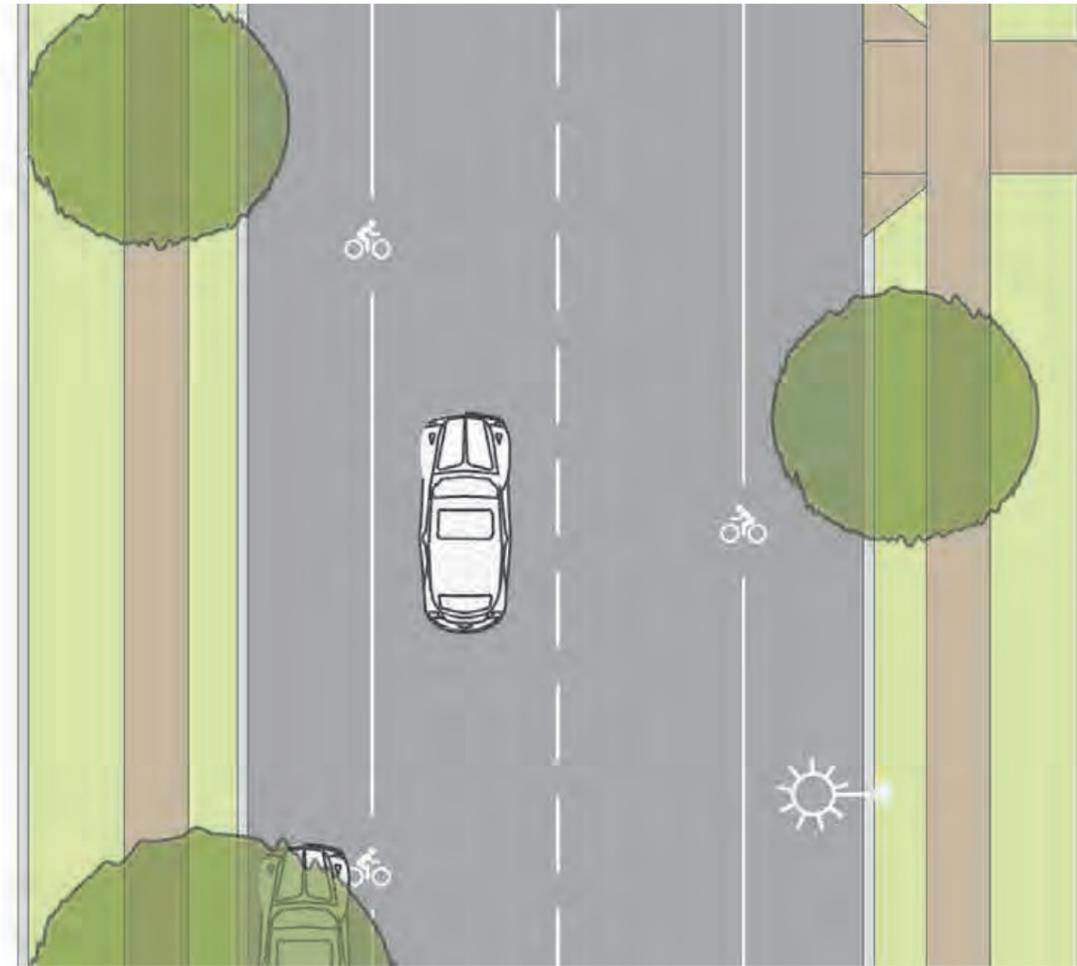


40.0m minimum

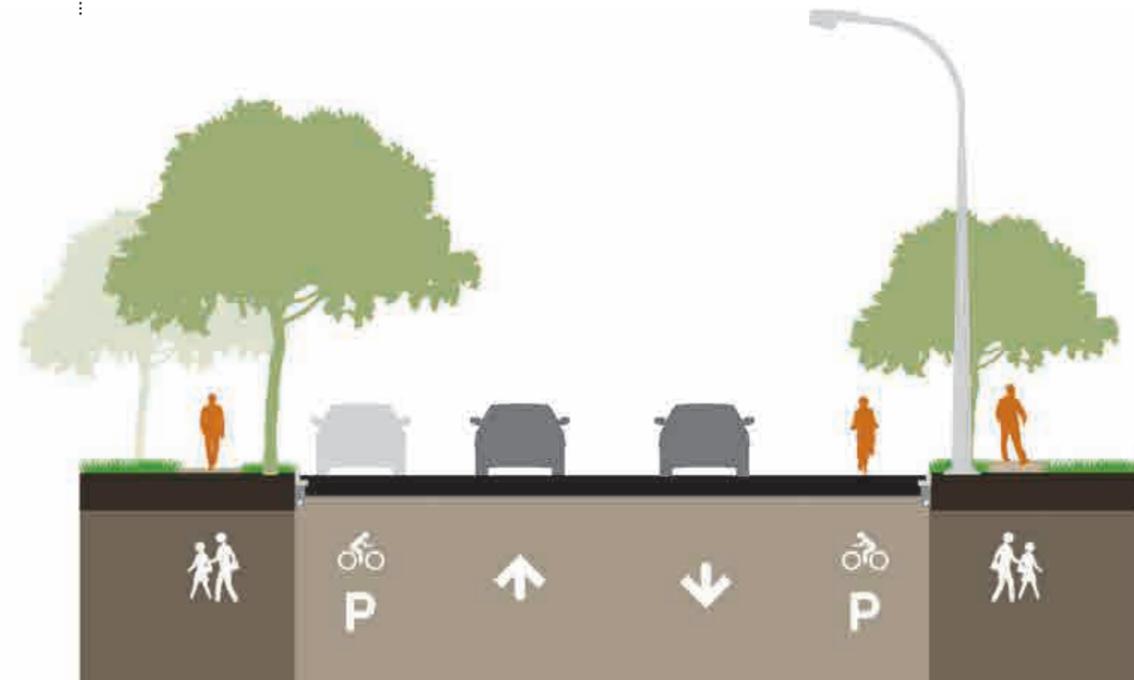


2.32 Major Collector Street

Two-lane, two-way road

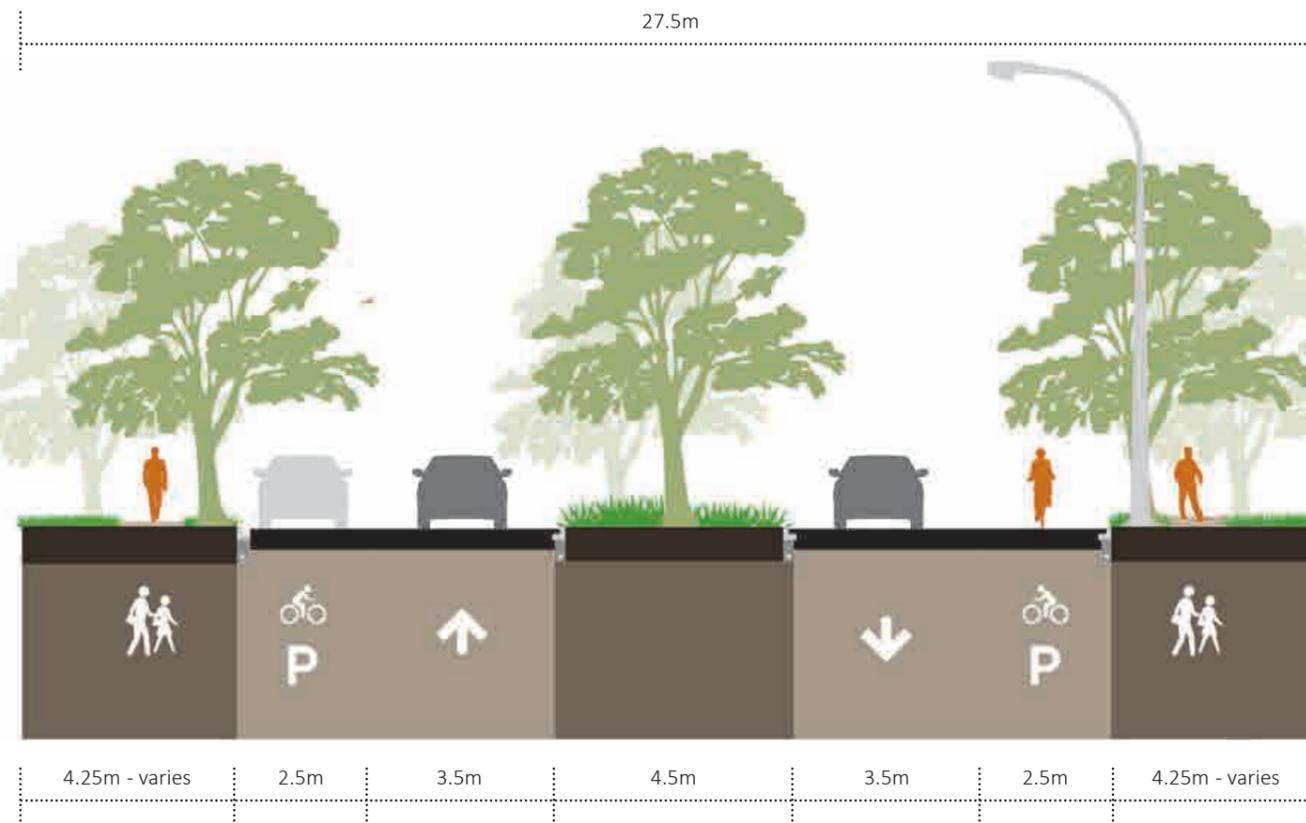
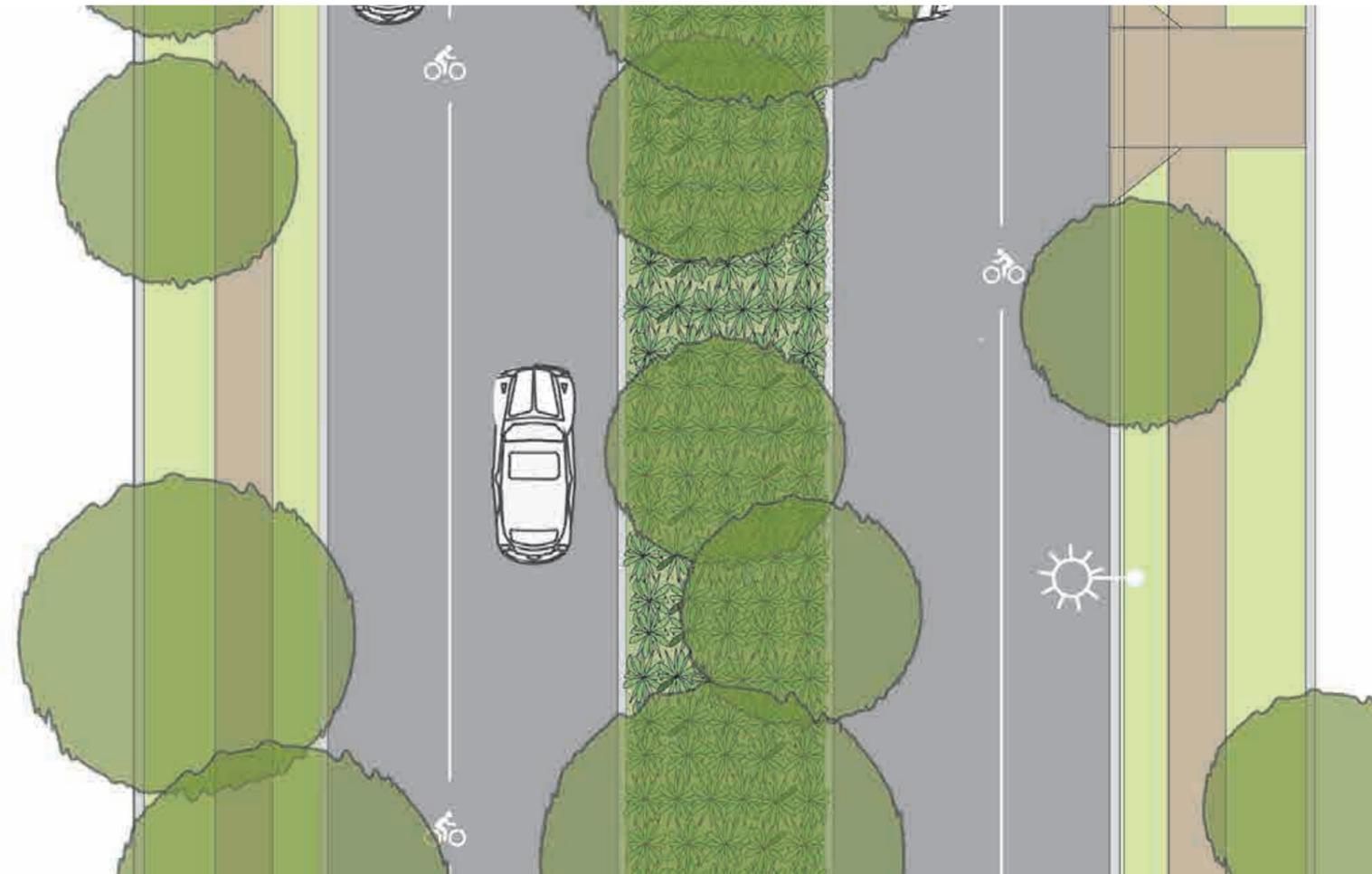


23.0m



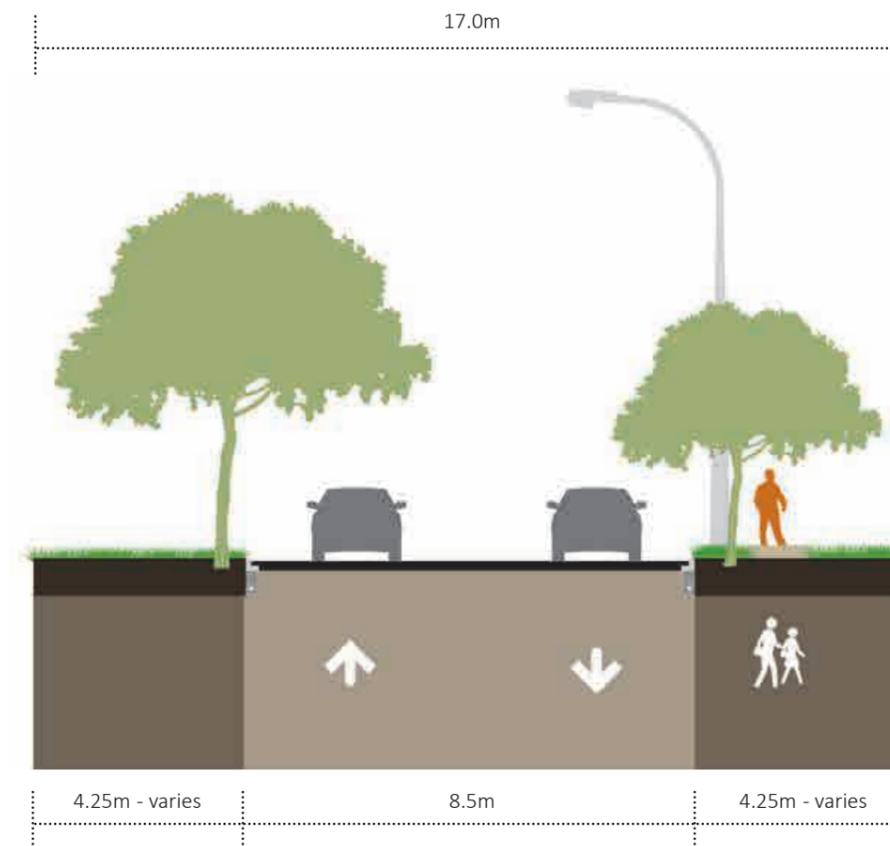
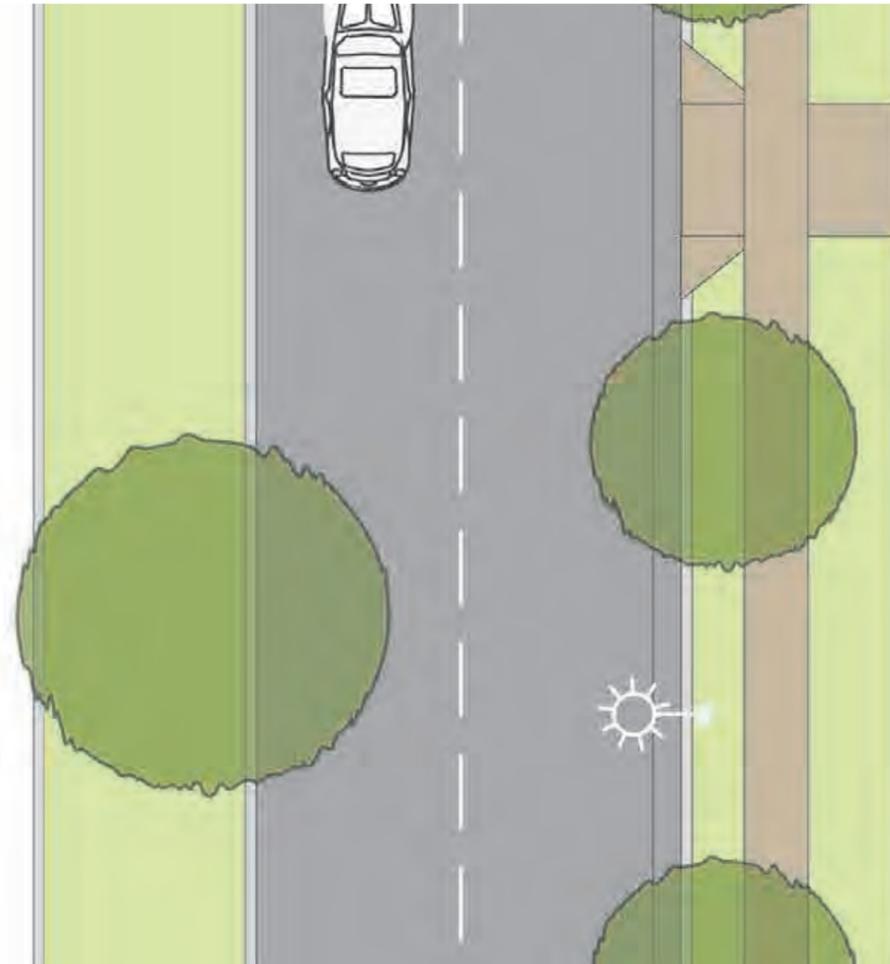
4.25m - varies | 2.5m | 3.5m | 3.5m | 2.5m | 4.25m - varies

Dual carriageway

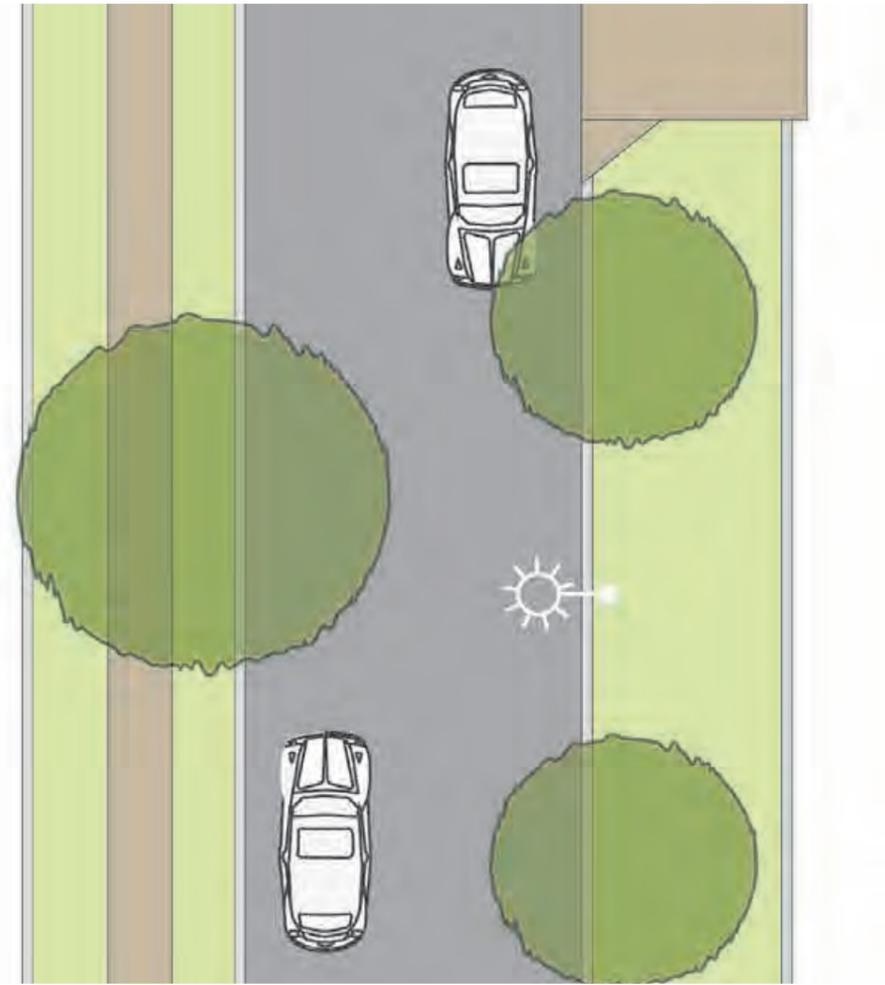


2.33 Collector Street

Two-lane, two-way road



2.34 Access Street and Access Place



16.0m - varies



4.25m min

8.0m

3.75m min

2.4 ALTERNATE MODES OF TRANSPORT

Community expectations and attitudes are positively shifting to reflect a greater understanding of the role that active and public transport plays in a sustainable urban environment. In the past, much of the transport network was designed with a focus on private vehicle use, with less emphasis on public and active transport. This has resulted in less people walking, cycling and using public transport.

Within the streetscape, regional centres and at transport nodes, priority should be given to the design and implementation of active and public transport. A greater emphasis on these modes will focus the streetscape design and planning on human comfort, accessibility and safety.

2.41 Walking

The provision of stimulating, comfortable, functional streetscapes encourages people to walk between destinations and to walk to public transport thus reducing car use and vehicular generated air pollution.



Bradfield Bridge connecting Ipswich Mall to Riverlink

2.42 Cycling

The provision of cycling infrastructure within Ipswich is constantly expanding to accommodate the rapidly growing number of cyclists. Whether cycling is for commuting to and from work or for recreation, it can be a pleasant experience as the street network provides a variety of choices for moving around the city. Designated bike paths are proposed on higher order streets. The remaining streets in the network, due to their relatively lower speeds and vehicle numbers, do not require a designated cycle lane.



Cycle lane line marking, Springfield

2.43 Public Transport

The streetscape is critical in facilitating effective connections to public transport facilities. Public transport facilities are essentially extensions of public spaces and their function should be acknowledged and appropriately connected to the streetscape to provide equitable access and promote community use.

Public transport connections and transit oriented developments require considerable forethought and planning to ensure the streetscape responds to unique design requirements and an increased number of vehicles, pedestrians and cyclists.



Bell Street, Ipswich Central



*Bus Centre Orion Shopping Centre,
Springfield.*

Ipswich is comprised of many urban and rural centres, each with their own local distinctiveness. Ipswich City Council is committed to the provision of quality streets and streetscapes that support, acknowledge and enhance the distinct landscape, environment, culture and history of this city and its communities.

distinctive Ipswich

PART 3

3.1 CLIMATE

Ipswich has a humid subtropical climate with dominant rain falls are over the summer and autumn months.

Median temperatures vary from the high twenties in summer to the mid teens in winter. In general the more easterly suburbs have more moderate temperatures and the more westerly suburbs have higher summer temperatures and cooler winter temperatures with light frosts over winter in valley areas.

Local climate impacts upon how and when the community utilises the streetscape, particularly as pedestrians and cyclists. It also impacts upon the selection and placement of street paving and furniture. Enhancing human comfort encourages increased usage. Rainfall, temperatures and soils impact upon plants vigour, longevity and health.



Scenic open view of Mt Flinders from Rosewood Marburg Road

3.2 SOILS

The 6 major soil types in the City are:

- Vertisols
- Hydrosols
- Kandosols
- Sodosols
- Chromosols
- Dermosols

Figure 3 illustrates the distribution of the six major soil types across Ipswich. While soil maps give a general indication of the soil type, and its location, soils will vary greatly in each area, particularly between ridgelines (shallow soils) and valleys (deep silty soils).

Much of the natural vegetation was cleared many decades ago and in the ensuing years agriculture and other land management practices have resulted in loss of organic matter, erosion, leaching of plant nutrients, compaction, degradation of soil biology and in some locations contamination.

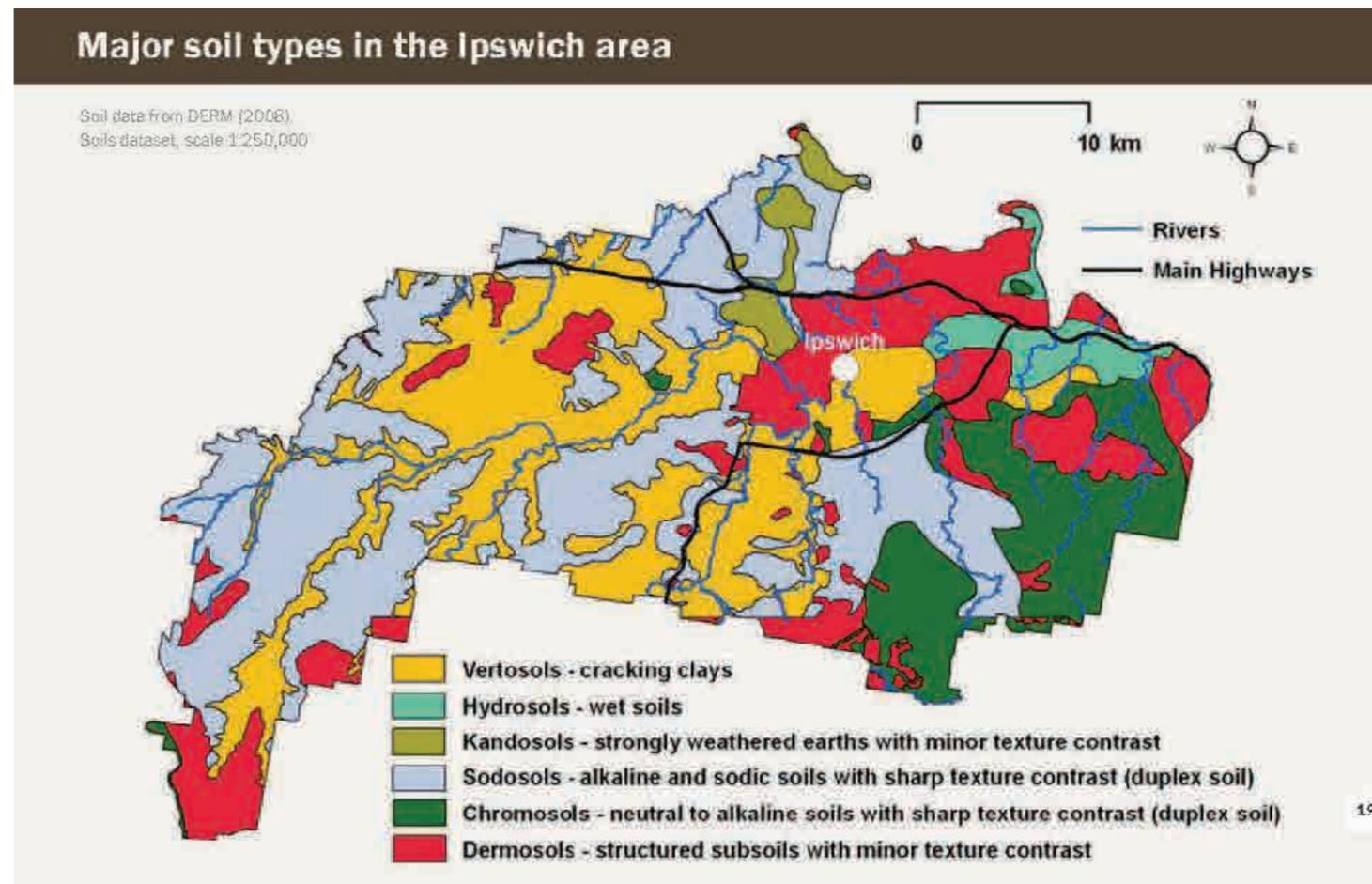


Figure 5: Major Soil Types in the Ipswich Area

3.3 HERITAGE

Council is committed to heritage conservation and the choice of appropriate paving, furniture, finishes and plantings can make a great contribution to the historic streetscapes. Most of the streetscapes in the city have not been subject to extensive 'gentrification' and have been noted as 'generally lacking pretension' and having an 'honest quality'. Streetscape upgrades often use highly popular or fashionable materials, paving, furniture or planting which may supercede or dilute the character and quality of place that is loved by the community and which attracts visitors to the area. Assessing and qualifying the character or sense of place and the individual elements is therefore an essential component on any historic streetscape upgrade project.



Antiques store in character area, Marburg

3.4 BUILT FORM

Buildings and structures often frame the streetscape and contribute to the overall character. Generally the buildings in most streetscapes are a mixture from diverse eras. However some streetscapes are dominated by older buildings or by new buildings.

Materials also vary throughout the city. Many of these materials have the opportunity to be repeated or emphasised in the streetscape so as to provide a complementary and consistent theme. Many character areas such as Marburg, Goodna and Rosewood have distinctive materials and treatments particular to these areas.



Iconic clock tower in Ipswich Central

3.5 VEGETATION

Vegetation within Ipswich varies from natural forest or woodland; to agricultural or productive landscapes; to residential gardens; to pocket landscapes in urban situations. Plant selections in the streetscape and adjacent areas often reflect local climate; soils; popular plants of the time; cultural aspirations and the influences of key people such as F.W. Turley, Lloyd Bird and Arnold Rieck.

Large fig trees are a feature of Ipswich City. Large old fig trees are prominent in the older streetscapes, gardens and parks of the city. However continuous tree planting has occurred over the last century and a half and they are also a feature in newer areas of the city such as Springfield. Fig trees provide an appropriate scale for larger roadways, provide needed shade and complement the built form.

Plant selections in the older parts of the city reflect early plant trialling that occurred. Some plant selections were successful and some weren't (eg: Oak trees, *Quercus robur* in Short St). This has been a continuing pattern as many different plants have been used over the decades.

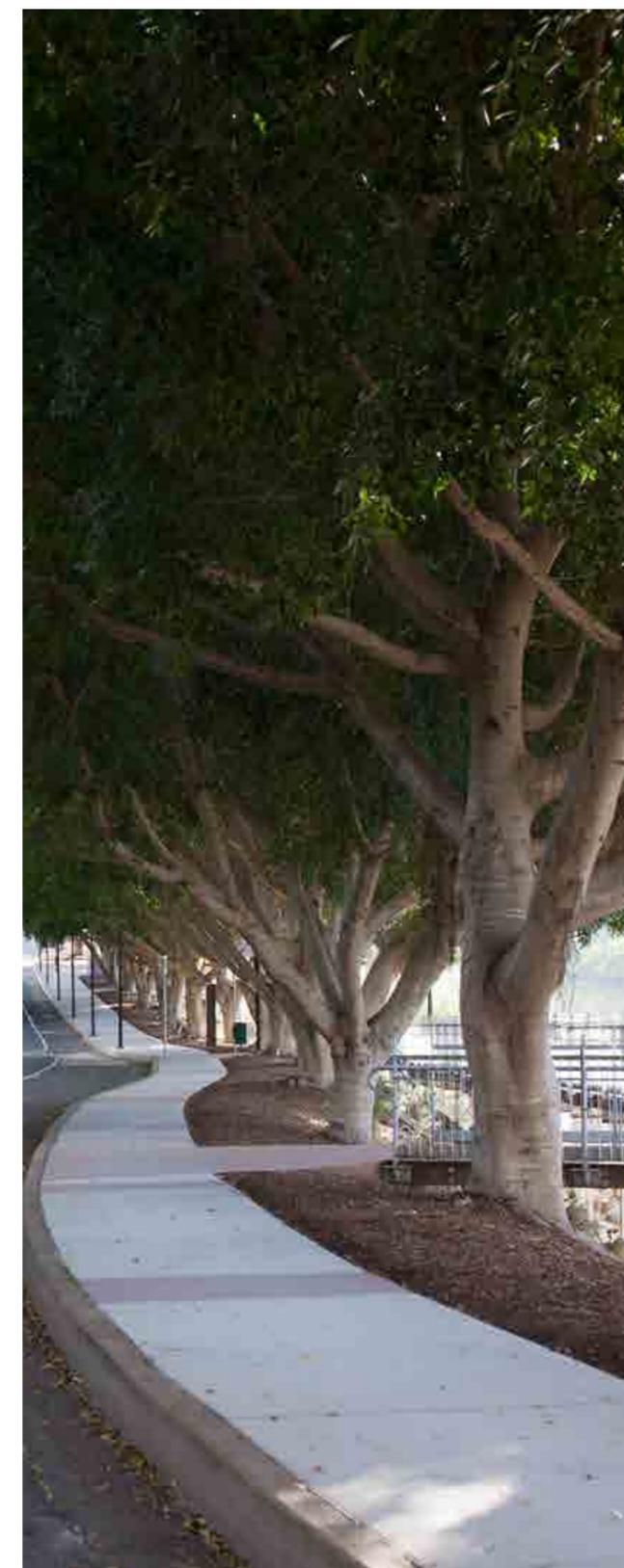
Plant selection and availability is often based on fashion. Certain plants have a character that is very popular during the period. This may be exotic and unusual (1910s to 20s), colourful and tropical (1950s and 1960s); native woodland and cottage gardens (1970s); native rainforest (1990s); or stylised and architectural (2000s).

Bougainvillea

The Bougainvillea, once the floral emblem of Ipswich, has a long and rich history in Ipswich and grows extremely well. A climber, tree, shrub, hedge, groundcover, planter and hanging basket plant, the species in cultivation are hybrids and selections of three species, *B. spectabilis*, *B. glabra* and *B. peruviana*.

At the beginning of the 20th century, Mr Frank W Turley, curator of Queens Park, recognised their potential and began planting them in the park and around the city. He went on to grow them from seed, and raised new cultivars – many of which have become favourites in Queensland and around the world. Some of these plants have survived and can still be seen in Ipswich parks and gardens today.

When chosen and located appropriately, Bougainvilleas are very long-lived and tolerant of long periods of drought once established. Less vigorous, compact cultivars are recommended for streetscape use, particularly in more urban environments, providing spectacular colour and form.



Avenue of *Ficus microcarpa* var. *Hillii* along King Edward Parade

The following section highlights the design process and standards necessary for the planning, design and delivery of successful streetscapes in Ipswich. Adherence to the following processes and standards aims to ensure that high quality and sustainable streetscapes are consistently delivered throughout the city.

implementation

PART 4



4.1 DESIGN PROCESS AND CONSIDERATIONS

The following diagram illustrates the design process required for the development of successful streetscapes. Through all phases of the design process, the following professional involvement should be considered:

- Landscape design, documentation and review is to be undertaken by a registered landscape architect.
- Where required, plant selection, horticultural recommendations and review is to be undertaken by a registered horticulturist or an Council approved equivalent.
- Tree assessment, recommendations and review is to be undertaken by qualified and certified arborists.
- Traffic design, documentation and review is to be undertaken by Registered Professional Engineer of Queensland (RPEQ) experienced in road design and traffic engineering.
- Where required, soil, biological assessment, recommendations, application and review is to be undertaken by certified soil food web institute advisers.

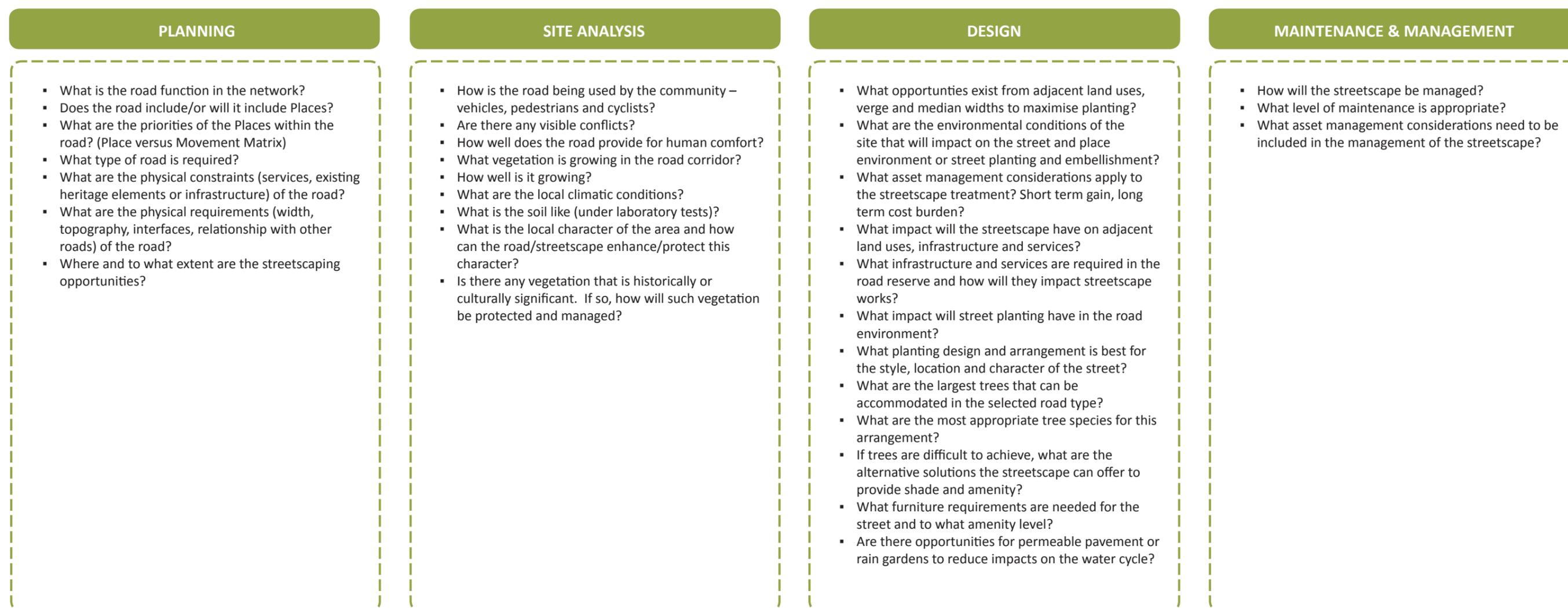


Figure 6: Streetscape design process and considerations diagram.

4.2 DOCUMENTATION AND DELIVERABLES

4.21 Detail Design and Construction Documentation (Operational Works)

The following section summarises the various design requirements and considerations necessary to inform the preparation of streetscape design documentation.

Table 4.1 specifies the minimum requirements to be included in streetscape plans and documentation for the submission of Operational Works applications to Council. Streetscape plans are to include, but not limited to, the following:

4.22 Planting Provision

Streetscape planting undertaken as a component of the site development works is to be carried out in accordance with the Ipswich Streetscape Design Guidelines, the relevant provisions of the Ipswich City Council Planning Scheme and Council's Standard Drawings.

The planting must be undertaken in accordance with approved street tree plans, landscape plans and planting schedules detailing proposed species approved by Council as part of the development approval process.

Streetscapes provided within a new development will be placed on an 18 month maintenance period in association with the civil infrastructure works. Trees or plants which have died or have been damaged during construction or maintenance period are required to be replaced.

4.23 Street Tree Contribution

In lieu of the provision of street trees, there is an opportunity for a contribution to be made to Council for the provision of street trees. Street tree planting for a development will then be undertaken by Council. This planting should be undertaken at the time the development is substantially complete, including house construction, to assist in the survival of the trees and to minimise the impact on the trees from site construction works.

There may be instances where the planting is not undertaken immediately, examples include periods where water restrictions are in place, or where planting, through agreement with the developer, is undertaken as part of entry statements and other key locations within close proximity of the development. This may include areas of public open space or adjacent to community facilities.

DOCUMENTATION REQUIREMENTS
CONSTRUCTION DOCUMENTATION
<ul style="list-style-type: none"> Streetscape plans must be in accordance with the following: Ipswich City Council Planning Scheme; <i>Ipswich Streetscape Design Guidelines</i>; and the Ipswich City Council Standard Drawings. Council's Standard Drawings can be located at the following website: http://www.ipswichplanning.com.au/planning-documents/standard-drawings
<ul style="list-style-type: none"> Identify all new and existing trees within the dedicated road, including those to be retained and those to be removed.
<ul style="list-style-type: none"> Identify the location/proximity of services within the road reserve.
<ul style="list-style-type: none"> Cadastral layout.
<ul style="list-style-type: none"> Contours.
<ul style="list-style-type: none"> Location of any services, Power supply and lighting adjacent footpaths (water, sewers, gas, telecommunications etc).
<ul style="list-style-type: none"> Extent and surface finish treatment of pathways.
<ul style="list-style-type: none"> Extent of turf or grass cover.
<ul style="list-style-type: none"> Planting and landscape treatment.
<ul style="list-style-type: none"> Garden edging.
<ul style="list-style-type: none"> Signage.
<ul style="list-style-type: none"> Structures, retaining walls and stone work.
<ul style="list-style-type: none"> Root barrier locations.
<ul style="list-style-type: none"> All relevant plans, sections and details necessary to illustrate the proposed landscape works.
PLANTING SCHEDULES
<ul style="list-style-type: none"> Provide details of proposed planting including common and botanical names, pot sizes and height and spread at maturity.
MATERIAL AND FURNITURE SCHEDULES
<ul style="list-style-type: none"> Provide details of proposed materials (including root barrier), surface finishes and furniture including manufacturer, supplier and necessary construction and installation information and specifications.

Table 1: Detail Design and Construction Documentation (Operational Works Application) requirements.

4.3 DESIGN STANDARDS

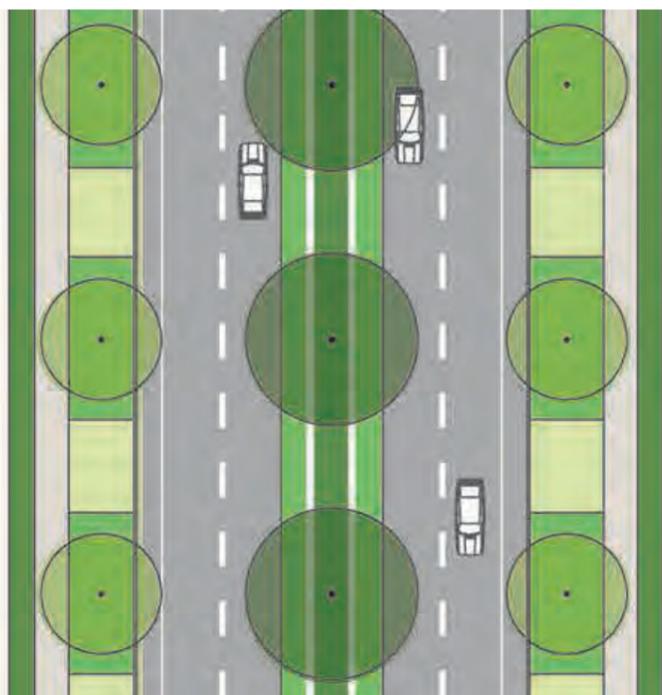
4.31 Planting Design & Arrangements

All planting arrangements include both the verge and the median strip, with the form varying depending on the physical characteristics of the street and the location of services and driveways. Planting design within roundabouts can also continue the planting arrangement that occurs along the street.

Table 2, the Street Planting Standards Table, details the specific planting standards, location and layout requirements necessary when planning and designing streetscapes in Ipswich.

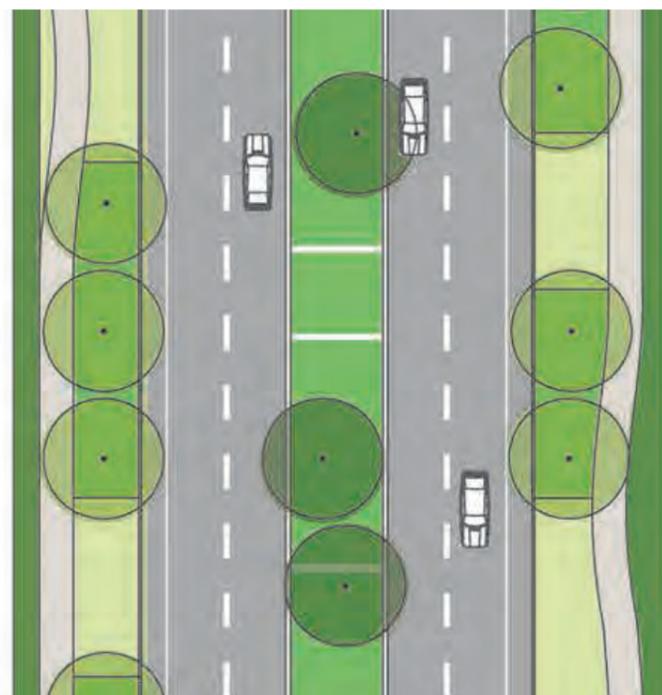
Formal Planting Arrangement

Avenue or boulevard tree planting is the most common and visually prominent arrangement of trees. Formal planting generally involves the use of single species with the intent of achieving a consistent tree form and size, complimented by mass planting of a uniform, structured understorey. This results in a visually strong, rhythmic outcome.



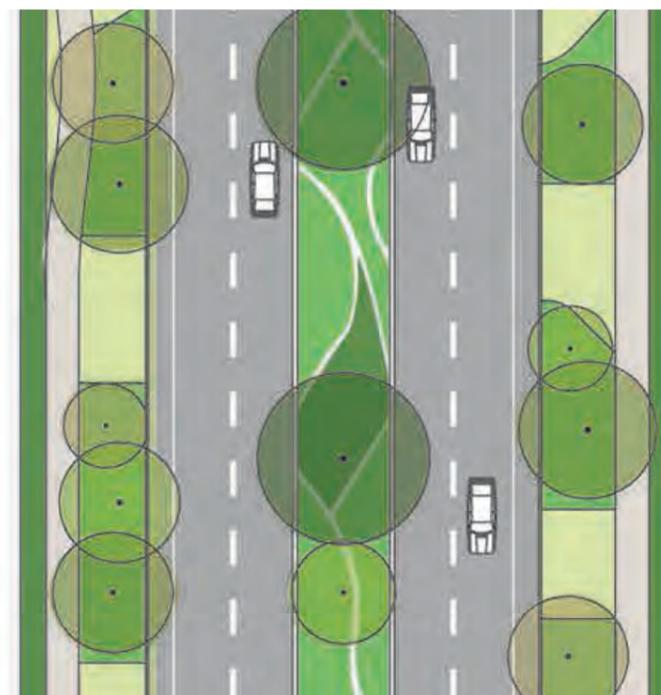
Informal Planting Arrangement

Informal planting generally involves the grouping of trees and cluster planting. This arrangement is commonly used in areas where the footpath is wider or there is greater opportunity for a meandering pathway. The arrangement usually consists of a few different species and the opportunity to create concentrated and consistent planting clusters. This results in a more relaxed streetscape.



Irregular Planting Arrangement

The irregular clustering of trees and understorey planting can mimic the random, unpredictable and unique natural environment. Planting bed design may also explore more organic shapes. The result is a softer, more naturalistic streetscape providing variety, interest and diversity. Irregular planting may be an ideal solution within a road reserve that is constrained due to services, infrastructure or remnant vegetation.



4.32 Street Planting Standards

OBJECTIVE	DESIGN REQUIREMENTS												
<p>STREET TREE INSTALLATION Street trees must be planted in appropriate locations at specified distances from other streetscape elements and infrastructure.</p>	<p>Minimum horizontal distances from mature tree canopy/drip line:</p> <ul style="list-style-type: none"> ▪ 2 metres to a power pole. ▪ 3 metres to a street light (Refer relevant service provider for management and maintenance standards). <p>Minimum horizontal distances from tree trunk:</p> <ul style="list-style-type: none"> ▪ 3 metres to a 110kV concrete pole. ▪ 1 metre to Energex underground cables (includes vertical distance of 1m). ▪ 2 metres to a fire hydrant, valve box or Telstra inspection pit. ▪ 1.5 metres to a house sewer or water main connection. ▪ 2 metres to a directly buried fibre optic cable. ▪ 2 metres either side of a driveway. ▪ 15 metres from the approach side of a pedestrian crossing and 5 meters on the departure side. ▪ 20 metres from the approach side of a bus stop and 5 meters on the departure side. ▪ 15 metres from the centre of an intersection on a local, collector or trunk collector road with appropriate consideration of intersection sight lines. <p>Council have a preference for native species within the streetscape. Part 5 of this guide contains schedules of suitable species for all streetscapes. Street trees planted under overhead power lines are nominated in Part 5 - Planting Schedules. Planting of trees, shrubs and groundcovers within an existing roundabout or median strip may be considered when the roundabout is 8 metres in diameter or greater or the median width is 2 metres or greater. Where an approved streetscape master plan has been prepared, planting is to be undertaken in accordance with that plan. Streetscape design is to refer to CPTED guidelines.</p>												
<p>STREET TREE INSPECTIONS</p>	<p>Any street trees specified as 100L or larger must be inspected by Council prior to installation</p>												
<p>AREAS Street tree provision is required at varying rates and container sizes for the various centres and areas within Ipswich.</p> <p><i>Unless otherwise directed by Council, staking is to be provided all all trees where risk of damage is likely (e.g. residential development, industrial estate etc).</i></p>	<table border="0"> <tr> <td data-bbox="552 747 715 785">CENTRES</td> <td data-bbox="715 747 2807 785"> <ul style="list-style-type: none"> ▪ Street tree planting is to be maximised wherever possible. ▪ Where street trees are being installed as a single planting they must have a minimum container size of 45L (refer standard detail). ▪ In the event that underground services or infrastructure restricts the installation of trees, ground covers, shrubs or alternate planting treatment is to be provided (refer Part 4 section 4.34). </td> </tr> <tr> <td data-bbox="552 785 715 1031">URBAN</td> <td data-bbox="715 785 2807 1031"> <ul style="list-style-type: none"> ▪ Single street trees are to be provided at a maximum spacing of 10 metres of road frontage or up to the spacings prescribed in Part 5 - Planting Schedules. ▪ Where street trees are being installed as a single planting they must have a minimum container size of 45L (refer standard detail). ▪ Future driveway and services locations to be considered prior to planting to avoid plant loss. ▪ The use of trees, shrubs and groundcover planting in mulched beds is supported at key locations. These include adjacent to parkland, at road junctions or waterway crossings. This is to be detailed on the approved landscaping plans. </td> </tr> <tr> <td data-bbox="552 1031 715 1199">SUBURBAN</td> <td data-bbox="715 1031 2807 1199"> <ul style="list-style-type: none"> ▪ Single street trees are to be provided at a maximum spacing of 20 metres of road frontage or up to the spacings prescribed in Part 5 - Planting Schedules. ▪ Where street trees are being installed as a single planting they must have a minimum container size of 25L (refer standard detail). ▪ Future driveway and services locations to be considered prior to planting to avoid plant loss. ▪ The use of trees, shrubs and groundcover planting in mulched beds is supported at key locations. These include adjacent to parkland, at road junctions or waterway crossings. 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<p>GENERAL STREET PLANTING All planting is to be designed using CPTED principles to maximise sight lines and passive surveillance.</p>	<ul style="list-style-type: none"> ▪ All street trees are to have a minimum clear trunk height of 2 metres at maturity unless otherwise approved by Council. ▪ All planting between kerb and footpath is to be a maximum height 750mm. ▪ All groundcovers and shrubs within a roundabout are to a maximum height of 750mm from road level. (i.e. 150mm kerb height to roundabout requires max 600mm high planting). ▪ All planting is to be planted at an appropriate setback from edge of planting area or garden edge to ensure that pruning is not required or obstruction to pedestrians and cyclists will not occur. A nominal 100mm setback (from mature plant foliage to garden edge) is recommended. 												
<p>STREET PLANTING ADJACENT PARKLAND</p>	<ul style="list-style-type: none"> ▪ Existing vegetation within the parkland should be retained where possible. Consideration is to be given to appropriate specie retention. ▪ Planting within the road reserve should reflect the character of the parkland vegetation. Consideration is to be given to appropriate species selection. ▪ Extension of the landscaping associated with the parkland onto the street verges is supported subject to the selection of appropriate species and ensuring that there is minimal interference to the visibility of pedestrians, cyclists and motor vehicles. ▪ The use of bollards to restrict vehicle encroachment into the road verge and parkland is supported. The style and location of these is to be in accordance with Ipswich City Council's standard drawings and be included on the street tree landscaping plan. Where upright kerb exists, bollards may not be necessary as a vehicle deterrent. ▪ Where possible feature trees within the road reserve should be used to visually and physically draw people into the park. ▪ Engineering design such as one-way crossfall roads should be used where appropriate. 												
<p>WATERWAY CROSSINGS To provide planting that enhances the existing landscape character and vegetation associated with the waterway.</p>	<ul style="list-style-type: none"> ▪ Retain existing vegetation where possible. Consideration is to be given to appropriate specie retention. ▪ Planting should respond to the natural waterway and reflect existing vegetation or include other species suited to the location. ▪ The extension of the tree planting associated with the waterway onto the street verges is supported. On nominated state controlled roads, tree selection and placement should generally preserve sightlines in accordance with relevant State Government standards and guidelines. ▪ Remove listed weed species, as part of landscape works unless determined otherwise by ICC (or relevant authority). ▪ Ensure that earthworks associated with landscape works is undertaken in such a way that prevents any contaminants entering the waterways. 												

4.33 Bus Stops

When required, bus indents are to be provided in accordance with Council's standard drawings.

Council's Standard Drawings can be located at the following location:

<http://www.ipswichplanning.com.au/planning-documents/standard-drawings>

For the provision of bus stop related infrastructure, refer to Translink for further information.



Adshel bus shelter. Augusta Parkway, Augustine Heights.



Bus indent bay and associated infrastructure. Bell Street, Ipswich Central.

4.34 Alternatives to Street Tree Planting

In the situation that street trees cannot be achieved due to significant constraints in the streetscape (including underground or overhead services and infrastructure), Council encourages the use of alternative solutions such as planted arbours and trellises in urban centres. They provide much needed shade and visual relief from hardscape environments. They also soften the interface and reduce the scale between buildings and pedestrians.

Wherever possible, suitable vegetation is to be planted against posts, walls or screens visible from the road. Plants and structures must not obstruct traffic and pedestrian sightlines or the flow of pedestrian movement.

Refer to the design requirements listed to ensure appropriate design outcomes. Refer to Plant Schedules for a list of suitable species.

OBJECTIVE	DESIGN REQUIREMENT
Structures are to provide adequate clearances	<p>Unless otherwise determined by Council, the structure is to:</p> <ul style="list-style-type: none"> Have a minimum unobstructed vertical clearance of 3 metres between the footpath and the underside of the structure or climbing plants. Ensure a minimum unobstructed footpath width of 3 metres. Be designed to prevent climbing or vandalism Be designed using CPTED principles. Be constructed of low maintenance or otherwise approved materials.
Structures must not obstruct traffic or pedestrian sightlines	<ul style="list-style-type: none"> Posts of structures are to be set back behind footpaths or towards the adjacent property boundary. All relevant road safety design standards should be considered. Groundcovers within sightlines to be maximum 750mm height unless approved otherwise. Plant selection is to acknowledge relevant maintenance regimes to prevent inappropriate growth between maintenance cycles.
Structure design	<ul style="list-style-type: none"> The structure is to be designed with planting and asset maintenance regimes and capabilities in mind.



Structures for climbing plants provide shade where trees or awnings may not be possible.



Bougainvillea makes a stunning creeper along trellises and arbours

4.35 Understorey Planting

Understorey planting is to comply with Council's standard drawings. Street planting will be located in urban and rural centres, at transport nodes, in medians and roundabouts or in otherwise approved locations.

Understorey planting consists of shrubs, groundcovers and climbers located within mulched garden beds. In medians, roundabouts and between the kerb and the footpath, unless otherwise determined by Council, planting is to grow no higher than 750mm at maturity. Planting locations are to also consider kerb side parking and access between parking and footpath.

Wherever possible, suitable vegetation is to be planted against all posts, walls or screens visible from the road to discourage graffiti in these locations. For safety reasons, shrubs and climbers must not obstruct traffic or pedestrian sightlines.

Where mass planting is required, layered planting which incorporates CPTED principles is to be applied to provide physical and perceived safety to pedestrians and cyclists.

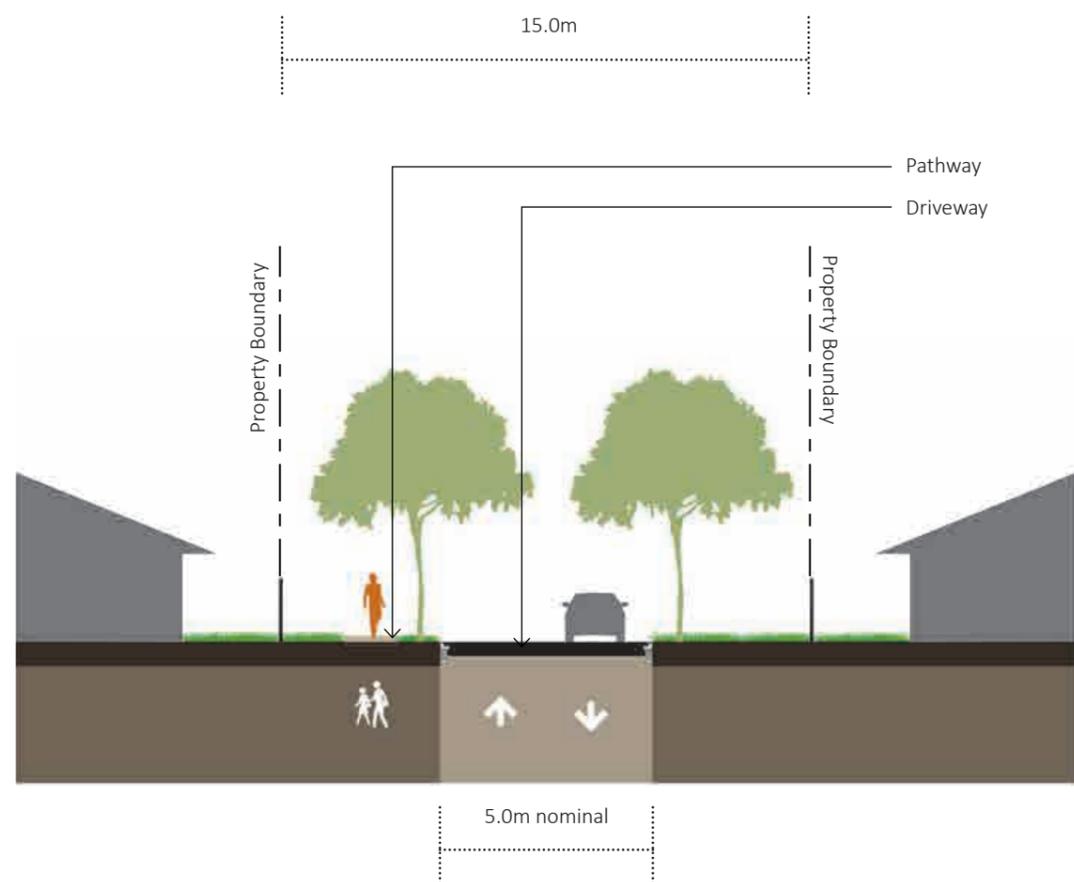
Refer to Plant Schedules for a list of suitable species.



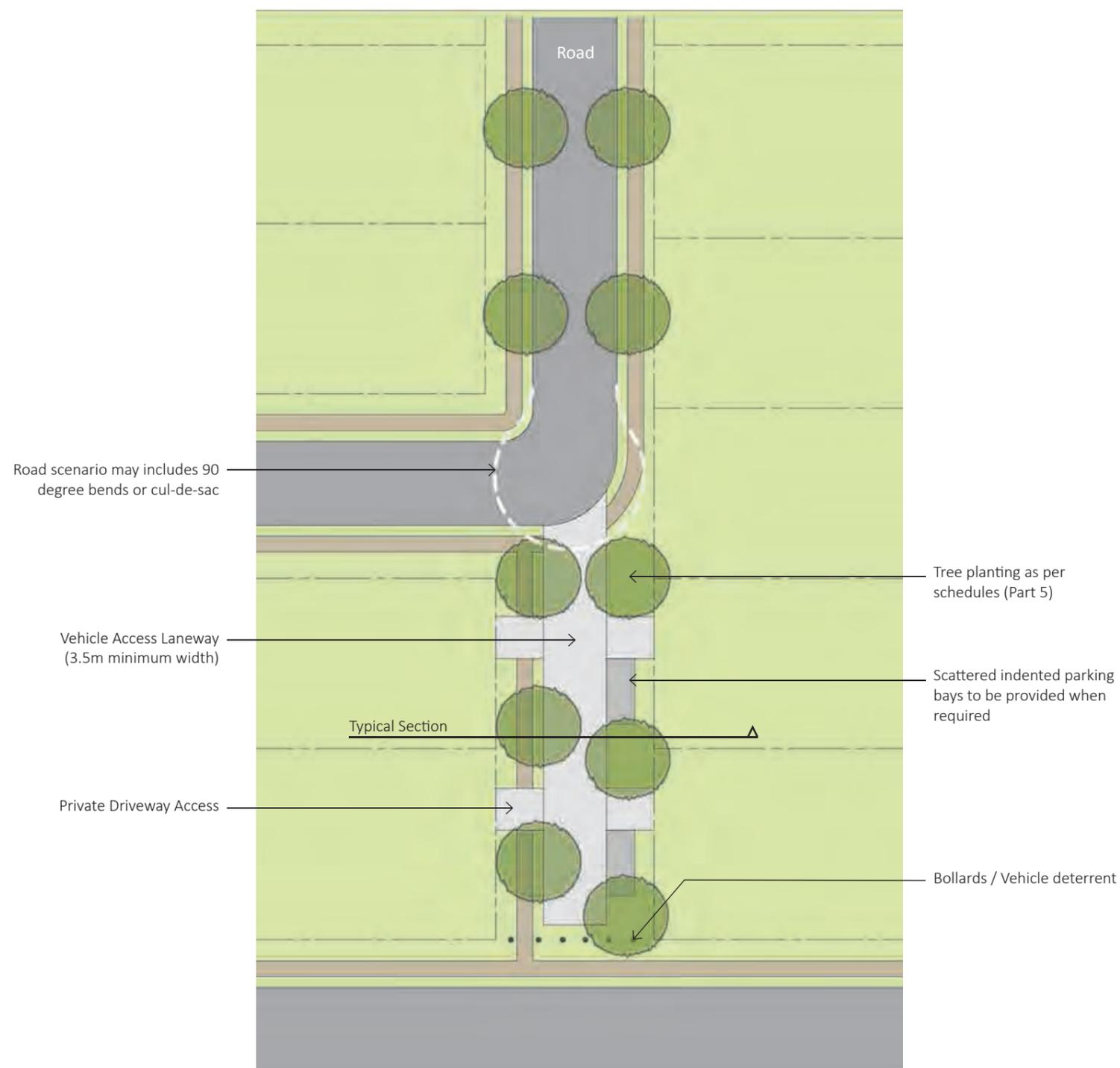
Mass planting can be effective with the use of species with different textures, colours and heights, providing a layering effect.

4.36 Vehicle Access Laneways

OBJECTIVE	DESIGN REQUIREMENT
Vehicle Access Laneways and pedestrian links in road reserves require site specific treatments and careful consideration	<ul style="list-style-type: none"> Traffic conditions and pedestrian requirements may require a site specific design outcome. In some situations, shared use of the vehicle access may be accepted in lieu of a pathway. Large trees are not accepted in laneways or pedestrian links. Sight lines: Groundcovers/shrubs are required to be a maximum height of 750mm (at mature height). Pathway widths are to respond to adjoining street pathway requirements.



Typical Section



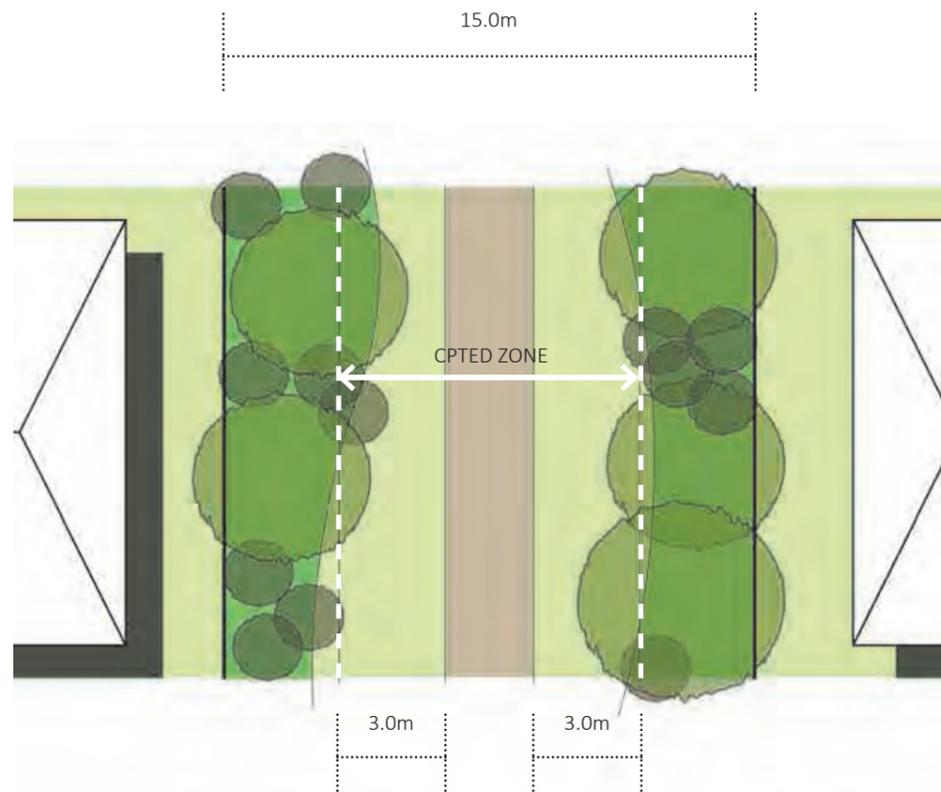
Typical Plan

4.37 Pedestrian Links

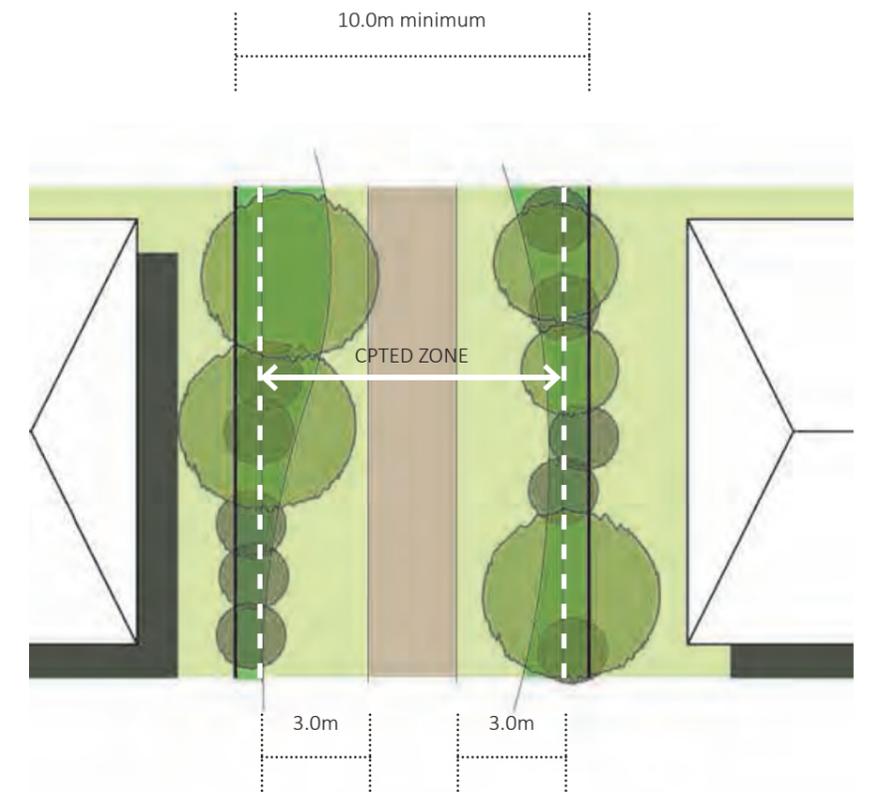
OBJECTIVE	DESIGN REQUIREMENT
<p>Pedestrian links require site specific treatments and careful consideration</p>	<ul style="list-style-type: none"> For pedestrian links greater than 40m in length, turf is required along pathways to maximise surveillance and increase perceived safety of the pathway. For short connections (less than 40m) full planting is acceptable. CPTED requirements are to be provided at all scenarios. Large trees are not accepted in pedestrian links. CPTED ZONE - A 3m setback is required from the edge of path. Within this zone turf and/or low groundcovers are required. A maximum planting height of 750mm (at mature height) is required in this zone. Pathway widths are to respond to adjoining street pathway requirements.



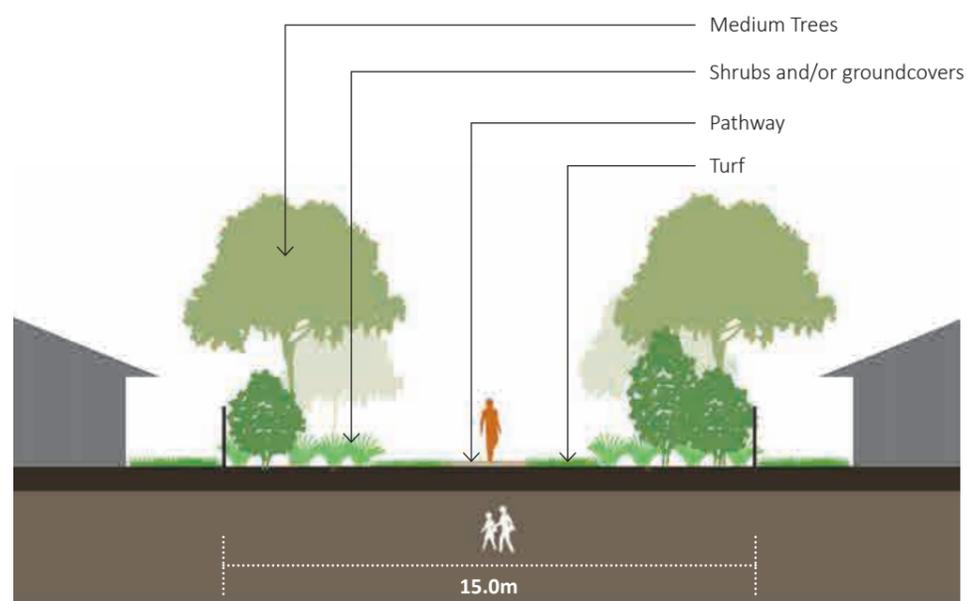
Pedestrian link in Augustine Heights



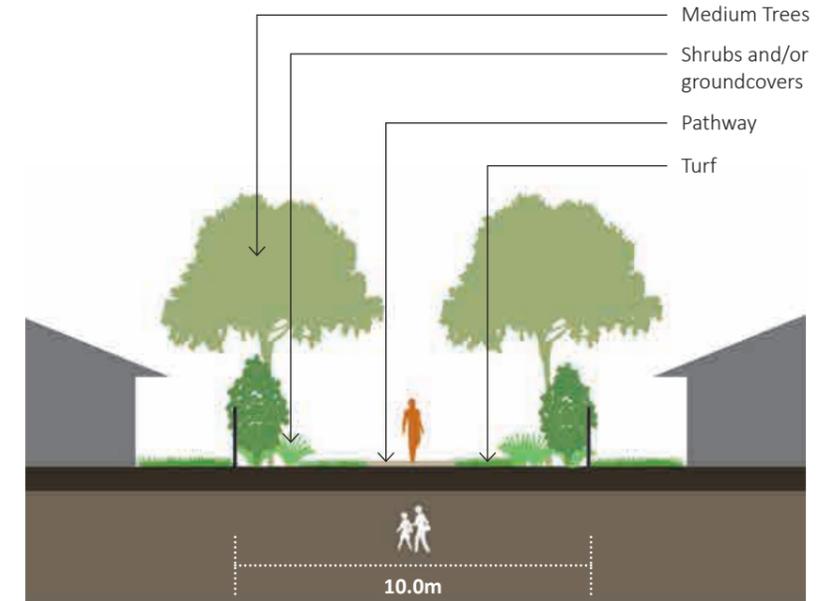
Pedestrian Laneway (Optimum Road Reserve Width)
Typical Plan



Pedestrian Laneway (Minimum Road Reserve Width)
Typical Plan



Pedestrian Laneway (Optimum Road Reserve Width)
Typical Section



Pedestrian Laneway (Minimum Road Reserve Width)
Typical Section

4.38 Footpaths

Footpath pavement is to comply with Council's standard drawings. Footpaths are to be provided on at least one side of the street in all residential, commercial and industrial areas or as required as part of the broader pathway network. They are to connect to community facilities, neighbourhood centres, public transport nodes and the open space network. Footpaths are to be shaded by shade trees and have a minimum setback requirements from the kerb to provide for tree planting (refer ICC Standard Drawings and planting schedules for tree setbacks).

Pavement treatments vary depending on the type of place function. Higher levels of embellishment are encouraged in high use or high place function areas. Highly urbanised areas or feature hardstand areas may benefit from a level of embellishment that will attract retail and commercial development.

OBJECTIVE	DESIGN REQUIREMENT	
ROAD TYPES Different road types require different footpath width requirements.	Footpaths will be a minimum (unobstructed) width of: <ul style="list-style-type: none"> ▪ 1.5 metres for a local access street. ▪ 2.0 metres for major collector. ▪ Minimum 2.5 metres for sub arterial or arterial roads. ▪ Where necessary, a footpath may be required to be wider to meet pathway network requirements. Shared pathways accommodating high volumes of pedestrians and cyclists or where a pathway provides a commuter or regional bikeway function, pathways may need to wider than the above mentioned widths.	
AREAS Footpath and hardstand areas require different treatments and levels of embellishment depending on place function.	HIGH PLACE FUNCTION (Ipswich Central, Urban Centres and Rural Centres)	Minimum of exposed aggregate and/or coloured concrete. Other options (subject to approval by Council) may include: <ul style="list-style-type: none"> ▪ Honed or sawcut concrete. ▪ Natural stone paving. ▪ Porphyry banding. ▪ Decorative paving and stencilling. ▪ Asphalt street printing/stamping. ▪ Other bespoke designs. ▪ For Ipswich Central, refer to Council's Streetscape Material Specification.
	MEDIUM PLACE FUNCTION (Commercial Centres or Clusters of commercial premises)	Minimum of plain grey concrete with exposed aggregate or coloured concrete treatments at important nodes.
	LOW PLACE FUNCTION (Suburban and Industrial)	Minimum of plain grey broom finished concrete. Various concrete treatments may be considered at open space entry nodes (subject to Council approval).



Decorative pavement, Ipswich Mall



Stone paving and coloured exposed aggregate concrete, Ellenborough Street, Ipswich



Porphyry sett banding, Rosewood

4.39 Typical Road Reserve Planting



Liriope Evergreen Giant planting at a road junction, Brookwater.

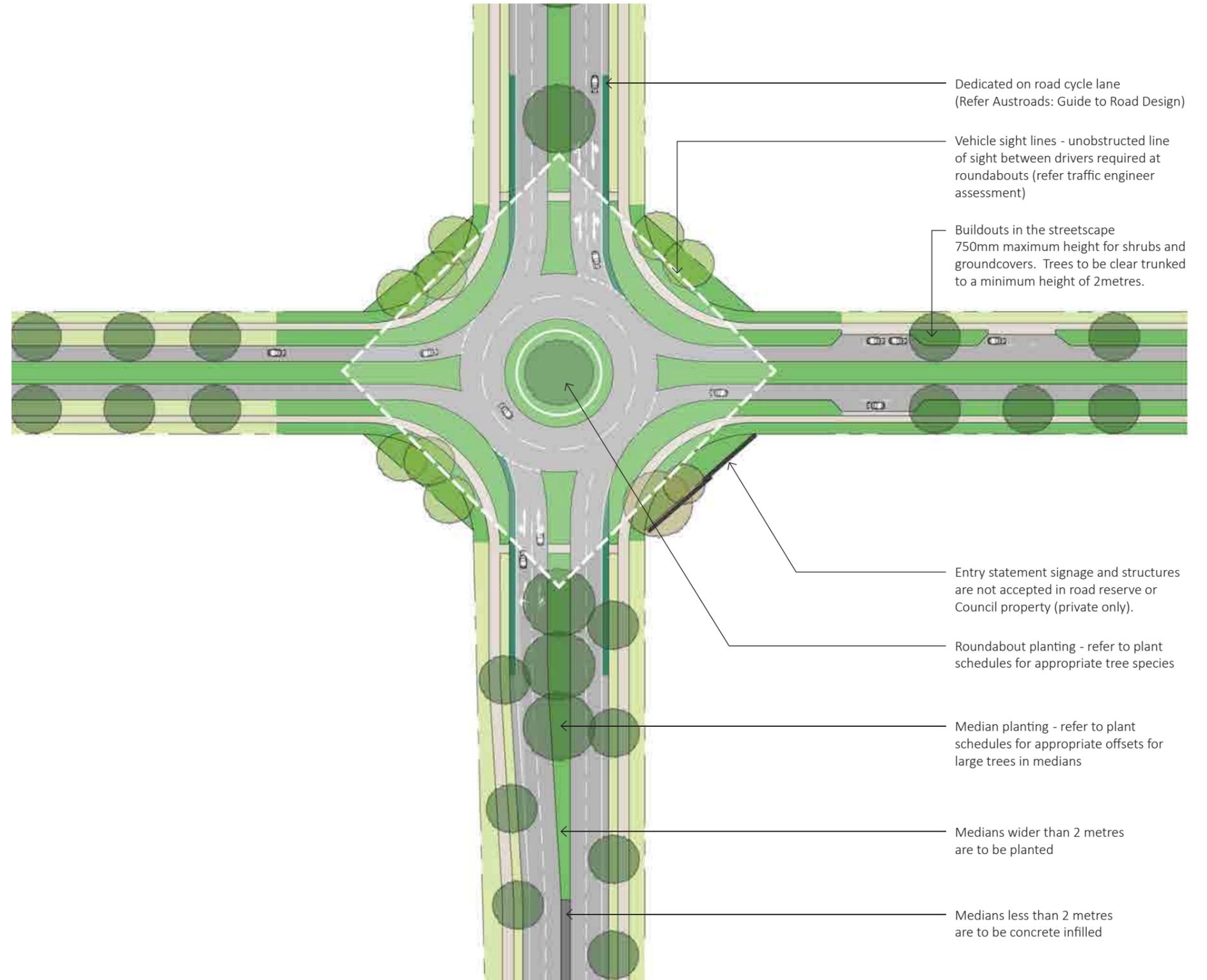


Figure 6: Streetscape Elements - Typical Plan

Planting Locations and Design Requirements

The Streetscape Elements Typical Plan (Figure 6) illustrates the various planting scenarios common within the streetscape. The tables below detail the various design requirements for planting within each scenario.

Entry Statements

OBJECTIVE	DESIGN REQUIREMENT
Planting within entry statements	<ul style="list-style-type: none"> Entry statements may be planted with trees, groundcovers and shrubs of any height, unless the planting falls within the traffic sightlines or impacts CPTED principles.
Entry walls and artwork for entry statements	<ul style="list-style-type: none"> All entry signage and associated structures are not permitted on Council land or within the road reserve. The use of low maintenance art installations (no signage) may be considered and subject to site specific Council approval.

Kerb Buildouts

OBJECTIVE	DESIGN REQUIREMENT
Planting in and around buildouts	<ul style="list-style-type: none"> Buildouts are to be planted with groundcovers and/or shrubs that grow no higher than 750mm (refer Plant Schedules).
Sightlines near buildouts are not to be obstructed	<ul style="list-style-type: none"> Trees in buildouts must be clear trunked to 2 metres (min). Understorey planting to be a maximum of 750mm in height.

Roundabouts

OBJECTIVE	DESIGN REQUIREMENT
Planting within roundabouts	<ul style="list-style-type: none"> All roundabouts with a non-trafficable island diameter greater than 8m may be planted with groundcovers or shrubs that grow no higher than 750mm (measured from road surface). Medium tree species (individual or cluster of 2-3) to be located as central as practically possible within the roundabout. One (maximum) large tree may be accepted if there is sufficient space (refer Planting schedules) and subject to traffic assessment.
Sightlines near roundabouts are not to be obstructed	<ul style="list-style-type: none"> Trees in roundabouts must be clear trunked to 2 metres (min). Understorey planting to be a maximum of 750mm in height.

Medians

OBJECTIVE	DESIGN REQUIREMENT
Planting within medians	<ul style="list-style-type: none"> All medians 2 metres or greater in width, other than those used as pedestrian refuges, are to be planted with groundcovers and/or shrubs that grow no higher than 750mm (refer Plant Schedules). All medians less than 2 metres wide must be concrete infilled. Large trees may be accepted if there is sufficient space (refer Plant Schedules).
Sightlines near medians are not to be obstructed	<ul style="list-style-type: none"> Trees in medians must be clear trunked to 2 metres (min). Understorey planting to be a maximum of 750mm in height (unless otherwise approved by Council where sightlines or surveillance is not necessary).

4.310 Street Furniture

Street furniture is to be provided within the streetscape for comfort and amenity. Furniture selection varies depending on the function of a place and requires a site specific design approach. Higher levels of embellishment are encouraged in high use or high place function areas. Urbanised areas may benefit from a higher level of embellishment to activate retail and commercial frontages and suitable of a higher maintenance regime. All furniture design is to be robust and vandal resistant where possible.

For furniture requirements in Ipswich Central, refer to Council's Streetscape Material Specification.

DESIGN REQUIREMENTS FOR FURNITURE TYPES							
PLACE FUNCTION	SEATING	BINS	DRINKING FOUNTAINS	BICYCLE RACKS	TREE GRATES	BOLLARDS	TACTILES
HIGH (Ipswich Central, Urban Centres and Rural Centres)	Minimum requirement: bench seat with back rest and arm rests, located in key nodes. Bespoke and custom items as additional embellishment to be approved by Council. Materials include: <ul style="list-style-type: none"> Timber. Stainless Steel or aluminium. Colour powdercoat. Plastics/composites to be approved by Council. 	Rubbish bins to be located at key nodes. Recycle bins to be provided in urban areas. Materials include: <ul style="list-style-type: none"> Stainless steel. Aluminium. Colour powdercoat. 	Drinking fountain - disability accessible. Custom made items as additional embellishment to be approved by Council. Materials include: <ul style="list-style-type: none"> Stainless steel Aluminium. Colour powdercoat. 	Multiple bays in key nodal locations. Custom made and custom items as additional embellishment to be approved by Council. Acceptable materials include: <ul style="list-style-type: none"> Stainless steel. Aluminium. Colour powdercoat. 	Appropriate for highly urban environments. Custom made items as additional embellishment to be approved by Council. (Refer Council Standard Drawings).	Minimum requirement: Council standard timber bollard. Custom made designs to be approved by Council. Acceptable materials include: <ul style="list-style-type: none"> Stainless steel. Aluminium. Colour powdercoat Timber. (Refer Council Standard Drawings).	Must achieve luminance contrast and design requirements outlined in AS1428.4. Acceptable materials include: <ul style="list-style-type: none"> Brass inserts. Stainless steel inserts. Paver tiles. Plastic inserts . Cast insitu.
MEDIUM (Commercial Centres or clusters of commercial premises)	Minimum requirement: bench seat with back rest, located in key nodes. Custom made items as additional embellishment to be approved by Council. Materials include: <ul style="list-style-type: none"> Stainless steel. Aluminium. Colour powdercoat. 	Rubbish bins to be located at key nodes. Custom made items as additional embellishment to be approved by Council. Materials include: <ul style="list-style-type: none"> Stainless steel. Aluminium. Colour powdercoat. 	Drinking fountain - disability accessible. Custom made items as additional embellishment to be approved by Council. Materials include: <ul style="list-style-type: none"> Stainless steel. Aluminium. Colour powdercoat. 	Singular rack close to public transport or retail hub. <ul style="list-style-type: none"> Stainless steel. Aluminium. Colour powdercoat. 	May be required in highly trafficable areas only. Custom made items as additional embellishment to be approved by Council. (Refer Council Standard Drawings).	Minimum requirement: Council standard timber bollard. Custom made bollards to be approved by ICC. Acceptable materials include: <ul style="list-style-type: none"> Stainless steel. Galvanised. Colour powdercoat. Timber. (Refer Council Standard Drawings).	Must achieve luminance contrast and design requirements outlined in AS1428.4. Acceptable materials include: <ul style="list-style-type: none"> Brass inserts. Stainless Steel inserts. Paver tiles. Plastic inserts. Cast insitu.
LOW (Suburban and industrial)	Minimum requirement: bench seat with back rest, located at key transport nodes.	Rubbish bins to be located at key transport nodes only.	Not required	Not required	Not required	Minimum requirement: Council standard timber bollard. (Refer Council Standard Drawings).	Must achieve luminance contrast and design requirements outlined in AS1428.4. Acceptable materials include: <ul style="list-style-type: none"> Plastic inserts or tiles. Cast insitu.

Table 3: Streetscape Furniture Design Requirements

Streetscape Furniture Palette

The following streetscape furniture palette illustrates the wide range of furniture used throughout Ipswich.

Selection of appropriate furniture is to comply with figure 4.4 and consider low maintenance regimes and life cycle costs.

The location of proposed furniture and associated specifications are to be included in the streetscape plans for approval by Council.

Seating



Seat with back and arm rests, Bell Street, Ipswich



Bespoke seating, Woolloongabba



Timber seating, Rosewood



Steel and aluminium seat

Bins



Steel bin, Ipswich Central



Stainless Steel Bin, Marburg



Steel bin, Ipswich Central

Drinking Fountains



Stainless Steel Drink Fountain

Bicycle Racks



Stainless Steel Bike rack, Ipswich Central



Stainless Steel Bike rack, Marburg

Tree Grates



Custom tree grates, Ipswich Central

Bollards



Timber bollards, Rosewood



Stainless bollards, Ipswich Central



Galvanised bollards, Springfield



Stainless bollards, Ipswich Central

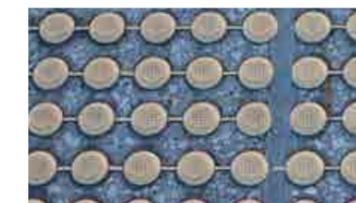
Tactiles



Tactile indicators, Springfield



Tactile indicators, Ipswich Central



Tactile indicators, Ipswich Central



Planting in the city, which includes trees, palms, shrubs, groundcovers and climbers plays a major role in supporting the objectives noted in Part 1 of this report. Planting improves the amenity of the streetscape and plays a larger role in making the city more liveable for the community.

planting

PART 5



*Fairview Avenue,
Flinders View, Ipswich.*

5.1 PLANTING PRINCIPLES

The following principles are essential to successful streetscape planting in the city to enhance and expand our urban forests:

Maximise planting opportunities in the city

Over the long term, if appropriately selected and maintained, planting and turf are the most cost effective treatments to install, maintain and upgrade. The use of planting, ahead of other treatments such as paving, other surfacings and structures, is therefore encouraged in the streetscape.

Diversity and character

Planting contributes to the character of Ipswich and makes it distinctive from other urban landscapes in Queensland as there is a diversity of plant species used in the streetscapes. This guide emphasises the use of plants that perform well in the local Ipswich environment.

Use the largest tree possible for the space

Large trees provide a much greater benefit to the community. They can be planted at wider spacings. The canopies provide greater impact to the surrounding area and can help humanise the scale of larger buildings. Large trees maximise the benefits of planting areas to cool, clean and beautify the city.

Go for the green option

Utilise green infrastructure rather than engineering solutions.

Provide a suitable substrate

The old adage of a '\$1.00 tree and a \$10.00 hole' holds true. The emphasis and budget should be focussed on preparing the soil and growing area and providing early maintenance, rather than on larger or more expensive planting stock.

5.2 SOILS

5.21 Soil Depths

Minimal soil volumes are required for healthy plant growth. The Australian Institute of Horticulture recommends the following minimum depths:

- Garden beds — 500mm topsoil over 100mm decompacted subsoil.
- Turf — 200mm topsoil over 100 mm decompacted subsoil.
- Tree pits — 500mm topsoil over 500mm decompacted subsoil.

Minimum soil volumes are nominated for large trees (refer Appendix B). Where nominated soil depths are not available, soils must be imported from off-site and raised planters may be required to provide nominated site levels and necessary topsoil depths.

5.22 Soil Types

Vertosols - cracking clays

LANDFORM AND DISTRIBUTION

Widespread on flat to undulating alluvial plains, creek flats and higher terraces.

KEY FEATURES

Clay-rich and often well-structured. Susceptible to water-logging and compaction. Highly sticky when wet.

EROSION

Vulnerable to sheet and gully erosion on moderate slopes.

FERTILITY AND PLANT GROWTH

Some soils may be nutrient deficient, and aluminium and manganese toxicities may occur in some areas. Slow drainage may cause waterlogging and restrict plant growth.

Hydrosols - wet soils

LANDFORM AND DISTRIBUTION

Occur in the poorly drained sections of valley floors.

KEY FEATURES

Soil properties largely determined by height of water table, which is almost always relatively high. Grey colours and mottling indicate prolonged saturation. May be clay or sand throughout, or combinations of the two.

EROSION

Because they occur in the lowest parts of the landscape, sheet, rill, gully or tunnels erosion is rare, although flooding may be a problem. Disturbed soils exposed to stream flow may erode.

EARTHWORKS

Suitable for roads and tracks except in the lowest positions.

FERTILITY AND PLANT GROWTH

Generally nutrient rich, although aluminium and manganese toxicities may occur in some areas. Soil surface may crust leading to poor soil-seed contact. Poor drainage may lead to oxygen-poor root conditions and inhibit plant growth.

Kandosols - strongly weathered earths with minor texture contrast

LANDFORM AND DISTRIBUTION

Occur on the crests and slopes of low hills.

KEY FEATURES

Usually deep (1.0-5.0m). Weak soil profile development and gradual increase in clay content with depth.

EROSION

Highly erodible even on low slopes if bare Earthworks Suitable for most earthwork operations. Allow for 30% settling.

FERTILITY AND PLANT GROWTH

Generally very low nutrient status, especially phosphorus and nitrogen. Plant available water capacity is generally very low, and salinity may be a problem in some areas.

Sodosols - alkaline and sodic soils with sharp texture contrast

LANDFORM AND DISTRIBUTION

Widespread on plains and low hills.

KEY FEATURES

Sharp contrast between sandy topsoils and clay-rich subsoils.

EROSION

Highly erodible. Vulnerable to sheet, tunnel and gully erosion due to highly dispersive subsoils.

EARTHWORKS

Unsuitable for most earthwork operations.

FERTILITY AND PLANT GROWTH

Generally low to very low nutrient status. Plant available water is very low. Plant growth is impeded by poor subsoil drainage due to high clay content, and is also impeded by tough clay subsoil.

Chromosols - neutral to alkaline soils with sharp texture contrast

LANDFORM AND DISTRIBUTION

Yellower soils occur on gently undulating rises to rolling country. Redder soils occur on gently inclined and steep slopes in hilly country.

KEY FEATURES

Sharp texture contrast between sandy topsoils and clay-rich subsoils.

EROSION

Highly erodible even on shallow slopes. Prone to sheet erosion. Because subsoils are clay-rich, they are vulnerable to dispersion.

EARTHWORKS

Suitable for most earthwork operations. Allow for 30% settling.

FERTILITY AND PLANT GROWTH

Generally low to very low nutrient status, and plant available water capacity is low.

Dermosols - structured subsoils with minor texture contrast

LANDFORM AND DISTRIBUTION

Widespread on mid to upper positions on low undulating hills.

KEY FEATURES

Clay-rich soils with well-structured subsoils.

EROSION

Highly erodible even on shallow slopes when bare. Because sub-soils are clay-rich, they are vulnerable to dispersion.

EARTHWORKS

The cracking nature of these soils can be a limitation for earthworks. Allow for 30% settling. Limited suitability for roads and tracks where accumulation of water in ruts and wheel tracks should be avoided.

FERTILITY AND PLANT GROWTH

Phosphorus may be low, and some soils may have elevated salt levels in the subsoils which may inhibit growth.

5.23 Soil Testing

It is necessary to undertake a soil test on all sites where planting is to occur; to record outcomes of the testing; and to make recommendations for amelioration based on test outcomes. On larger streetscape projects (over 5,000m²) soil tests should be undertaken by a soil laboratory and provide analysis and recommendations for amelioration. On smaller projects some simple tests can be undertaken by Council officers or consultants. These include:

- pH test
- Sedimentation test
- Soil composition ribbon test
- Simple compaction test
- Infiltration test
- Colour

5.24 Improvements of Site Soils

Often there is limited opportunity to design and install engineered planting pits with improved soil volumes. However it will still be possible to provide improvements to site soils surrounding the planting area. This will effectively extend the opportunity for root growth beyond the establishment hole and into the surrounding soil environment.

When soil improvements are required, an arborist, horticulurist, landscape architect or relevant ICC officer is to be consulted. Some soil improvement measures may include the following.

Manual Cultivation

- Traditionally this would include ripping, coring, tilling and physical decompaction.
- Likely to be most applicable in brownfield developments, but is generally not feasible in heavily paved or highly urbanised areas.

DISADVANTAGES:

- Improvements may be short-lived if not combined with good management practices.
- Improvements can be slow to manifest.
- Can destroy remaining natural soil profiles and damage soil biota.
- Can cause smearing and drainage hard pans in wet clay soils .

ADVANTAGES:

- Cost effective on a large scale. Can provide quick and dramatic improvement, particularly in newly constructed developments.
- Can be used to create site-specific drainage gradients.
- Supplementary benefits of increased water infiltration, carbon sequestration and improved plant health.
- Can be used to improve established trees.
- Does not require engineering inputs or approvals.
- Takes advantage of existing adjacent soil areas.

Biological Soil Improvements

- Extending and maintaining organic mulch cover .
- The addition of organic composts to soil profile — vertical mulching.
- Treatment with humic, fulvic acids, seaweed-based fertilisers, fish hydrolosate etc.
- Inoculation with mycorrhizal fungi.
- Treatment with prescribed compost teas.

DISADVANTAGES:

- Improvements can be slow to manifest.
- Requires skilled soil analysis, record keeping and monitoring of applications.
- Specifications need to be site-specific.

ADVANTAGES:

- Cost effective on a large scale.
- Supplementary benefits of increased water infiltration, carbon sequestration and improved plant health.
- Can be used to improve established trees.
- Takes advantage of existing adjacent soil areas.
- Causes minimal disturbance and overall improvements to established planting .

5.25 Erosion and Sediment Control

All works associated with streetscape construction should be aware of the need to manage soils in accordance with erosion and sediment control best practice to avoid negative impacts on waterways and Council stormwater assets.

5.26 Soil Amendments

The following issues are to be addressed when amending site topsoil for planting areas:

Soil depths

Minimal soil volumes are required for healthy plant growth. Refer Council's Standard Drawings for various planting situation requirements.

Imported soil

Imported topsoil is to comply with the Australian Standard 'Soils for landscape and garden use', 4.5. Organic Soil or 4.8. Topsoil, and should have an organic matter content of not less than 15% but no more than 20%.

Turf works are to utilise an imported sandy loam complying with the Australian Standard. Tree pits are to utilise topsoil with an organic matter content of no more than 5% in areas greater than 500mm below ground surface.

Imported topsoil is to be free of toxins, weeds (including nutgrass), insects, pathogens, sharp items, roots greater than 12mm in diameter, clay lumps greater than 10mm in diameter, stones greater than 20mm in diameter, strong odour once spread and watered, and any other form of material foreign to the normal composition of the soil.

Soil Compaction

Compacted soils are widespread in urban situations and impede healthy root growth. Undertake decompaction of soils where planting is to occur and adjacent to tree planting pits, prior to amending topsoil.

A major problem in recent years has been the heavy compaction of the road corridor and adjacent areas undertaken during civil engineering works. Valuable topsoil has also been lost or covered with subsoils during these operations. Areas of compaction need to be clearly marked on site and restricted to the road corridor and should not occur in the verge areas, future medians and roundabouts. Topsoil is to be stockpiled during works operations and excess topsoil transported to Council storage areas rather than being dumped.

Organic matter

Organic matter is a key component of soils. Organic matter encourages biological activity in the soil, which is essential for healthy plant growth. It helps retain moisture and nutrients in the soil and acts as a buffering agent. Organic matter breaks down rapidly in warm, moist weather and the addition of organic matter, such as an organic mulch, needs to be applied on a regular basis to replace it.

Fully composted organic matter is to be incorporated within the topsoil. It should make up 5% of the topsoil (mineral content 45%, water 25%, air 25%). It is not to be incorporated in depths over 500mm, where it is likely to decompose anaerobically and have deleterious impacts on plant health.

Humic acid or humates (brown coal) can be applied to the soil in the form of a granular or liquid product. Refer to manufacturer's recommendations.

Soil pH

The preferred soil pH for most plants is between 6.5 and 7. Many Ipswich soils have pH of 5.5 and lower, or higher than 9. Appropriate levels of organic matter helps to buffer the pH and make the soil more amenable to plant growth.

Biological amendments are to be applied to the soil to provide a suitable pH. Soils with a low pH benefit from the addition of lime. Crushed lime, rather than more commonly used powdered lime, will provide a long term reserve in the soil.

Plant nutrition

Poor land practices; loss of vegetation and mulch cover; and heavy summer rainfall have resulted in most Ipswich soils becoming leached and low in many essential nutrients.

A biological approach to plant nutrition is encouraged. This approach supports a healthy soil biology and provides a long term, cost efficient approach which is well suited to the temperatures and rainfall of a subtropical climate. Balanced nutrition is provided from a mixture of various ground rock minerals, formulated to meet plants' nutritional requirements.

These minerals are retained in the soil for many years. Soluble fertilisers are not recommended, as they can readily leach from the soil, contaminating waterways and groundwater. They also can contain salts which negatively impact upon the soil biology. Slow release and controlled release fertilisers are not recommended as they are less cost effective; release soluble fertilisers; do not provide long term nutrition; and are less predictable in humid, subtropical climates.

Soil biology

A healthy soil biology is critical for plant health. Various organisms, particularly fungi and bacteria, assist plants with the uptake and transportation of nutrients and water. Some soils may have a compromised biology due to the lack of organic matter and the impacts of contamination. Application of materials, such as compost tea (by a certified adviser - Soil Food Web Institute) may be required in urban areas during the plant establishment period.

Many products have deleterious effects on the soil biology. These include many pesticides, fungicides, herbicides, water crystals (petroleum based), wetting agents (petroleum based) and many soluble (chemical) fertilisers. The use of these products in the soil, on plants or in adjacent areas, should be avoided or strictly limited to specific controls specified, applied and monitored by persons appropriately qualified and licensed.

Mulch

Mulch insulates the soil, helps to retain moisture and enhances moisture infiltration. Organic mulches are recommended for use in the streetscape as they provide valuable organic matter to the soil and enhance the soil biological activity.

Weed matting or other forms of plastic sheeting should not be used. The matting limits water and organic material infiltrating into the soil and thus negatively impacts upon plant growth. It also decays over time and becomes unsightly, requiring removal.

The use of gravel and small stones as mulch should not be used in the streetscape as they do not provide vital organic matter for the soil; require high levels of maintenance; and can be used as missiles. Rocks and larger stones however are encouraged when used together with an organic mulch.

Water

Ipswich City is generally regarded as having good rainfall. However the rainfall can be erratic and there are periods when rain can be absent for many months. Newly planted trees and other plants will require supplementary water during establishment if they are to survive.

The use of hardy plants that have a proven record of performing well in the streetscape is encouraged. However these plants can look tired or may fail during extended dry periods. Supplementary watering is therefore recommended for high profile plantings within the city during these periods.

The soil is the largest water reservoir. Organic matter can increase the water holding capacity of the topsoil significantly. A healthy soil biology can also assist plants locating water during these periods. The addition of zeolite to the soil is recommended to further enhance water holding capacity.

Soil Contaminants

Soils in urban areas are prone to contamination from debris, residues and wastes such as engine oils, fuel, cleaning fluids, construction debris, tyre residues and chemical spills. These contaminants can adversely affect physical and biological properties of soils.

This is of particular concern where plants are grown for food production. It is recommended that previous land uses are researched prior to streetscape design and construction being undertaken.

Where planting areas or planting pits are within or adjacent to paved surfaces, the use of harmful cleaning agents or chemical treatments is to be avoided. These can spill or be washed into and concentrated in planting pits or broader site soils.



Lakeside Avenue, Springfield, Ipswich.

5.3 PLANT SELECTION

Well informed plant selection results in plantings that continue to perform for many decades with minimum maintenance. They are valued by the community and showcase the attributes of the city. Inappropriate plant selections result in increased costs to the community, ongoing maintenance, plant replacement and potentially costly removal.

Plant selection is based on a knowledge of individual species and how they have performed in different locations and over time. Subjective plant selection based on personal likes and dislikes, generalisations, ideology, fashion or product marketing may result in poor outcomes.

Ipswich has some 150 years of experience planting streetscapes. This history is displayed today in the great diversity of plantings visible in the streetscapes, open space and gardens throughout the city. The plant schedules in this section contain lists of many of these species and their attributes. There are many more species that are likely to perform well in the city. The list will therefore grow over the years.



Figs (Ficus sp) and other large trees must be appropriately accommodated to ensure longevity and healthy growth. If the minimum planting standards for large trees cannot be achieved, a suitable medium tree, which can thrive, should be chosen.

Selection Criteria

The following attributes have been used to develop selection criteria appropriate for species for the plant schedules. When considering plant species which are not included in the following Planting Schedules, the plant selection criteria is to be used to determine a plant's suitability prior to liaising with relevant ICC Officers and Arborists.

- A proven track record in Ipswich City.
- Maintenance — slow growing and little visible litter or dead foliage.
- Generally pest and disease free.
- Aesthetics — lush foliage, attractive form .
- Longevity — has a life of at least 20 years under standard streetscape conditions.
- Tolerates heat island impacts .
- Robust — will recover from general but infrequent abuse.
- Well behaved roots.
- Generally has a large canopy to planting centre.
- Is unlikely to become a weed.
- Tolerance of Ipswich soil and conditions.
- Does not have attractive poisonous fruit, sharp spines or is known to cause allergies in a large part of the population.
- Shape — street trees generally have a broad canopy and clean trunk .
- Size — in the case of trees nominated under power lines.

In recent years the species used in streetscape plantings and the diversity of plant material available from nurseries has declined. This is of concern as monocultures of a single species are more prone to pests and disease damage, which makes

them less suitable for streetscape planting. Native plants are particularly susceptible, as they have not been 'quarantined' from these pests as non-native plants often have.

The International Society of Arboriculture recommends that no tree should make up more than 10% of the urban forest. This recommendation could equally apply to other plantings. In recent years some plants have come to dominate streetscape plantings and at times have been affected by pest or diseases — *Lomandra longifolia* (dart moth), *Dianella caerulea* (rust and phytophthora), *Syzygium* spp. (lerpes), *Elaeocarpus eumundii* (erinose mite), *Grevillea* 'Poorinda Royal Mantle' (phytophthora), *Banksia* spp (phytophthora), *Cycas revoluta* (Blue China Moth). Actively reducing the number of these species in future urban plantings and encouraging the use of a more diverse palette will help to avoid increased pest and disease problems.

Trialling new plants in the streetscape is important to build this diversity. When selecting plants to trial, consider origins. Plants from subtropical and tropical coastal areas are much more likely to succeed. Plants with origins in temperate or Mediterranean climates which have winter rainfall and dry summers are unlikely to succeed (including native plants). Plants from arid areas or consistently moist areas are also unlikely to be suitable. Plants for trialling should be planted in limited numbers in less prominent areas and their performance should be reviewed and recorded by staff members.

Plant selection should be undertaken by one of the following accredited professionals:

- Registered landscape architect — undertaking landscape design and documentation for planting projects; setting design criteria
- Registered horticulturist — recommending plants based on desired outcomes, site and soil analysis, and available maintenance
- Certified arborist — undertaking health assessment of existing trees and providing recommendations for appropriate works and maintenance in the immediate area.

5.4 PLANTING COVERAGE

A general requirement for the majority of streetscape planting is to provide continuous coverage by vegetation, including:

- Dense, weed restricting groundcovers
- Dense, continuous screening
- Dense coverage across walls
- Continuous canopy cover

When planted too close, plants compete with one another for light, water and nutrients and either become stunted or short-lived. When planted too far apart, a dense coverage is not achieved, or may take too long to become effective. Appropriate planting centres are nominated in the Plant Schedules.

Nominated centres do not apply to informal plantings of trees, palms, or climbers.

Plant density and diversity of species ensures an attractive garden with a layering of colours, textures and patterns



5.5 TREES

5.51 Unobstructed Root Area

There is a direct relationship between the size of the tree and the required volume of accessible soil. A large tree needs an adequate soil volume to provide it with the necessary resources for growth. Restricted or inadequate soil volumes will result in constrained growth, poor performance and increased infrastructure conflicts. Appropriate soil volumes will enable mature growth, enhance tree health and longevity and minimise maintenance issues associated with adjacent infrastructure. Some damage to infrastructure and services has already occurred in Ipswich when inadequate soil volumes or planting setbacks are provided.

In almost all cases, trees should be planted in prepared tree pits, with root access to the surrounding area. However the surrounding soils are often heavily compacted and hostile to root growth. Improvements to the surrounding soil may be required to encourage root growth beyond the prepared tree pit. Unobstructed root areas for each tree species are nominated in this guide. (Refer Appendix B). These prescribed Unobstructed Root Areas have been set as the preferred volume of suitable soil (of 1m in depth) which a tree needs to thrive.

In some situations, trees do not have access to the surrounding soils. They may be located in containers, within paved areas, raised planters, rock cavities, on podiums and between buildings or structures. In these situations, unobstructed root areas have been nominated for specific trees so that the trees may thrive. Reduced volumes are likely to result in reduced tree size and vigour, increased maintenance burden, tree decline or damage to structure and infrastructure as the tree matures. Where the lifespan of the landscape is known to be temporary (maximum 5 to 10 years) and is supported by a tree, landscape or vegetation management plan nominating tree maintenance and replacement schedules, reduced volumes may be considered.

In highly urban areas or constrained locations it is desirable, and may be necessary, to extend available soil volumes in the form of continuous linear pits or by connecting individual planting pits using cultivated root trenches. These pits and trenches may run under footpaths and paved surfaces. Paving may be supported by structural soils, engineered load-bearing plastic inclusions (structural cells) within the planting media or may be cantilevered or bridged over the pit area.

Many large trees develop buttressing roots or flared trunks that help to stabilise and support their broad canopies. Buttressing roots are roots that enlarge adjacent to the trunk. To avoid damage to adjacent paving and infrastructure, minimum setbacks from roads and footpaths have been specified for such trees where buttressing or flaring occurs (Refer Appendix B).

Shared Soil Volumes

Studies and field observations indicate that where trees share soil they may need less soil volume per tree and will perform better than isolated trees. Where possible, streetscapes should be designed to allow for the tree pits to be amalgamated. ICC is to be consulted when deciding appropriate shared soil volumes, unobstructed root areas and necessary setbacks for multiple trees.

- Where possible, consolidate planting pits to take advantage of shared soil volumes.
- In highly urbanised sites planting pits can be extended laterally behind kerbs, either beneath or within paving, to provide continuous tree planting trenches .
- Engineered and cultivated root trenches can be used to direct root growth and to extend and connect adjacent tree pits.

LARGE TREES

HEIGHT = 15m minimum (at mature height)
MINIMUM PLANTING WIDTH = 4m (desirable >5m)
ROOT BARRIER = Always required

Large trees (e.g. *Ficus Microcarpa var. hillii*) have vigorous or invasive root systems and develop flared trunks or buttress roots (some more than others. e.g. *Ficus* species). As such, it is critical to the longevity and health of the tree and protection of adjacent assets and infrastructure that minimum planting widths and Unobstructed Root Areas are provided. The provision of root barrier is intended to obstruct root growth. Consequently the minimum planting width of 4m is to be provided to ensure adequate lateral stability of the tree.

SHADE TREES (MEDIUM & SMALL)

HEIGHT = 15m maximum (at mature height)
MINIMUM PLANTING WIDTH = 0.9m (desirable >1.2m)
ROOT BARRIER = Not required (unless otherwise specified or required by Council)

Shade trees are typically medium sized trees with non-invasive roots. As such, a minimum acceptable planting width of 0.9m applies to all medium trees (unless otherwise specified). Root barrier is not required unless otherwise directed by Council. It is assumed that the unobstructed root area, as specified in the planting schedules, can be achieved in typical verge conditions.

5.52 Providing Root Spaces

Root conflicts are inevitable, due to the numerous physical constraints placed on trees within our streetscapes and the necessary proximity of built infrastructure in urban areas. However, root conflict can be avoided by designing and providing appropriate growing environments for trees within the streetscapes.

Common root conflicts include:

- Cracking or upheaval of footpaths and paving.
- Displacement of kerb and channel.
- Displacement and cracking of retaining walls and masonry boundary fences.
- Root invasion of underground drainage systems (sewer, stormwater).
- Interruption/damage to water supply lines.

It is essential that the focus on tree performance is extended to the below-ground environment. Planting specifications need to demonstrate that accessible soil volumes have been considered and that adequate opportunity is provided for new trees to inhabit these areas.

Trees in highly urban environments require special consideration. Footpaths need to be supported by a suitably compacted soil — which is not favourable to tree root growth. A number of engineered options are widely used and may be worth considering when minimum planting widths or unobstructed root area can not be achieved:

- Structural/gap graded soils.
- Rigid plastic cells.
- Suspended pavement.
- Tree grates.

Council must be consulted prior to the specification of an alternate solution.

5.53 Critical Design Considerations

To avoid infrastructure damage, the following design considerations are recommended:

- Provide trees with good planting design.
- Unobstructed root area (to 1m in depth).
- Planting clearance and space for development of buttress roots and stem flare.
- Adequate open soil area at the top of planting pits to allow surface water and gas infiltration.
- Suitable drainage.

Design infrastructure in proximity to trees so that it will resist tree root damage (i.e. according to appropriate soil class and construction standards):

- Use flexible swivel joints in pipes to account for likely soil movement and decrease risk of root invasion following cracking.
- Adequately compact backfilled service trenches to meet construction standards and discourage colonisation by tree roots.
- Where possible, consolidate services in shared trenching alignments.
- Include accessible root pruning trenches within or at the edge of paved areas.
- Use no dig, above grade construction methodologies, where possible, in the vicinity of existing trees.
- Construct footpaths above existing grade to avoid damaging established tree roots.
- Reinforce, cantilever or suspend paths where appropriate.

Use appropriate materials and methodologies when constructing paving within proximity of trees

- Use paving materials and designs that provide adequate aeration and infiltration to tree roots.
- Leave gaps under suspended paving to allow gaseous exchange at soil surface.
- Use pervious or porous paving surfaces, tree grates and inlets to facilitate gaseous exchange and water infiltration.
- Hand-form kerb and channel in proximity to established trees to avoid excessive damage to large woody tree roots.

Actively manage tree roots to direct or control their growth

- Initiate root pruning programs.
- Provide nutrient sinks, vertical mulching and/or cultivated root trenches to direct and concentrate root growth away from infrastructure.
- Use root deflectors or barriers only where appropriate to site-specific requirements.

5.54 Overhead Power Lines

Overhead power lines are present in many parts of the city. Ipswich City Council has an MOU with Energex regarding maintenance of these lines. Refer to the following plant schedules for a list of street tree species that have proven to require minimal or no maintenance when planted under powerlines in the city.

To enhance public safety and health, powerlines are proposed to be undergrounded as a component of centre or public transport node upgrades in the future.

5.55 Street Lighting

Consideration is to be given to the placement of trees in proximity to street lights. In order to adequately access and maintain street lights and to ensure sufficient luminance of the road, minimum offsets are required (Refer Part 4: Design Standards Table and relevant service provider for associated maintenance standards).

5.6 PLANT SCHEDULES

The following plant schedules are provided to assist in the selection of plant species. These species are approved by Council and if planted appropriately, will add to the amenity of Ipswich's streetscapes.

Whilst the list is not exhaustive, it provides a wide variety from which to choose. Please contact Council's arborist if you wish to use a species not listed in the schedules.

Council is committed to the provision of diverse streetscapes with colour, texture, light and shade but also mindful of the need to select appropriate species for appropriate situations. Planting design requires a considered approach to ensure "right plant, right place".

The following selection criteria is listed in the schedules and will help to make this process easier.

Proven Track Record

This criteria gives an indication of the plant's track record in Ipswich.

Height & Width

These dimensions will give an indication of the size and shape of the plant, although they are a guide only as plants will grow according to the conditions of their environment.

Throughout the document, Council refers to trees in sizes small, medium and large. The size is determined by the mature height of the tree:

Small	Up to 7metres
Medium	7 to 15 metres
Large	15 metres or above

Spacing

The recommended spacing between plants is based on the growth requirements of the tree, including size and canopy spread. It is the responsibility of the designer to space plants appropriately.

Plant Location

Within the plant schedules, Council has nominated the ideal locations for specific species including urban, suburban and rural. Please refer to this selection criteria to ensure plants are located in their ideal locations. This ensures plants will grow where they are best suited, will perform to the best of their ability and will be given an appropriate maintenance regime by Council.

In some instances, specific plant species are deemed appropriate for certain character areas or in certain situations. For example, the Jacaranda tree (*Jacaranda mimosifolia*) is acceptable only in key character areas, where they line the streets to create a distinctive character for the area. The spectacular blooms are proudly on show during the Goodna Jacaranda Festival. Please refer to the 'Notes' section of the plant schedules for additional information on plant species and their specific requirements.

Unobstructed Root Area

Council require all streetscapes be designed with unobstructed root area in mind. All tree sizes have differing requirements in terms of access to soil. Providing sufficient room for trees to grow ensures healthy growth and root establishment. Providing adequate space for trees results in less damage to infrastructure, trees, services and reduces ongoing maintenance.



*Effective street tree planting which uses appropriate tree sizes for each side of the street.
Little Stanley Street, South Bank, Brisbane.*

5.61 Large Trees

Large trees provide excellent shade and amenity but due to size must be carefully considered when used in streetscape environments. Council supports the selection of large trees, provided the appropriate species is planted in a suitable location and meets the minimum planting standards.

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT m)	WIDTH m)	CENTRE SPACING (m)	BROAD TOLERANCE	BROAD CANOPY AND CLEAN STEM	VIGOROUS ROOTSYSTEM	TOLERATES HEAT ISLAND IMPACTS	UNOBSTRUCTED ROOT AREA	SETBACK FROM TREE CENTRE TO KERB OR FOOTPATH	NOTES
<i>Adansonia digitata</i>	Baobab Tree	***	10-16	8-12	15-20		***	****	****	80 m3	2m	
<i>Agathus robusta</i>	Kauri Tree	*****	15-20	6-10	12-20	semi-deciduous	*****	***	***	60 m3	1.5m	
<i>Aleurites mollucana</i>	Candlenut Tree	****	8-10	20-30	15-20	evergreen	*****	***	*****	60 m3	1.5m	
<i>Araucaria bidwillii</i> *	Bunya Pine	***	10-15	20-30	15-20	evergreen	***	***	***	80 m3	2m	
<i>Araucaria columnaris</i> *	Cook Pine	***	8-10	20-30	15-20	evergreen	***	***	****	60 m3	1.5m	
<i>Araucaria heterophylla</i> *	Norfolk Island Pine	***	8-10	20-30	15-20	evergreen	***	****	***	80 m3	1.5m	
<i>Araucaria cunninghamiana</i> *	Hoop Pine	***	8-10	20-30	15-20	evergreen	***	***	****	60 m3	1.5m	
<i>Bombax ceiba</i>	Bombax Tree	***	20-30	8-15	12-20	semi-deciduous	*****	***	*****	80 m3	2m	
<i>Ceiba somaliensis</i>	Samalian Ceiba	*****	8-20	8-18	15-20	semi-deciduous	****	****	*****	80 m3	2m	
<i>Cedrela odorata</i>	Cigar-box Ceder	*****	8-20	8-12	15-20	evergreen	*****	****	*****	60 m3	1.5m	
<i>Ficus benjamina</i> *	Weeping Fig	*****	15-20	15-20	20-25	evergreen	*****	*****	*****	110 m3	2m	
<i>Ficus benjamina</i> 'Bogor'	Bogor Weeping Fig	*****	15-20	15-20	20-25	evergreen	*****	*****	*****	110 m3	2m	
<i>Ficus benjamina</i> 'Exotica' *	Exotica Weeping Fig	*****	15-20	15-20	20-25	evergreen	*****	*****	*****	110 m3	2m	
<i>Ficus benjamina</i> var.nuda *	Baby Ben Weeping Fig	*****	15-20	15-20	20-25	evergreen	*****	*****	*****	110 m3	2m	
<i>Ficus bengalensis</i> *	Banyan Tree	*****	15-20	15-30	20-25	evergreen	*****	*****	*****	150 m3	3m	
<i>Ficus macrophylla</i> *	Moreton Bay Fig	*****	8-12	15-20	20-25	evergreen	*****	*****	***	110 m3	2m	
<i>Ficus rubiginosa</i> *	Rusty Fig	****	8-12	8-12	20-25	evergreen	*****	****	****	110 m3	2m	
<i>Ficus microcarpa</i> var microcarpa*	Curtain Fig	*****	15-20	15-20	20-25	evergreen	*****	*****	*****	110 m3	2m	
<i>Ficus microcarpa</i> var. hillii*	Hill's Weeping Fig	*****	15-20	15-20	20-25	evergreen	*****	*****	*****	110 m3	2m	
<i>Ficus obliqua</i> *	Small Leaf Fig	***	8-12	8-10	15-20	evergreen	*****	***	****	80 m3	2m	
<i>Ficus religiosa</i> *	Peepal Tree, Bohdi Tree	****	12-15	10-12	15-20	evergreen	*****	***	*****	110 m3	2m	
<i>Ficus virens</i> *	White Fig, Pakad	*****	15-20	15-25	20-25	evergreen	*****	****	*****	110 m3	2m	
<i>Melaleuca quinquenervia</i>	Swamp Paperbark	*****	10-15	3-5	10-15	evergreen	*****	****	*****	80 m3	2m	
<i>Neolamackia (Anthocephalus) cadamba</i>	Kadamba	***	10-15	8-12	15-20	evergreen	*****	****	****	60 m3	1.5m	



Roundabout planting, Brookwater, Ipswich.

5.62 Shade Trees

Shade trees come in all shapes and sizes. Council supports the use of shade trees in all streets to expand the city's urban forest and increase pedestrian comfort. However, certain trees are limited to specific locations based on their physical attributes (eg. urban, suburban, rural).

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LEAFFALL	TYPE	LOCATION	UNOBSTRUCTED ROOT AREA	NOTES
<i>Acmena smithii</i>	Lillypilly	***	6-10	4-6	4-6	Evergreen	Screening	suburban	30m ³	
<i>Alectryon tomentosus</i>	Red Jacket, Hairy Bird's Eye	***	5-7	4-6	4-6	Evergreen	Shade	suburban rural	30m ³	
<i>Allocasuarina torulosa*</i>	Rusty She-oak	***	3-5	2-3	3-5	Evergreen	Screening	rural	20m ³	
<i>Azadirachta indica*</i>	Neem Tree	*****	8-10	8-10	8-12	Evergreen	Shade	urban suburban	40m ³	
<i>Backhousia citriodora*</i>	Lemon Scented Myrtle	****	6-8	3-4	3-5	Evergreen	Screening	suburban rural	20m ³	
<i>Barklya syringifolia*</i>	Barklya	****	5-7	4-6	6-8	Evergreen	Shade	suburban rural	30m ³	Very slow growing
<i>Bolusanthus speciosus*</i>	Wisteria Tree	*****	4-8	4-5	7-10	Semi-deciduous	Shade	urban suburban	30m ³	
<i>Brachychiton australis*</i>	Broad Leaf Bottle	*****	5-8	4-5	7-10	Semi-deciduous	Shade	urban suburban rural	30m ³	
<i>Brachychiton discolor</i>	Lace Bark	*****	6-8	3-6	8-10	Evergreen	Shade	urban suburban rural	30m ³	
<i>Brachychiton populneus*</i>	Kurrajong	*****	4-7	4-5	6-8	Evergreen	Shade	urban suburban rural	30m ³	Slow growing
<i>Brachychiton rupestris*</i>	Queensland Bottle Tree	*****	4-7	4-5	6-8	Evergreen	Shade	urban suburban rural	30m ³	Slow growing
<i>Caesalpinia ferrea*</i>	Leopard Tree	*****	8-10	6-8	8-10	Semi-deciduous	Shade	urban suburban	40m ³	
<i>Callitris columellaris*</i>	White Cypress Pine	***	3-8	1-3	4-6	Evergreen	Slender	suburban	30m ³	Avoid pruning
<i>Calodendron capense*</i>	Cape Chestnut Tree	***	5-8	5-8	6-8	Evergreen	Shade	suburban	30m ³	
<i>Cassia brewsteri ssp marksiana</i>	Cigar Cassia	****	6-8	4-6	6-8	Semi-deciduous	Shade	suburban rural	30m ³	
<i>Cassia fistula*</i>	Indian Laburnum	***	6-8	4-6	6-8	Semi-deciduous	Shade	suburban	30m ³	Formative pruning essential if canopy growth will be constrained
<i>Cassia javanica*</i>	Apple Blossom Cassia	*****	6-8	6-8	8-10	Semi-deciduous	Shade	suburban	30m ³	
<i>Casuarina cunninghamiana*</i>	River She-oak	***	8-10	6-8	8-10	Evergreen	Shade	rural	30m ³	
<i>Casuarina equisetifolia*</i>	Beach Sheoke	***	5-7	3-5	4-6	Evergreen	Screening	rural	30m ³	Tendency for suckering from damage to surface roots
<i>Casuarina glauca*</i>	Swamp Oak	***	4-6	3-4	4-6	Evergreen	Screening	rural	30m ³	Tendency for suckering from damage to surface roots
<i>Ceiba somaliensis</i>	Samalian Ceiba	*****	8-20	8-18	15-20	Semi-deciduous	Large Tree		40m ³	
<i>Ceiba speciosa (smooth trunk cv)</i>	Silk floss tree	****	6-8	4-6	8-10	Semi-deciduous	Shade	urban suburban	30m ³	
<i>Citharexylum spinosum*</i>	Jamaican Fiddlewood	***	4-6	3-5	6-8	Semi-deciduous	Screening	suburban	20m ³	Formative pruning essential if canopy growth will be constrained
<i>Colvillea racemosa*</i>	Colville's Glory Tree	*****	8-10	5-7	8-10	Semi-deciduous	Shade	rural	30m ³	
<i>Corymbia eximea*</i>	Yellow Bloodwood	***	8-10	6-8	8-10	Evergreen	Shade	rural	30m ³	Preferred in revegetation and garden areas
<i>Corymbia maculata var citriodora*</i>	Lemon Scented Gum	***	10-30	6-10	8-12	Evergreen	Shade	rural	40m ³	Preferred in revegetation and garden areas
<i>Corymbia ptychocarpa*</i>	Swamp Bloodwood	***	4-6	3-5	5-8	Evergreen	Shade	suburban rural	30m ³	Preferred in revegetation and garden areas
<i>Corymbia tessellaris*</i>	Moreton Bay Ash	***	10-25	6-8	8-10	Evergreen	Shade	rural	40m ³	Preferred in revegetation and garden areas
<i>Cupaniopsis anacardioides*</i>	Tuckeroo	****	4-6	4-8	6-8	Evergreen	Shade	urban suburban	20m ³	

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LEAFFALL	TYPE	LOCATION	UNOBSTRUCTED ROOT AREA	NOTES
Cupaniopsis parvifolia*	Small leaf Tuckeroo	***	4-6	2-5	6-8	Evergreen	Shade	urban suburban rural	30m ³	
Delonix regia*	Poinciana	****	4-6	8-12	10-15	Semi-deciduous	Shade	suburban	40m ³	For planting in character areas only.
Dysoxylon muelleri*	Rosewood				8-10	Evergreen	Shade	suburban	30m ³	
Ehretia acuminata*	Koda	****			8-10	Evergreen	Shade	suburban	30m ³	
Elaeocarpus eumundii*	Eumundi Quandong	****	5-8	2-4	6-8	Evergreen	Screening	suburban	30m ³	Narrow tree not for avenues
Elaeocarpus grandis	Quandong Tree	****	8-12	6-8	8-12	Evergreen	Shade	suburban rural	40m ³	protected areas on deep soils
Elaeocarpus obovatus*	Hard Quandong	****	6-10	4-6	8-10	Evergreen	Shade	suburban rural	30m ³	
Erythrina caffra*	South African Coral Tree	*****	6-10	5-8	8-10	Semi-deciduous	Shade	urban suburban	30m ³	Tendency for suckering from damage to surface roots
Erythrina falcata	Brazilian Coral Tree	*****	6-10	5-8	8-10	Semi-deciduous	Shade	suburban	30m ³	
Erythrina lysistemon	Transvaal Coral Tree	*****	6-10	5-8	8-10	Semi-deciduous	Shade	urban suburban	30m ³	
Erythrina Sykesii*	Coral Tree	***	6-10	5-8	8-10	Semi-deciduous	Shade	suburban	30m ³	
Erythrina variegata 'Parcellii'*	Parcel's Coral Tree	****	6-10	5-8	8-10	Semi-deciduous	Shade	suburban	30m ³	
Erythrina variegata var orientalis*	Coastal Coral Tree	****	6-10	5-8	8-10	Semi-deciduous	Shade	suburban	30m ³	
Erythrina vespertilio*	Batswing Coral Tree	***	6-10	5-8	8-10	Semi-deciduous	Shade	suburban rural	30m ³	
Eucalyptus argophloia*	Lapunyah/Chinchilla White Gum	**			8-10	Evergreen	Shade	rural	30m ³	Preferred in revegetation and garden areas
Eucalyptus curtissii	Plunket Mallee	***	4-5	3-4	6-8	Evergreen	Shade	rural	30m ³	Preferred in revegetation and garden areas
Eucalyptus fibrosus*	Gum	**			8-10	Evergreen	Shade	rural	30m ³	Preferred in revegetation and garden areas
Eucalyptus microcorys	Tallowwood	***	10-15	8-10	8-10	Evergreen	Shade	rural	30m ³	Preferred in revegetation and garden areas
Eucalyptus tereticornis*	Forest Red Gum	**	10-15	8-10	8-10	Evergreen	Shade	rural	30m ³	Preferred in revegetation and garden areas
Euroschinus falcatus*	Ribbonwood	***	5-8	4-6	6-8	Evergreen	Shade	suburban rural	30m ³	
Ficus coronata*	Sandpaper Fig	****	3-8	2-4	4-6	Evergreen	Shade/Large Tree	suburban rural	30m ³	
Flindersia australis*	Native Teak Ash	*****	8-10	6-8	8-10	Evergreen	Shade	urban suburban rural	30m ³	Root barrier required.
Flindersia bennettiana*	Bennett's Ash	*****	8-10	6-8	8-10	Evergreen	Shade	urban suburban rural	30m ³	Root barrier required.
Flindersia schottiana*	Bumpy Ash	*****	8-12	6-8	8-10	Evergreen	Shade	urban suburban rural	30m ³	Root barrier required.
Flindersia xanthoxyla*	Ash	*****	8-12	6-8	8-10	Evergreen	Shade	urban suburban rural	30m ³	Root barrier required.
Fraxinus griffithii*	Himalayan Ash	*****	8-10	6-8	8-10	Deciduous	Shade	suburban	30m ³	
Fraxinus uhdei*	South American Ash	*****	8-10	6-8	8-10	Deciduous	Shade	suburban	30m ³	
Glochidion sumatranum*	Umbrella Cheese Tree	**	4-8	3-5	4-6	Evergreen	Screening	rural	20m ³	Formative pruning essential if canopy growth will be constrained
Gmelina fasciculiflora*	Northern White Beech	*****	8-10	6-8	8-10	Semi-deciduous	Shade	suburban rural	40m ³	
Gmelina leichhardtii	White Beech	***	8-15	8-10	15-20	Semi-deciduous	Shade	suburban rural	40m ³	
Grevillea baileyana*	Bailey's Oak	*****	8-10	3-5	6-8	Evergreen	Shade	suburban rural	30m ³	
Harpullia pendula*	Tulipwood	****	6-8	6-10	5-7	Evergreen	Shade	suburban rural	30m ³	
Harpephyllum caffrum*	Wild Plum	*****	8-10	8-15	15-20	Evergreen	Shade	suburban rural	30m ³	
Hymenosporum flavum	Native Frangipanni	***	5-8	3-5	8-10	Evergreen	Slender	suburban rural	30m ³	mixed plantings only
Jacaranda mimosifolia*	Jacaranda	*****	8-10	8-10	8-10	Semi-deciduous	Shade	urban suburban	30m ³	For planting in character areas only.
Lophostemon confertus*	Brush Box	*****	8-12	5-8	8-10	Evergreen	Shade	urban suburban rural	30m ³	
Macaranga tanarius*	Macaranga	**	3-6	3-4	6-8	Evergreen	Screening	rural	30m ³	Only suitable for reveg areas - Suckers and weedy
Magnolia champaca*	Champak	*****	8-10	6-8		Evergreen	Shade	urban suburban	30m ³	
Melaleuca bracteata 'Revolution Green'*	Revolution Green	***	3-5	2-4	6-8	Evergreen	Screening	suburban rural	30m ³	
Melaleuca bracteata*	River Tea Tree		4-6	2-4	6-8	Evergreen	Screening	suburban rural	30m ³	
Melaleuca leucodendron*	Paperbark Tree	****	6-10	4-8		Evergreen	Shade	urban suburban	30m ³	not in shallow soils over rock as may lift paving

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LEAFFALL	TYPE	LOCATION	UNOBSTRUCTED ROOT AREA	NOTES
Melaleuca stypheloides*	Prickly Paperbark	****	3-5m	3-5m	3-4m	Sun	suburban rural	low	30m ³	
Melaleuca viridiflora*	Swamp Paperbark	*****	5-8	3-4	6-8	Evergreen	Screening	suburban	30m ³	
Melia azederach	White Cedar	***	6-8	6-8	8-10	Deciduous	Shade	suburban rural	30m ³	Subject to cedar moth - best planted as single specimen among other trees only
Milletia (Pongamia) pinnata*	Indian Beech, Native Wisteria Tree	*****	8-10	8-10	8-10	Semi-deciduous	Shade	urban suburban	30m ³	Tendency for suffering from damage to surface roots
Pararchidendron pruinosum*	Snow Wood	****	8-10	6-8	8-10	Semi-deciduous	Shade	suburban rural	30m ³	
Peltophorum africanum	African Yellow Poinciana	*****	8-12	6-10	8-10	Semi-deciduous	Shade	urban suburban	30m ³	
Peltophorum pterocarpum*	Yellow Poinciana	*****	8-10	6-8	8-12	Semi-deciduous	Shade	urban suburban	30m ³	
Petalostigma triloculare*	Long-leaved Bitter Bark	***	3-5	3-5	6-8	Evergreen	Shade	rural	30m ³	
Pittosporum phillyreoides*	Native Weeping Willow	***	3-5	3-4	6-8	Evergreen	Shade	rural	30m ³	
Pittosporum rhombifolium*	Diamond-leaf pittosporum	****	3-6	3-4	6-8	Evergreen	Screening	suburban rural	30m ³	
Pleiogynium timorense*	Burdekin Plum	*****	5-8	3-4	6-8	Evergreen	Shade	suburban	30m ³	Fruit drop may be problematic over footpaths
Rhodospaera rhodanthema*	Tulip Satinwood	***	6-10	4-6	6-8	Evergreen	Shade	suburban rural	30m ³	slow
Sapium sebiferum*	Chinese Tallow	****	3-6	3-4	6-8	Deciduous	Shade	suburban	30m ³	
Schizolobium parahybum*	Mexican Fern Tree	***	8-12	5-8	8-10	Semi-deciduous	Shade	suburban	30m ³	sheltered areas well away from buildings and infrastructure
Schotia brachypetala*	Parrot Tree	*****	5-8	5-8	8-10	Evergreen	Shade	urban suburban	30m ³	
Senna siamea*	Siamese Shower Tree	*****	8-10	6-8	8-10	Semi-deciduous	Shade	urban suburban	30m ³	
Stenocarpus sinuatus*	Firewheel Tree	*****	5-8	2-3	5-6	Evergreen	Slender	urban suburban	30m ³	
Sterculia quadrifida	Peanut Tree	*****	8-10	6-8	8-10	Evergreen	Shade	urban suburban	30m ³	
Syzygium australe*	Lillypilly	***	6-8	3-4	6-8	Evergreen	Screening	suburban rural	30m ³	Many cultivars subject to psillid damage
Syzygium cumini*	Jambolan	***	7-10	4-7	6-8	Evergreen	Evergreen	suburban	30m ³	
Syzygium francisii*	Francis' Water Gum	***	5-8	4-6	8-10	Evergreen	Shade	suburban rural	30m ³	
Syzygium jambos*	Rose Apple	***	5-8	4-6	8-10	Evergreen	Shade	suburban	30m ³	Subject to Myrtle Rust
Syzygium leuhmannii	Riberry Tree	***	7-10	3-5	6-8	Evergreen	Screening	suburban rural	30m ³	
Syzygium moorei*	Rose Apple	***	5-8	3-5	6-8	Evergreen	Shade	suburban rural	30m ³	
Syzygium oleosum*	Blue Cherry	***	5-8	3-5	8-10	Evergreen	Shade	suburban rural	30m ³	
Syzygium paniculatum*	Lillypilly	***	6-8	3-4	6-8	Evergreen	Screening	suburban rural	30m ³	
Syzygium tierneyanum*	River Cherry	***	8-10	3-4	6-8	Evergreen	Shade	urban suburban	30m ³	Fauna attracting
Tabebuia impetiginosa*	Pink Trumpet Tree	*****	8-10	6-8	8-10	Semi-deciduous	Shade	urban suburban	30m ³	
Tabebuia palmeri*	Pink Trumpet Tree	*****	8-10	6-8	8-10	Semi-deciduous	Shade	urban suburban	30m ³	
Tabebuia rosea*	Pink Trumpet Tree	*****	8-10	6-8	8-10	Semi-deciduous	Shade	urban suburban	30m ³	
Tamarindus indicus*	Tamarind Tree	*****	5-10	5-8	8-10	Semi-deciduous	Shade	urban suburban	30m ³	
Toona ciliata*	Red Cedar	**	8-10	6-8	8-10	Deciduous	Shade	suburban rural	30m ³	planted as single specimen among other trees only
Tristaniaopsis laurina*	Water Myrtle	**	5-8	4-6	6-8	Evergreen		suburban rural	30m ³	Deep moist soils only
Waterhousia floribunda*	Creek Lillypilly	****	6-8	4-6	8-10	Evergreen	Shade	urban suburban	30m ³	

5.63 Small Trees/Under Power Lines

These trees are appropriate for use under overhead power lines or where space is restricted.

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LEAFFALL	TYPE	LOCATION	UNOBSTRUCTED ROOT AREA	NOTES
<i>Acacia concurrens</i> *	Black Wattle	**	4-6	4-6	4-6	Evergreen	Shade	rural	20m ³	
<i>Acacia macradenia</i>	Zig Zag Wattle	**	4-5	4-5	4-6	Evergreen	Shade	rural	20m ³	
<i>Atractocarpus (Randia) fitzalanii</i> *	Native Gardenia	*****	3-6	2-4	3-5	Evergreen	Screening	urban suburban	20m ³	
<i>Banksia integrifolia</i> *	Old Man Banksia	***	2-5	2-3	3-5	Evergreen	Screening	suburban rural	20m ³	Subject to phytopthera
<i>Brachychiton bidwillii</i> *	Little Kurrajong	*****	2-6	3-4	7-10	Semi-deciduous	Shade	urban suburban rural	20m ³	select smaller forms
<i>Brachychiton rupestris</i> *	Bottle tree	****	4-7	4-6	6-8	Evergreen	Shade	urban suburban rural	20m ³	
<i>Buckinghamia celsissima</i> *	Ivory Curl	****	4-6	4-5	6-8	Evergreen	Shade	suburban	20m ³	
<i>Chionanthus ramiflora</i> *	Native Olive	*****	4-6	4-6	6-8	Evergreen	Shade	suburban	20m ³	performing well
<i>Cupaniopsis anacardioides</i> *	Tuckeroo	****	4-6	4-8	6-8	Evergreen	Shade	urban suburban	20m ³	
<i>Delonix regia</i> *	Poinciana	****	4-6	8-12	10-15	Semi-deciduous	Shade	suburban	20m ³	For planting in character areas only.
<i>Ficus auriculata</i>	Roxburg's Fig	*****	3-5	4-8	8-10	Evergreen	Shade	suburban	20m ³	
<i>Hakea salicifolia</i>	Willow Leaved Hakea	***	3-5	3-5	3-5m	Sun	suburban rural	low	20m ³	
<i>Lagerstroemia x Mathewsii</i> 'Eave's White'	White Crepe Myrtle	*****	3-5	3-4	6-8	Deciduous	Shade	urban suburban	20m ³	
<i>Lagerstroemia x Mathewsii</i> 'Heliotrope Beauty'*	Heliotrope Crepe Myrtle	*****	3-5	3-4	6-8	Deciduous	Shade	urban suburban	20m ³	
<i>Lagestroemia x Mathewsii</i> 'Eavesii'	Mauve Crepe Myrtle	*****	3-5	3-4	6-8	Deciduous	Shade	urban suburban	20m ³	
<i>Lagestroemia x Mathewsii</i> 'Eaves Red'	Red Crepe Myrtle	*****	3-5	3-4	6-8	Deciduous	Shade	urban suburban	20m ³	
<i>Lagestroemia x Mathewsii</i> 'Newmanii'	Pink Crepe Myrtle	*****	3-5	3-4	6-8	Deciduous	Shade	urban suburban	20m ³	
<i>Melaleuca (Callistemon)</i> 'Dawson River'*	Dawson River Bottle Brush	***	3-5	2-4	6-8	Evergreen	Shade	suburban rural	20m ³	
<i>Melaleuca (Callistemon)</i> 'Glasshouse House Country'*	Glasshouse Country Bottle Brush	***	3-5	2-4	6-8	Evergreen	Shade	suburban rural	20m ³	
<i>Melaleuca (Callistemon)</i> 'King's Park Special'*	Kings Park Bottle Brush	***	3-5	2-4	6-8	Evergreen	Shade	suburban rural	20m ³	
<i>Melaleuca (Callistemon)</i> formosus*	Bottlebrush	***	2.5-3	2.5-3	6-8	Evergreen	Shade	suburban rural	20m ³	
<i>Melaleuca (Callistemon)</i> salignus	White Bottlebrush		3-5	2-4	6-8	Evergreen	Shade	suburban rural	20m ³	
<i>Melaleuca (Callistemon)</i> viminalis*	Weeping Bottle Brush	*****	3-5	2-4	6-8	Evergreen	Shade	suburban rural	20m ³	
<i>Melaleuca liniariifolia</i> *	Snow in Summer	****	3-5	2-3	6-8	Evergreen	Shade	suburban rural	20m ³	
<i>Petalostigma triloculare</i> *	Long-leaved Bitter Bark	***	3-5	3-5	6-8	Evergreen	Shade	rural	20m ³	
<i>Pittosporum phillyreoides</i> *	Native Weeping Willow	***	3-5	3-4	6-8	Evergreen	Shade	rural	20m ³	
<i>Plumeria rubra</i> *	Red Frangipanni	****	3-5	3-4	6-8	Semi-deciduous	Shade	urban suburban	20m ³	
<i>Tabebuia aurea (argentea)</i> *	Silver Leaf Trumpet Tree	*****	4-5	4-6	6-8	Semi-deciduous	Shade	urban suburban	20m ³	
<i>Xanthostemon chrysanthus</i> *	Golden Penda	*****	3-5	3-4	6-8	Evergreen	Shade	urban suburban	20m ³	

5.64 Palms

The use of palms should be limited to key areas which have a suitable maintenance regime to manage leaf litter and fronds, such as centres, nodes or feature planting. While the following list is extensive, when considering palms, Council must be consulted prior to species selection.

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LIGHT	LOCATION	MAINTENANCE	UNOBSTRUCTED ROOT AREA	NOTES
<i>Archontophoenix alexandrae</i> *	Alexander Palm	*****	3-10m	3-5m	3-5m	*****	urban suburban	low	6m ³	
<i>Archontophoenix cunninghamiana</i> *	Bangalow palm	**	3-10m	3-5m	3-5m	*	suburban rural	low	6m ³	
<i>Beaucarnea recurvata</i> *	Ponytail Palm	*****	2-4m	2-4m	2-5m	*****	urban suburban	low	6m ³	
<i>Bismarkia nobilis</i> *	Bismarck Palm	*****	4-10m	5-8m	5-8 m	*****	urban suburban	low	20m ³	
<i>Butia capitata</i> *	Jelly Palm	*****	3-6m	3-5m	4-6m	*****	urban suburban	low	6m ³	
<i>Carpentaria acuminata</i> *	Darwin palm	*****	3-10m	2-4m	2-5m	*****	urban suburban	low	6m ³	
<i>Caryota mitis</i> *	Clustering Fishtail Palm	****	3-6m	3-6m	3-5m	*****	urban suburban	low	15m ³	
<i>Caryota urens</i> *	Himalayan Fishtail Palm	****	3-10m	3-6m	4-6m	*****	suburban	low	10m ³	
<i>Dioon edule</i>	Mexican Cycad	*****	1-1.2m	1-1.2m	1-2m	*****	urban suburban	very low	3m ³	
<i>Dioon spinulosum</i>	Mexican Cycad	*****	1.5-3m	3-5m	3-5m	*****	urban suburban	very low	6m ³	
<i>Dyopsis cabadae</i> *	Blue Cane Palm	*****	3-10m	3-5m	3-5m	*****	urban suburban	low	6m ³	
<i>Dyopsis decaryi</i> *	Triangle Palm	*****	3-8m	3-6m	4-6m	*****	urban suburban	low	6m ³	
<i>Dyopsis lutescens</i> *	Golden Cane Palm	*****	3-5m	3-6m	3-5m	*****	urban suburban	low	6m ³	
<i>Dyopsis madagascariensis</i> var <i>lucubensis</i> *	Lucubu Palm	*****	3-8m	3-5m	3-5m	*****	urban suburban	low	6m ³	
<i>Hyophorbe lagenicaulis</i> *	Bottle Palm	*****	3-5m	3-5m	3-5m	*****	urban suburban	low	6m ³	frost tender
<i>Hyophorbe verschaffeltii</i> *	Spindle Palm	*****	3-5m	3-4m	3-5m	*****	urban suburban	low	6m ³	
<i>Latania verschaffeltii</i> *	Yellow Latan Palm	*****	3-10m	3-5m	3-5m	*****	urban suburban	low	6m ³	
<i>Lepidozamia peroffskyana</i> *	Peroffsky's Lepidozamia, Burrawong Palm	*****	3-5m	3-4m	3-5m	*****	urban suburban	very low	6m ³	
<i>Livistona australis</i> *	Cabbage Tree Palm	*****	3-10m	3-5m	3-5m	*****	urban suburban rural	low	6m ³	
<i>Livistona chinensis</i> *	Chinese Fan Palm	*****	3-10m	3-5m	3-5m	*****	urban suburban	low	6m ³	
<i>Livistona decora</i> *	Weeping Fan Palm	*****	3-10m	3-5m	3-5m	*****	urban suburban	low	6m ³	
<i>Macrozamia communis</i> *	Zamia Palm	*****	2-3m	3-5m	3-5m	*****	urban suburban rural	very low	6m ³	

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LIGHT	LOCATION	MAINTENANCE	UNOBSTRUCTED ROOT AREA	NOTES
<i>Macrozamia miquellii</i> *	Zamia Palm	*****	2-3m	3-5m	3-5m	*****	urban suburban rural	very low	6m ³	
<i>Macrozamia moorei</i> *	Zamia Palm	*****	3-5m	3-5m	4-6m	*****	urban suburban	very low	6m ³	
<i>Pandanus tectorius</i>	Beach Screw Pine	*****	3-5m	3-5m	3-5m	*****	urban suburban	low	10m ³	
<i>Pandanus tectorius</i> 'Baptisii'*	Striped Screw Pine	*****	3-5m	3-5m	3-5m	*****	urban suburban	low	10m ³	
<i>Pandanus tectorius</i> 'Veitchii'*	Beach Screw Pine	*****	3-5m	3-5m	3-5m	*****	urban suburban	low	10m ³	
<i>Phoenix reclinata</i> *	Senegal Date Palm	*****	3-10m	4-8m	4-6m	*****	urban suburban	low	20m ³	spiny petioles
<i>Phoenix robelinii</i> *	Pygmy Date Palm	*****	1.5-3m	1.2-2.5m	2-4m	*****	urban suburban	low	4m ³	spiny petioles
<i>Phoenix sylvestris</i> *	Indian Date Palm	****	3-8m	5-7m	5-8m	*****	urban suburban	low	10m ³	spiny petioles
<i>Ravenala madagascariensis</i> *	Traveller's Palm	*****	3-10m	5-8m	5-8m	*****	urban suburban	medium	10m ³	spiny petioles
<i>Ravenea rivularis</i> *	Majestic Palm	***	3-10m	3-5m	4-6m	*****	urban suburban	low	6m ³	leaves tear in wind
<i>Roystonea regia</i> *	Royal Palm	*****	3-10m	5-8m	5-8m	*****	urban suburban	low	10m ³	Locate away from paths, plazas and buildings due to leaf drop
<i>Sabal minor</i> *	Dwarf Palmetto	****	1.5-3m	2-4m	2-4m	*****	urban suburban	low	4m ³	
<i>Sabal palmetto</i> *	Palmetto Palm	*****	3-10m	3-5m	3-5m	*****	urban suburban	low	6m ³	
<i>Washingtonia robusta</i> *	Washingtonia Palm	*****	3-15m	3-5m	3-5m	*****	urban suburban	low	6m ³	
<i>Wodyetia bifurcata</i> *	Foxtail Palm	*****	3-10m	4-7m	4-6m	*****	urban suburban	low	6m ³	

5.65 Shrubs

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LIGHT	LOCATION	MAINTENANCE	NOTES
<i>Acacia fimbriata</i> *	Brisbane Wattle	*	2-3.5m	2-3m	2-3m	Sun	rural	low	short-lived and negatively impacts on adjacent vegetation
<i>Acalypha wilkesiana</i> cultivars*	Compact Fire Plant	*****	1-2m	1-2m	1-2m	Sun, semi-shade	urban suburban	low	
<i>Allamanda oenantha</i> 'Sunee'*	Dwarf Allamanda	*****	0.6-1m	1-1.5m	1-1.2m	Sun	urban suburban	very low	
<i>Atractocarpus</i> (<i>Randia</i>) <i>fitzalanii</i> *	Native Gardenia	*****	3-6m	2-4m	2-3m	Sun, semi-shade	urban suburban rural	very low	
<i>Austromyrtus dulcis</i>	Midjim Berry	****	0.5-0.7m	0.5-1.2m	0.7-1m	Sun, semi-shade	urban suburban rural	very low	
<i>Banksia serrata</i>	Saw Banksia	**	1.5-2m	1.2-2m	1.2-1.5m	Sun	suburban rural	low	Suffers from root pathogens and can be short lived
<i>Backhousia myrtiflora</i> *	Aniseed Scented Myrtle	****	1.5-3m	1.5-3m	1.5-2m	Sun, semi-shade	urban suburban rural	very low	
<i>Babbingtonia virgata</i> 'La Petite'*	Twiggy Heath Myrtle	****	0.5 to 1	0.8-1.2	0.5 to 1	Sun	urban suburban rural	very low	
<i>Bougainvillea</i> 'White Cascade'	White Cascade Bougainvillea	*****	0.3- 0.7m	1-1.5m	1-1.2m	Sun	urban suburban	low	
<i>Bougainvillea</i> 'Zulu'	Purple Bambino Bougainvillea	*****	0.5-1m	1-1.5m	1-1.2m	Sun	urban suburban	low	
<i>Brunfelsia americana</i>	Queen of the night	****	1.5-2m	1-1.5m	1-1.2m	Sun, semi-shade	suburban	low	
<i>Brunfelsia australis</i> *	Yesterday Today Tomorrow	****	1.2-1.5m	1-1.5m	1-1.2m	Sun, semi-shade	suburban	low	
<i>Calliandra tweedii</i> 'Horizontalis'*	Red Flash, Dwarf Powder Puff	*****	0.2-0.5m	1.5-2m	1.2-1.5m	Sun	urban suburban	low	
<i>Calliandra haematocephala</i> *	Red Powder Puff	*****	1.8-2.5m	2-3m	1.5-2m	Sun	suburban	low	
<i>Callistemon</i> 'Little John'	Dwarf bottlebrush	*****	0.6-1m	0.6m	1 - 1.5m	Sun	urban suburban	low	
<i>Carissa</i> 'Desert Star'*	Desert Star Carissa	****	0.7-1.2m	1-1.5m	0.7-1.2m	Sun	urban suburban	very low	
<i>Camellia sasanqua</i> *	Sasanqua Camellia		1.5-2m	1.2-1.5m	1.2-1.5m	Sun, semi-shade	suburban	low	
<i>Chamaedorea seifritzii</i> *	Hawaiian Bamboo Palm	*****	1.8m-2m	1-2m	0.8-1.2m	Semi-shade, shade	urban suburban	very low	
<i>Codiaeum variegatum</i> *	Croton	*****	1-1.5m	0.7-1m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Cordyline fruticosa</i> 'Alba-rosea'*	Ti Plant	****	1-2m	0.7-1.2m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Cordyline fruticosa</i> 'Compacta'*	Ti Plant	****	1-2m	0.7-1.2m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Cordyline fruticosa</i> 'Maize'	Ti Plant	****	1-2m	0.7-1.2m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Cordyline fruticosa</i> 'Rubra'*	Red Ti Plant	****	1-2m	0.7-1.2m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Cordyline fruticosa</i> 'Schubertii'	Ti Plant	****	1-2m	0.7-1.2m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Cordyline stricta</i> *	Narrow Leaf Ti	***	1-2m	0.7-1.2m	0.7-1m	Sun, semi-shade	urban suburban rural	low	
<i>Cordyline petiolaris</i> *	broad leaf palm lily	***	1-2m	0.7-1.2m	0.7-1m	Semi-shade, shade	urban suburban rural	low	
<i>Cordyline congesta</i> *	Native Cordyline	****	1-2m	0.7-1.2m	0.7-1m	Sun, semi-shade	urban suburban rural	low	
<i>Cordyline glauca</i> *	Glauc Cordyline	****	1-2m	0.7-1.2m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Cordyline rubra</i>	Red Fruited Palm Lily	***	1-2m	0.7-1.2m	0.7-1m	Semi-shade, shade	urban suburban rural	low	
<i>Eranthemum pulchellum</i>	Blue Sage	****	1-1.2m	1-1.5m	0.7-1m	Semi-shade	suburban	low	
<i>Euphorbia pulcherrima</i> *	Poinsettia	1-1.5	1-2m	1-2m	1-1.5m	Sun	urban suburban	medium	
<i>Euphorbia geroldi</i>	Gerold's Euphorbia	****	1-2m	1-1.5m	0.7-1m	Semi-shade, shade	urban suburban	very low	
<i>Euphorbia leucocephala</i> *	Snowflake Bush	*****	1-2m	1-1.5m	1-1.5m	Sun	urban suburban	medium	
<i>Elaeocarpus reticulatus</i> *	Blueberry Ash	***	2-5m	2-3m	1.5-2m	Sun, semi-shade	urban suburban	low	
<i>Elaeocarpus reticulatus</i> 'Primma Donna'*	Pink Blueberry Ash	***	2-5m	2-3m	1.5-2m	Sun, semi-shade	urban suburban rural	low	
<i>Eremophila maculata</i> *	Emu Bush	***	1-1.5m	1.2-1.5m	1-1.2m	Sun	urban suburban rural	low	
<i>Galphimia gracilis</i> (glauca)*	Rain of Gold	*****	1-1.5m	1-1.5m	1-1.2m	Sun	urban suburban	low	
<i>Gardenia jasminoides</i> cultivars*	Gardenia	****	1-1.5m	1-1.5m	1-1.2m	Sun, semi-shade	urban suburban	low	
<i>Gelsimium sempervirens</i> *	Carolina jessamine	*****	1.5-2m	2-2.5m	rambler	Sun, semi-shade	urban suburban	low	
<i>Graptophyllum excelsum</i>	Queensland Fuchsia	****	0.5-0.7m	0.5-0.7m	0.5-0.7m	Sun, semi-shade	urban suburban	low	

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LIGHT	LOCATION	MAINTENANCE	NOTES
Graptophyllum ilicifolium	Holly Fuchsia	****	0.5-0.7m	0.5-0.7m	0.5-0.7m	Sun, semi-shade	urban suburban	low	
Graptophyllum pictum	Carricature Plant	****	1.5-2m	1.2-1.5m	1-1.2m	Sun, semi-shade	urban suburban	low	
Grevillea 'Coconut Ice'*	Coconut Ice Grevillea	****	2-3.5m	2-2.5m	2-2.5m	Sun	suburban rural	low	
Grevillea 'Honey Gem'*	Honey Gem Grevillea	****	2-3.5m	2-2.5m	2-2.5m	Sun	suburban rural	low	
Grevillea 'Marmalade'*	Marmalade Grevillea	****	2-3.5m	2-2.5m	2-2.5m	Sun	suburban rural	low	
Grevillea 'Moonlight'*	Moonlight Grevillea	****	2-3.5m	2-2.5m	2-2.5m	Sun	suburban rural	low	
Grevillea 'Ned Kelly'*	Ned Kelly Grevillea	****	2-3.5m	2-2.5m	2-2.5m	Sun	suburban rural	low	
Grevillea 'Pink Surprise'*	Pink Surprise Grevillea	****	2-3.5m	2-2.5m	2-2.5m	Sun	suburban rural	low	
Grevillea 'Poorinda Constantine'*	Poorinda Constantine Grevillea	****	2-3.5m	2-2.5m	2-2.5m	Sun	suburban rural	low	
Grevillea 'Robyn Gordon'*	Robyn Gordon Grevillea	****	1.5-2m	1.5-2m	1.5-2m	Sun	suburban rural	low	
Grevillea 'Sandra Gordon'*	Sandra Gordon Grevillea	****	2-3.5m	2-2.5m	2-2.5m	Sun	suburban rural	low	
Grevillea banksii*	Banks' Grevillea	****	2-3.5m	2-2.5m	2-2.5m	Sun	suburban rural	low	
Grevillea banksii var forsteri*	Forster's Grevillea	****	2-3.5m	2-2.5m	2-2.5m	Sun	suburban rural	low	
Grevillea 'Poorinda Royal Mantle'*	Royal Mantle Grevillea	****	0.2-0.3	1.5-3m	1-1.5m	Sun	suburban rural	low	
Grewia occidentalis*	Lavender Star Bush	****	1.2-2m	1.2-2m	1-1.5m	Sun	urban suburban	low	
Hibiscus rosa-sinensis 'Psyche'*	Psyche Hibiscus	*****	1-2m	1-1.5m	0.8-1.2m	Sun	urban suburban	low	
Hibiscus 'Swan Lake'*	Swan Lake Hibiscus	*****	1-2m	1-1.5m	0.8-1.2m	Sun	urban suburban	low	
Hibiscus manihot subsp tetraphyllum	Native Hibiscus	****	1-1.5m	0.7-1m	0.7-1m	Sun	suburban rural	low	
Hibiscus rosa-sinensis*	Hibiscus	****	1-2m	1-1.5m	0.8-1.2m	Sun	urban suburban	low	
Hibiscus splendens	Native Hibiscus	***	1.5-2.5m	1.2-2m	1.2-2m	Sun	suburban rural	low	
Ixora chinensis 'Compacta'	Orange Ixora	****	1-2m	0.7-1m	0.7-1m	Sun, semi-shade	urban suburban	very low	
Ixora chinensis 'Coral Fire'	Crimson Ixora	****	1-1.5m	0.7-1m	1-1.2m	Sun, semi-shade	urban suburban	very low	
Ixora 'Nora Grant'	Pink Malay Ixora	****	1-1.5m	1-1.5m	1-1.2m	Sun, semi-shade	urban suburban	very low	
Jasminum mesneyi	Yellow Jasmine	*****	1.2-2m	1.2-3m	1-2m	Sun	urban suburban	medium	
Leptospermum polygalifolium 'Pacific Beauty'*	Pacific Beauty	***	1.5-2m	1.5-1.8m	1.2-1.8m	Sun	suburban rural	low	
Leptospermum laevigatum*	Coast Tea Tree	****	2-3m	1.5-2m	1.5-2m	Sun	suburban rural	low	
Leucophyllum frutescens*	White Sage	***	1-1.8m	1-1.5m	1-1.2m	Sun	urban suburban	low	
Magnolia (Michelia) figo*	Port Wine Magnolia	****	1-2m	1-1.5m	1-1.2m	Sun, semi-shade	urban suburban	very low	
Malvaviscus arboreus*	Sleeping Hibiscus	*****	1-2m	1-2m	1-1.5m	Sun	urban suburban	low	
Melaleuca (Callistemon) 'Pink Candy'*	Pink Candy	*****	2-3m	1.5-2m	1.5-2m	Sun	urban suburban rural	very low	
Melaleuca (Callistemon) 'Prolific'*	Prolific	*****	2-3m	1.5-2m	1.5-2m	Sun	urban suburban rural	very low	
Melaleuca (Callistemon) 'Wildfire'*	Wildfire	*****	2-3m	1.5-2m	1.5-2m	Sun	urban suburban rural	very low	
Melaleuca 'Claret Tops'	Dwarf paperbark	*****	1.5m	1m	1.5-2m	Sun	urban suburban rural	very low	
Metrosideros kermadecensis*	Kermedec Island Xmas Tree	****	2-3m	2-2.5m	1.5-2m	Sun	urban suburban	very low	
Nandina domestica*	Heavenly Bamboo	*****	1-1.5m	0.8-1.2m	0.8-1m	Sun, semi-shade	urban suburban	very low	
Nandina domestica 'Nana'*	Dwarf Heavenly Bamboo	*****	0.7-1m	0.7-1m	0.5-0.8m	Sun, semi-shade	urban suburban	very low	
Odontonema callistachyum*	Scarlet Fire-spike	*****	1-2m	1-1.5m	1-1.2m	Sun, semi-shade	urban suburban	very low	
Pavetta lanceolata*	Forest Bride's Bush	*****	1-1.2m	0.5-1m	0.5-0.7m	Sun, semi-shade	urban suburban rural	very low	
Pavetta natalensis	Natal Pavetta	****	1.5-2.5m	1.2-1.5m	1.2-1.5m	Sun, semi-shade	urban suburban	very low	
Pittosporum tobira 'Wheeler's Dwarf'*	Miss Muffet, Dwarf Japanese Laurel	****	0.5-1m	0.5-1m	0.5-1m	Sun, semi-shade	urban suburban	very low	

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LIGHT	LOCATION	MAINTENANCE	NOTES
<i>Psyrax odorata</i>	Shiny-leaved Canthium	****	1.2-2m	1-1.2m	1-1.5m	Sun, semi-shade	suburban rural	very low	
<i>Rondeletia amoena</i> *	Rhodeletia	*****	1.5-2.5	1.2-1.8m	1-1.5m	Sun, semi-shade	urban suburban	very low	
<i>Ruscus hypoglossum</i>	Thornless Butcher's Broom	*****	0.7-1.2m	0.7-1.2m	0.7-1m	Semi-shade, shade	urban suburban	very low	
<i>Ruttya fruticosa</i>	Parrot Bush	*****	1-1.8m	1-1.5m	1-1.2m	Sun	urban suburban	low	Requires acidic soils
<i>Salvia leucantha</i>	Mexican Sage	*****	0.7-1.2m	0.7-1.2m	0.7-1m	Sun	urban suburban	low	
<i>Spirea cantonensis</i> *	May Bush	*****	1- 1.8m	1- 1.8m	1-1.5m	Sun	urban suburban	low	
<i>Senna acclinis</i>	Brush Senna	****	1.2-1.5m	1.2-1.5m	1-1.2m	Sun	suburban rural	low	
<i>Senna pallida</i>	Cassia	****	1.2-2m	1.5-2.5m	1-2m	Sun	urban suburban	low	
<i>Tabernaemontana divaricata</i> *	Mock Gardenia	****	1.2-2m	1.2-2m	1.2-2m	Sun, semi-shade	urban suburban	very low	
<i>Westringia 'Fruticosa'</i>	Coastal Rosemary	****	1-2m	2-3m	2.5-3m	Sun, semi-shade	urban suburban	very low	
<i>Westringia 'Wynyabbie Gem'</i>	Native Rosemary	****	1.5m	1.5m	1.5-2m	Sun, semi-shade	urban suburban	very low	



*Brisbane Street,
Ipswich Central.*

5.66 Groundcovers

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LIGHT	LOCATION	MAINTENANCE	NOTES
<i>Adiantum atroviride</i> (aethiopicum)	Native Maidenhair Fern	****	0.2-0.3m	0.3-0.5	0.3-0.5m	Semi-shade, shade	urban suburban rural	very low	
<i>Acalypha chamaedrifolia</i> 'Summer Love'	Summer Love	****	0.05-0.1m	0.5-1m	0.5-1m	Sun, semi-shade	urban suburban	very low	
<i>Adiantum hispidulum</i>	Rough Maidenhair Fern	*****	0.2-0.5m	0.3-0.5m	0.3-0.5m	Semi-shade, shade	urban suburban rural	very low	
<i>Aechmea blanchettiana</i> 'Rubra'	Red Blanchet's Aechmea	***	1-1.2m	1-2m	1-1.2m	Sun, semi-shade	urban suburban	very low	
<i>Aechmea caudata</i>	Aechmea	***	0.7m	0.7-1m	0.7m	Semi-shade	urban suburban	very low	
<i>Aechmea gamosepala</i>	Matchstick Cactus	*****	0.2-0.3m	0.5-1m	0.5-0.7m	Semi-shade, shade	urban suburban	very low	frost tender
<i>Aechmea recurvata</i> var. <i>benrathii</i>	Aechmea	*****	0.1m	0.3-0.5m	0.3-0.5m	Sun, semi-shade	urban suburban	very low	frost tender
<i>Agapanthus praecox</i> var. <i>orientalis</i> *	Nile Lily	****	0.5-0.7m	0.7-1m	0.7-1m	Sun, semi-shade	urban suburban	very low	
<i>Alcantarea glaziouana</i>	White Empress Bromeliad	****	0.8-1m	1.5-2m	1.5-2m	Sun, semi-shade	urban suburban	very low	
<i>Alcantarea imperialis</i>	Empress of Brazil	****	1-1.5m	2-2.5m	1.8-3m	Sun, semi-shade	urban suburban	very low	
<i>Alpinia caerulea</i>	Native Blue Ginger	***	1.8-2m	1-2m	1-1.5m	Semi-shade, shade	suburban rural	medium	
<i>Alpinia formosana</i>	Pinstripe Ginger	****	1.2-1.5m	1-2m	1-1.5m	Semi-shade, shade	urban suburban	low	
<i>Alpinia henryi</i>		****	1.2-2m	1-2m	1-1.5m	Semi-shade, shade	urban suburban	low	
<i>Alpinia zerumbet</i> *	Shell Ginger	*****	1.5-2.5m	1.5-3m	1.2-2m	Sun, semi-shade, shade	urban suburban	low	
<i>Aptenia cordifolia</i>	Baby Sunrose	****	0.05m	0.3-0.5m	0.3-0.5m	Sun, semi-shade	urban suburban	very low	
<i>Artemisia ludoviciana</i> 'Alba'	Silver Artemisia	*****	0.3-0.5m	0.5-0.8m	0.5-0.8m	Sun	urban suburban	low	
<i>Aspidistra elatior</i> *	Cast Iron Plant	*****	0.5-0.8m	0.5-1m	0.5-0.8m	Semi-shade, shade	urban suburban	very low	
<i>Asplenium australasicum</i>	Birdnest Fern	****	0.7-1m	1-1.5m	1-2m	Semi-shade, shade	urban suburban rural	very low	
<i>Billbergia nutans</i>	Queen's Tears	*****	0.3-0.5m	0.5-1m	0.5m	Semi-shade, shade	urban suburban	very low	
<i>Billbergia pyramidalis</i> *	Pineapple Lily	*****	0.3-0.5m	0.5-1m	0.5m	Semi-shade, shade	urban suburban	very low	
<i>Bougainvillea</i> 'Little Guy'	Little Guy Bougainvillea	*****	0.3- 0.7m	1-1.5m	1-1.2m	Sun	urban suburban	low	
<i>Bougainvillea</i> ' Little Caroline'	Little Caroline Bougainvillea	*****	0.3-0.7m	1-1.5m	1-1.2m	Sun	urban suburban	low	
<i>Bougainvillea</i> 'Temple Fire'	Temple Fire Bougainvillea	*****	0.3- 0.7m	1-1.5m	1-1.2m	Sun	urban suburban	low	
<i>Brachyscome multifida</i>	Cut-leafed Daisy	****	0.4m	0.6m	0.5-0.7m	Sun	urban suburban	very low	
<i>Bulbine frutescens</i>	Cats' Tail lily	****	0.3-0.5m	0.5-1m	0.5-0.7m	Sun	urban suburban	very low	
<i>Catharanthus roseus</i>	Vinca	*****	1m	1m	0.7m	Sun	urban suburban	medium	
<i>Chlorophytum cosmosum</i> 'Mandianum'*	Spider Plant	*****	0.2-0.3m	0.5-1m	0.3-0.5m	Semi-shade, shade	urban suburban	very low	
<i>Cissus alata</i> 'Ellen Danica'*	Grape Ivy	*****	0.2-0.3m	1-2m	0.7- 1m	Semi-shade, shade	urban suburban	very low	
<i>Crinum bulbispermum</i>	Vaal River Lily	*****	1-1.2m	1.5-1.8m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Clivea miniata</i> *	Kaffir Lily	*****	0.5-0.7	0.7-1m	0.7-1m	Semi-shade, shade	urban suburban	very low	
<i>Crinum mauritanum</i>	Spider Lily	*****	0.3-1m	0.7-1m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Crinum moorei</i> *	Natal Lily, Christmas Lily	****	1-1.2m	1.5-1.8m	0.7-1m	Semi-shade, shade	urban suburban	very low	
<i>Crinum pedunculatum</i> *	Native Spider Lily	***	1-1.2m	1.5-1.8m	0.7-1m	Sun, semi-shade	urban suburban rural	low	
<i>Crinum x Powellii</i>	Christmas Lily	*****	1-1.2m	1.5-1.8m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Cryptomium falcatum</i> *	Holly Fern	****	0.3-0.5m	0.5-0.7m	0.5-0.7m	Semi-shade, shade	urban suburban	very low	
<i>Cymbopogon refractus</i>	Barbed-wire Grass		0.5-0.7m	0.7-1m	0.7- 1m	Sun, semi-shade	suburban rural	medium	
<i>Davallia feejeensis</i>	Rabbits Foot Fern	****	0.5-0.7m	0.7-1m	0.5-0.7m	Semi-shade, shade	urban suburban	very low	

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LIGHT	LOCATION	MAINTENANCE	NOTES
<i>Dianella atraxis</i>	Atherton Flax Lily	***	0.3-0.5m	0.5-0.7m	0.5-0.7m	Semi-shade, shade	urban suburban	low	
<i>Dianella caerulea</i> *	Blue Flax Lily	***	0.3-0.5m	0.5-0.7m	0.5-0.7m	Sun, semi-shade	suburban rural	low	
<i>Dichorisandra thyrsiflora</i>	Blue Ginger	****	1.5-2m	1-2m	1-1.2m	Semi-shade, shade	urban suburban	low	
<i>Diets bicolor</i> *	Yellow Wild Iris	*****	0.8-1m	1-1.5m	0.7- 1m	Sun	urban suburban	low	
<i>Diets flavida</i>	Smoky Wild Iris	*****	0.8-1m	1-1.5m	0.7- 1m	Sun	urban suburban	low	
<i>Diets grandiflora</i> *	White Wild Iris	*****	0.8-1m	1-1.5m	0.7- 1m	Sun	urban suburban	low	
<i>Diets irioides</i> *	White Wild Iris	*****	0.5-0.8m	0.8-1m	0.6-0.8m	Sun	urban suburban	low	
<i>Doodia aspera</i>	Prickly Rasp Fern	*****	0.2-0.5m	0.3-0.7m	0.3-0.5	Sun, semi-shade	urban suburban rural	low	
<i>Doryanthes excelsa</i> *	NSW Gynea Lily	*****	2-2.5m	2.5-3m	2-3m	Sun	urban suburban	very low	
<i>Doryanthes palmeri</i> *	Qld Gynea Lily	*****	2-2.5m	2.5-3m	2-3m	Sun	urban suburban rural	very low	
<i>Drynaria rigidula</i>	Basket Fern	*****	0.7-1m	0.7-1.5	0.7-1m	Semi-shade, shade	urban suburban rural	low	
<i>Epiphyllum crenatum</i> *	Epiphyllum	*****	0.7-1m	1-1.2m	0.7-1m	Semi-shade	urban suburban	very low	
<i>Epiphyllum oxypetalum</i> *	Queen of the night	*****	0.7-1.2m	0.7-1m	0.7-1m	Semi-shade	urban suburban	very low	
<i>Erigeron karvinskyanus</i> *	Mexican Daisy	*****	0.2-0.3m	0.5-0.8m	0.5-0.7m	Sun	urban suburban	low	
<i>Eucharis amazonica</i> *	Amazon Lily	****	0.3-0.5m	0.5-1m	0.5-0.7m	Semi-shade, shade	urban suburban	very low	
<i>Euphorbia hypericifolia</i> 'Diamond Frost'*	Diamond Frost	*****	0.3-0.5m	0.5-1m	0.5-0.7m	Sun, semi-shade	urban suburban	very low	
<i>Gahnia aspera</i>	Redfuted Saw Sedge		0.7-1.0m	1-1.2m	0.7-1m	Sun, semi-shade	urban suburban rural	low	
<i>Gardenia jasminoides</i> 'Radicans'*	Groundcover Gardenia	*****	0.2-0.3m	1-1.2m	0.7-1m	Sun, semi-shade	urban suburban	very low	
<i>Gaura lindheimeri</i>	White Butterflies	*****	0.5-0.7m	0.5-0.7m	0.5-0.7m	Sun	urban suburban	low	
<i>Gazania rigens</i> *	Black Eyed Daisy	*****	0.2-0.3m	0.5-1m	0.5-0.7m	Sun	urban suburban	very low	
<i>Gerbera jamesonii</i> *	Gerbera Daisy	****	0.3-0.5m	0.5-0.7m	0.5m	Sun	urban suburban	low	
<i>Goodenia ovata</i>	Hop Goodenia	***	0.3m-0.5m	0.5- 1m	0.5m	Sun, semi-shade	urban suburban rural	low	
<i>Grevillea</i> 'Poorinda Royal Mantle'*	Royal Mantle	****	0.2-0.3	1.5-3m	1-1.5m	Sun	urban suburban rural	very low	
<i>Hemerocallis cultivars</i> *	Day Lily	****	0.3-0.4m	0.4-0.7m	0.4-0.5m	Sun	urban suburban	low	
<i>Hippeastrum cvs</i> *	Hippeastrum	*****	0.3-0.5m	0.5-1m	0.5-0.7m	Sun	urban suburban	very low	
<i>Hippeastrum puniceum</i> *	Orange Hippeastrum	*****	0.3-0.5m	0.5-1m	0.5-0.7m	Sun	urban suburban	very low	
<i>Hymenocallis littoralis</i> *	Spider Lily	*****	0.5-0.7m	0.7-1.5m	0.7-1m	Sun, semi-shade	urban suburban	very low	
<i>Hymenocallis sp</i> 'Cayman Giant' ("speciosus")*	Giant Spider Lily	*****	0.7-1m	1-1.5m	0.7-1.2m	Sun, semi-shade	urban suburban	very low	
<i>Juniperus conferta</i>	Shore Juniper	****	0.3m	1.5-2m	1.5-2m	Sun	urban suburban	low	
<i>Kalanchoe blossfeldiana</i>	bedding kalanchoe	****	0.2-0.3	0.2-0.5	0.2-0.3	Sun, semi-shade	urban suburban	very low	
<i>Kalanchoe fedtschenkoi</i> *	Grey Kalanchoe	*****	0.3-0.5	0.3-0.7	0.3-0.5	Sun	urban suburban	very low	
<i>Kalanchoe luciae</i>	Flap jacks	****	0.3-0.5m	0.3-0.5m	0.3-0.5m	Sun	urban suburban	very low	
<i>Kalanchoe tomentosa</i>	Panda Plant	****	0.5-0.7	0.5-0.7	0.3-0.5	Sun	urban suburban	very low	
<i>Ledebouria (Drimiopsis) petiolata</i> *	Leopard Lily	*****	0.3m	0.5-0.7m	0.5m	Semi-shade, shade	urban suburban	very low	
<i>Liriope muscari</i> 'Evergreen Giant'*	Evergreen Giant	*****	0.4-0.6m	0.5-0.7m	0.5-0.7m	Sun, semi-shade	urban suburban	very low	
<i>Liriope muscari</i> 'Just Right'*	Just Right Liriope	*****	0.3-0.5m	0.5-0.6m	0.5-0.6m	Sun, semi-shade	urban suburban	very low	
<i>Lomandra confertifolia</i> *	Dwarf Mat Rush	****	0.3-0.5	0.5-1m	0.5-0.7m	Sun	suburban rural	very low	
<i>Lomandra hystrix</i> *	Matt Rush	*****	1-1.2m	1-1.5m	0.7-1m	Sun, semi-shade	urban suburban rural	low	
<i>Lomandra longifolia</i> *	Matt Rush	*****	1-1.2m	1-1.5m	0.7-1m	Sun, semi-shade	urban suburban rural	low	
<i>Microsorium diversifolium</i> *	Kandgaroo Fern	*****	0.3m	1-1.2m	0.7-1m	Semi-shade, shade	urban suburban rural	very low	
<i>Microsorium punctatum</i> *	Leather Fern	*****	1m	1-1.2m	0.7-1m	Semi-shade, shade	urban suburban rural	very low	

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	LIGHT	LOCATION	MAINTENANCE	NOTES
<i>Molinera capitulata</i> *	Palm Lily	*****	1-1.2m	1.2-2m	1-1.2m	Semi-shade, shade	urban suburban	very low	
<i>Myoporum ellipticum</i>	Coastal myoporum	*****	0.25-0.5m	1-1.5m	1-1.5m	Sun	urban suburban	very low	
<i>Myoporum parvifolium</i>	Creeping myoporum	*****	0.25-0.5m	1-1.5m	1-1.5m	Sun	urban suburban	very low	
<i>Neoregelia compacta</i>	Bleeding Heart Bromeliad	****	0.3-0.5m	0.5-2m	0.5-0.7m	Semi-shade	urban suburban	very low	
<i>Neoregelia marmorata</i>	Marbled Neoregelia	****	0.3-0.5m	0.5-1m	0.5-0.7m	Semi-shade	urban suburban	very low	
<i>Neoregelia spectabilis</i>	Painted Fingernails	****	0.3-0.5m	0.5-1m	0.5-0.7m	Semi-shade	urban suburban	low	
<i>Nephrolepis hirsutula</i> *	Mach Fern, Ostrich Fern	****	0.7-1m	1-1.2m	0.7-1m	Sun, semi-shade	urban suburban	low	
<i>Ophiopogon jaburan</i> *	Giant Mondo Grass	*****	0.3-0.5m	0.5m-1m	0.5-0.7m	Sun, semi-shade	urban suburban	very low	
<i>Ophiopogon japonicus</i> *	Mondo Grass	****	0.1-0.2m	0.3-0.7m	0.3m	Sun, semi-shade	urban suburban	very low	
<i>Ophiopogon intermedius</i> 'Stripey White'*	Stripey White	****	0.3-0.5m	0.5-0.7m	0.5-0.7m	Sun, semi-shade	urban suburban	very low	
<i>Philodendron bipinnatifidum</i> *	Self Heading Philo	*****	1.5-2m	2-2.5m	1.5-2m	Sun, semi-shade, shade	urban suburban	very low	
<i>Philodendron xanadu</i> *	Xanadu Philodendron	*****	0.7-1.5m	1-2m	0.7-1m	Sun, semi-shade, shade	urban suburban	very low	
<i>Phlebodium aureum</i>	Bear's Foot Fern	****	0.3-0.5m	0.5-1m	0.5-0.7m	Semi-shade, shade	urban suburban	very low	
<i>Plectranthus amboinensis</i>	Allherb	*****	0.3-0.5m	1-2m	0.7-1.2m	Sun, semi-shade	urban suburban	very low	
<i>Plectranthus argentatus</i>	Silver Plectranthus	*****	0.7-1m	1-2m	0.7-1.2m	Sun, semi-shade	urban suburban rural	very low	
<i>Plectranthus graveolens</i>	Plectranthus	*****	0.7-1m	1-2m	0.7-1.2m	Sun, semi-shade	urban suburban rural	very low	
<i>Plectranthus neochilus</i>	Dogbane	*****	0.5-0.7m	1-2m	0.7-1.2m	Sun, semi-shade	urban suburban	very low	
<i>Plectranthus neochilus</i> 'Pietersburg'	Creeping Dogbane	*****	0.1-0.2m	0.7-1m	0.5-0.7m	Sun, semi-shade	urban suburban	very low	
<i>Plectranthus parviflorus</i> 'Blue Spire'	Blue Spire	****	0.3-0.5m	0.5-0.7m		Fall Sun, Semi-Shade	urban suburban rural	low	
<i>Plectranthus</i> sp 'Atherton'	Atherton Plectranthus	*****	0.7-1m	1-2m	0.7-1.2m	Sun, semi-shade	urban suburban	very low	
<i>Poa labillardieri</i> (local progeny)	Large Tussock Grass	****	0.5-0.7m	1-1.2m	0.5-0.7m	Sun, semi-shade	urban suburban rural	low	
<i>Portea petropolitana</i> var <i>extensa</i>	Portea Bromeliad	*****	0.7m	1-1.5m	0.7-1m	Sun, semi-shade	urban suburban	very low	
<i>Proiphys cunninghamiana</i>	Brisbane Lily	***	0.3-0.5m	0.7-1m	0.5-0.7m	Semi-shade, shade	urban suburban rural	low	
<i>Scaevola aemula</i>	Fairy Fan-Flower	****	0.3-0.5m	0.7-1m	0.75	Sun, semi-shade	urban suburban	low	
<i>Strelitzia reginae</i>	Bird of Paradise	****	1.2m	1.2m	0.75m	Sun		low	
<i>Trachelospermum jasminoides</i> 'Tricolor'	Star Jasmine	*****	0.1-0.2m	1-1.5m	0.7-1m	Sun, semi-shade	urban suburban	very low	
<i>Tulbaghia simmleri</i>	Fragrant Society Garlic	*****	0.5m	0.5m	0.3m	Sun	urban suburban	low	
<i>Tulbaghia violacea</i>	Society Garlic	*****	0.3m	0.3m	0.3-0.5m	Sun, semi-shade	urban suburban	low	
<i>Vetivera zinzanioides</i> 'Monto'	Sterile Vetifer Grass	*****	1m	1.2m		Sun	urban suburban	low	
<i>Viola banksii</i>	Native Violet		0.05-0.1m	0.3-0.7m	0.3-0.5m	Semi-shade, shade	urban suburban rural	low	
<i>Zephyranthes candida</i>	White Indian Crocus	*****	0.5m	0.5m	0.3m	Sun	urban suburban	low	

5.67 Climbers

BOTANICAL NAME (*currently used)	COMMON NAME	PROVEN TRACK RECORD	HEIGHT (m)	WIDTH (m)	SPACING	TYPE	LIGHT	LOCATION	NOTES
<i>Beaumontia grandiflora</i>	Angel's Trumpets	****	6m	3m		winding	sun	suburban	
<i>Bougainvillea cvs*</i>	Bougainvillea	*****	2-8m	2-5m	1.5-3	rambling	sun	urban suburban	
<i>Cissus antarctica</i>	Kangaroo Vine	*****	4-8m	3-6m	2-4m	twining	sun-shade	urban suburban	
<i>Combretum fruticosum*</i>	Orange Combretum	*****	3-5m	3-5m	2-3m	rambling	sun	urban suburban	
<i>Epipremnum aureum</i>	Pothos Vine	****	3-5m	2-3m	1-2m	root climber	semi-shade shade	urban suburban	
<i>Ficus pumila*</i>	Creeping Fig	*****	2-5m	2-5m	1-2m	root climber	sun, semi-shade	urban suburban	
<i>Hibbertia scandens</i>	Trailing Guinea Flower	***	2-4m	2-3m	1.5-2	twining	sun semi-shade	urban suburban rural	
<i>Hoya australis*</i>	Native Hoya	****	2-3m	1-2m	1-2m	twining	semi-shade shade	urban suburban rural	
<i>Hoya carnosa*</i>	Hoya	****	2-3m	1-2m	1-2m	twining	semi-shade shade	urban suburban	
<i>Ipomoea horsfalliae</i>	Cardinal Creeper	***	2-4m	2-4m	1-2m	twining	sun semi-shade	urban suburban	
<i>Monstera deliciosa*</i>	Fruit Salad Plant	****	2-4m	2-4m	1-2m	root climber	semi-shade shade	urban suburban	
<i>Pandorea jasminoides*</i>	Trumpet Creeper	****	2-4m	2-4m	1-2m	rambling	sun	suburban	
<i>Pandorea pandorana*</i>	Wonga Wonga Vine	*****	3-5m	3-5m	1.5-2	rambling	sun semi-shade	urban suburban rural	
<i>Petrea volubilis*</i>	Sandpaper Vine	*****	3-5m	3-5m	1.5-2	rambling	sun	urban suburban	
<i>Philodendron lacerum*</i>	Philodendron	****	3-5m	2-3m	1-2m	root climber	semi-shade shade	urban suburban	
<i>Philodendron oxycardium</i>	Heart-leaf Philodendron	****	3-5m	2-3m	1-2m	root climber	semi-shade shade	urban suburban	
<i>Pyrostegia venusta*</i>	Flame Vine	*****	4-5m	3-5m	1.5-3m	twining	sun	urban suburban	
<i>Solandra maxima*</i>	Cup of Gold Vine	*****	3-8m	3-5m	2-3m	rambling	sun	urban suburban	
<i>Stephanotis floribunda*</i>	Madagascar Jasmine	****	2-4m	2-3m	1-2m	twining	sun, semi-shade	urban suburban	
<i>Tecomanthe hillii</i>	Fraser Island Creeper	****	3-5m	2-3m	1.5-2	twining	sun semi-shade	urban suburban	
<i>Thunbergia mysorensis*</i>	Slipper Flower	****	3-8m	3-5m	1.5-2	twining	sun	urban suburban	
<i>Trachelospermum jasminoides*</i>	Star Jasmine	*****	2-4m	2-3m	1.5-2	twining	sun, semi-shade	urban suburban	

5.68 Bougainvilleas

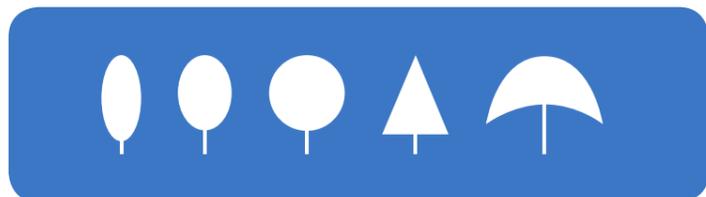
BOTANICAL NAME	FLOWER COLOUR	FOLIAGE	HEIGHT (m)	WIDTH (m)	VIGOUR
TREES					
Pink Pixie	Pink	Green	2-2.5m	1.5-2m	slow grower
Vera Blakeman	Red	Green	2-2.5m	1.5-2m	slow grower
Zeffa	Purple	Green	2-2.5m	1.5-2m	slow grower
HEDGING					
Bougainvillea 'Bilas'	Red	Creamy pink to green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Jazzi'	Brilliant Red	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Marlu'	Mauve to white	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Maudi'	Purple-red	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Miski'	Orange	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Nonya'	Bright mauve-lavender	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Pedro'	Brick Red	Green	0.7-1.2m	0.7-1.2m	slow grower
Bougainvillea 'Roteli's Special'	Red	Green	1-2m	1-1.2m	medium grower
Bougainvillea 'Shaba'	orange to mauve-pink	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Siggi'	Golden	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Wallflower'	Pink	Green	1-2m	1-1.2m	medium grower
Bougainvillea 'White Cascade'	White	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Zuki'	Claret	White and green	1-1.5m	1-1.5m	slow grower
SHRUBS					
Bougainvillea 'Bilas'	Red	Creamy pink to green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Jazzi'	Brilliant Red	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Marlu'	Mauve to white	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Maudi'	Purple-red	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Miski'	Orange	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Nonya'	Bright mauve-lavender	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Pedro'	Brick Red	Green	0.7-1.2m	0.7-1.2m	slow grower
Bougainvillea 'Shaba'	orange to mauve-pink	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Siggi'	Golden	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'White Cascade'	White	Green	1-1.5m	1-1.5m	slow grower
Bougainvillea 'Zuki'	Claret	White and green	1-1.5m	1-1.5m	slow grower
GROUNDCOVERS					
Bougainvillea 'Little Caroline'	Cerise-red	Green	0.3-0.7m	1-1.5m	slow grower
Bougainvillea 'Little Guy'	Red	Green	0.3-0.7m	1-1.5m	slow grower
Bougainvillea 'Purple Carpet'	Purple	Green	0.3-0.7m	1-1.5m	slow grower
Bougainvillea 'Solar Flare'	Orange	Green	0.3-0.7m	1-1.5m	slow grower
Bougainvillea 'Temple Fire'	Brick red to purple-pink	Green	0.3-0.7m	1-1.5m	slow grower

BOTANICAL NAME	FLOWER COLOUR	FOLIAGE	HEIGHT (m)	WIDTH (m)	VIGOUR
CASCADING (planters, hanging baskets)					
Bougainvillea 'Bilas'	Red	Creamy-pink to green	0.7-1.2m	1-1.5m	slow grower
Bougainvillea 'Bokay'	Rich Pink	Green	0.7-1.2m	1-1.5m	slow grower
Bougainvillea 'Jazzi'	Brilliant Red	Green	0.7-1.2m	1-1.5m	slow grower
Bougainvillea 'Nonya'	Pink	Green	0.7-1.2m	1-1.5m	slow grower
Bougainvillea 'Panda'	White	White and green	0.7-1.2m	1-1.5m	slow grower
Bougainvillea 'Shaba'	Copper-red fading to mauve-pink	Green	0.7-1.2m	1-1.5m	slow grower
Bougainvillea 'White Cascade'	White	Green	0.7-1.2m	1-1.5m	slow grower
Bougainvillea 'Orange Butterfly'	Orange	Green	0.3-0.7m	1-2m	slow grower
Bougainvillea 'Pink Butterfly'	Pink	Green	0.3-0.7m	1-2m	slow grower
Bougainvillea 'Red Butterfly'	Red	Green	0.3-0.7m	1-2m	slow grower
Bougainvillea 'Yellow Butterfly'	Yellow	Green	0.3-0.7m	1-2m	slow grower
PERGOLA OR ARBOR					
Bougainvillea 'Ambience'		Green	3-5m	2-3m	medium grower
Bougainvillea 'Barbara Kaast'	Red	Green	3-5m	2-3m	medium grower
Bougainvillea 'Donya'	Pink	Green	3-5m	2-3m	medium grower
Bougainvillea 'Donya White'	White	Green	3-5m	2-3m	medium grower
Bougainvillea 'Killie Campbell'	copper to magenta	Green	3-5m	2-3m	medium grower
Bougainvillea 'Penelope'	White	Green	3-5m	2-3m	medium grower
Bougainvillea 'Snowcap'	Deep pink and white	Green	3-5m	2-3m	medium grower
Bougainvillea 'Tango'	Orange	Green	3-5m	2-3m	medium grower
Bougainvillea 'Tango Gold'	Gold	Green	3-5m	2-3m	medium grower
Bougainvillea 'Tango Red'	Red	Green	3-5m	2-3m	medium grower
IPSWICH BOUGAINVILLEAS BY TURLEY					
Bougainvillea 'Bois de Rose'	pale biscuit tinged pink	furry-green	8-10m	8-10m	very vigorous
Bougainvillea 'Excelsior'	Red	furry-green	8-10m	8-10m	very vigorous
Bougainvillea 'Glabra Improved'	purple	glossy green	5-8m	5-8m	vigorous
Bougainvillea 'Laterita Improved'	red	furry-green	8-10m	8-10m	very vigorous
Bougainvillea 'Mrs O Perry'	orange-red	furry-green	8-10m	8-10m	very vigorous
Bougainvillea 'Silver Magenta'	bright purplish pink	furry-green	5-8m	5-8m	very vigorous
Bougainvillea 'Tomato Red'	Red	furry-green	8-10m	8-10m	very vigorous
Bougainvillea 'Traillii Improved'	Bright magenta	glossy green	5-8m	5-8m	vigorous
Bougainvillea 'Turley's Red'	red	furry-green	8-10m	8-10m	very vigorous
Bougainvillea 'Turley's Special'	bright brick-red	furry-green	8-10m	8-10m	very vigorous

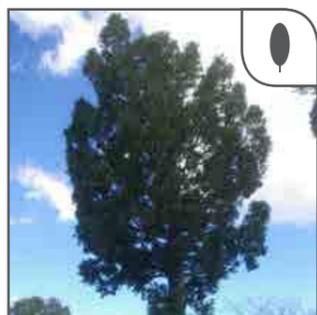
5.7 PLANT GALLERY

The following galleries provide reference photos for many of the plants included in the planting schedules.

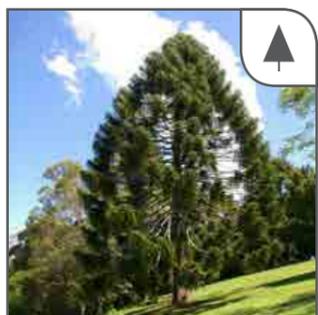
For a guide to the form and shape of each tree species, please refer to the graphic shown at the top of each photo.



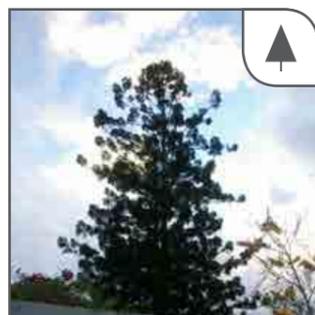
5.71 Large Trees



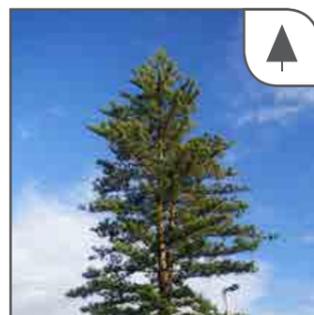
Agathis robusta



Araucaria bidwillii



Araucaria cunninghamiana



Araucaria heterophylla



Bombax ceiba



Ficus benjamina



Ficus bengalensis



Ficus macrophylla



Ficus microcarpa



Ficus religiosa



Ficus virens



Melaleuca quinquenervia



Neolamarckia cadamba



*King Edward Parade,
Ipswich.*

5.72 Shade Trees



Acmena smithia



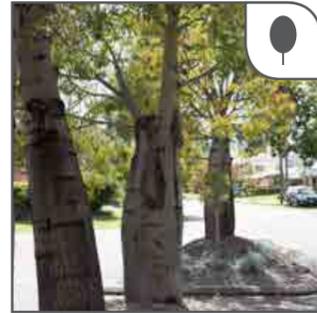
Backhousia citriodora



Brachychiton discolor



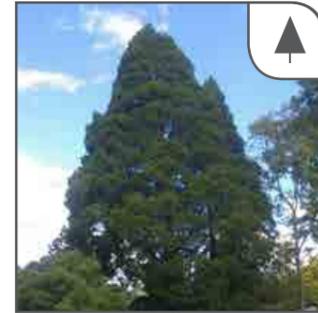
Brachychiton populneus



Brachychiton rupestris



Caesalpinia ferrea



Callitris columellaris



Cassia brewsteri



Cassia javanica



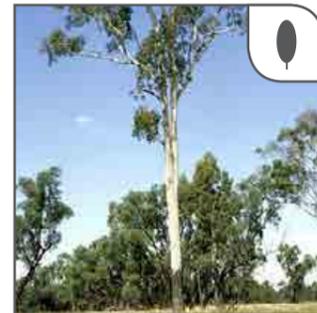
Ceiba speciosa



Citharexylum spinosum



Corymbia maculata



Corymbia tessellaris



Delonix regia



Elaeocarpus eumundii



Elaeocarpus grandis



Erythrina vespertilio



Eucalyptus microcorys



Eucalyptus tereticornis



Flindersia schottiana



Fraxinus uhdei



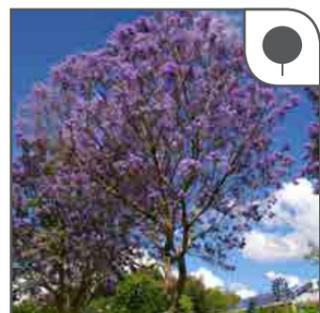
Gmelina leichhardtii



Harpullia pendula



Hymenosporum flavum



Jacaranda mimosifolia



Lagerstroemia speciosa



Lophostemon confertus



Macaranga tanarius



Magnolia champaca



Melaleuca leucodendron



Melia azederach



Peltophorum pterocarpum



Rhodospheera rhodanthera



Schotia brachypetala



Senna sp.



Syzygium cumini



Syzygium leuhamnii



Tabebuia sp.



Tamarindus indicus



Toona ciliata



Tristaniopsis laurina



Waterhousia floribunda

5.73 Small Trees



Acacia macradenia



Attractocarpus fitzalanii



Banksia integrifolia



Brachychiton bidwillii



Brachychiton rupestris



Buckinghamia celsissima



Chionanthus ramiflora



Cupaniopsis anacardioides



Delonix regia



Ficus auriculata



Hakea salicifolia



Lagetroemia sp.



Melaleuca linariifolia



Petalostigma sp.



Tabebuia aurea



Xanthostemon chysanthus

5.74 Palms



Archonyophornic cunninghamia



Bismarkia nobilis



Butia capitata



Carpentaria acuminata



Dioon edule



Dioon spinulosum



Dypsis cabadae



Dypsis lutescens



Dypsis madagascariensis



Hyophorbe lagenicaulis



Hyophorbe verschaffeltii



Latania sp.



Lepidozamia peroffskyana



Livistona australis



Livistona chinensis



Livistona decora



Macrozamia communis



Pandanus sp.



Pandanus tectorius



Pandanus tectorius 'Veitchii'



Phoenix sylvestris



Ravenala madagascariensis



Roystonea regia



Washingtonia sp.



Wodyetia bifurcata

5.75 Shrubs



Acalypha wilkesiana cultivars



Attractocarpus fitzalanii



Austromyrtus dulcis



Backhousia myrtifolia



Banksia serrata



Brunfelsia australis



Caesalpinia pulcherrima



Calliandra haematocephala



Calliandra tweedii



Callistemon 'Little John'



Camellia sasanqua



Carissa sp.



Chamaedorea seifritzii



Codiaeum variegatum



Cordyline fruticosa 'Alba-rosea'



Cordyline fruticosa 'Compacta'



Cordyline fruticosa 'Maize'



Cordyline fruticosa 'Rubra'



Cordyline petiolaris



Euphorbia pulcherrima



Galphimia gracilis



Gardenia jasminoides



Graptophyllum excelsum



Graptophyllum pictum sp.



Grevillea sp.



Grevillea 'Royal Mantle'



Hibiscus rosa-sinensis 'Psyche'



Hibiscus splendens



Ixora sp.



Jasminum mesneyi



Leptospermum laevigatum



Leucophyllum frutescens



Malva viscus arboreus



Melaleuca 'Claret Tops'



Metrosideros sp.



Metrosideros paniculata 'Min-A-Min'



Metrosideros paniculata 'Smart Choice'



Nandina domestica



Odontonema sp.



Pavetta lanceolata



Rondeletia sp.



Ruscus hypoglossum



Ruttya fruticosa



Salvia leucantha



Schefflera arboricola



Schefflera arboricola 'Worthy'



Senna pallida



Tabernaemontana divaricata



Westringea sp.

5.76 Groundcovers



Acalypha chamaedrifolia



Adiantum atroviride



Aechmea caudata



Aechmea gamosepala



Aechmea recurvata



Agapanthus sp.



Alcantarea glazouana



Billbergia nutans



Alcantarea imperialis



Alpinea caerulea



Alpinea henryi



Alpinea zerumbet



Aptenia cordifolia



Artemisia ludoviciana



Aspidistra elatior



Asplenium australasicum



Billbergia pyramidalis



Bulbine frutescens



Catharanthus roseus



Cissus alata



Crinum bulbispermum



Crinum pedunculatum



Cryptomium falcatum



Cymbopogon refractus



Davallia feejeensis



Dianella caerulea



Dichorisandra thyrsifolia



Dietes bicolor



Dietes grandiflora



Doodia aspera



Doryanthes excelsa



Doryanthes palmeri



Drynaria rigidula



Erigeron karvinskyanus



Eucharis amazonica



Euphorbia hypericifolia
'Diamond Frost'



Gardenia jasminoides



Gaura lindheimeri



Gazania rigens



Gerbera sp.



Goodenia ovata



Grevillea 'Royal Mantle'



Hemerocallis littoralis



Hymenocallis littoralis



Kalanchoe fedtschenkoi



Kalanchoe luciae



Liriope muscari 'Evergreen Giant'



Liriope muscari 'Just Right'



Lomandra confertifolia



Lomandra longifolia



Microsorium sp.



Molinera sp.



Neoregelia compacta



Neoregelia marmorata



Neoregelia spectabilis



Ophiopogon japonicus



Ophiopogon intermedius sp.



Philodendron bipinnatifidum



Philodendron xanadu



Plectranthus sp.



Plectranthus argentatus



Plectranthus graveolens



Plectranthus neochilus



Plectranthus parviflorus 'Blue Spire'



Poa labillardieri



Proiphys cunninghamiana



Scaevola aemula



Strelitzia reginae



Trachelospermum jasminoides 'Tricolor'



Tulbaghia violacea



Vetivera zinzanioides 'Monto'



Viola banksii



Zephyranthes candida

5.77 Climbers



Beaumontia grandiflora



Cissus sp.



Combretum sp.



Epipremnum aureum



Ficus pumila



Hibbertia scandens



Hoya carnosa



Pandorea pandorana



Petrea volubilis



Philodendron lacerum



Philodendron oxycardium



Pyrostegia venusta



Solandra maxima



Tecomanthe hillii



Thunbergia mysorensis



Trachelospermum jasminoides

5.78 Bougainvilleas



Bougainvillea 'Jazzi'



Bougainvillea 'Little Caroline'



Bougainvillea 'Temple Fire'



Bougainvillea 'Zuki'

