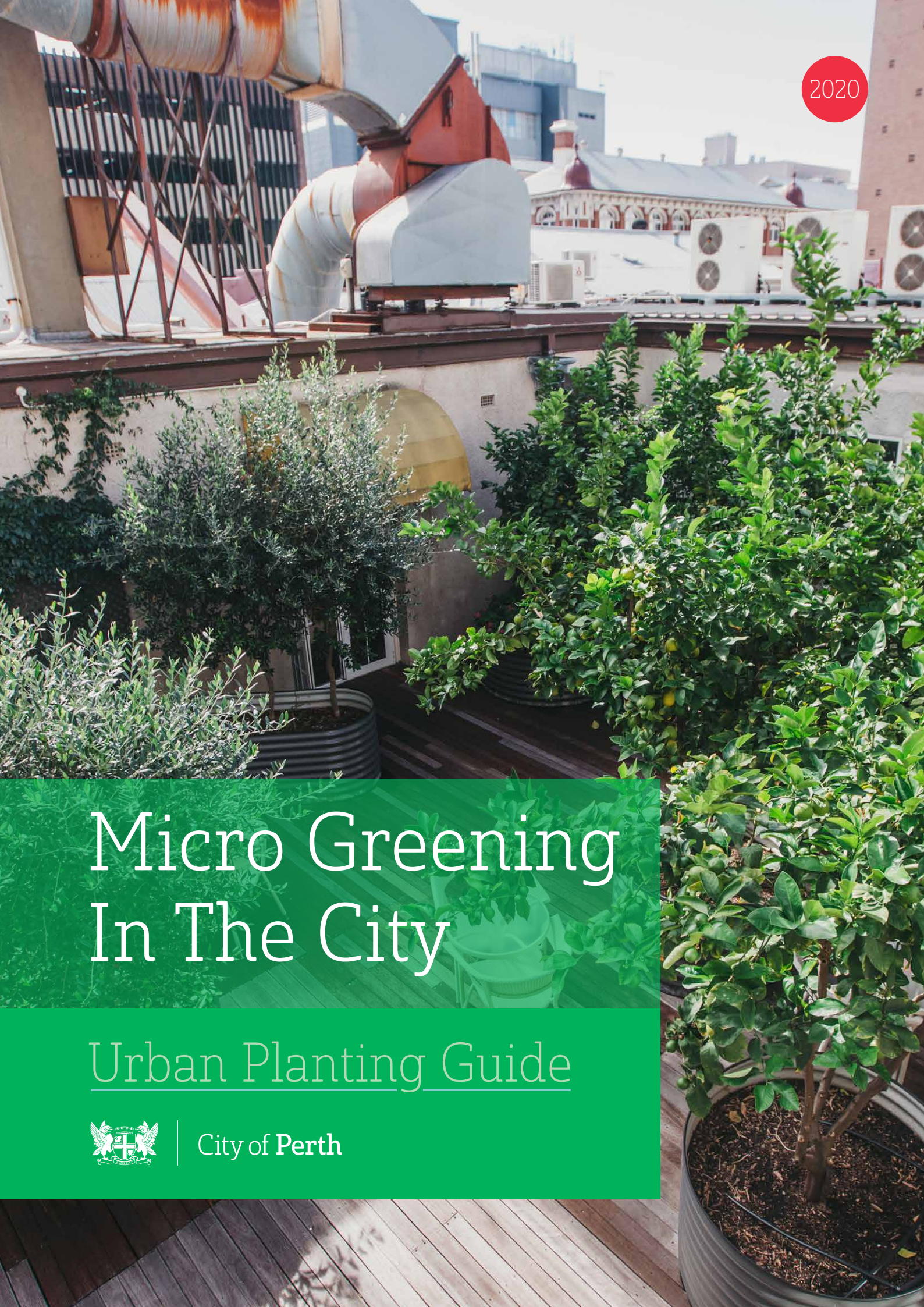


2020

# Micro Greening In The City

## Urban Planting Guide

City of **Perth**

# Contents

*The City of Perth has produced this document with assistance from Josh Byrne & Associates.*

# BACKGROUND

**The City of Perth (The City) is working on a range of city greening initiatives while delivering on community expectations and actions within the Strategic Community Plan. The specific greening initiatives implemented emerge from various plans and studies, including:**

- City of Perth Urban Forest Plan (2016)

- Green Infrastructure and Biodiversity Study (2017)

- Water Sensitive Transition Study (2017)

The Urban Forest Plan is a strategic action plan focused on growing and managing the city's collection of green spaces, trees and other vegetation. Stage one of the Plan was adopted by Council in September 2016 and focuses on street and parkland trees. Stages two and three are currently in development, focusing on wider elements of green infrastructure, including small scale greeing initiatives. The *Micro Greening in the City Guide* is an initiative to help increase small scale greening within the city, in particular in privately owned spaces. It forms part of the Urban Forest Plan.

## Introduction

This *Micro Greening in the City Guide* provides succinct, informative, inspirational and engaging information for the community that may encourage and assist residents, retailers, commercial tenants and building owners with planting in small scale, privately owned areas such as balconies, shop fronts and interior spaces.

## What is Micro Greening?

Micro Greening is the 'greening' or vegetation incorporated at the micro-scale. Small interventions like simple plant pots or vines growing up a wall are examples of Micro Greening.

## Why is this important?

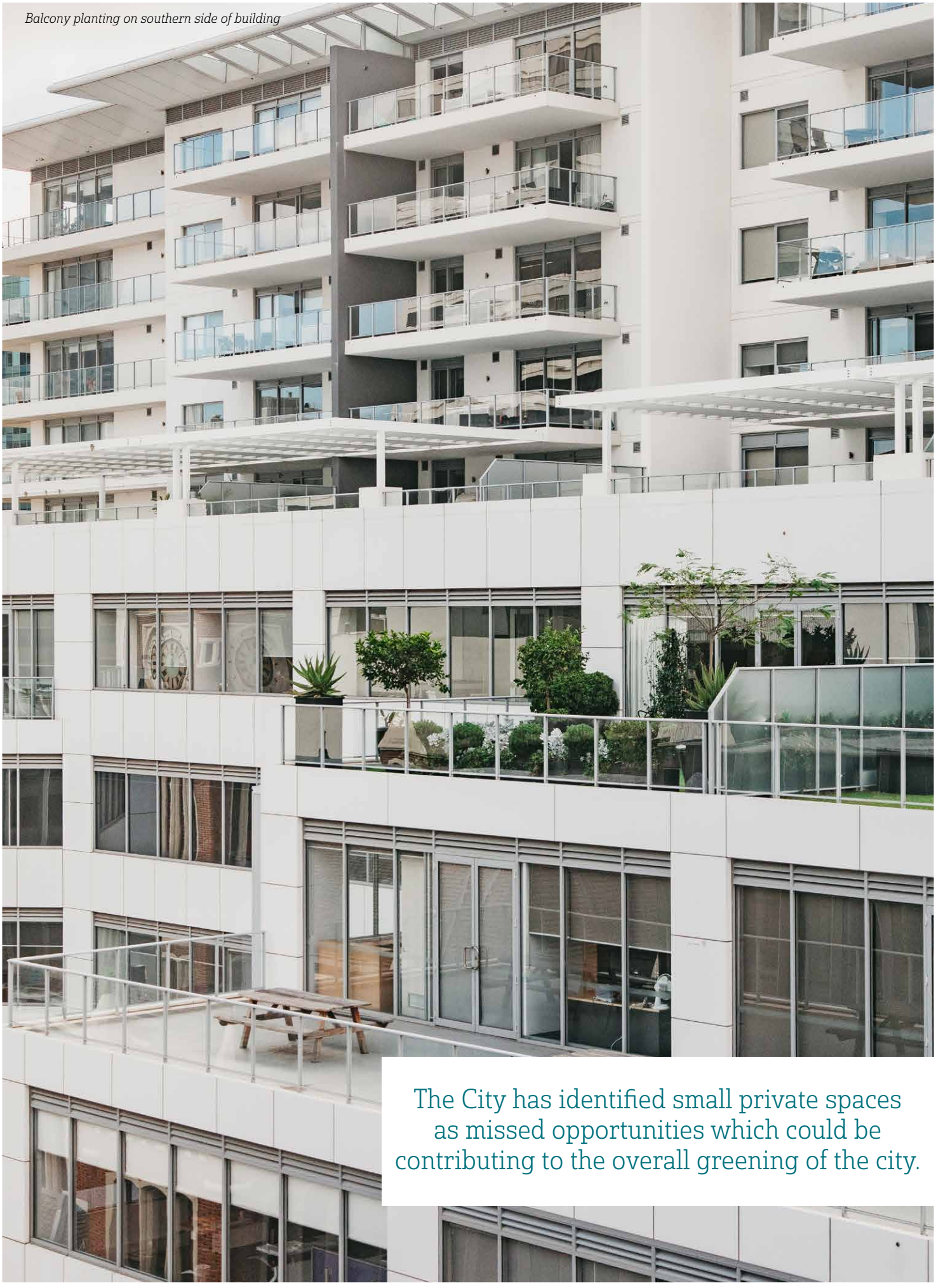
Even at this small scale, Micro Greening can have a profound effect on a city's livability by:

- reducing air pollution
- reducing the urban heat island effect
- increasing biodiversity
- improving health and wellbeing for residents and city workers
- creating a sense of place
- providing a welcoming environment for visitors
- creating an attractive green city

## Types of Micro Greening

Four main types of Micro Greening will be explored in further detail through the following case studies;

- Balconies
- Interior spaces
- Shop fronts
- Left over spaces



*Balcony planting on southern side of building*

The City has identified small private spaces as missed opportunities which could be contributing to the overall greening of the city.

# Balconies

**Apartments make up the majority of the residential building stock in the City of Perth with many including private balconies. Balconies provide a fantastic opportunity for urban greening at the micro-scale.**

## Planning Requirements

**Strata Body Limitations –** there may be some limitations imposed by your strata body. These may limit what you can incorporate on your property whether it be on your balcony or any vertical planting which maybe reliant on the building for support. It is worth checking these prior to commencing any greening initiatives.

**Planning / Building Approval –** no formal approval is required for Micro Greening which does not incorporate building works.

## Safety Considerations

**Building Loading –** people wanting to install large pots or planters must consult with building owners or strata managers to ensure their balcony does not have weight restrictions. Not all balconies may be able to accommodate the increased weight. The watering of pots or planters will increase the overall weight on the balcony.

**Safe Placement of Pots –** pots and planters should be placed where they pose no risk of becoming climbable, particularly when placed close to balcony balustrades or handrails. This is particularly important if children will be using the area. They should also not be fixed to the outside of balustrades where they could become a danger to those below.

**Safe Access for Watering and Maintenance –** ensure that any plantings are located within easy reach for maintenance or hand watering.

## Key Considerations

**Solar Aspect –** be conscious of your balcony's aspect when selecting plants to ensure they will flourish in the balcony's light conditions whether sun, part shade or full shade. Refer to Environmental Considerations for more information.

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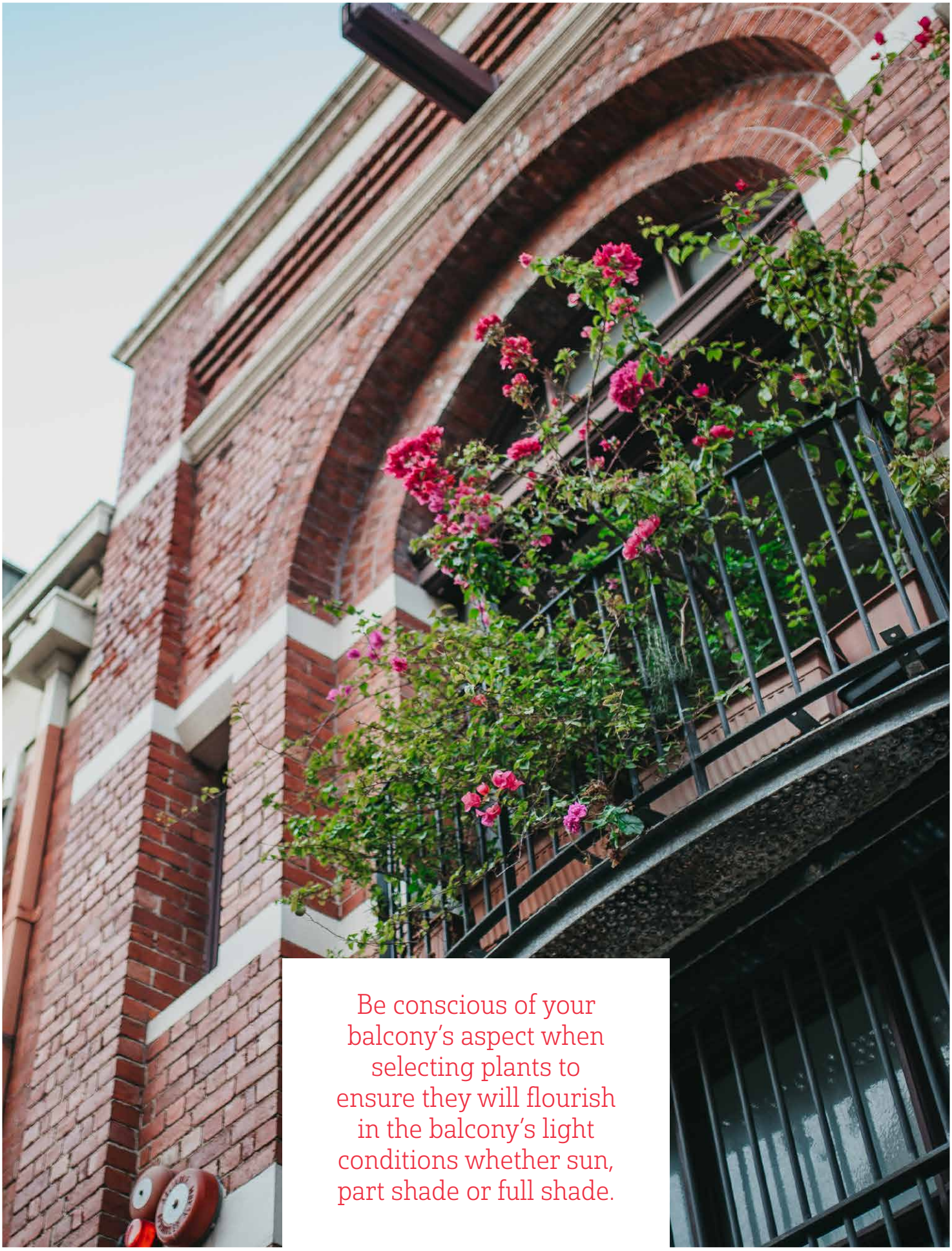

Be conscious of your balcony's aspect when selecting plants to ensure they will flourish in the balcony's light conditions whether sun, part shade or full shade.

*Example of balcony planting, King Street, Perth*

# Balconies

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>> **Impact of Wind –** consider the effect of strong winds which can dry out pot plants very quickly. Some plants may even get damaged if exposed to frequent strong winds. You may need to consider robust resilient plant species for your balcony if it is not well protected. Further information can be found under Environmental Considerations.

**Maximising Space –** consider the placement of your balcony pots or planters to ensure the space is still functional and accessible. Where floor space is not available, hanging pot plants is another great way to add greening to your area.

**Impact on Adjoining Properties –** consider the impact of your balcony garden on neighbouring residents. Some highly fragrant plants for example may cause breathing issues in some people. Vines should not become overgrown and encroach on neighbouring balconies.

**Watering –** carefully consider how your plants will be watered on a regular basis. Potted plants will tend to dry out more readily than plants in the ground and most plants like consistent moisture levels over the warmer growing seasons. Automatic watering systems are the best solution and will ensure your plants still thrive even if you are on holidays. Be mindful water does not oveflow from your balconoy onto balcnies below. Refer to Sustainable Water Use.

Automatic watering systems are the best solution and will ensure your plants still thrive even if you are on holidays.

*Small residential balcony example*

## Planting Opportunities

**Living Walls –** these can include climbers/vines which grow up or cascade down a vertical surface. They can assist in reducing the effects of prevailing winds and/or provide privacy to your balcony. A support framework may be required, however there are self-clinging

*A Staghorn (Platycerium superbum) makes a great focal point*

*An example of a West facing residential balcony planter using Zig Zag plants*

Carefully consider each pot's placement, staggering larger pots to the rear against walls/ barriers with smaller pots in front.

species available which can easily grow up many different types of walls. You may also consider incorporating a Staghorn fern (Platycerium superbum) as a great focal point.

**Pots/Planters –** pots and planters are an easy way to liven up any balcony. Carefully consider each pot's placement, staggering larger pots to the rear against walls/barriers with smaller pots in front. This is better for maintenance access and looks good too!

**Vegetated Pergolas –** sitting under a softly shaded, living canopy is a sheer delight. There are numerous robust, vigorous climbers/vines which create a vegetated roof within a couple of years but be careful to keep an eye on them and trim them back as they can grow onto adjoining properties.

**Window Boxes –** many innovative planters are available in today's market which can safely attach to window frames or window ledges with self-watering systems for ease of maintenance. These can look particularly attractive if you have a set of them with a similar planting style in each. For safety reasons, window boxes should not project over property boundaries into the street or into adjacent properties. Where they pose a risk of falling, they should also be secured.

# Interior Spaces

**There are various interior environments of different scales which could cleverly incorporate plant life. These include courtyards, cafeterias, covered walkways and internal hallways.**

## Planning Requirements

**City of Perth Building Requirements –** it is worth checking with the City to see if there are any permits or applications required relating to the work you are looking to undertake i.e. fire hazard, egress, historical restrictions.

**Planning / Building Approval –** no formal approval is required for Micro Greening which does not incorporate building works.

## Safety Considerations

**Safe Placement of Pots –** it is important to consider main pedestrian/vehicular movements in these spaces, so pots do not become a hazard or block exit or entry points. Their location should also be easily accessible for hand watering and ongoing maintenance.

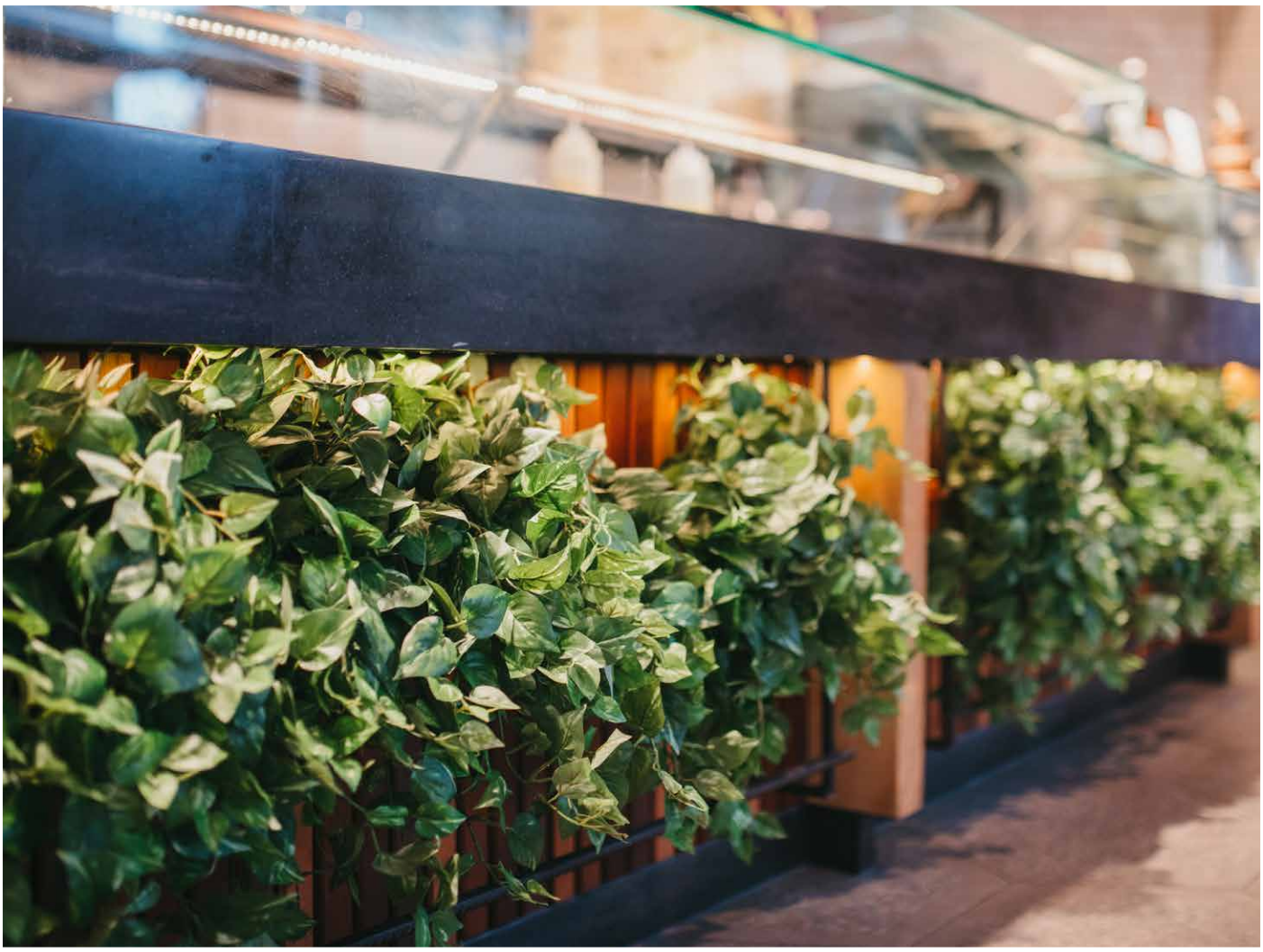
**Designing Out Crime –** the height and position of these plantings must comply with Designing Out Crime principles. For further information go to Department of Planning, Lands and Heritage Designing Out Crime Planning Guidelines.

## Key Considerations

**Solar Aspect –** interior spaces usually receive only indirect sunlight through windows, atrium roof glazing or skylights. Even with limited light there are low, medium or high light level indoor plants available which will thrive in these locations.  For more information refer

Even with limited light there are low, medium or high light level indoor plants available which will thrive in these locations.

*Interior potted plant at building entry*



*Low level interior planting beneath shop counter*

to Environmental Considerations and Recommended Plant List.

**Dust –** many internal plants have large or wide leaves which due to the lack of wind, collect dust. To maintain a high level of presentation, it is important to regularly wipe the leaves with a wet cloth to bring out their lush appearance.

**Plant Rotation –** the main source of sunlight in many interior environments enters from one direction resulting in irregular plant growth as they lean towards this light. To overcome this, it is important to rotate/turn each plant regularly.

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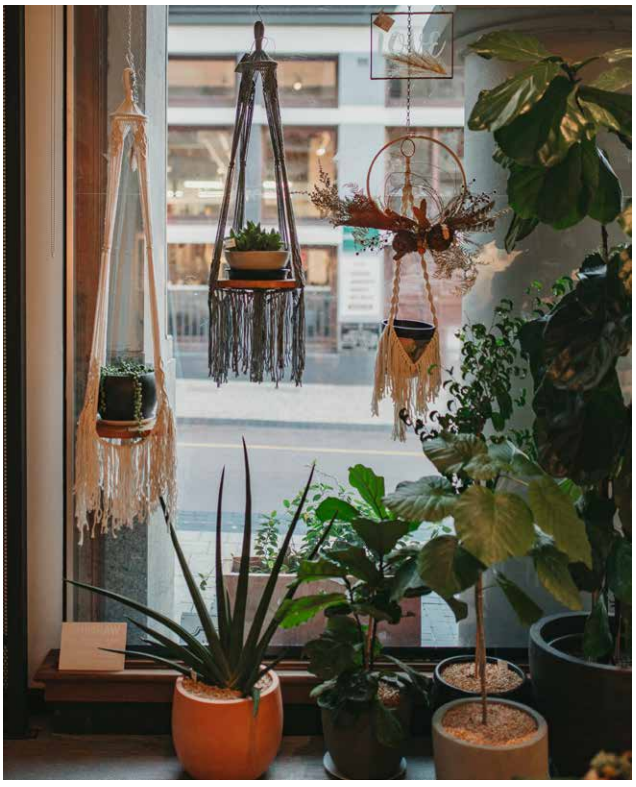

*Potted plants suspended in shopfront*

# Interior Spaces

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>> **Watering –** large internal planted displays would typically be automatically irrigated, however if you have several individual pots within your internal space, hand watering may be a better option. Self-watering pots are also worth considering. Refer to Sustainable Water Use.

## Planting Opportunities

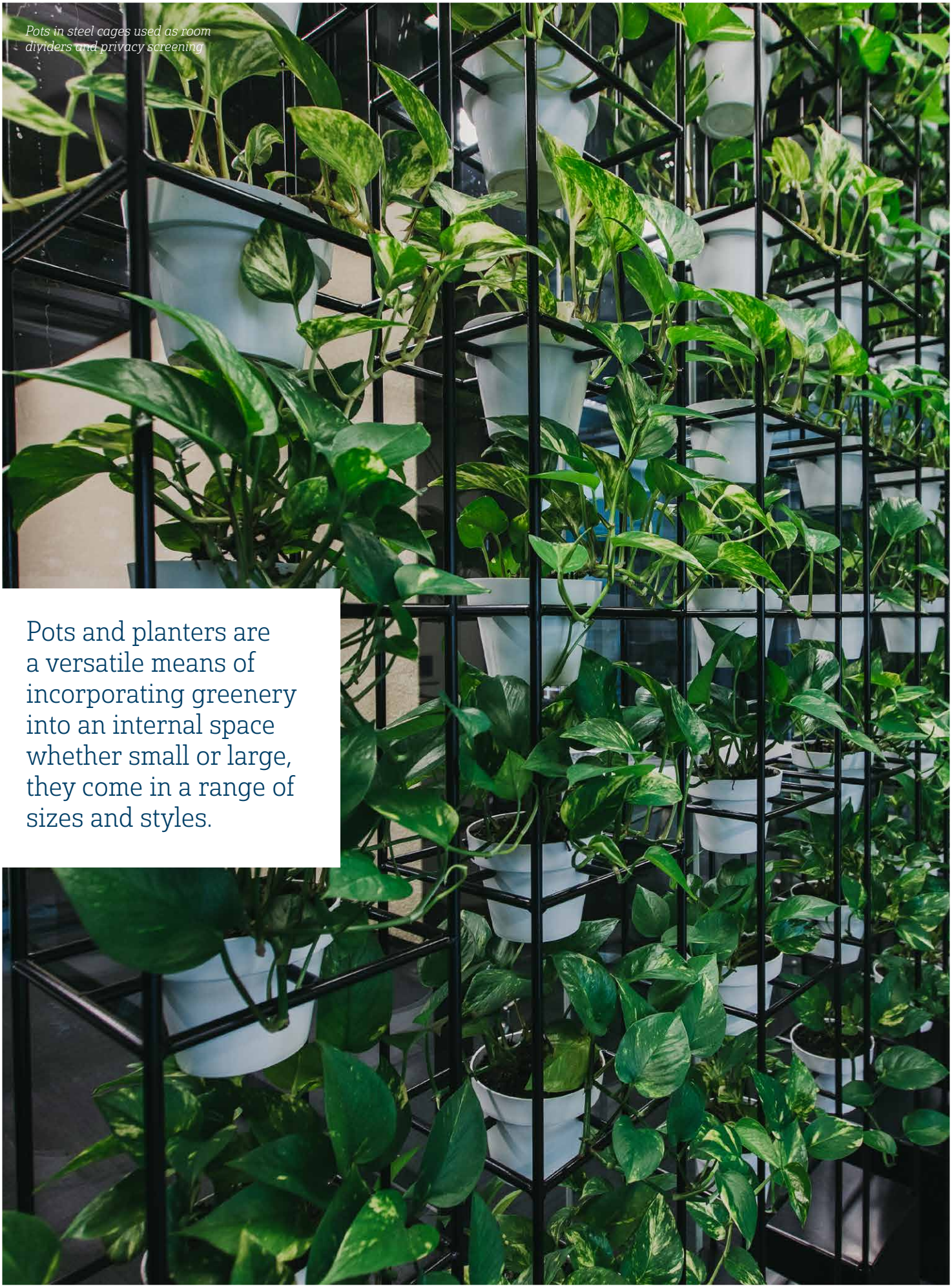
**Pots/Planters –** are a versatile means of incorporating greenery into an internal space whether small or large, pots and planters come in a range of sizes and styles.

**Hanging Planters –** these are great if you are lacking floor space but just make sure you have a sturdy ceiling to support the planter.

**Vertical Climbers –** climbers are a simple and effective way to achieve a lush green backdrop. They can soften any hard-urban surface and even make spaces appear larger. Select climbers which can thrive in your light conditions and ensure you are able to prune them should they grow beyond your space.

**Small Trees –** well positioned tree(s) can make a huge impact in any contained urban space, both visually and in terms of health and wellbeing benefits. Carefully consider the tree's ultimate mature size when selecting species and ensure it has sufficient soil mass surrounding the root ball whether it is in a pot or in the ground. Refer to Recommended Plant List.

*Indoor display of potted and hanging plants*



*Pots in steel cages used as room dividers and privacy screening*

Pots and planters are a versatile means of incorporating greenery into an internal space whether small or large, they come in a range of sizes and styles.

# Shop Fronts

**Shop fronts typically offer light, bright locations for plants to thrive. With clever spatial design, plant life can enhance the shop's display products and entice passers-by to take a closer look, even in confined spaces.**

## Planning Requirements

**City of Perth Building Requirements –** it is worth checking with the City to see if there are any permits or applications required relating to the work you are looking to do i.e. fire hazard, egress, historical restrictions. No approvals are required for movable shop front planters.

**Planning / Building Approval –** no formal approval is required for Micro Greening which does not incorporate building works.

## Safety Considerations

**Safe Placement of Pots –** avoid pots/ planters becoming a potential obstruction or hazard for shop users. Pots and planters should be located within the property boundary.

**Hazards with Watering –** it is important to ensure water doesn't drip or collect on the floor and become a slip hazard. Self-watering pots are an easy contained system to eliminate this issue.

To maintain a high level of presentation, it is important to regularly wipe the leaves with a wet cloth to bring out their lush appearance.

*Built-in window box with planting.*

*Movable planter with castors.*

## Key Considerations

**Solar Aspect –** shop fronts typically have floor to ceiling glazing making them a great light filled location for plants. Less light will enter your shop if it faces south or it is overshadowed by nearby buildings, however there are many indoor plants available that can tolerate low light conditions. For further information refer to Environmental Considerations and Recommended Plant List.

**Dust –** many internal plants have large or wide leaves which due to the lack of wind, collect dust. To maintain a high level of presentation, it is important to regularly wipe the leaves with a wet cloth to bring out their lush appearance.

**Plant Rotation –** the main source of sunlight in many interior environments enters from one direction resulting in irregular plant growth as they lean towards this light. To overcome this, it is important to rotate/turn each plant regularly.

> Consider training your staff so they aware are of the plant's maintenance requirements to share the load!

**Watering –** it is recommended that hand watering is undertaken for the small shop front plant displays. Consider implementing a staff roster to ensure sufficient watering is undertaken. Refer to Sustainable Water Use.

**Maintenance –** while most indoor plants are low maintenance, it is important to regularly monitor their health and >>

*Pots placed at front of business on privately owned land that are not an obstruction.*

# Shop Fronts

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>> appearance. Refer to Sustainable Water Use for signs of over-watering/under-watering. Consider training your staff so they are aware of the plant's maintenance requirements to share the load! Alternatively, you can engage landscape contractors to oversee this role.

**Vandalism/Theft –** this is particularly important if you are positioning pots or planters outside your shop. If they are not large and heavy items, consider movable pots with castors which can be moved inside the shop at the end of the day.

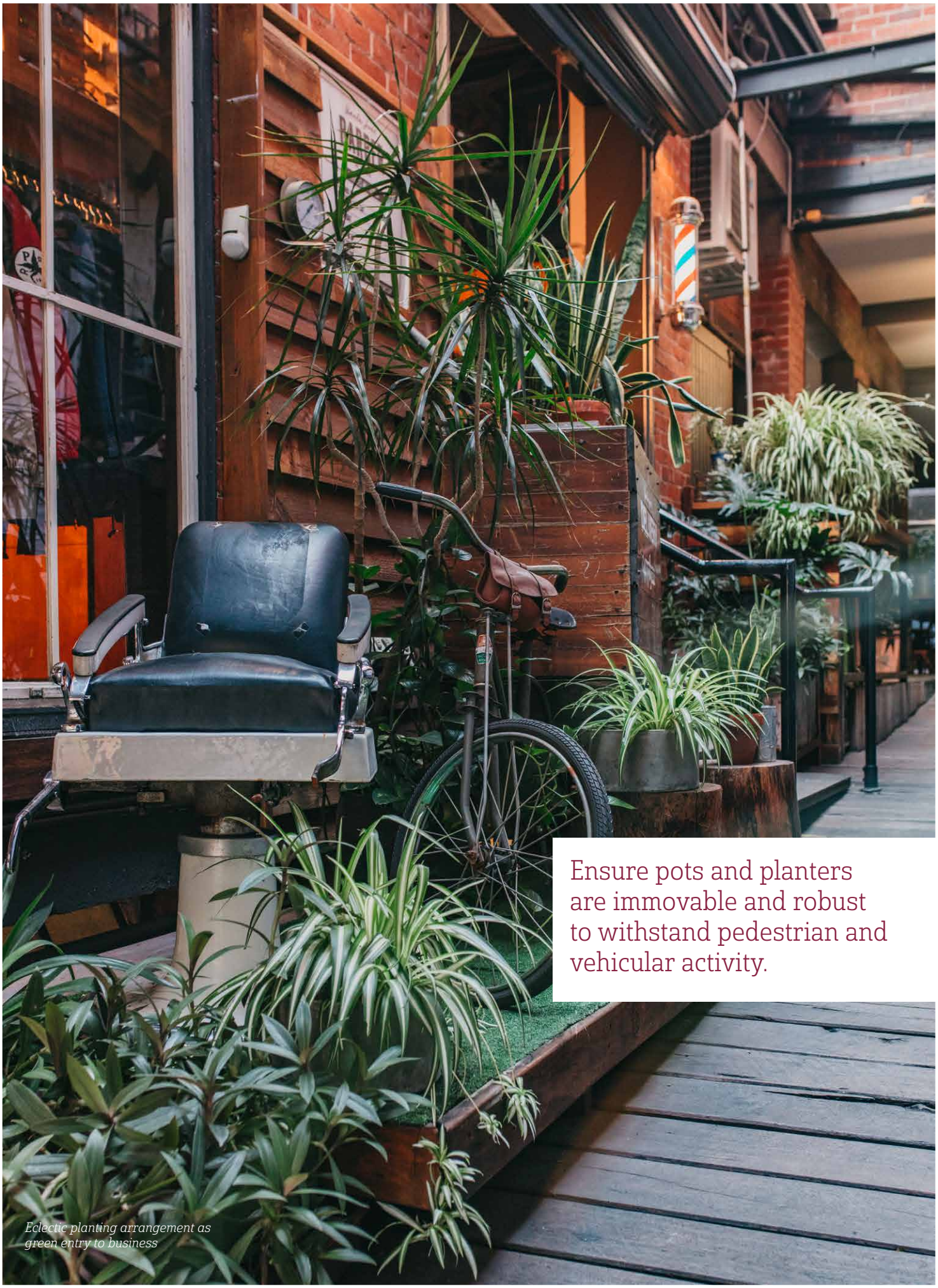
## Planting Opportunities

**Pots/Planters –** simple arrangements of three pots or even one large pot will have a big impact in a shop front to passers-by. Make sure you select similar pot styles and plants that create a cohesive theme which balances with the rest of the shop's interior.

*Plants incorporated into shop window display.*

**Window Boxes –** window boxes are a great way to add some colour and life to a plain window. Ensure the plantings are kept reasonably low to avoid reducing the natural light into the shop. Cascading vines work well in window boxes but make sure they are regularly trimmed. For safety reasons, window boxes should not project over property boundaries into the street or into adjacent properties.

*Potted plant at shop entry*



Ensure pots and planters are immovable and robust to withstand pedestrian and vehicular activity.

*Eclectic planting arrangement as green entry to business*

# Left Over Spaces

**The city is full of left over spaces which perform primary, utilitarian functions including vehicular access routes, bin storage areas or pedestrian alleyways. Yet the majority of these spaces are harsh and unattractive with amazing potential to be transformed through the incorporation of simple urban greenery.**

## Planning Requirements

**City of Perth Building Requirements**
Prior to creating your piece of micro greenery, it is essential to understand any requirements or restrictions. Speak with the City to enquire whether planning approvals are required, particularly in relation to structures, pergolas, garden sheds and water tanks.

**Dial before you Dig –** If you are planning on digging into the natural ground, you should undertake a 'Dial before you Dig' assessment prior to any excavation or construction work. This will assist in understanding the location of above and below ground services on your property and may impact your landscape proposals.

**Planning / Building Approval –** no formal approval is required for Micro Greening which does not incorporate building works.

*Planting on and underneath emergency stairs on rooftop*

## Safety Considerations

**Safe Placement of Pots –** It is critical to consider the pot or planter locations so that they don't impede pedestrian/ vehicle circulation routes and their sight lines. Pots and planters should be located within the property boundary.

**Hazards with Watering –** care should be taken when watering to avoid water spilling on surrounding surfaces and becoming a slip hazard. Temporary signs informing passers-by of this potential hazard could be an option. If you are hand watering with a hose, also be

If you are hand watering with a hose, also be conscious that the hose doesn't become a trip hazard.

Wind tunnels are common in city environments and create quite difficult windy conditions for plants to thrive.

conscious that the hose doesn't become a trip hazard.

**Designing Out Crime –** ensure the planting doesn't create a potential hiding spot where antisocial behaviour could occur. Hedges and bushy shrubs should be avoided.

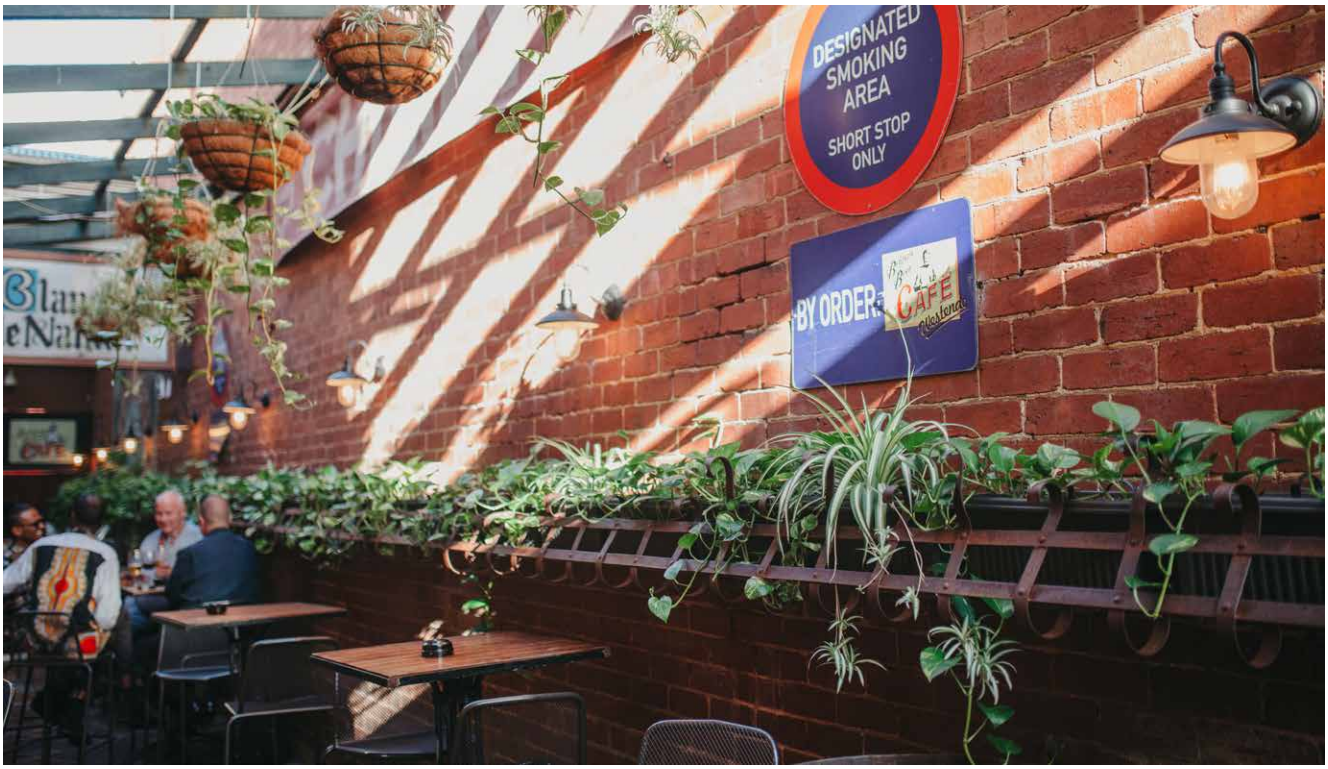
**Sightlines -** planting should be kept low in areas where vehicles operate, such as laneways so drivers have clear sightlines to pedestrians or other motorists.

## Key Considerations

**Solar Aspect –** often laneways and leftover spaces are situated in deep shade, so it is worth tracking the amount of direct sunlight it receives (if any) to select the most appropriate plants. Refer to Environmental Considerations for sunlight information and the Recommended Plant List for plant species options.

**Wind –** wind tunnels are common in city environments and create quite difficult windy conditions for plants to thrive. Refer to Environmental Considerations for ways to minimise the impact of wind.

**Watering –** refer to Sustainable Water Use. >>




*Planters fixed to wall in courtyard*

# Left Over Spaces

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>> **Vandalism/Theft/Robustness –** it is important to consider the potential for vandalism in these locations. Greening options should align with crime prevention principles and be robust enough to withstand regular pedestrian footfall and vehicular movements.

## Planting Opportunities

**Living Walls –** there are lots of opportunities in these left-over spaces to establish a climber on walls simply and effectively with a big impact! Refer to the Recommended Plant List for climber species options.

**Pots/Planters –** if you are considering pots, make sure they are either self-watering or suitably large, so they don't dry out quickly. Also ensure they are immovable and robust to withstand pedestrian and vehicular activity.

**Vegetated Pergolas –** These are a great way to create a lovely shaded area to sit under. Check with the City to ensure your proposal adheres to their planning requirements before building.

**Window Boxes –** A simple, cost effective way to transform a buildings' appearance. Make sure they are easy to access for watering and maintenance and are secured appropriately to the building to prevent them falling off. For safety reasons, window boxes should not project over property boundaries into the street or into adjacent properties.

*Planting in a narrow garden bed in laneway*

*Raised planting along building entry*


*Built in window box with planting*

The city is full of left over spaces which perform primary, utilitarian functions including vehicular access routes, bin storage areas or pedestrian alleyways. Yet the majority of these spaces are harsh and unattractive with amazing potential to be transformed through the incorporation of simple urban greenery.

*Potted plants inside privately owned parking area*

# Environmental Considerations

**Whether you are up on a balcony or down in a shaded laneway, it is important to understand the two main environmental aspects that affect all gardens to varying degrees – sun and wind.**

## Maximising Solar Efficiency

### Amount of Sunlight

Before selecting any plants, it is important to track the sun over your intended planting area to see how many hours of sun it receives. This should be done whether you have an outside space or indoor spot. Once you have this information, you can then select the best plants for the right light conditions. For outside plants light is categorised into the following:

**Full Sun –** 6 hours or more of direct sunlight per day

**Part Shade –** between 2-6 hours of direct sunlight per day

**Full Shade –** less than 2 hours of direct sunlight per day

For indoor plants, be aware that sunlight through a window is not as strong as the direct outside sunlight and the intensity of the light rapidly reduces the further the plant is from the window. For indoor plants, light is categorised into the following:

**High Light Conditions –** direct light or bright sunlight, close to a northern facing window

**Medium Light Conditions –** good sunlight but plants are located further from the windows

**Low Light Conditions –** little to no sunlight and only soft artificial light

### Useful Tips

Most urban inner-city environments will be shaded for most of the day, due to the surrounding tall buildings. Before selecting plants, it is important to watch the sun track over your intended garden area to see how many hours of sun it receives.

Most plant labels will indicate the whether the plant is suited to full shade, part shade or sunny conditions.

### Orientation

It is important to know what direction your urban space, window or balcony faces to gauge the intensity of light coming in. There are some useful tips for both indoor and outdoor conditions below:

**South Facing -** these tend to have the weakest light intensity and are often in relatively deep shade, however there are many shade-loving plants which will thrive in these locations. Be conscious to move plants in these locations if indoors over the winter period to a sunnier spot or even outside to ensure they get sufficient light.

**North Facing -** these urban spaces, if not interrupted by building shadows, receive the most sun and therefore are the best location for sun loving plants including vegetables, herbs and other edibles. If in direct outside sunlight, it is important to provide shade to these areas during the summer months as it will get very hot.

**East Facing -** These spots benefit from the morning sun when the rays are not quite as strong. East facing aspects are often good for plants that need moderate sunlight or morning sunlight only.

**West Facing -** These get the full afternoon and evening sun, which can be surprisingly strong in the summer. Although they don't get the same intensity of light as northern exposures, a west facing position is a good place for your sun-loving plants.

## Typical Signs of Insufficient Light or Too Much Light

Plants receiving insufficient light may have:

- Spindly growth
- New leaves that are smaller than existing ones
- Slowed growth
- Not flower or flower poorly
- Variegated leafy plants turn solid green
- New shoots leaning or growing towards the light

Plants receiving too much light may have:

- Leaf burn
- Faded or washed out leaves
- Leaf drop

## Thermal Performance

Plants are a great way to improve the thermal performance of a building. They can help reduce the interior's daytime temperature and in turn enhance comfort and lower energy costs. Cleverly positioned trees, vegetated pergolas or climbers can help to shield your building from the harsh summer sun. However, care should be taken to avoid adversely affecting your neighbour's thermal performance.

## Wind

The effect of wind on plants can be detrimental if not properly understood. Wind can dry out the soil surrounding plants especially in pots, dehydrate the foliage (appearance of burnt leaves) and even blow over light weight or top-heavy pots/planters.

Be aware of 'wind tunneling', a term used to describe wind which is channelled down streets and open voids by the surrounding tall buildings creating areas of intense wind.

Avoid light plastic pots or plant species that tend to grow "top heavy" especially if you are on an exposed balcony as they will topple over in a strong wind.

# Pots and Planters

**There is a huge variety of pots and planters available from expensive architectural pots to simple plastic tubs. The selection you make depends on your budget, the size of your urban environment and the style you wish to achieve.**

## Pot Selection

Ensure the pot/planters have adequate drainage holes for water to drain away. There are many decorative pots that don't have any drainage holes, so it is important with these to plant into a separate smaller pot, usually a simple black plastic pot that has drainage holes, then conceal it inside the decorative pot. This method enables you to easily interchange plants into different styled pots for different effects without having to completely re-pot them.

Select a pot/planter that has sufficient additional soil around the plants root ball, so they have space to grow. If the pot is too small, the plants will quickly become rootbound and the plant will fail to thrive.

Some materials like terracotta are very porous and draw water from the pot's soil resulting in the plants needing frequent watering. To overcome this issue, select glazed pots or seal the pot on the inside.

There are many self-watering pots/ planters available that have a concealed water reservoir in the base and use capillary action to draw water up through the soil to the plant. Watering them is simply undertaken via a special tube which is connected directly to the reservoir.

If you are renting the premises or require the movable pots/planters, ensure you select lightweight pots or install castors on the base to avoid too much heavy lifting .

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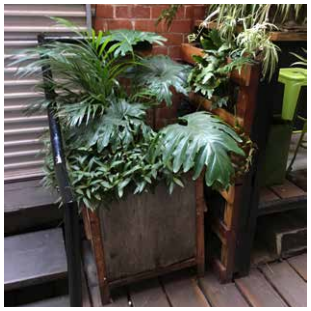
*02*

*03*

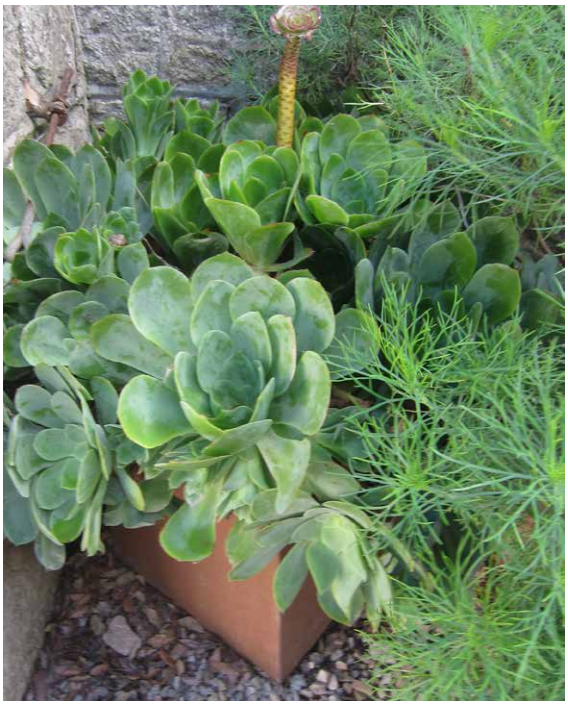
*04*



*05*

*01_Terracotta pot*
*02_Plastic self watering pot*
*03_Concrete pots*
*04_Plant pot trolley*
*05_Upcycled and eclectic items used for planting*

| | Benefits | Disadvantages |
|---|---|---|
| *In-ground planting* | • Use existing soil<br>• Won't dry out as much as pots/ planters<br>• Less cost – no soil or pot(s) to purchase<br>• Won't get root bound and require re-potting regularly | • New plants may conflict with underground services<br>• Future damage to surface treatments and structures due to root growth<br>• Typically require soil improvement at time of planting<br>• Potential to be trampled and damaged by pedestrians or vehicles. |
| *Pot / planter planting* | • Flexible arrangement which can be moved or reconfigured.<br>• Due to their elevated position within a pot, plants are easy to access and maintain<br>• Can easily change a style/mood of a space by changing a pot/planter.<br>• There are many different pot styles, colours and forms available. | • Need re-potting regularly (depending on pot size).<br>• Will require more watering than in-ground planting.<br>• Pot/planter will deteriorate over time and need replacing.<br>• Higher chance of theft/ vandalism than plants in the ground.<br>• More cost – soil and pot(s) to purchase. |



*Terracotta pot in corner of a courtyard*

*A group of plastic pots hung from shop ceiling*

# Soil Conditioning, Nutrition and Fertilising

**A good soil is the key building block of healthy plants. Healthy soil is a living, breathing organism vital for the health and well-being of plants in the garden, so take the time to get this right to ensure your plants thrive.**

## Selecting the Right Potting Mix

There are many potting mixes available on the market today, so it is important to select a quality potting mix that is:

- free draining but capable of absorbing and holding water in the soil for the plant to take up
- contains a high amount organic matter
- Australian Standard certified potting mix (AS 3743)
- free of any pathogens, like Phytophthora and Pythium

## Recommended Soil Conditioner Types

Soil conditioners are used to improve existing soils for in-ground planting applications. Soil conditioners are not required if you are importing potting mixes for pots and planters.

Perth soils are predominately sandy soils with low nutrient content so will benefit from soil conditioners to help increase their microbial activity and fertility as well as the soil's moisture and nutrient retention capacity. There is a variety of soil conditioners available including:

- Clay (bentonite) increases the water and nutrient holding capacity of sandy soils
- Soil Wetting Agents act like a detergent to break down the waxy coating on hydrophobic soil particles to allow water to penetrate the soil profile
- Mineral Soil Amendments (spongolite, zeolite) are an alternative to clay and are naturally occurring materials that have the ability to hold nutrients and prevent leaching
- Water Storing Granules are manufactured polymers which swell up as they absorb large quantities of water


01


02


03


04


05


06

*01_Soil wetting crystals*
*02_Soil wetting agent*
*03_Organic soil conditioner*
*04_Bark mulch*
*05_Straw mulch*
*06_Gravel or pebble mulch*

## Recommended Soil Conditioner Application Rates

Clays and mineral soil amendments should be applied as per the manufacturer's application rate which is typically a single application mixed thoroughly into the top 25cm of existing soil.

Soil wetting agents should be evenly spread on the soil's surface.

## Mulch

Mulch dramatically improves moisture retention by reducing evaporation from the surface of the soil. It also feeds plants essential nutrients as it breaks down, helps to suppress weeds and insulates plant roots from extreme temperature fluctuations. It is important to maintain an even 5-10cm deep layer of organic, coarse mulch across all your garden beds.

## Recommended Fertiliser Types

If fertiliser is required, consider a controlled release or organic fertiliser.

Controlled release fertilisers, also known as slow release fertilisers, are coated compressed pellets and release nutrients over a longer period of time because they are not water soluble.

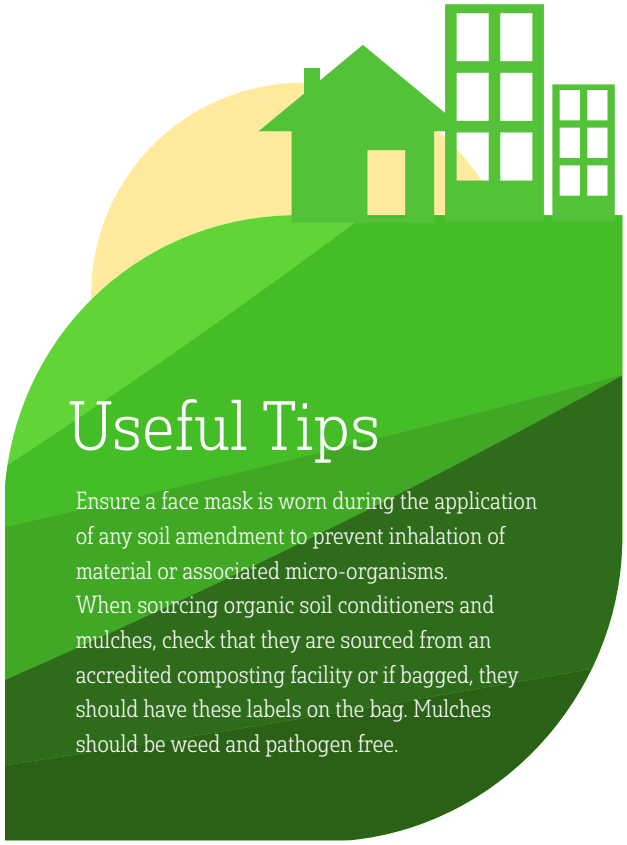
Organic fertilisers are derived from plant and animal parts/residue. They:

- Improve soil structure and its water retention ability
- Introduce micro-organisms into the soil which helps with nutrient uptake in the plant
- Some organic fertilisers types include; blood and bone, bagged manures, and rock mineral-based fertilisers.

## Recommended Fertiliser Application Methods

There are three main application methods for distributing including:

- Deep soil application or 'digging' is the best method of mixing organic fertilisers into the soil prior to planting. This is only required if you have planted directly into the ground.
- Hand broadcasting if applied correctly, can provide an even distribution of the fertiliser to the required area.
- Liquid application is an effective method of applying fertiliser as plants can uptake nutrients quickly. It is important to ensure you don't over apply, so refer to the product packaging for applciation rates. Frequent light applications are better than heavy, infrequent applications.
- Apply fertiliser at the manufacturer's recommended rate. If the plant looks healthy and happy, you probably do not need to fertilise.



## Useful Tips

Ensure a face mask is worn during the application of any soil amendment to prevent inhalation of material or associated micro-organisms.
When sourcing organic soil conditioners and mulches, check that they are sourced from an accredited composting facility or if bagged, they should have these labels on the bag. Mulches should be weed and pathogen free.

# Smart Water Use

**As Perth is in a drying climate it is paramount that all the aspects of your planting scheme, including plant species selection, methods of watering and selection of pot type are carefully considered. We want to be efficient in our water use, so our plants and gardens thrive and our water usage is minimal.**

## Typical Signs of Under and Over Watering

It is important to make sure your plants are getting enough water. And while it is common to forget to water your plants, you can also overwater your plants too, so the information below will give you some helpful signs to watch for to avoid over or under watering your plants.

Over watering signs may include:

- Wet and wilted leaves
- Evidence of root rot
- Leaves turn brown
- Leaf drop
- Distinctive moldy, wet smell
- Saturated soil

Under watering signs may include:

- Soil is dry
- Wilted leaves
- Slowed growth
- Yellowing of the leaves

## Useful Tips

Typically, potted plants dry out quickly so consider self-watering pots that have their own water reservoir. This is particularly important when you intend to go away for a couple of days or in hot weather. For standard pots, make sure excess water runoff is collected in pot saucers.

Plants require more water in summer than in winter and this includes indoor plants.

Be aware that terracotta pots (unless they have been sealed) are porous and dry out quicker than plastic or concrete pots.

It is best to water in the morning to give plants a good start to the day.

If the top couple of centimetres of soil is dry then it is time to water your plants.

## Water Saving Technology

These can be inexpensive devices that are easily fitted to most automatic irrigation systems and can save water.

- Evapotranspiration sensors and weather stations will adjust the irrigation cycle based on the current climatic conditions and the plant's estimated water demand.
- Rain sensors disconnect the automatic irrigation system controller temporarily when rainfall has occurred.
- Soil moisture sensors modify the irrigation run time based on the amount of moisture in the soil.

# Hand Watering vs Irrigation System

| | *Hand watering* | *Automatic irrigation system* |
|---|---|---|
| *What is it?* | • Manually watering of plants with a hose or watering can | • Programmable electronic timers which switch irrigation stations on and off at specified times. |
| *Benefits* | • Simple, cost effective set up<br>• Good for small spaces with a limited planting area | • Are convenient and save time<br>• Can be easily adjusted (or automatically self-adjusted) to suit the climatic conditions/ seasons<br>• Reduce the likelihood of over or under watering when managed properly. |
| *Disadvantages* | • Takes time, depending on the amount of plants<br>• Difficult to provide an even watering so under and over watering may occur<br>• Be aware if using a hose, especially in a public area, as it can become a trip hazard | • More expensive to set up than simply hand watering<br>• Need access to a water source and a concealed location (yet accessible) for the irrigation controller and valves etc.<br>• Most irrigation systems require an electrical connection, however, there are battery operated irrigation controllers also available<br>• If you have lots of individual pots, there will be irrigation pipes visible. |
| *Considerations* | Is it a manageable planting area that is easily accessible and will not take too much time to water if watering by hand?<br><br>Will you be able to implement a regular watering routine (i.e. with staff members) if you are hand watering? | |

# Plant Selection

Based on the information to date you should now understand the type of area you are planting as well as the specific environmental considerations. Now comes the best part, choosing the plants.

## Considerations for Selecting the Right Plant

When selecting plants for your urban space, try to choose plants that bring the space to life and complement the surrounding environment whether it's a shop front, apartment balcony, interior space or laneway.

The following attribute for each plant should be taken into consideration:

- Mature size - any selection should allow the plant to reach its full mature size
- Growth rate - is the plant a fast grower, which will require more maintenance or a slow grower, which will take longer to reach the mature size
- Form (i.e. shrub, climber, tree etc and whether the plant works best as a striking individual statement or as part of a mass planting)
- Leaf and/or flower colour - the visual interest and seasonal colour which will make your area interesting
- Evergreen or deciduous - seasonal colour but will drop more leaves and require additional maintenance, or evergreen providing year round foliage or shade
- Fragrance - some plants have flowers which produce great scents and smells
- Preferred plant location - plant will thrive in certain positions, but not in others
- Maintenance requirements - certain species will be more work than others to keep looking good year round

### Useful Tips

It is worth keeping your planting palette relatively simple to avoid a cluttered appearance.

Layer your display with taller shrubs/trees to the rear and smaller shrubs in front.

Don't be afraid to ask the nursery any plant details, as they can be a wealth of knowledge.

# Recommended Plant List

## Small Shrubs
(less than 1.5m tall)

Waterwise · Full sun · Part sun · Full shade · Insect attracting · Bird attracting · Balconies · Interior spaces · Shop fronts · Leftover spaces

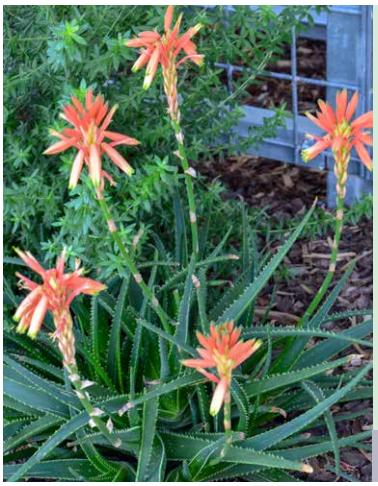
**Latin Name:** Agave attenuata

**Common Name:** Agave

**Height:** 1.0m

**Width:** 1.0m

This incredibly hardy shrub makes a great feature plant if planted in mass or one in a pot. It is drought tolerant and low maintenance.



**Latin Name:** Aloe sp.

**Common Name:** Aloe

**Height:** 0.3m

**Width:** 0.3m

There are many different Aloe's available with various flower colours from reds, pinks through to orange and yellows enabling them to suit any garden style/ theme. They are extremely resilient and low maintenance.

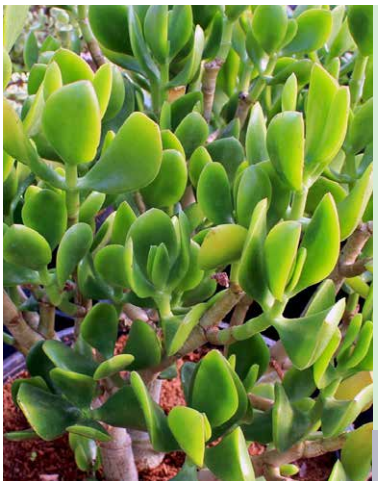
**Latin Name:** Aspidistra elatior

**Common Name:** Cast Iron Plant

**Height:** 0.5m

**Width:** 0.5m

Very hardy, drought tolerant plant that can thrive in the toughest of conditions. Their wide leathery leaves make a great statement, when planted in mass.



**Latin Name:** Crassula ovata

**Common Name:** Jade Plant

**Height:** 1.0m

**Width:** 0.5m

This is a succulent plant with thick, lush, green round leaves. They work well in a modern minimalist garden in a feature pot. They are low maintenance and drought tolerant.

**Latin Name:** Liriope muscari

**Common Name:** Lilyturf

**Mature Size:** 0.3m x 0.3m

This robust grass like herbaceous perennial with striking purple flower spikes. They work well if planted in mass and can thrive in various light conditions.

**Latin Name:** Monstera deliciosa

**Common Name:** Aloe

**Mature Size:** 0.3m x 0.3m

This lush, long lived plant with unique, large, slitted, heart shaped leaves makes a great versatile plant. It can easily cascade down furniture indoors or wrap itself up a fence or tree.

**Latin Name:** Patersonia occidentalis

**Common Name:** Native Iris

**Mature Size:** 1.0m x 1.0m

This ornamental clumping perennial has striking purple and white flowers similar to the Iris. This plant is endemic to Western Australia, and is drought tolerant.

# Recommended Plant List

## Small Shrubs
(less than 1.5m tall)

Waterwise · Full sun · Part sun · Full shade · Insect attracting · Bird attracting · Balconies · Interior spaces · Shop fronts · Leftover spaces

**Latin Name:** Philodendron sp. Xanadu

**Common Name:** Xanadu

**Mature Size:** 1.0m x 1.0m

This lush, compact plant has attractive lobed leaves. It requires medium indoor light conditions and looks great when planted in mass.

**Latin Name:** Rosmarinus officinalis

**Common Name:** Rosemary

**Mature Size:** 1.0m x 1.0m

Rosemary is a hardy perennial which can be grown as a low hedge or a cascading groundcover, if a prostrate variety is selected. Their leaves are commonly used in cooking.

**Latin Name:** Sansevieria trifasciata

**Common Name:** Mother in Law Tongue

**Mature Size:** 1.0m x 1.0m

Striking, architectural plant with thick, long leather leaves makes a great statement to any environment. They are very robust plants that can thrive in difficult conditions and help remove toxins from the air.

**Latin Name:** Senecio serpens

**Common Name:** Blue Chalk Sticks

**Mature Size:** 0.3m x 0.2m

This unusual succulent with its fleshy grey/blue finger leaves makes a great low maintenance spreading shrub. It is drought tolerant and works well if planted in mass along with other succulents.

**Latin Name:** Spathiphyllum sp.

**Common Name:** Peace Lily

**Mature Size:** 1.0m x 1.0m

These graceful plants are a popular indoor plant. They have long lasting white flowers and wide, lush green leaves. They are toxic to pets.

**Latin Name:** Zamioculcas zamiifolia

**Common Name:** Zanzibar Gem

**Mature Size:** 0.5m x 0.5m

This distinctive shrub resembling a small palm is a robust easy-care plant as it is tolerant to low light conditions and little water. It looks great as an individual potted feature or on mass in a larger planter.

**Latin Name:** Senecio rowleyanus

**Common Name:** String of Pearls

**Mature Size:** 1.0m

A creeping, perennial succulent vine that has grey to green, grape-like leaves along weak, slender, pendant stems. Sprawling over the edges of containers or hanging baskets, the string of beads plant resembles a beaded necklace.

# Recommended Plant List

## Small Shrubs
(less than 1.5m tall)

Waterwise · Full sun · Part sun · Full shade · Insect attracting · Bird attracting · Balconies · Interior spaces · Shop fronts · Leftover spaces

**Latin Name:** Echeveria sp

**Common Name:** Native Iris

**Mature Size:** 1.0m x 1.0m

The Echeveria succulent plant is just such a specimen, thriving on brief periods of neglect, low water and nutrients. The many varieties of Echeveria plants provide wonderful tones and texture for mixed beds and pots.

**Latin Name:** Zamia furfuracea

**Common Name:** Cardboard Palm

**Mature Size:** 1.2m x 1.5m

It's a tough evergreen plant that gives a great tropical feel with its spike-free thick leaves and fleshy trunk. It doesn't need flowers to look appealing.

**Latin Name:** Pilea peperomioides

**Common Name:** Chinese Money Plant

**Mature Size:** 0.3m x 0.3m

Prefers a well-draining potting soil, and a pot with drainage holes is necessary. If the leaves start to look slightly droopy, that's a sign that the plant needs water. Rotate it at least once a week to prevent it from getting lopsided.

**Latin Name:** Chlorophytum comosum

**Common Name:** Spider Plant

**Mature Size:** 0.3m x 0.2m

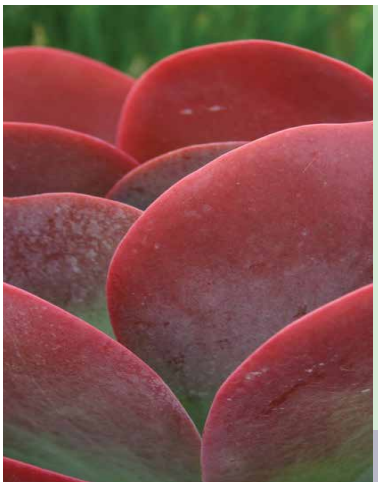
The Spider Plant is a popular, familiar plant because it is a practically foolproof choice for novice gardeners. These tough little houseplants are not just easy to take care of: they are actually hard to kill!

**Latin Name:** Sedum rubrotinctum

**Common Name:** Jelly Bean Plant

**Mature Size:** 0.1m x 0.5m

An evergreen succulent perennial, the leaves are jelly bean shaped, green with red-brown tips which turn to bronze in summer. Sedums need very little attention or care and will do just as well in less hospitable areas.



**Latin Name:** Kalanchoe tetraphylla

**Common Name:** Flapjack

**Mature Size:** 0.6m x 0.3

A succulent that forms a basal rosette of large, rounded, fleshy, stalkless leaves, which are grayish-green with red margins. The plant flowers from autumn to spring.

**Latin Name:** Tradescantia spathacea

**Common Name:** Moses in the Cradle

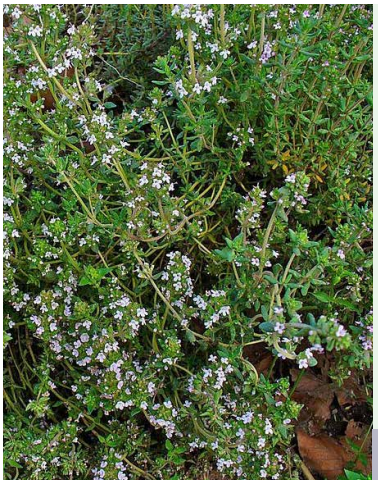
**Mature Size:** 0.4m x 1.0m

A clumping plant with bold leaves in shades of pink, purple and green. Fast growing plant with a compact growth habit and spreading nature. Can be divided and replanted.

# Recommended Plant List

## Small Shrubs
(less than 1.5m tall)

Waterwise · Full sun · Part sun · Full shade · Insect attracting · Bird attracting · Balconies · Interior spaces · Shop fronts · Leftover spaces



**Latin Name:** Thymus vulgaris

**Common Name:** Thyme

**Mature Size:** 0.3m x 1.0m

A frost-hardy shrub that produces small, green leaves that release a strong aroma when bruised.

White and mauve flowers are produced in summer. Its foliage is used for cooking, infusions (tea) and for medicinal purposes.

**Latin Name:** Petroselinum crispum

**Common Name:** Parsley

**Mature Size:** 0.6m x 0.6m

Like other Parsleys it is biennial so you'll need to re-plant for the third year. Regular harvesting of small quantities by hand should be enough to keep it in good shape, otherwise keep watered in hot weather.

**Latin Name:** Salvia officinalis

**Common Name:** Sage

**Mature Size:** 0.8m x 1.0m

This is a short lived perennial that looks lovely in pots. The foliage has a grey/green appearance and the surfaces of the leaves are softly wooly. The leaves are also quite aromatic and used in cooking.

**Latin Name:** Carpobrotus virescens

**Common Name:** Coastal Pigface

**Mature Size:** 0.2m x 3.0m

A colourful and hardy creeping ground cover with very thick, succulent leaves which can grow to 10cm in length.

The succulent leaves of the plant can also be eaten raw or cooked, or use the fleshy pulp as an ointment similar to Aloe Vera.

**Latin Name:** Cymbopogon ambiguus

**Common Name:** Native Lemongrass

**Mature Size:** 1.0m x 1.0m

An aromatic grass traditionally used by the Aboriginal people to treat flu symptoms, chest infections and skin sores.

The stalks and leaves may be used in tea or as a fragrant flavouring ingredient in soups, curries, sauces and marinades.

**Latin Name:** Mentha viridis

**Common Name:** Mint

**Mature Size:** 0.6m x 0.5m

Mint is a hardy, fast growing, perennial herb with serrated, crinkled green foliage that is pungently fragrant and the most used mint in cooking. It is highly invasive, so grow in a container only.

**Latin Name:** Tetragonia tetragonioides

**Common Name:** Warrigal Greens

**Mature Size:** 0.2m x 2.0m

Australia's version to English Spinach, best grown in moist, rich but well-draining loam. May die back during winter but re grow once the warm weather returns. In cold areas treat as an annual.

Should be blanched or cooked before eating and can be enjoyed in soups, stews or stir fries.

# Recommended Plant List

## Large Shrubs and Trees
(greater than 1.5m tall)

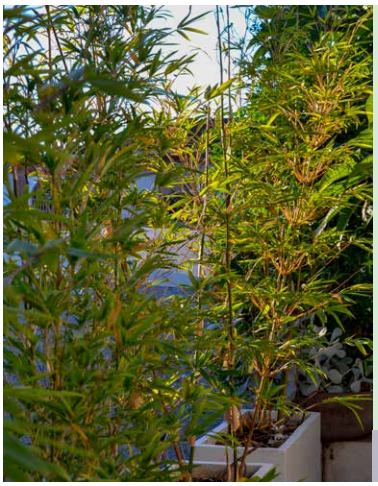
Waterwise · Full sun · Part sun · Full shade · Insect attracting · Bird attracting · Balconies · Interior spaces · Shop fronts · Leftover spaces

**Latin Name:** Anigozanthus flavidus

**Common Name:** Kangaroo Paw

**Mature Size:** 2.0m x 1.0m

Iconic strappy leaved plants that make great mass planting displays. They are available in a range of colours and sizes with 'Yellow Gem', 'Big Red' and 'Tango' known to be some of the hardiest varieties.



**Latin Name:** Bambusa gracilis

**Common Name:** Bamboo

**Mature Size:** 8.0m x 1.0m

This non-invasive bamboo is currently very popular as it is fast growing, drought tolerant, low maintenance and great for screening.

**Latin Name:** Citrus japonica

**Common Name:** Cumquat

**Mature Size:** 3.0m x 1.5m

Cumquats are an attractive small tree suitable for a pot on a balcony. They produce small fruit which can be made into jams and chutneys. They need regular feeding and watering and thrive in wind protected environments.

**Latin Name:** Citrus x meyeri

**Common Name:** Dwarf Meyer Lemon

**Mature Size:** 2.0m x 1.0m

Dwarf citrus varieties are suited to urban environments where space is limited. They can be pruned into a hedge or make a feature in a pot. Like all citrus's, Meyer Lemons need regular feeding and watering. They thrive in wind protected environments.

**Latin Name:** Cycas revoluta

**Common Name:** Sago Palm

**Mature Size:** 7.0m x 1.0m

These ancient plants look great as a standalone architectural feature in a pot as part of a minimalist garden arrangement. They are low maintenance and thrive in a sunny spot. Slow growing.

**Latin Name:** Dracena marginata

**Common Name:** Dracena

**Mature Size:** 1.8m x 0.5m

Very hardy plant suited to low light indoor conditions. Very striking, architectural form with narrow, glossy leaves. Toxic to pets. Slow growing.

**Latin Name:** Ficus benjamina

**Common Name:** Weeping Fig

**Mature Size:** 2.0m x 1.0m

An attractive, weeping upright shrub with glossy green leaves. Requires high light levels to thrive and regular watering when planted indoors. They are vulnerable to pests including aphids, mealy bugs and scale.

# Recommended Plant List

## Large Shrubs and Trees
(greater than 1.5m tall)

Waterwise · Full sun · Part sun · Full shade · Insect attracting · Bird attracting · Balconies · Interior spaces · Shop fronts · Leftover spaces

**Latin Name:** Ficus lyrata

**Common Name:** Fiddle Leaf Fig

**Mature Size:** 2.0m x 1.0m

This increasingly popular architectural plant with bold, large leaves. It is very hardy and can thrive in low light conditions when planted indoors. Toxic to pets.

**Latin Name:** Murraya panniculata

**Common Name:** Orange Blossom

**Mature Size:** 3.0m x 1.5m

This glossy leaved evergreen makes an excellent hedge to boost privacy. It has white fragrant flowers and a biannual prune is required to maintain hedge form.

**Latin Name:** Olea europaea

**Common Name:** Olive

**Mature Size:** 3.0m x 1.5m

Well suited to our climate, there are many different olive varieties available as either fruiting or non-fruiting. Drought tolerant and requiring little maintenance, there is also dwarf varieties which work well in small spaces.

**Latin Name:** Rhaphiolepsis indica

**Common Name:** Indian Hawthorn

**Mature Size:** 3.0m x 1.5m

This robust shrub makes a great dense hedge with white/pink flowers and blue/black inedible berries. A slow growing plant that is also drought tolerant.

**Latin Name:** Rhapis excelsa

**Common Name:** Lady Palm

**Mature Size:** 3.0m x 1.5m

A striking multi-stemmed palm with fan shaped leaves. Thrives in medium light conditions when planted indoors. A versatile, long lived plant that is easy to maintain.

**Latin Name:** Viburnum tinus

**Common Name:** Laurestine

**Mature Size:** 4.0m x 2.0m

This tough, ornamental, evergreen shrub is excellent for hedging and screening. It produces white/pink flowers and has dark green leathery leaves.

**Latin Name:** Howea forsteriana

**Common Name:** Kentia Palm

**Mature Size:** 6.0m x 2.0m

This palm is also a favourite for indoor décor. It is pretty tolerant of neglect and can handle low sunlight exposure, air conditioning and central heating. Make sure that your soil's drainage is effective to avoid root rot.

# Recommended Plant List

## Climbers & Feature Plants

Waterwise · Full sun · Part sun · Full shade · Insect attracting · Bird attracting · Balconies · Interior spaces · Shop fronts · Leftover spaces

**Latin Name:** Epipremnum aureum

**Common Name:** Devil's Ivy

**Mature Size:** Trails up to 20m

This versatile, popular indoor climber has attractive marbled green, white and yellow foliage. It is easy to grow and makes a great vertical statement cascading down furniture or balconies.

**Latin Name:** Ficus pumila

**Common Name:** Climbing Fig

**Mature Size:** Climbs up to 10m

This vigorous, evergreen climbing plant is well suited to shaded conditions. It proves popular for its ability to cling to brickwork and/or fences and cover parts in an attractive green display.

**Latin Name:** Hardenbergia violacea

**Common Name:** Native Wisteria

**Mature Size:** Climbs up to 5m

Quick growing climber has glossy dark green leaves and white or purple flowers in spring. They easily grow up fences and twist around poles. There are also new shrub varieties available and make a great mass planting display.

**Latin Name:** Hibbertia scandens

**Common Name:** Snake Vine

**Mature Size:**
Climbs up to 5m

Fairly vigorous climber is easy to grow. They have shiny green leaves and single buttercup like yellow flowers. They can grow along a fence or make a great groundcover.

**Latin Name:** Trachelospermum jasminoides

**Common Name:** Chinese Star Jasmine

**Mature Size:**
Climbs up to 5m

This very popular jasmine has an amazing fragrance when it flowers. It has attractive dark green glossy foliage. Great for screening bare walls or as a dense groundcover.

**Latin Name:** Bougainvillea sp.

**Common Name:** Bougainvillea

**Mature Size:**
Climbs up to 5m

There are numerous cultivars in a wide range of colours. Prefers a free draining soil and will thrive in full sun or part shade. The sap is mildly toxic if ingested in enough quantities can lead to illness.

**Latin Name:** Platycerium superbum

**Common Name:** Staghorn

**Mature Size:**
Up to 1m wide

In nature, these ferns often grow high up in trees, but they can also be commonly grown on a cool moist south-facing wall with a timber backing.

They do not like dense shade and should be protected from drying winds.

# Pests and Diseases

Pests and diseases are a reality of every urban garden or indoor plant display, however good management can help to control outbreaks and simplify the treatment process. The following table provides solutions to the control of common pest problems.

**Identify:**

Small insect approx 1-2mm long.

**Control:** Control weeds. Encourage predator insects such as ladybirds, hoverflies and wasps to attack aphids by not using pesticides. Ants discourage these predators insects, therefore ant control must be considered part of aphid control.

*Aphids*

**Identify:**

Small insects often found in fruit tree foliage. Larvae infested fruit.

**Control:** Remove infected fruit from the ground and tree and dispose. Traps can be made from plastic drink bottles with a lure in side. Allow three traps per tree. An organic bait containing spinosad is also available.

*Fruit fly*

**Identify:**

Approx 1-5mm long, typically found on plant branches.

**Control:** Rub scales carefully off stems by hand. Spray with organic horticultural oil as directed, preferably when the eggs are hatching.

*Scale*

**Identify:**

Snails and slugs leave a trail of slime. Slaters are often found under leaf matter or under items such as pots.

**Control:** Remove hiding places. Bait with a pellet made from naturally occurring Iron EDTA complex and not harmful to the soil, insects or other animals.

Do not put pellets in heaps.

## *Slugs, snails and slaters*

**Identify:**

Small spider like insect, adult mites approx. 0.5mm long.

**Control:** Destroy leaves or plants promptly, and control weeds. Natural enemies include tiny ladybirds, lacewing larvae, and predaceous thrips. They are killed by some chemicals used in the control of diseases or pests such as caterpillars or aphids.

## *Two spotted spider mite*

**Identify:**

White powder on foliage.

**Control:** The white powder is associated with poor air circulation and weakens a plant. Avoid crowding plants to ensure air flows easily between. It is best to remove the affected leaves/ stem before it spreads.

Also make sure you water the soil not the plant.

## *Powdery mildew*

**Identify:**

Spots develop on foliage.

**Control:**

The majority of leaf spot is caused by fungi, but some are caused by bacteria. Avoid overhead watering and remove affected leaves. If the infection is severe, a fungicide spray may be a last resort.

## *Leaf spot*

# Further Information

Your local retail nursery will have qualified horticulturists that can provide advice on specific plant species. They are a wealth of information and using the tips and advice gleamed from this planting guide you will be able to discuss your particular needs.

There are many books available from your local library or bookshop which will give specific advice on planting and plant care for the Perth environment.

There are also many on-line resources which may assist with plant arrangement and design ideas.

City of Perth