Adelaide Garden Guide for New Homes

How to implement the Planning and Design Code to maximise the benefits of trees and soft landscaping for infill development

GREEN ADELAIDE

STATE PLANNING COMMISSION

Trees and soft landscaping have the power to enhance our homes and lifestyles while combating local and global challenges.

Our gardens can make a difference.

Acknowledgement

We acknowledge that the Adelaide Plains is the traditional Country of the Kaurna people. We recognise and respect their cultural heritage, beliefs and relationship with the land. We acknowledge that they are of continuing importance to the Kaurna people living today.

This guide is an initiative of Green Adelaide in partnership with the State Planning Commission, PlanSA and the Office for Design and Architecture SA.

Text, plans and landscape designs by Clover Green Space.

plan.sa.gov.au/en/garden-guide

Contents

Introduction

What is the challenge?

Residential infill development is a significant provider of new housing in Greater Adelaide, with about 2,500 extra dwellings[1] being created each year. This type of housing helps to create walkable neighbourhoods, protect valuable farming and environmental land, and meet consumer demand for living close to jobs, shops, and services.

However, there is evidence that infill housing has contributed to a significant reduction in tree canopy and green cover in many neighbourhoods. This is because this type of development generally increases site coverage and driveway crossovers and reduces space for gardens and tree planting.

Loss of tree canopy and urban green cover reduces habitat for native fauna and creates urban heat islands. An increase in roofs and other hard surfaces also puts neighbourhoods at greater risk of flooding as rain and stormwater are less easily absorbed. This in turn decreases the soil moisture recharge, reducing water for trees and shrubs at a time when, with rising temperatures, they need the moisture even more.

This is why the Government of South Australia has set a target to **increase urban green cover by 20% across metropolitan Adelaide by 2045**[2].

This target recognises the many benefits of green cover to urban cooling, the local character, biodiversity and liveability of our suburbs, and our physical and mental health.

How does the Planning and Design Code help?

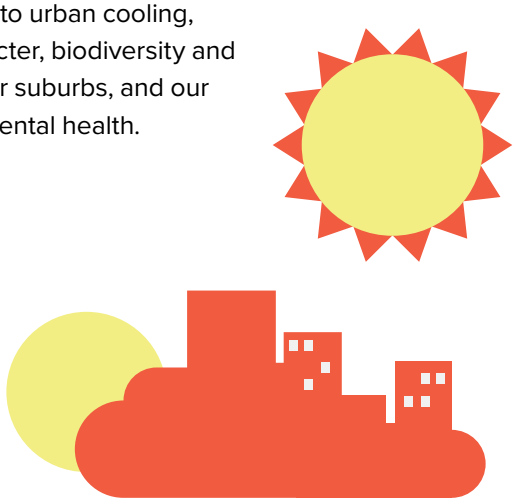
To assist in achieving the urban green cover target, the Planning and Design Code includes policies to encourage the retention of existing trees and outlines the minimum tree planting and soft landscaping requirements in most residential developments.

These requirements apply to individuals who are rebuilding their home or subdividing their land for more housing, through to developers of multi-storey apartments.

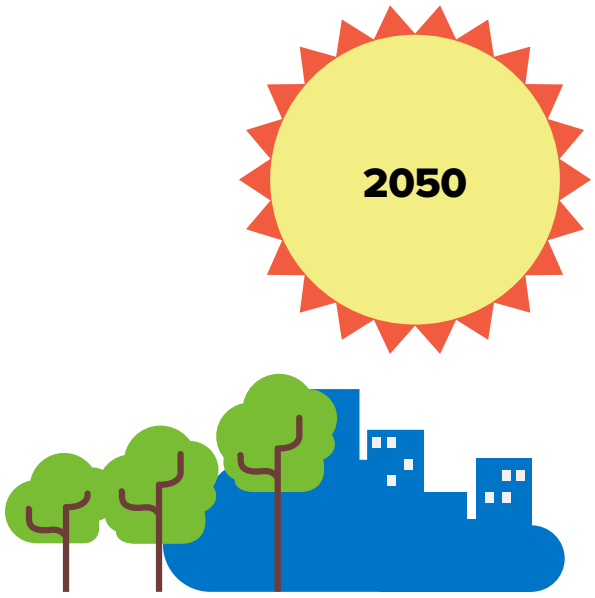
Why use this guide?

The guide aims to support developers, applicants, planning professionals and new homeowners to achieve better greening outcomes at the different planning and design stages.

It has been developed to help you adopt the tree planting and soft landscaping policies within the Code.



By 2050 the number of days per year above 35°C is projected to increase by more than 40%[3].



Despite our hot, dry climate, we can mitigate the urban heat island effect by growning our urban tree canopy and retaining water in urban landscapes.

How trees and gardens can benefit you, your property and the environment

- Reduced air pollution
- More carbon dioxide stored
- More oxygen produced
- Increased biodiversity
- Cleaner stormwater
- Increased water filtration
- Flood prevention
- Lower energy costs
- Increased property value
- Enhanced kerb appeal
- Improved privacy
- Neighbourhood character
- More community connection
- Cooler houses, streets and private outdoor spaces
- Better thermal comfort

Retaining and planting trees and soft landscaping can provide financial savings and gains.

A number of studies have revealed significant boosts to house value in leafy neighbourhoods.

A Brisbane-based study revealed a 5% increase in the median house price in streets with 50% canopy cover[4].

Perth-based research showed that a broad-leaved tree in front of a home can add more than $23,000[5].

Financial benefits can also be seen through the reduction of energy costs. Shading from trees can greatly improve the thermal comfort of our homes. It helps reduce energy used and greenhouse gases produced by air conditioning on hot days[6]. Shading the western facade of a dwelling with trees can also drop total energy costs between 5% and 10%[7].

Trees and soft landscaping can improve our health and wellbeing.

Residents of tree-lined neighbourhoods feel healthier and have fewer cardio-metabolic conditions[8]. Trees can also support physiological health through providing sensory relief and generating a sense of calm.

People who live in neighbourhoods with a tree canopy coverage of 30% or more have been shown to experience a third less stress[4].

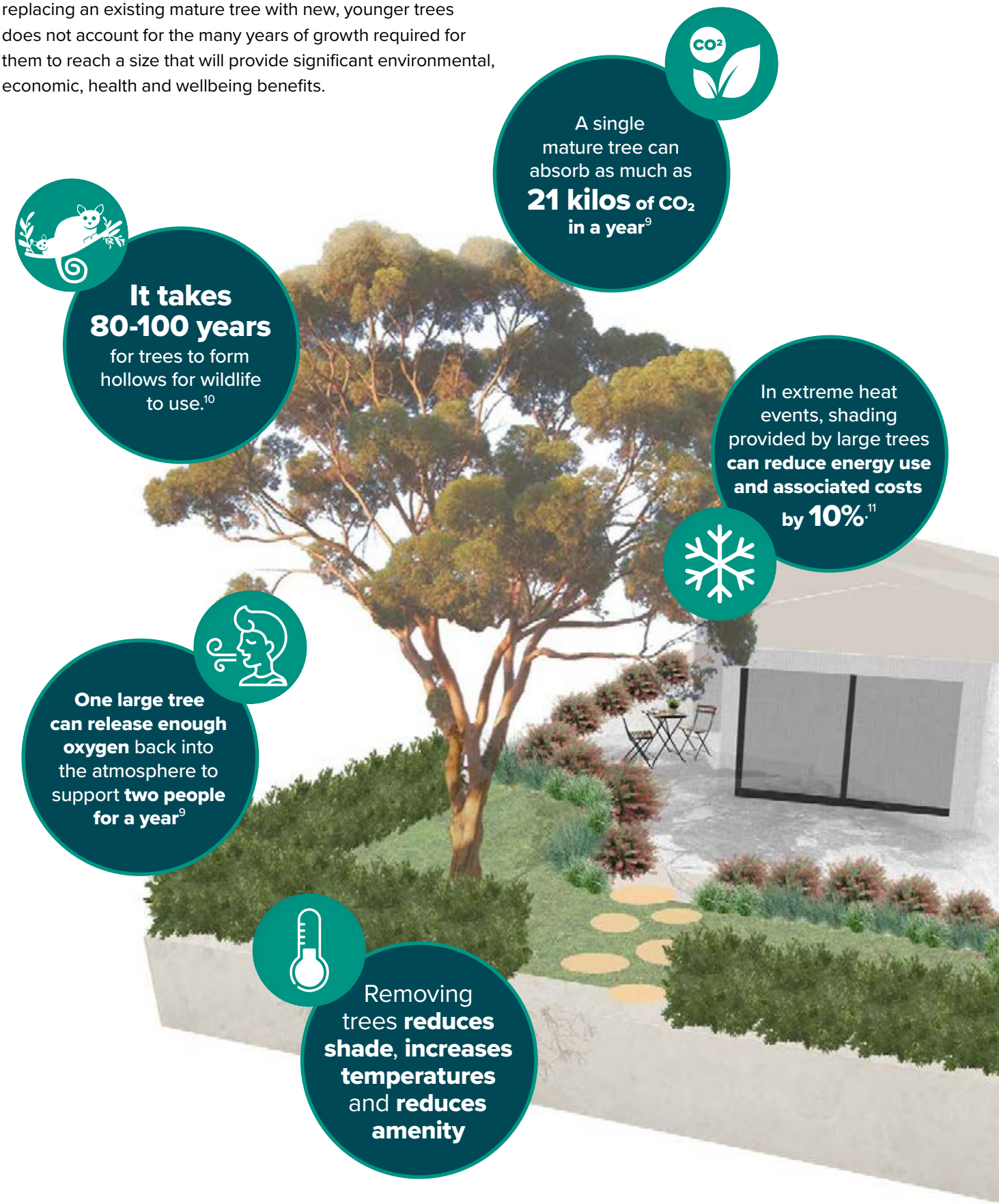
Retaining and planting trees and soft landscaping can improve the liveability of our homes and neighbourhoods.

Trees not only provide shade through shielding and absorbing light, they also actively cool the air through evapotranspiration.

A study based in Adelaide's western suburbs has shown that trees and soft landscaping in gardens can have significant cooling benefits and reduce surface temperature in the garden by 5 to 6 degrees[6].

Did you know?

Planting new trees and landscaping is essential. However, replacing an existing mature tree with new, younger trees does not account for the many years of growth required for them to reach a size that will provide significant environmental, economic, health and wellbeing benefits.



How to use this guide

This guide is separated into four sections, covering everything you need to know to meet the tree planting and soft landscaping policy requirements of the Planning and Design Code.

It steps you all the way through from planning your garden to maintenance of the vegetation you choose - and everything in between.

Find out below what each section covers.

1. Plan

Start planning your garden while you plan your house to maximise the short-term and long-term benefits.

Key considerations:

- Site orientation
- Retention of mature trees
- Placement of new trees
- Adequate soil provision
- Soft landscaping

This section includes:

- A planning checklist
- 3D visualisations of how to achieve greening success
- Case studies of common infill housing types including how to meet the minimum Planning and Design Code tree planting and soft landscaping policies, plus how to achieve even better outcomes

2. Design

Carefully consider the home's context and occupants' lifestyle to maximise liveability, aesthetic and wellbeing benefits of the garden.

Key considerations:

- Indoor/outdoor relationship
- Maximising shade and cooling
- Appearance and 'kerb appeal'
- Biodiversity

This section includes:

- A design checklist
- Lists of popular small, medium and large trees
- 8 different character garden designs and corresponding examples

3. Plant

Prepare for, construct and plant your garden to create the conditions for long-term health.

Key considerations:

- Soil preparation
- Irrigation
- Plant selection
- Optimal planting

This section includes:

- A planting checklist

4. Maintain

Care for your trees and plants to maintain the garden's health and enjoy its many benefits.

Key considerations:

- Watering
- Pruning
- Weeding
- Mulching

This section includes:

- A maintenance checklist

Development approval stages

When going through the development approval process for your house you will need to:

- identify trees to retain, where possible, and prepare a landscape plan (planning consent)
- check soil type (building consent)

For more information please visit PlanSA.

Every house is different

We recognise that every house and every applicant's needs are different and may have different preferences for landscaping styles. This guide is flexible enough to help different housing types to meet the minimum requirements in the Code. It also outlines considerations that will help you make your development more environmentally responsive to our changing climate.

The Planning and Design Code policies

The tree planting and soft landscaping policies in the Code seek to alleviate the issue of a declining canopy by encouraging residential development which retains existing trees (where practical) and requires the planting of new trees and landscaping.

These policies are located throughout the Code, such as the General Development Policies and Urban Tree Canopy Overlay. The Urban Tree Canopy Overlay applies to several residential zones across metropolitan Adelaide:

- City Living
- Established Neighbourhood
- General Neighbourhood
- Hills Neighbourhood
- Housing Diversity Neighbourhood
- Suburban Neighbourhood
- Urban Renewal Neighbourhood
- Waterfront Neighbourhood

The key features of these policies are:

- Mandatory tree planting policy in urban infill areas to ensure at least one tree is planted per new dwelling
- Option for payment into an offset fund, where tree planting is not feasible on-site
- Minimum soft landscaping of 10-25% over the whole site
- Percentage of soft landscaping in front yards of low-rise housing established at a minimum of 30%
- Garden beds to be at least 0.7m in width to ensure the area is viable for plant growth.

For further information including extracts and illustrations to support better understanding and application of these policies, see pages 12-15 or visit the PlanSA website for all relevant policies.

Urban tree canopy overlay map

Urban Tree Canopy Overlay

D01: Residential development preserves and enhances urban tree canopy through the planting of new trees and retention of existing mature trees where practicable

PO 1.1	**DTS/DPF 1.1**
Trees are planted or retained to contribute to an urban tree canopy	Tree planting is provided in accordance with the following:

Site size per dwelling (m^2)	**Tree size* and number required per dwelling**
<450m^2	1 small tree
450-800m^2	1 medium tree or 2 small trees
>800m^2	1 large tree or 2 medium trees or 4 small trees

Table 1: Tree size

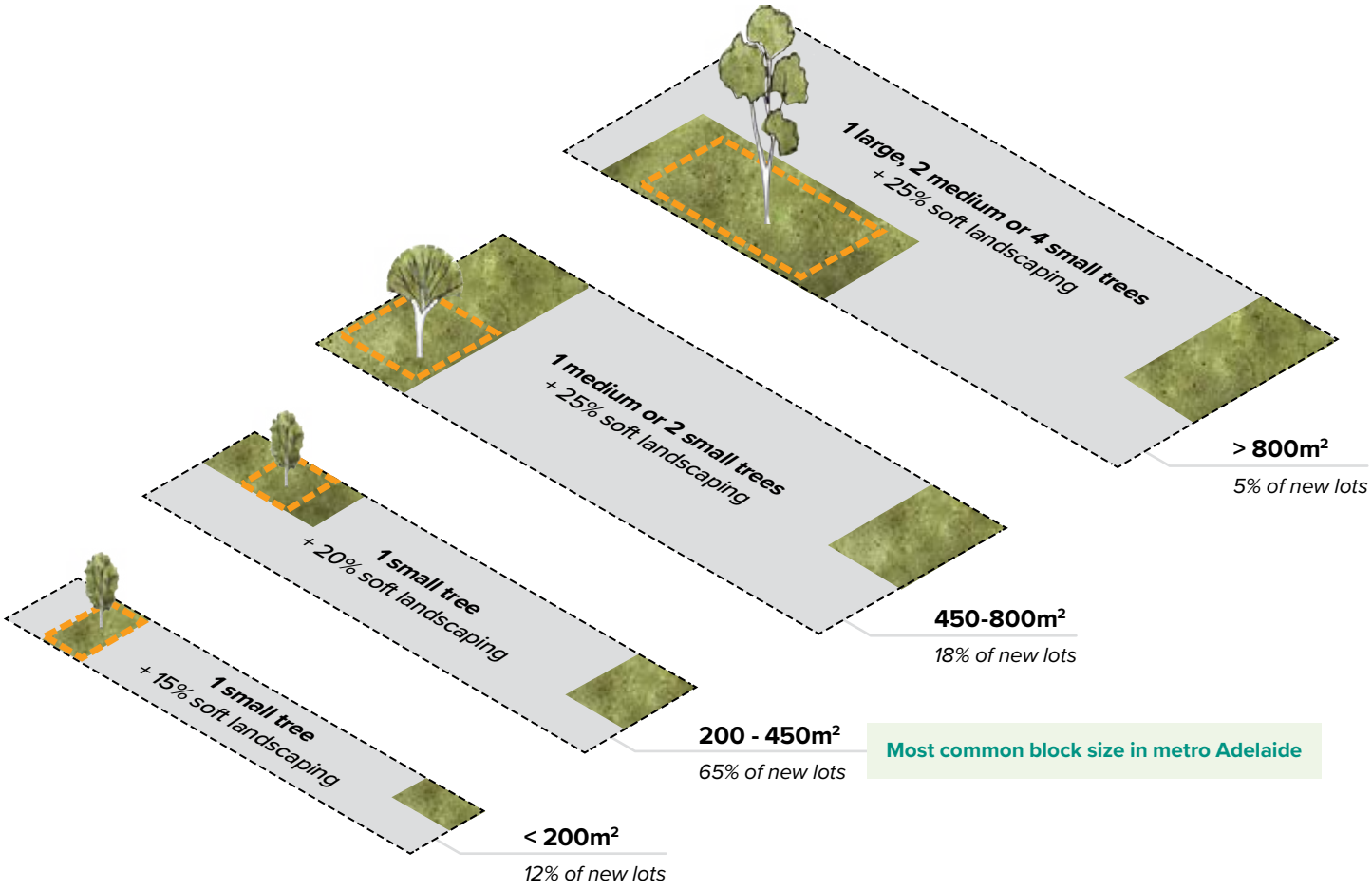
Tree Size	**Mature height (min)**	**Mature spread (min)**	**Soil area around tree within development site (min)**
Small	4m	2m	10m^2 and min. dimension of 1.5m
Medium	6m	4m	30m^2 and min. dimension of 2m
Large	12m	8m	60m^2 and min dimension of 4m

The discount in Column D of Table 2 discounts the number of trees required to be planted in DTS/DPF 1.1 where existing tree(s) are retained on the subject land that meet the criteria in columns A, B and C of Table 2, and are not a species identified in Regulation 3F(4)(b) of the Planning Development and Infrastructure (General) Regulations 2017.

Table 2: Tree discounts

Retained tree height (Column A)	**Retained tree spread (Column B)**	**Retained soil area around tree within development site (Column C)**	**Discount applied (Column D)**
4-6m	2-4m	10m^2 and min. dimension of 1.5m	2 small trees (or 1 medium tree)
6-12m	4-8m	30m^2 and min. dimension of 3m	2 medium trees (or 4 small trees)
>12m	>8m	60m^2 and min dimension of 6m	2 large trees (or 4 medium trees, or 8 small trees)

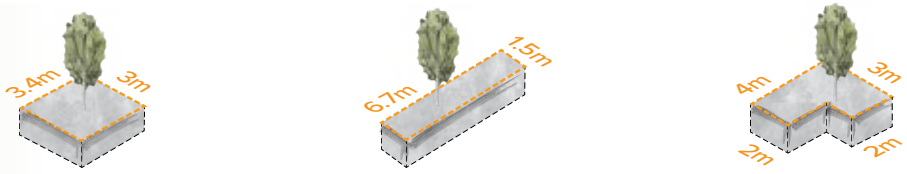
See glossary on page 112 for a definition of soft landscaping



Small tree

4m ⟷ 2m

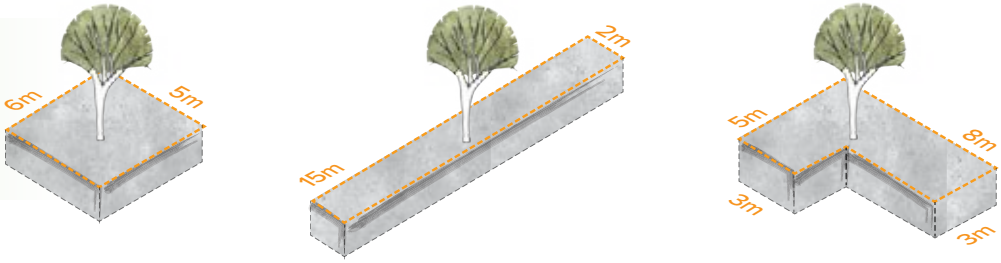
10m² soil area



Medium tree

6m ⟷ 4m

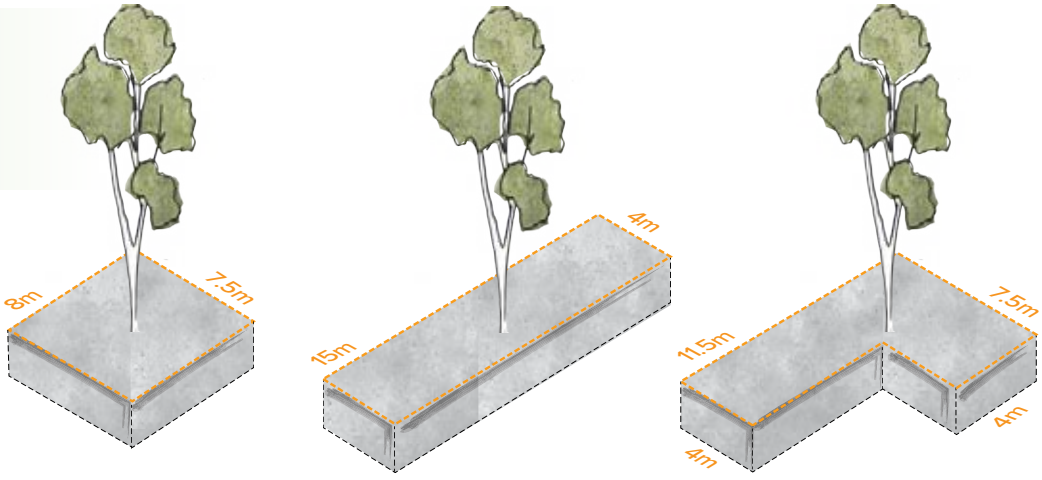
30m² soil area



Large tree

12m ⟷ 8m

60m² soil area



General Development Policies

Design in Urban Areas

Landscaping

PO 22.1	DTS/DPF 22.1
Soft landscaping is incorporated into development to: a) minimise heat absorption and reflection b) contribute shade and shelter c) provide for stormwater infiltration and biodiversity d) enhance the appearance of land and streetscapes.	Residential development incorporates soft landscaping with a minimum dimension of 700mm provided in accordance with a and b. a. a total area as determined by the following table:

Dwelling site area (or average site area) (m^2)	Minimum percentage of site
<150	10%
150-200	15%
>200-450	20%
>450	25%

b. at least 30% of any land between the primary street boundary and the primary building line

Soft landscaping

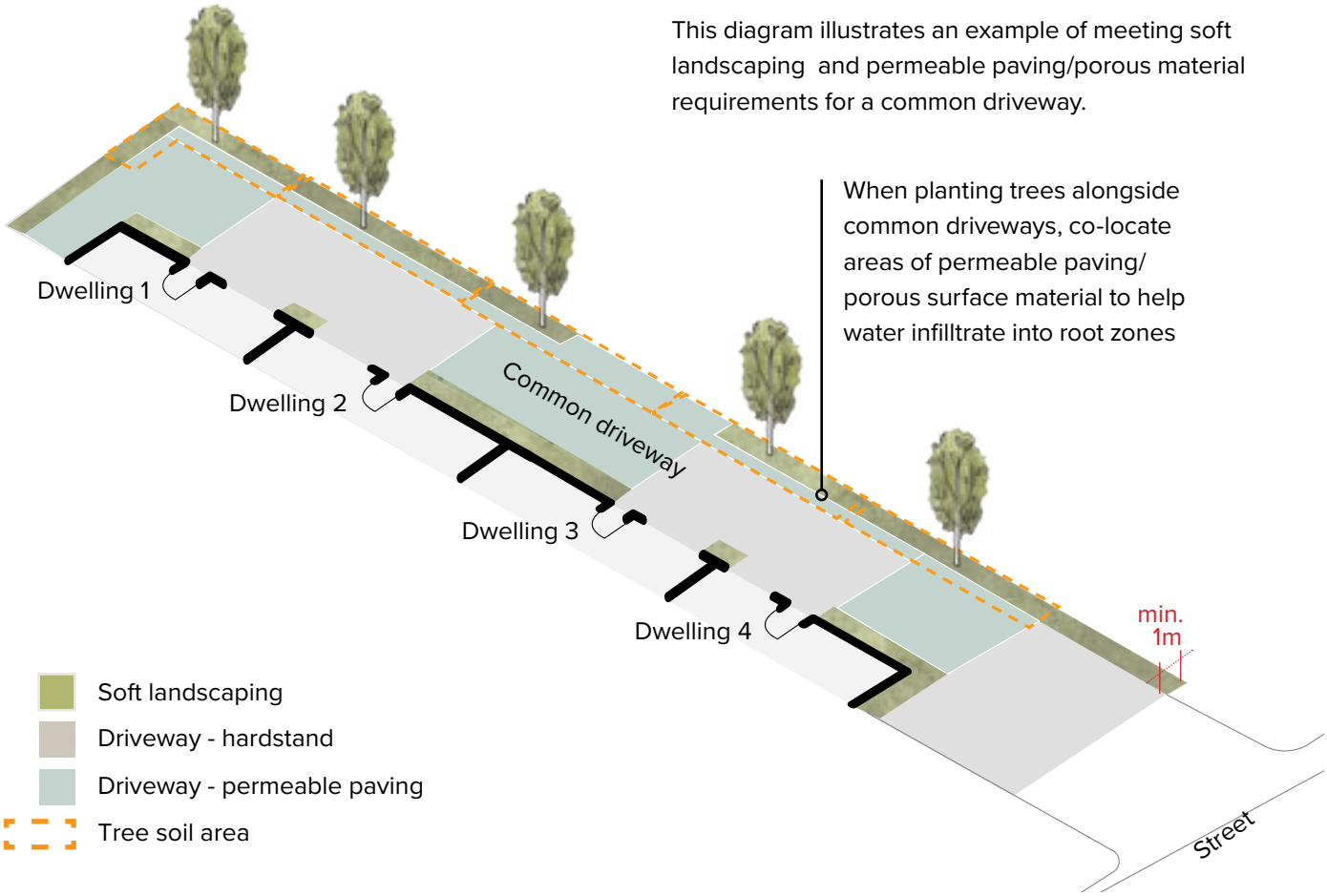
PO 34.1	DTS/DPF 34.1
Soft landscaping is provided between dwellings and common driveways to improve the outlook for occupants and appearance of common areas	Other than where located directly in front of a garage or building entry, soft landscaping with a minimum dimension of 1m is provided between a dwelling and common driveway
PO 34.2	**DTS/DPF 34.2**
Battle-axe or common driveways incorporate landscaping and permeability to improve appearance and assist in stormwater management	Battle-axe or common driveways satisfy a. and b.: a. are constructed of a minimum of 50% permeable or porous material b. where the driveway is located directly adjacent the side or rear boundary of the site, soft landscaping with a minimum dimension of 1m is provided between the driveway and site boundary (excluding along the perimeter of a passing point).

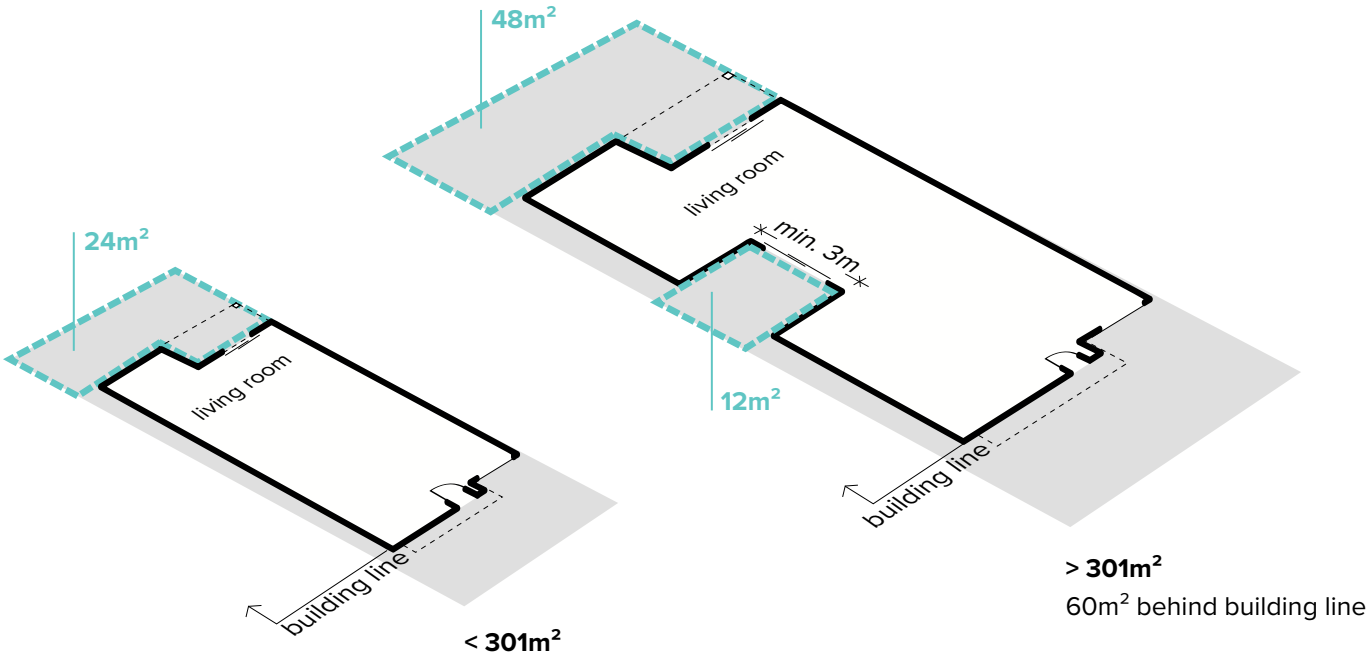
Table 1: Private Open Space

Dwelling Type	Minimum Rate
Dwelling (at ground level)	Total private open space area: a. Site area <301m^2: 24m^2 located behind the building line b. Site area >301m^2: 60m^2 located behind the building line Minimum directly accessible from a living room: 16m^2 with a minimum dimension of 3m

This diagram illustrates an example of meeting soft landscaping and permeable paving/porous material requirements for a common driveway.

When planting trees alongside common driveways, co-locate areas of permeable paving/ porous surface material to help water infilltrate into root zones





< 301m²
24m² behind building line

> 301m²
60m² behind building line

Private Open Space

Step 1

Plan

Start planning your garden while you plan your house to maximise the short and long term benefits.

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Plan checklist

Start planning your garden while you plan your house to maximise the short and long term benefits.

Retain existing mature trees where possible

Mature trees provide more shade, store more carbon and provide more habitat and shelter to enhance biodiversity than new or smaller trees. It will take many years for a newly planted tree to provide similar benefits to an established mature one.

A single mature tree can absorb as much as 21 kilos of CO_2 in a year[9].

- ☐ Identify if your site has a regulated or significant tree.
- ☐ Speak to an arborist to give advice on the tree's health, structure and **Tree Protection Zone** (TPZ) requirements. The TPZ is a designated area around a tree that is protected when nearby works are being undertaken to preserve the soil and tree.

- ☐ Design your house to accommodate the TPZ of the tree, maintaining soil volumes, levels and a healthy root system.
- ☐ Your structural engineer will design the footings for your house to accommodate the roots of the existing tree.
- ☐ Check with your council to see what assistance they can provide and whether they offer incentives to retain mature trees.
- ☐ Ensure your development meets **Australian standard AS 4970-2009: Protection of trees on development sites**. This can be accessed through your builder, developer or council.
- ☐ Consider retaining and planning to incorporate areas of established soft landscaping (hedges, plants) into your new development that can provide continued benefits for cooling, visual appeal, biodiversity and stormwater filtration.
- ☐ Work with your demolition company to plan which areas of vegetation will be retained. This can be cheaper than simply clearing your entire block.
- ☐ Ensure the extent and reach of roots for all existing trees are inspected to ensure there is no risk of damaging buildings or structures. The root can be trimmed (if required) and dammed with root barriers to prevent further growth and potential damage (under the guidance of an arborist if the tree is regulated).

For further information visit:

- Protecting regulated and significant trees (FAQ), PlanSA
- Tree Protection Australian Standards and the Law: Getting it Right, TreeNet
- Your local council Urban Forest/Tree Strategy
- How to achieve better greening outcomes for retaining a mature tree (see page 30).

Maximise efficient solar access and shading to house and garden spaces

An integrated approach to planning your home and garden with optimal solar access and shade can contribute to greatly improving energy efficiency.

For example, shading the western facade of a dwelling with trees can drop total heating and cooling energy costs by between 5 and 10%[7].

- ☐ Locate the living areas of your house and garden areas to the north and east where possible.
- ☐ Create spaces to plant evergreen trees to provide shade to your walls, roof and hard pavements from the hot western sun.
- ☐ Locate your vegetable and herb garden and fruit trees in north-facing sunny areas.
- ☐ Plant trees to shade your driveway, walls and pavements to reduce heat absorption and cool your house and environment.
- ☐ Grow vines and climbers on vertical surfaces such as fences and walls to provide shade and cooling.

For further information visit:

- Passive Design, Your Home
- What is Passive House? (FAQs), Australian Passive House Association

Plan garden areas with space and soil volumes to plant the largest tree possible

Bigger trees provide more benefits like shade and amenity.

- ☐ Speak to your council to discuss the tree and landscaping requirements that apply to your development site.
- ☐ Ensure your tree has adequate space to grow above and below the ground to promote its health and avoid conflict with infrastructure as it grows.

For further information visit:

- Refer to the Urban Tree Canopy Overlay policies on PlanSA or the Planning and Design Code section (pages 12-13) of this guide.
- How to achieve better greening outcomes for small trees compared to medium trees (see pages 32-33).

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Locate trees and garden spaces adjacent to indoor and/or outdoor living spaces where possible

Green leafy trees can provide sensory relief in urban environments, generating a sense of calm.

- ☐ Create attractive views looking onto gardens areas and plantings.
- ☐ Create outdoor spaces for relaxation, socialising, entertaining, connecting with nature and a better sense of wellbeing.
- ☐ Discuss the design of your house with your builder/ designer to include spaces for planting to create attractive outdoor spaces.

For further information visit:

- How to achieve better greening outcomes for courtyards (see page 26)
- How to achieve better greening outcomes for side setbacks (see page 27)

Plan for access to the garden spaces to construct landscape elements and plantings after your house is built

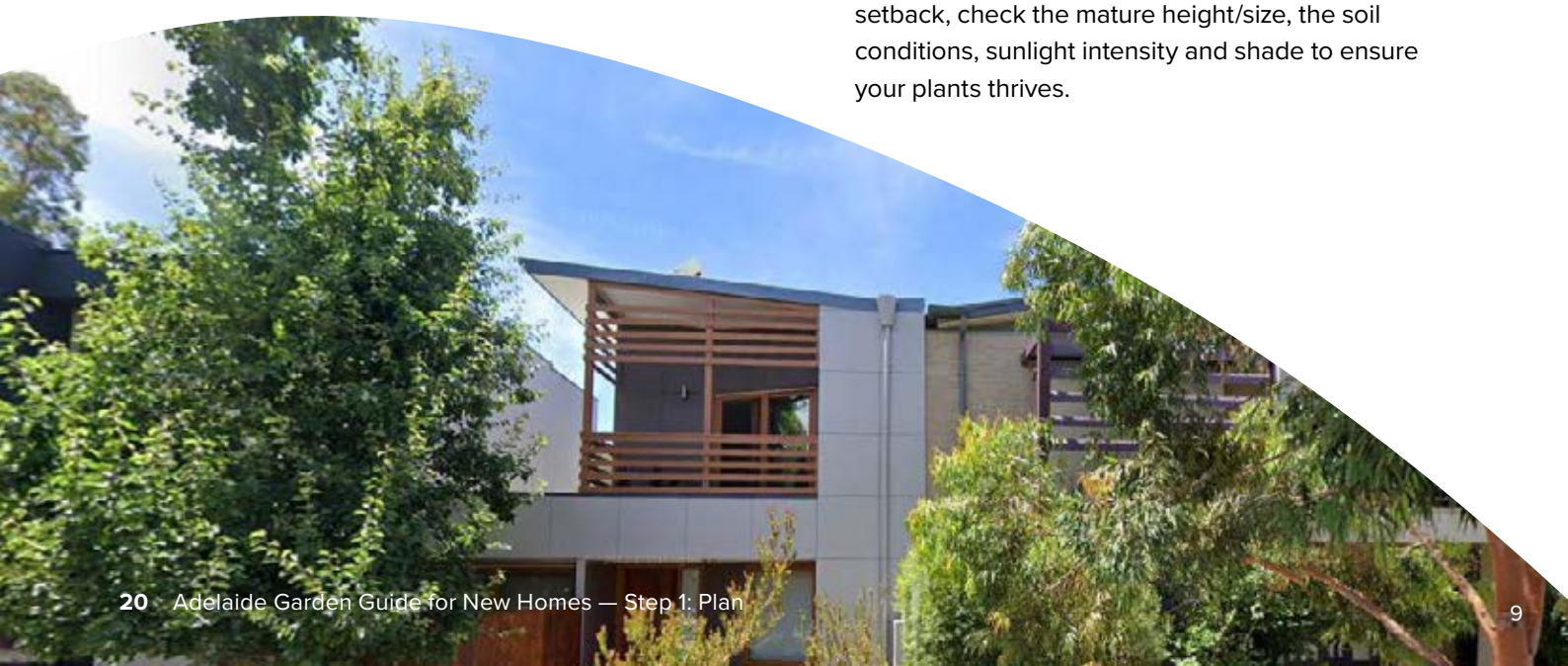
Avoid unnecessary costs and poor outcomes by thinking ahead.

- ☐ Ensure the soil in your garden is suitable for planting. It may need to be removed and replaced with good quality soil for your trees and plants to thrive.
- ☐ Check there is sufficient access to the garden for machinery (i.e. if you will need an excavator or delivery of soil, mulch etc.)

Ensure there is sufficient room for trees to develop and grow

Allow space for trunks, roots and branches to grow to ensure your trees and plants can mature and adjacent infrastructure and footings are protected.

- ☐ Ensure trees are planted a suitable distance away from buildings and structures to avoid damage to neighbouring properties, walls, fences and footings. Most root systems of trees have a spread that is 2-3 times the radius of the canopy. For example, if the tree canopy radius is 2m, its roots can be expected to reach 4-6m from the trunk.Avoid selecting trees and plants that are known to have aggressive, or highly invasive roots.
- ☐ Avoid selecting trees and plants that are known to have aggressive, or highly invasive roots.
- ☐ Choose the right plant for the right space. When planting in a confined space, like an atrium or side setback, check the mature height/size, the soil conditions, sunlight intensity and shade to ensure your plants thrives.



Coordinate the location of garden spaces with other household services and facilities

A practical approach to planning for trees and household services will help integrate services and planting.

- ☐ **Parking/driveways:** Integrate trees and planting with hard surfaces to provide shading and cooling.
- ☐ **Bins:** Integrate screens and plantings into your design to hide bins at the side and rear of the property.
- ☐ **Services:** Coordinate service locations with your builder and providers to create spaces to plant trees and gardens.
- ☐ **Clothes lines:** Locate the clothes line in a sunny position preferably at the side or rear outside of attractive garden or entertaining spaces. Consider lawn or porous surface material (gravel, permeable paving) underneath to allow for more efficient water infiltration and reduced run-off.
- ☐ **Solar panels:** Carefully consider the location of large trees to ensure that they won't cause shade over solar panels or shading is minimised.
- ☐ **Rainwater tanks:** Incorporate required rainwater tank/s preferably abutting dwelling walls or boundary fences to minimise conflicting with the space available for trees, planting, paths and outdoor living. Connect your tanks to your irrigation system or investigate a grey water treatment system to save on water bills.
- ☐ **Water supply and irrigation:** Include taps in your front and back garden for easy watering. Preferably plan to install an irrigation system at the time of construction to enable easy and efficient watering. Consider provisions for both recycled and potable water connections, including controllers and conduits to garden beds.
- ☐ **Roofs and gutters:** Consider the design of the roof, gutters and downpipes to ensure easy maintenance and avoid collection of fallen leaves. For example, using gutter guards, especially for flat roofs and box gutters.

For further information:

- Narrow Single Storey Homes: Design Guidelines, City of Salisbury
- How to achieve better greening outcomes for common driveways (see page 24-25)
- How to achieve better greening outcomes for front garden trees and services (see page 28-29)

Carefully consider the proposed location for trees and garden spaces in coordination with existing and proposed services and relevant requirements

Holistic consideration of trees and services locations will allow healthy growth of trees and avoid costly maintenance, repairs and safety risks. It is important to understand the mature height and radius of your chosen tree(s) to ensure it is appropriate for its intended location.

- ☐ Understand where your services, utilities and powerlines are located to enable you to plant in the correct locations to reduce any future damage.
- ☐ **Footings:** Consult a structural engineer to seek advice about the best placement of your tree(s) in relation to you and your neighbours' foundations and the most appropriate footing design required for your dwelling
- ☐ **Sewer and water:** Consult clearance requirements and select trees from approved planting lists when planting adjacent to services.
- ☐ **Overhead powerlines:** If you're planting near powerlines ensure the height of your mature tree(s) will meet the clearance requirements and select trees from approved planting lists.
- ☐ **Communications:** Be aware of the locations of conduits to avoid damage through digging or excavations.
- ☐ **Gas:** Do not plant large trees adjacent to in-ground gas services.
- ☐ **Stormwater drainage:** Consider the location of drainage infrastructure to avoid conflict with space available for tree planting across development sites. Consider integrating water sensitive urban design solutions to achieve better environmental outcomes.

For further information:

- House footings and the tree effect (see page 34 and 35)
- Trees and powerlines, Office of the Technical Regulator
- Powerline Friendly Trees, SA Power Networks
- Tree Planting Guide (2021), SA Water
- Dial Before You Dig
- WSUD policy for small-scale infill, Water Sensitive SA
- How to achieve better greening outcomes for front garden trees and services (see page 28).

How to achieve better greening outcomes

Common driveway

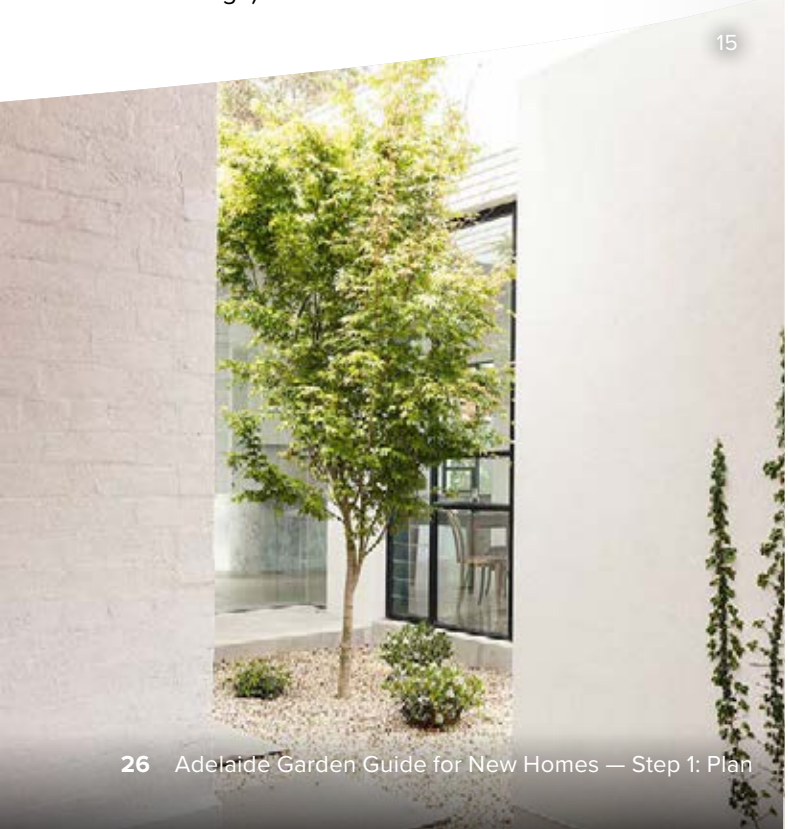
1. Shade the driveway to create a cooler ambient temperature and reduced need for internal air conditioning.
2. Plant low vegetation to soften view of the driveway from internal living spaces and the street.
3. Ensure footings consider abutting soil and water from soft landscaping zones.
4. Plant small trees approximately 6.5m apart along the driveway.
5. Plan for water sensitive methods such as directing stormwater run-off into garden beds and using more porous surface materials over soil areas for more efficient watering and less reliance on irrigation.
6. Extend soil volumes 0.5m below the driveway surface to achieve the minimum width (1.5m) required for the 10m^2 soil area for a small tree. Permeable driveway surfaces should be located over soil area for increased water infiltration.
7. Tree canopy (if planted) will provide more privacy for upper storey living spaces and neighbours.


7
4
2
1
3
10m²
5
6
Neighbouring property
0.85m depth minimum

Courtyards

1. Create a niche in the building which creates an internal atrium space.
2. Ensure the atrium allows light to penetrate into the centre of the house where large windows may not be possible.
3. Consider incorporating greening into the garden space including a small ornamental tree (10m^2 of soil area), climbers and understorey plants.

   When choosing plants consider the mature height/size, shading from other structures, soil and weather conditions to ensure the plant will thrive.
4. Windows or louvres in this area could also assist with ventilation, air quality and cooling throughout the house.
5. This space could become an architectural feature adding value to your property.
6. Consult a structural engineer and/or landscape architect about whether a tree root barrier could help reduce the effect on the footing system. (Note: Tree root barriers have been demonstrated by research to not provide long term protection and should not be relied upon in lieu of appropriate footing design).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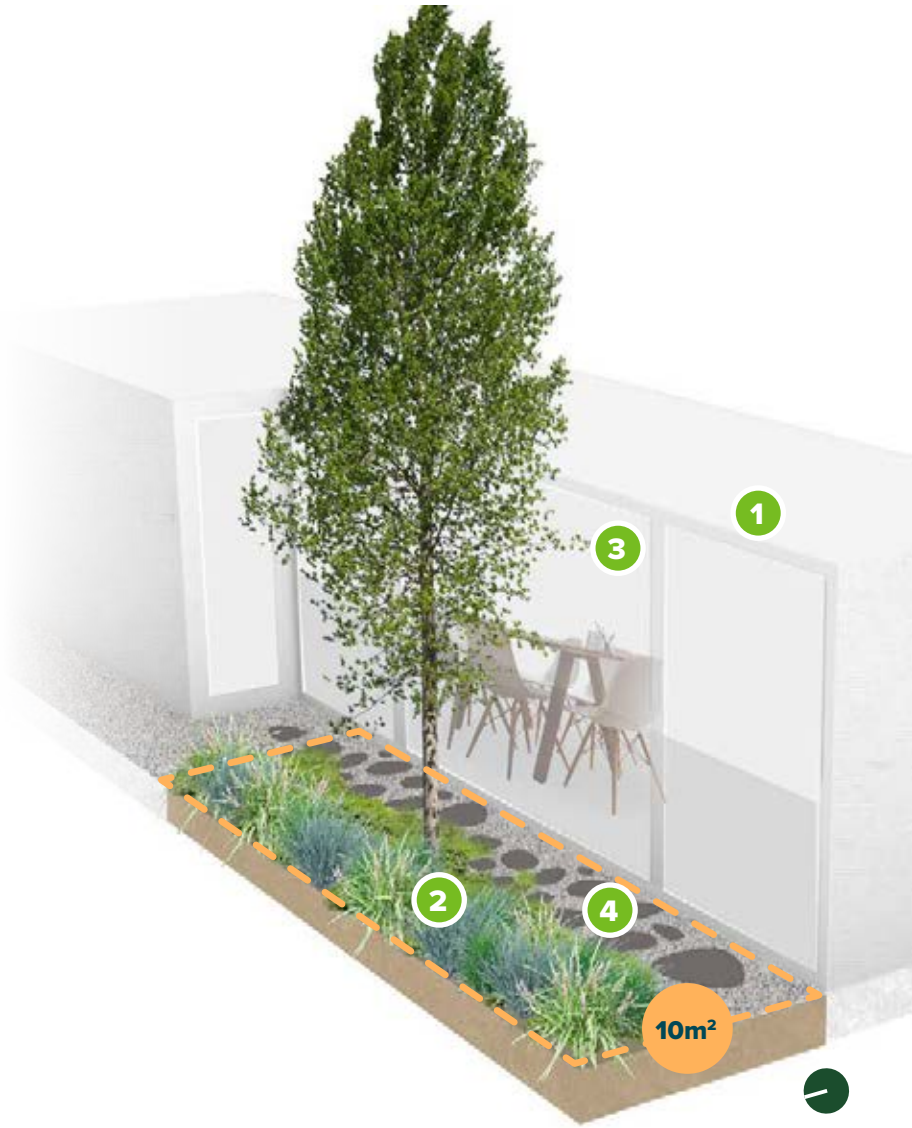
Side setbacks

1. Create a niche and garden area with a 2m setback in the building to allow light to penetrate into the centre of the house where large windows may not be possible.
2. Incorporate greening into the garden space including a small ornamental tree (10m^2 of soil area) and understorey planting.
3. Consider windows or louvres in this area to assist with ventilation, air quality and cooling throughout the house.
4. Use paving to create a perimeter (extending appropriately 1m from the foundation edge) so that rain and surface water will runoff and away from the building into the adjacent garden.

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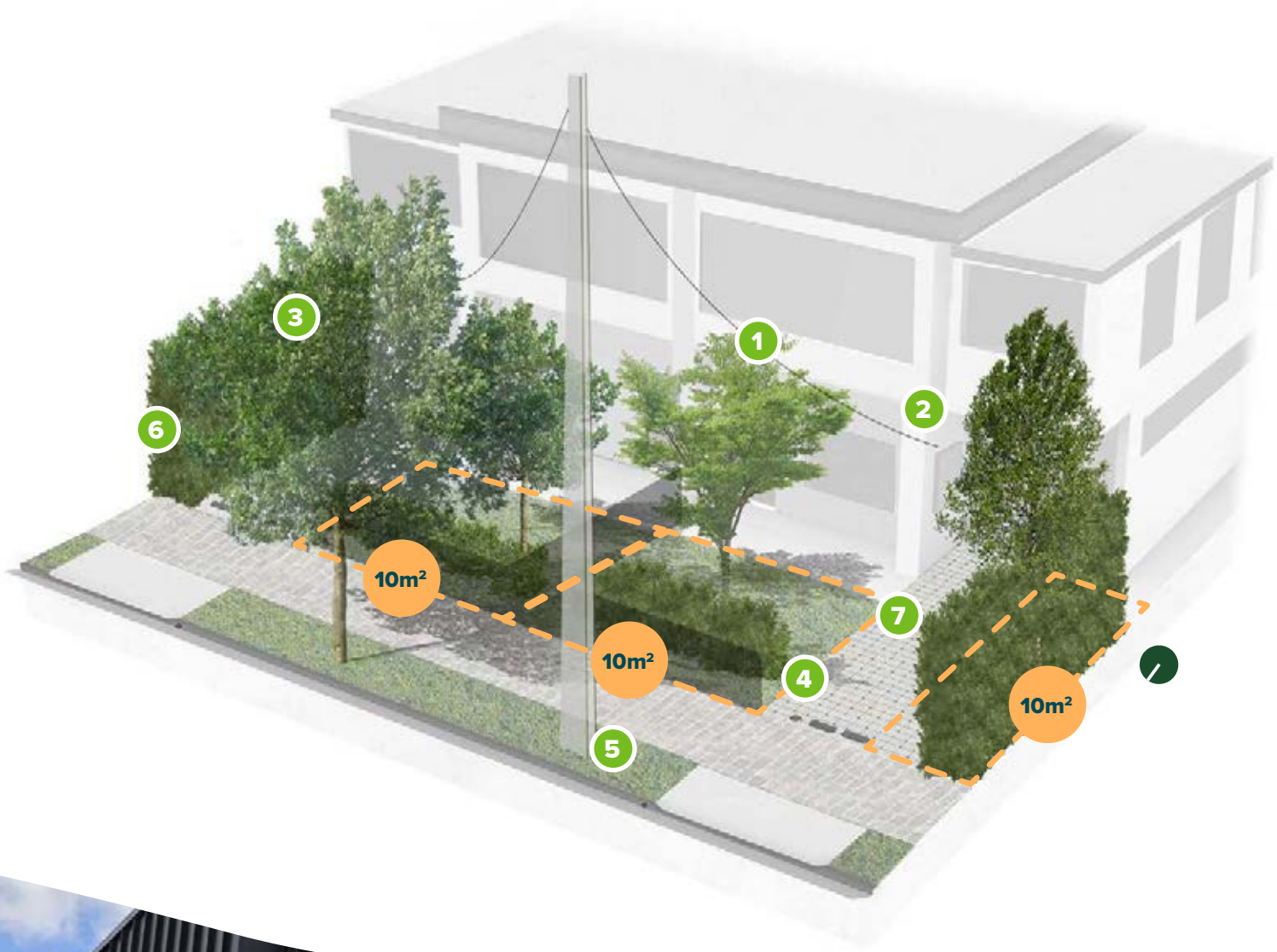
Front garden trees and services

1. Ensure that front garden trees are an appropriate species and size and are located so to avoid clashes with overhead and underground services
2. Well locate services so that they do not clash with soil areas for trees and plants (e.g. integrated into a wing wall next to driveway).
3. Retain existing street trees (where possible) with driveway access designed to accommodate (i.e. 2m setback to street trees).
4. Locate water and sewer service pits in the driveway to avoid clashes with trees and soft landscaping, provide easy access and reduce visual clutter.
5. Locate the stormwater outlet next to the driveway to avoid clashes with proposed and existing tree locations.
6. Provide a minimum 0.7m wide garden bed alongside the driveway to provide opportunity for soft landscaping (e.g. screening hedge for privacy).
7. Use permeable paving or porous material over the driveway to provide soil volume for an extra small tree to enhance amenity, shade and privacy.


1
2
3
4
5
6
7
10m²
10m²
10m²

Retain a mature tree

1. Retain a mature tree with adequate soil area (60m^2) to shade the house and garden from the sun, provide more comfortable spaces and reduce the need for air-conditioning.
2. Design the dwelling with a side setback to allow retained soil volume to wrap the building and provide an opportunity for an alfresco area.
3. Use permeable surfaces, such as gravel and steppers around the house to not disturb the root zone and allow water to infiltrate.
4. Carefully consider soft landscaping under larger trees. Select species that are tolerant of reduced light conditions and are shallow rooted so as not to compete with the existing tree roots. Native groundcovers are usually a good choice.
5. Design your house to accommodate the tree protection zone (TPZ) of the tree.

The **Tree Protection Zone (TPZ)** is the key method of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area protected from construction disturbance, so that the tree remains healthy.

The radius of the TPZ is calculated for each tree using the below formula:

Radius of TPZ = DBH x 12

DBH = the trunk diameter (metres), measured at 1.4m above the ground level (or diameter at breast height)

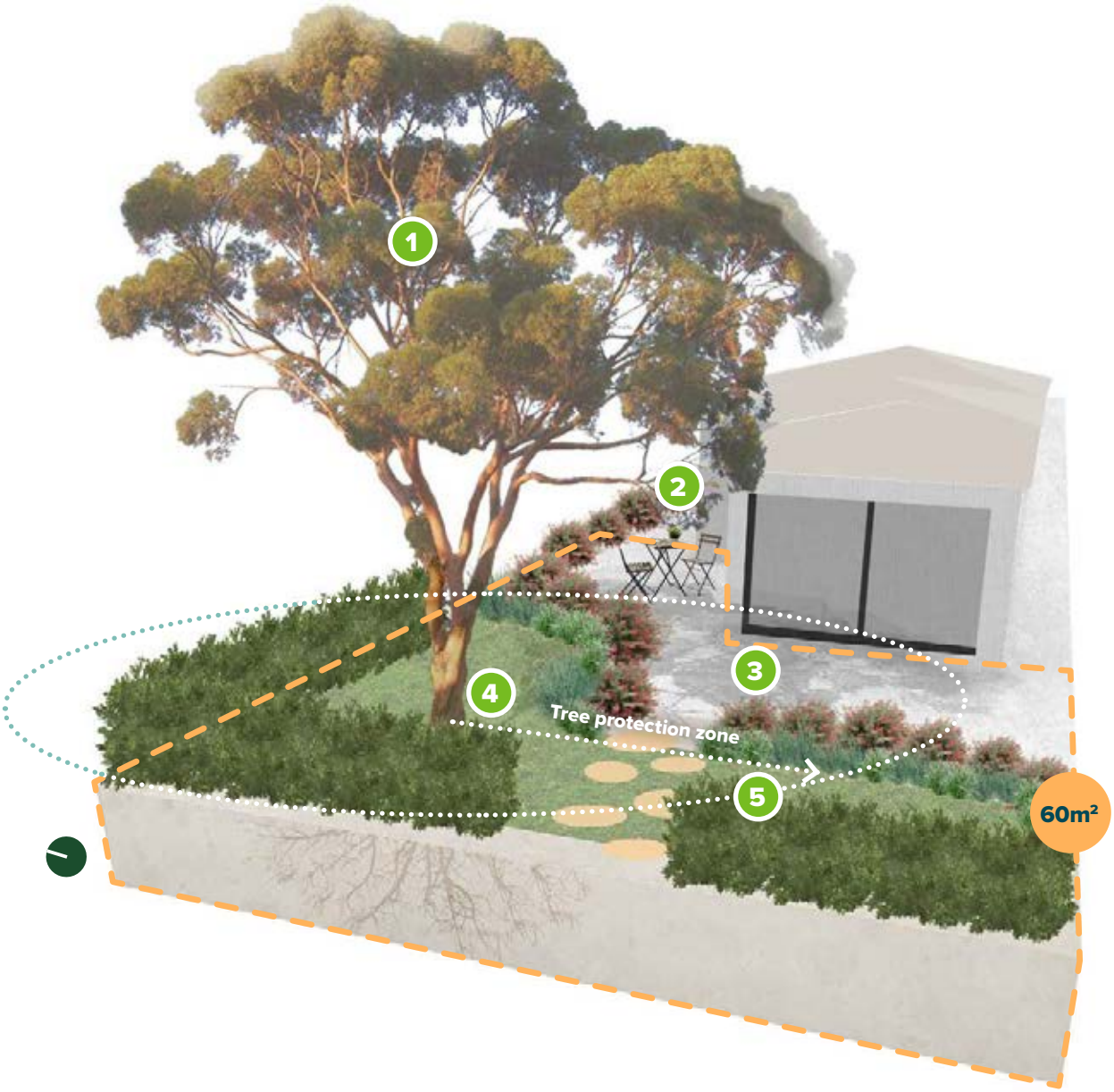
The **Structural Root Zone (SRZ)** is the area around the base of a tree required for the tree's stability in the ground. This zone considers a tree's structural stability only, not the root zone required for a tree's long-term health.

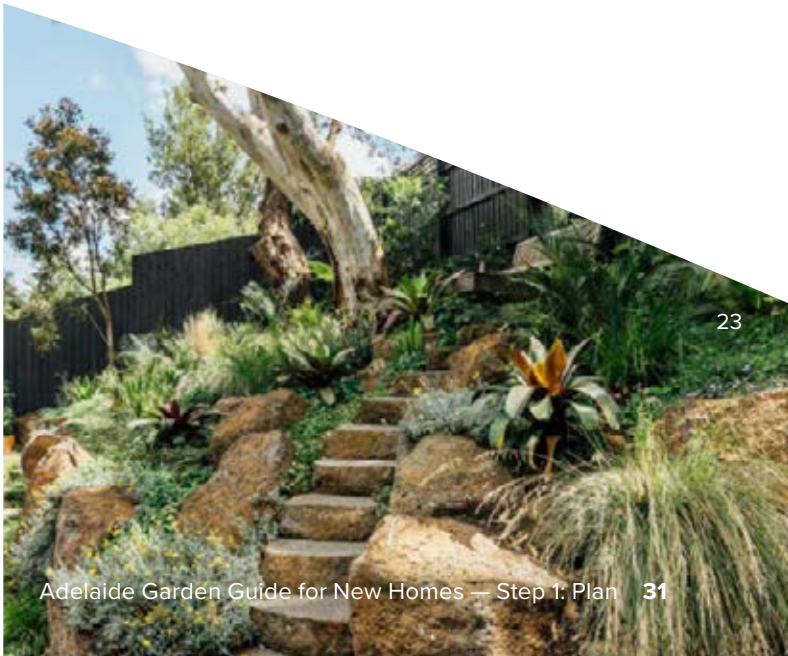
The radius of the SRZ is calculated for each tree using the below formula:

Radius of SRZ = (Dx50) $^{0.42}$ x 0.64

D = the trunk diameter (metres), measured above the root buttress

Speak to an arborist to provide advice on the tree's health, structure and TPZ/SRZ requirements.


1
2
3
4
Tree protection zone
5
60m²



Small trees compared to medium trees

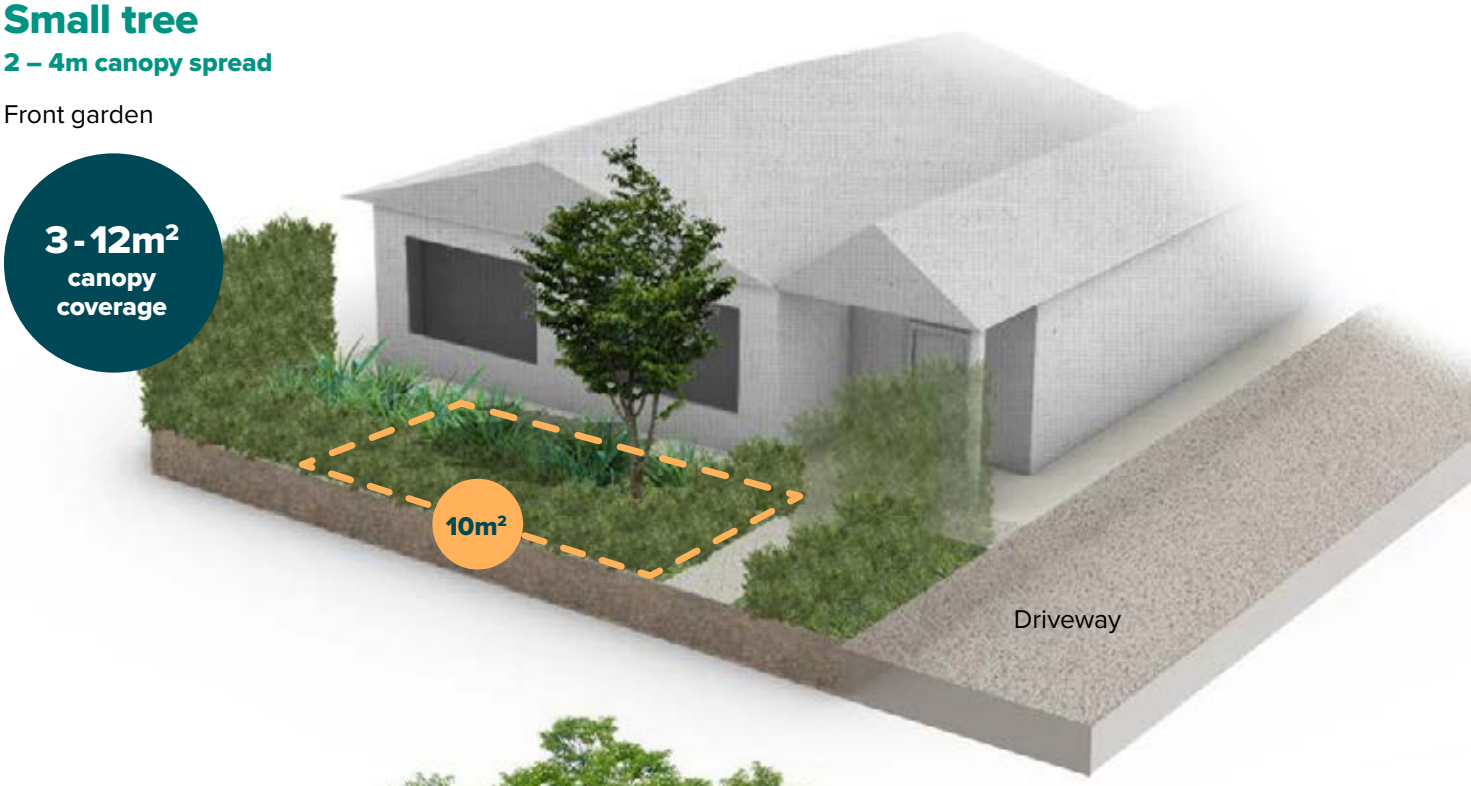
Accommodating a medium tree with 30m² soil area enhances economic, wellbeing and liveability benefits through extra shading and cooling of your garden and dwelling when compared to a small tree.

A medium tree can provide up to 16 times more canopy coverage than a small tree.

Small tree

2 – 4m canopy spread

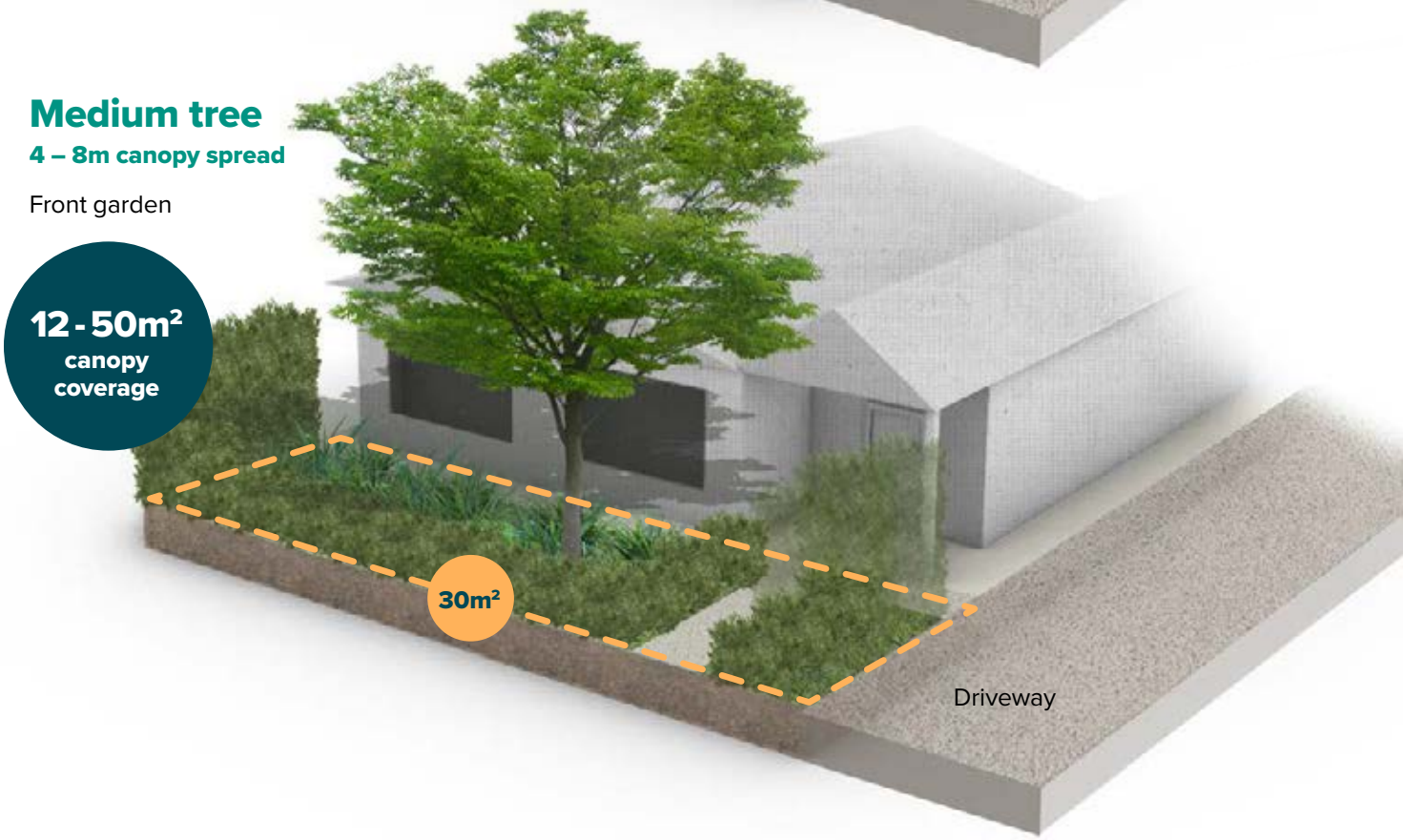
Front garden



Medium tree

4 – 8m canopy spread

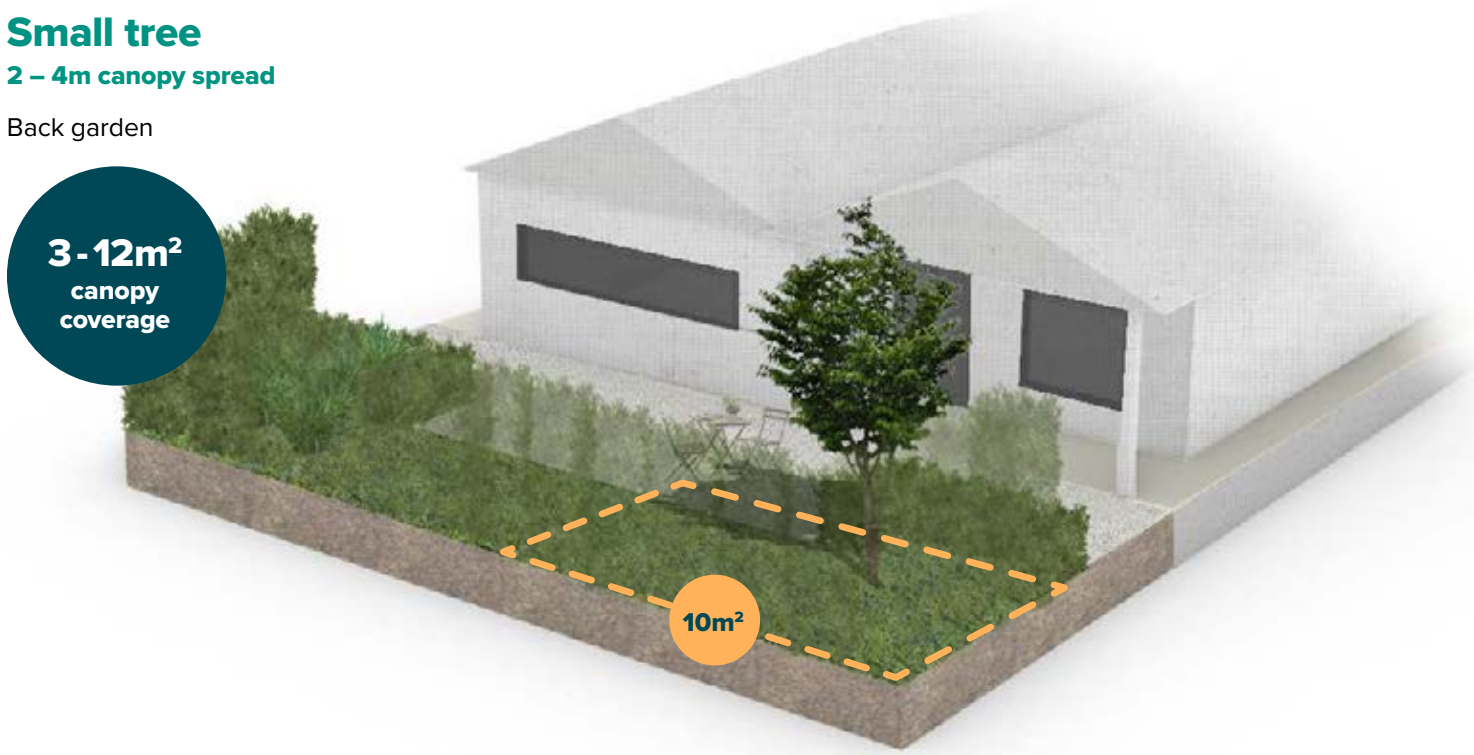
Front garden



Small tree

2 – 4m canopy spread

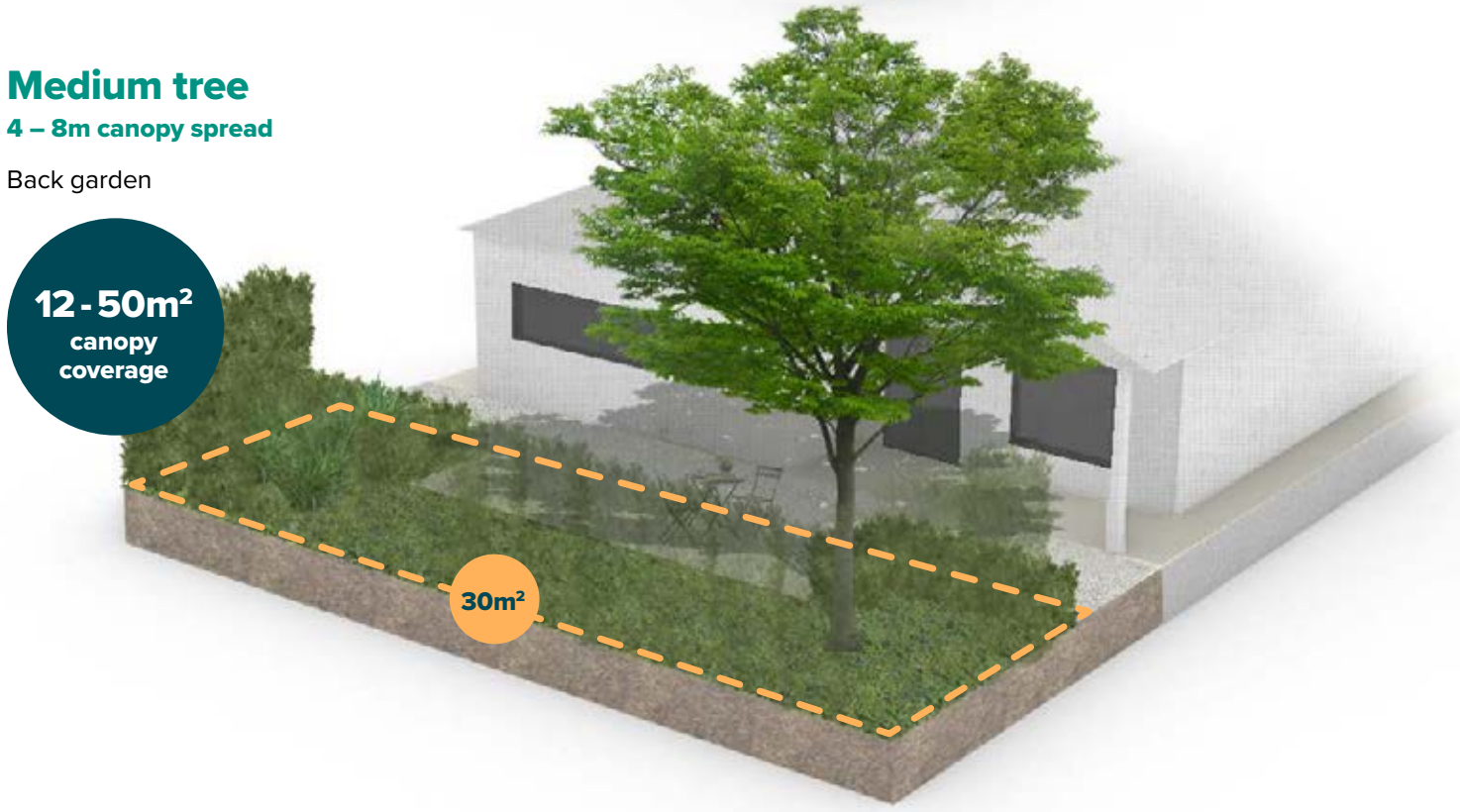
Back garden



Medium tree

4 – 8m canopy spread

Back garden



House footings and the tree effect

Structural engineers consider many factors in the design of footings for new buildings (in line with the Australian Standard 2870-2011 Residential Slabs and Footings). One important factor is existing and proposed new trees depending on their size, number and location in relationship to a new dwelling.

For example, if there are one or 2 trees located within the same distance away from a new dwelling as the mature height of the tree/s, the footings are designed to accommodate a '**single tree effect**'. If there are 3 or more trees located within the same distance away from a new dwelling as 1.5 times the mature height of the trees, footings will be designed to accommodate a '**group of trees effect**'.

The footing depth of a residential footing system can also be influenced by a number of other factors e.g. soil type, construction method, and the type and shape of the footing system. Therefore, the cost impact of trees on footings is highly variable.

It is important to acknowledge that in an established urban neighbourhood, house footings will often already have to be designed to accommodate the impact of nearby offsite trees. This is because there may already be a street tree or trees within one or more neighbouring sites within the 'tree effect' area of the new dwelling.

Therefore, planting a new tree will often not result in additional footing design costs as the new dwelling would have to already accommodate for a 'single tree effect' or 'group of trees effect'.

It is prudent for home builders to consider that new trees may be planted on neighbouring sites or in the public verge outside their house (within the area of effect on their footings) in the future. Therefore, it is important that their house footings are designed for this.

It is recommended that new home builders seek advice from a structural engineer about the optimal location for any new trees to minimise the effect on their and their neighbours' dwelling's footings.

Infill development zones

The **General Neighbourhood** and **Suburban Neighbourhood Zones** have a minimum 5m setback. Infill developments in these zones can usually meet the tree planting policy without incurring any new costs to house footings.

The denser **Housing Diversity** and Urban Renewal Zones have a minimum 3m setback. In these zones, households could choose to avoid additional house footing costs by setting their house back further than the minimum, or they can choose to accommodate the 'tree effect' in their house footing design. Due to the small block size and minimum setback, it is likely that many of these developments will already have to consider some form of 'tree effect' from nearby street trees or neighbour's trees.

Impact of soil type on the 'tree effect'

In Greater Adelaide there are numerous soil types, ranging from least reactive (sandy) to highly reactive (clay). At any given site, soil layers over the depth of moisture change can vary greatly. For example, sand might overlay reactive clay soil. The minimum depth of moisture change in Adelaide for a suburban development is 4 metres. The soil profile and reactivity of its layers determine the reactivity of the site. More reactive sites generally have a higher impact on footings, and less reactive sites a lower impact.

For low reactive sites, a tree (even planted quite close to a house) may have little impact on footing thickness and reinforcement requirements (and therefore cost), while in more reactive soils the implications (and therefore cost) can be considerably higher.

In cases where a new dwelling's footing construction may need to consider the 'tree effect', site reactivity is a significant factor in the magnitude of the cost impact.

Urban Tree Canopy Off-set Scheme

In special instances, where planting a tree can be challenging (e.g. small allotment size or highly reactive soil), the Urban Tree Canopy Off-set Scheme enables contribution into the Urban Tree Canopy Off-set Fund as an alternative to planting the required tree.

The Scheme operates in the following circumstances:

- Housing Diversity Neighbourhood Zone
- Urban Renewal Neighbourhood Zone
- City Living Zone
- any site with a 'Designated Soil Type' as described in the Scheme.

The money from the Fund can be used to plant trees in parks, reserves and nature strips, or to create new parks.

Cost Benefit Analysis in regards to the tree planting policy

In 2020, the State Planning Commission commissioned an Options Analysis Report to support the development of the tree planting policy for the Planning and Design Code.

This was to identify and understand the costs and benefits (for individuals and for the broader community) of the tree planting policy. Overall, this research found that in most instances the benefits were greater than the costs.

Foundation maintenance and footing performance

The CSIRO released a comprehensive and user-friendly homeowner guide regarding foundation maintenance and footing performance. The guide is designed to help identify causes of soil-related building movement and suggests methods of prevention of resultant cracking. This includes advice about existing trees, new trees and vegetation, and the role of garden layouts, watering and maintenance.

This guide was written in the context of the larger allotment sizes that prevailed in the early nineties and some of the provisions may not be achievable for small allotments.

Your engineer's soil report and site drainage plan will provide important information and guidance for your site in relation to drainage, landscaping (tree planting), paving protection and garden watering.

For further information:

- How to achieve better greening outcomes for courtyards (see page 26)
- Carefully manage stormwater run-off (see page 72)
- Ensure irrigation and stormwater systems are well installed and maintained (see page 111)

Case studies

The housing types listed below are illustrated on the following pages to provide a diversity of typical infill housing examples. Two plan layouts are provided per example. The first plan illustrates meeting the minimum tree planting and landscaping criteria of the Code. The second shows better greening outcomes for improved environmental, livability and wellbeing benefits.

The following case studies have been chosen as they represent the primary zones where urban infill occurs in metropolitan Adelaide. The most common housing types have also been illustrated.

For a more detailed table comparing all the different zones where the Urban Tree Canopy Overlay applies please see the Glossary section.

No.	Housing type	Density	Zone	Site area
1	Detached	1 dwelling	General Neighbourhood	300m²
2	Semi-detached	2 dwellings	Suburban Neighbourhood	750m²
3	Semi-detached	2 dwellings	General Neighbourhood	650m²
4	Detached ('battle-axe')	2 dwellings	Housing Diversity Neighbourhood	580m²
5	Residential flat building ('battle-axe')	4 dwellings	Housing Diversity Neighbourhood	940m²
6	Terrace/row	3 dwellings	General Neighbourhood	750m²
7	Detached	4 dwellings	General Neighbourhood	1200m²
8	Residential flat building	5 dwellings	Housing Diversity Neighbourhood	1000m²

Common housing types

Refer to the glossary for further detail about these housing types.

Row dwelling

Also known as terrace housing, 3 or more houses joined together

Detached dwelling

Also known as a freestanding house or standalone dwelling, not joined to any other house

Group dwelling

Also known as units, are a group of 2 or more detached houses that share a common driveway

Semi-detached dwelling

Also known as a townhouse or courtyard home, joined to 1 other house by a common wall

Residential flat building

Also known as apartments, it is a single building which includes 2 or more houses

Meeting minimum greening requirements for a

Detached dwelling

This example illustrates meeting minimum requirements for a single detached dwelling in the General Neighbourhood Zone.

Minimum requirements

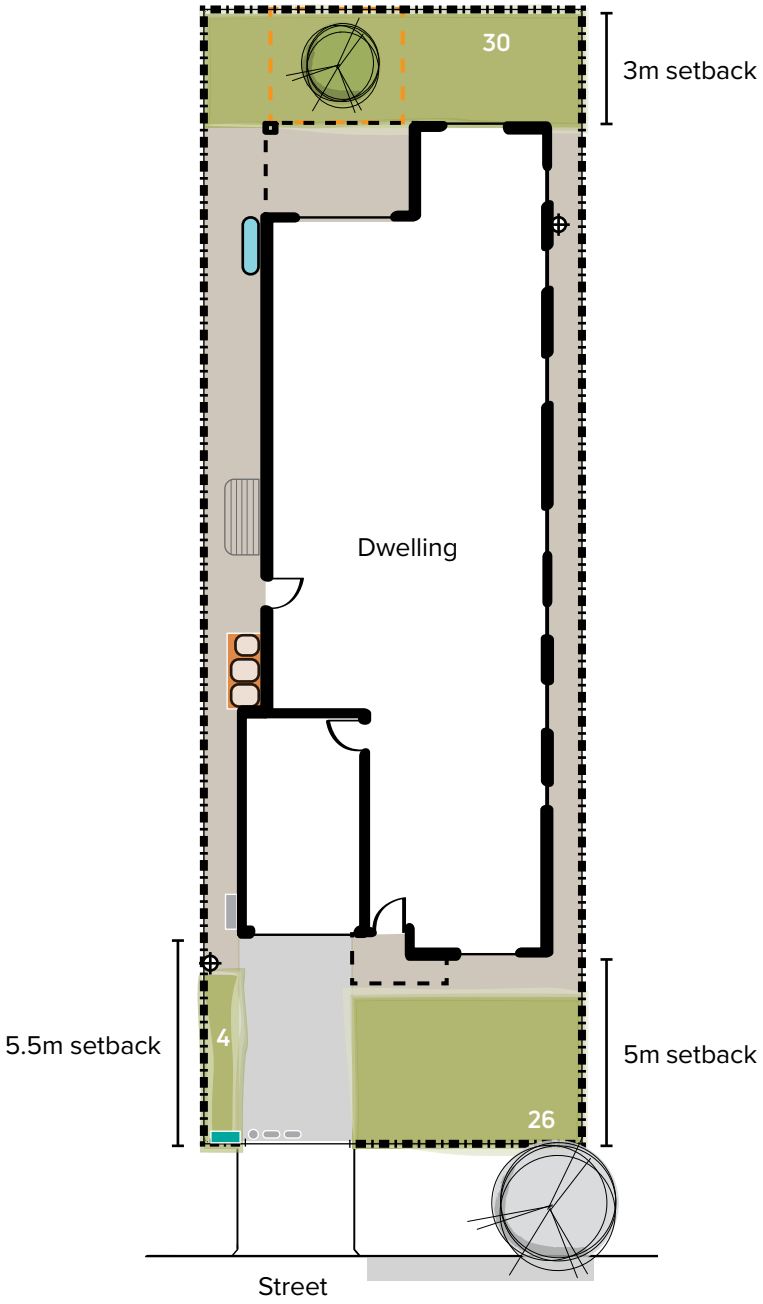
Site statistics	Code requirements
General Neighbourhood Zone	Front setback is the average of adjoining buildings or 5m 3m rear setback
300m^2 site area 1 storey 4 bedroom home	1 small tree per dwelling with min. soil area of 10m^2 with minimum diameter of 1.5m^2
	20% soft landscaping
	24m^2 Private Open Space behind building line
	Minimum 30% soft landscaping between building line and street

Common examples


31


32

1 tree



Legend

- Driveway / car parking
- Soft landscaping
- Paving
- Permeable surface material
- Building / balcony overhead
- Fence
- Water tank
- Bin storage
- Service cabinet
- Letter box
- Tree
- Soil Area
- m² soft landscaping
- Tap
- Clothes line
- Service pits

1 3 6m

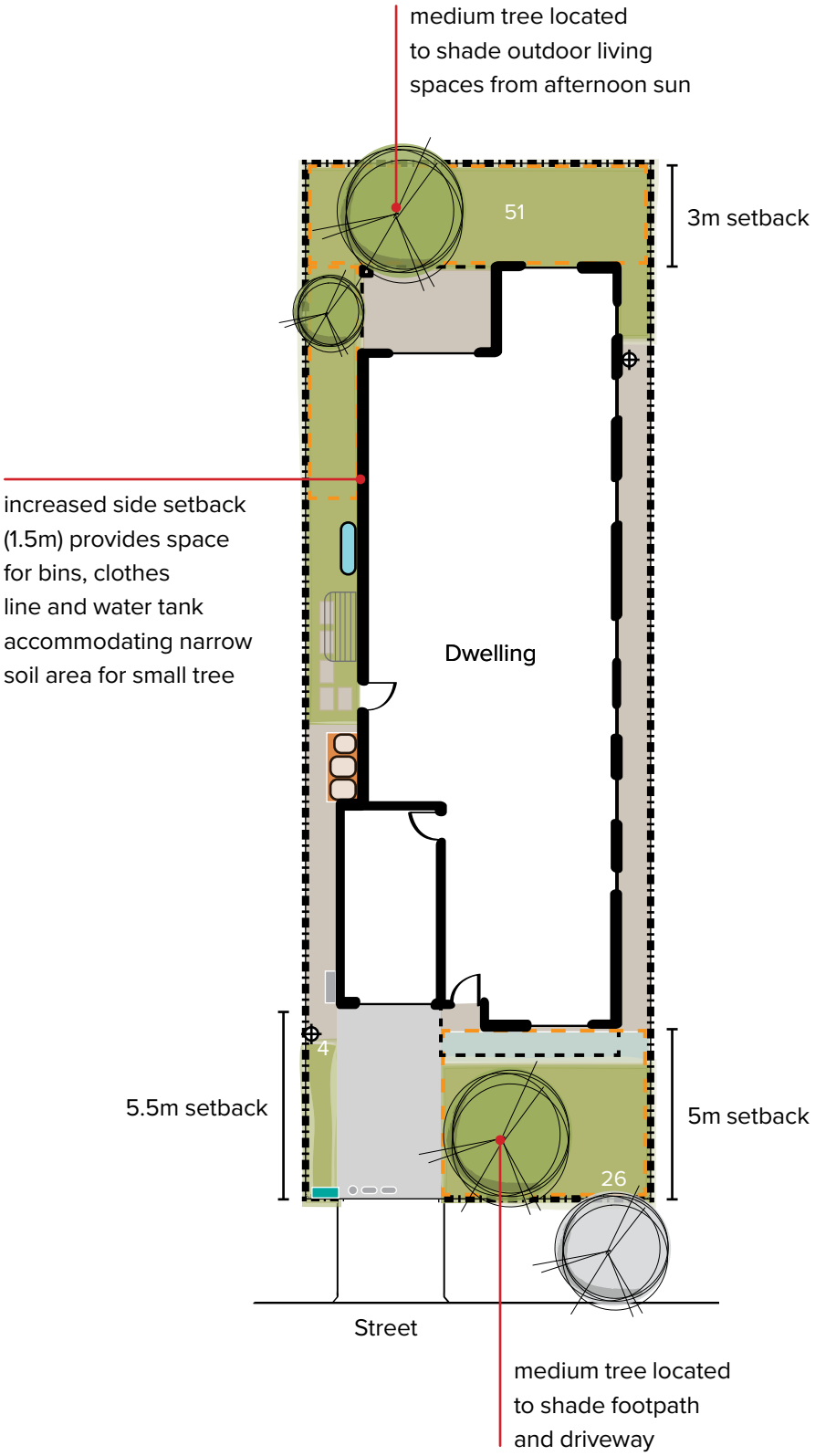
Better greening outcomes for a

Detached dwelling

This example illustrates better greening outcomes for a single detached dwelling in the General Neighbourhood Zone.

Achievable	How	Why
1 small tree	• Permeable surface material (decking to rear alfresco area and gravel along rear wall) to achieve soil areas • Narrow soil area (min. 1.5m) for additional small tree along western edge of dwelling	• Improved shading, especially of western side of alfresco area • Improved views from living spaces
2 medium trees	• 30m^2 soil areas retained in front and back gardens • Permeable/ porous surface material e.g. gravel path along front wall of dwelling to achieve front garden medium tree	• Shaded indoor and outdoor living spaces in summer • Contribution to shading and cooling footpath and enhancing neighbourhood amenity and character
25% soft landscaping	• Reduced hard surfaces and paving • Planting or lawn with steppers to western side of dwelling	• Enhanced appearance from dwellings and street • Enhanced cooling and minimised heat absorption and reflection • Improved stormwater infiltration • Improved contribution to biodiversity
55m^2 Private Open Space	• Generous undercover alfresco area to rear of dwelling	• Enhanced indoor/outdoor lifestyle opportunities • Improved connection to nature • Enhanced wellbeing

3 trees



Legend

- Driveway / car parking
- Soft landscaping
- Paving
- Permeable surface material
- Building / balcony overhead
- Fence
- Water tank
- Bin storage
- Service cabinet
- Letter box
- Tree
- Soil Area
- m² soft landscaping
- Tap
- Clothes line
- Service pits

1 3 6m

Meeting minimum greening requirements for a

Semi-detached dwelling

375m² site

This example illustrates meeting minimum requirements for semi-detached dwellings in the Suburban Neighbourhood Zone.

Minimum requirements

Site statistics	Code requirements
Suburban Neighbourhood Zone	Front setback average of adjoining buildings or 8m 4m rear setback
750m² parcel of land 2 dwellings with 375m² site area per dwelling 2 storey 4 bedroom homes	1 small tree per dwelling with min. soil area of 10m² with min. dim of 1.5m²
	20% soft landscaping
	60m² Private Open Space behind building line
	Min. 30% soft landscaping between building line and street

Common examples

34

2 trees


Street
30
2.5
2.5
30
8m setback
4
4
Dwelling 1
Dwelling 2
7
7
4m setback
31.5
31.5
Legend
Driveway / car parking
Soft landscaping
Paving
Permeable surface material
Building / balcony overhead
Fence
Water tank
Bin storage
Service cabinet
Letter box
Tree
Soil Area
x
m² soft landscaping
Tap
Clothes line
Service pits
1
3
6m

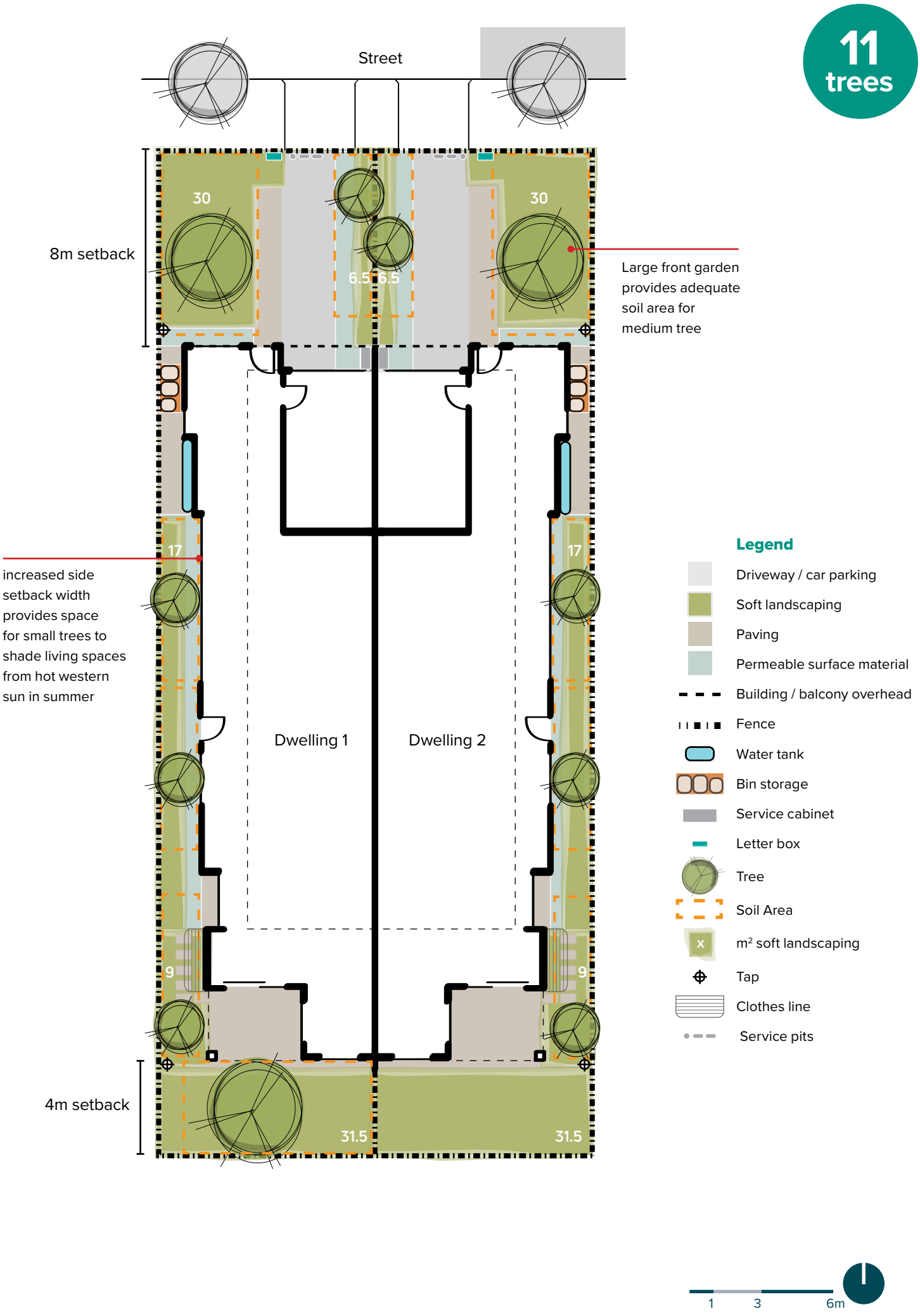
Better greening outcomes for a

Semi-detached dwelling

375m² site

This example illustrates better greening outcomes for semi-detached dwellings in the Suburban Neighbourhood Zone.

Achievable	How	Why
8 small trees	• Permeable surface material on driveway over soil area • Trees located in narrow zones alongside house with min. 1.5m width	• Screening for privacy • Improved shading, especially of windows down western side of dwelling 1 • Improved views from living spaces
3 medium trees	• Relatively large front and rear garden areas used to achieve 30m² soil area	• Shaded living room in summer • Enhanced cooling • Lower power costs • Improved habitat and biodiversity
25% soft landscaping	• Reduced hard surfaces and paving • Planting or lawn with steppers to side setbacks alongside clothes line	• Enhanced appearance from dwellings and street • Enhanced cooling and minimised heat absorption and reflection • Improved stormwater infiltration • Improved contribution to biodiversity
60m² Private Open Space	• Large undercover alfresco area to rear of dwelling	• Enhanced indoor/outdoor lifestyle opportunities • Improved connection to nature • Enhanced wellbeing


11 trees
Street
8m setback
30
30
6.5
6.5
Large front garden provides adequate soil area for medium tree
increased side setback width provides space for small trees to shade living spaces from hot western sun in summer
17
17
Dwelling 1
Dwelling 2
9
9
4m setback
31.5
31.5
Legend
Driveway / car parking
Soft landscaping
Paving
Permeable surface material
Building / balcony overhead
Fence
Water tank
Bin storage
Service cabinet
Letter box
Tree
Soil Area
x
m² soft landscaping
Tap
Clothes line
Service pits
1
3
6m

Meeting minimum greening requirements for a

Semi-detached dwelling

325m² site

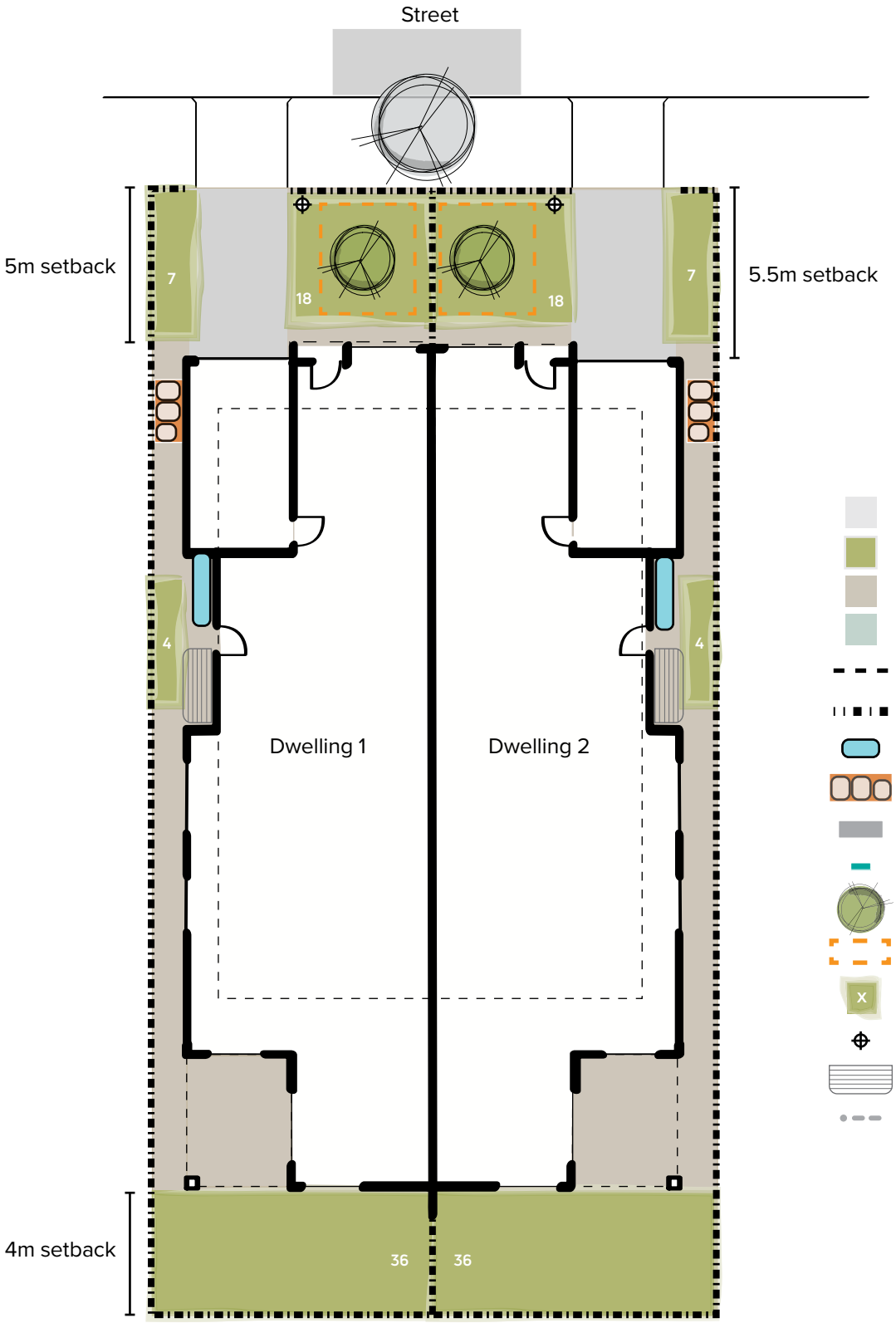
This example illustrates meeting minimum requirements for semi-detached dwellings in the General Neighbourhood Zone.

Minimum requirements

Site statistics	Code requirements
General Neighbourhood Zone	Front setback average of adjoining buildings or 5m 4m rear setback
650m² parcel of land 2 dwellings with 325m² site area per dwelling 1 storey 3 bedroom homes	1 small tree per dwelling with min. soil area of 10m² with min. dim of 1.5m²
	20% soft landscaping
	60m² Private Open Space behind building line
	Min. 30% soft landscape between building line and street

Common examples

2 trees


Street
5m setback
5.5m setback
7
18
18
7
4
4
Dwelling 1
Dwelling 2
4m setback
36
36
Legend
Driveway / car parking
Soft landscaping
Paving
Permeable surface material
Building / balcony overhead
Fence
Water tank
Bin storage
Service cabinet
Letter box
Tree
Soil Area
x
m² soft landscaping
Tap
Clothes line
Service pits
1
3
6m

Better greening outcomes for a

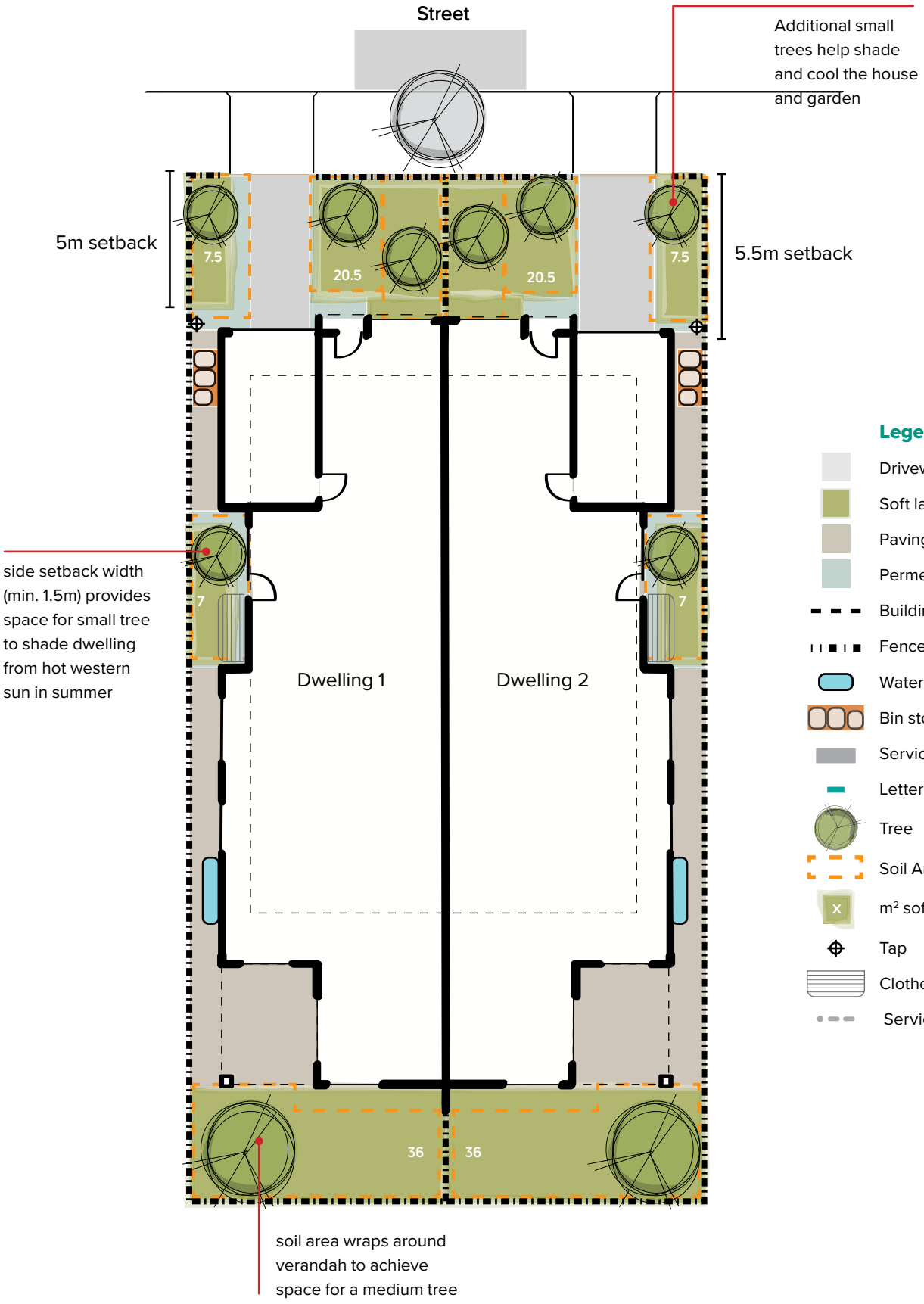
Semi-detached dwelling

325m² site

This example illustrates better greening outcomes for semi-detached dwellings in the General Neighbourhood Zone.

Achievable	How	Why
8 small trees	• Small tree located in narrow landscape zone alongside driveway • Using narrow (2m wide) side setback area to locate a small tree	• Amenity and neighbourhood character • Screening and privacy • Shade and cooling • Enhanced views from living spaces
2 medium trees	• Locate tree so 30m² soil area wraps around back verandah	• Enhanced cooling • Increased canopy coverage
22% soft landscaping	• Reduced hard surfaces and paving	• Enhanced appearance from dwellings and street • Enhanced cooling and minimised heat absorption and reflection • Improved stormwater infiltration • Improved contribution to biodiversity
60m² Private Open Space	• Generous rear alfresco area	• Enhanced indoor/outdoor lifestyle opportunities

10 trees


Street
Additional small trees help shade and cool the house and garden
5m setback
5.5m setback
7.5
20.5
20.5
7.5
side setback width (min. 1.5m) provides space for small tree to shade dwelling from hot western sun in summer
7
7
Dwelling 1
Dwelling 2
36
36
soil area wraps around verandah to achieve space for a medium tree
Legend
Driveway / car parking
Soft landscaping
Paving
Permeable surface material
Building / balcony overhead
Fence
Water tank
Bin storage
Service cabinet
Letter box
Tree
Soil Area
x
m² soft landscaping
Tap
Clothes line
Service pits
1
3
6m

Meeting minimum greening requirements for a

Detached ('battle-axe')

This example illustrates meeting minimum requirements for detached dwellings on a 'battle-axe' allotment in the Housing Diversity Neighbourhood Zone.

Minimum requirements

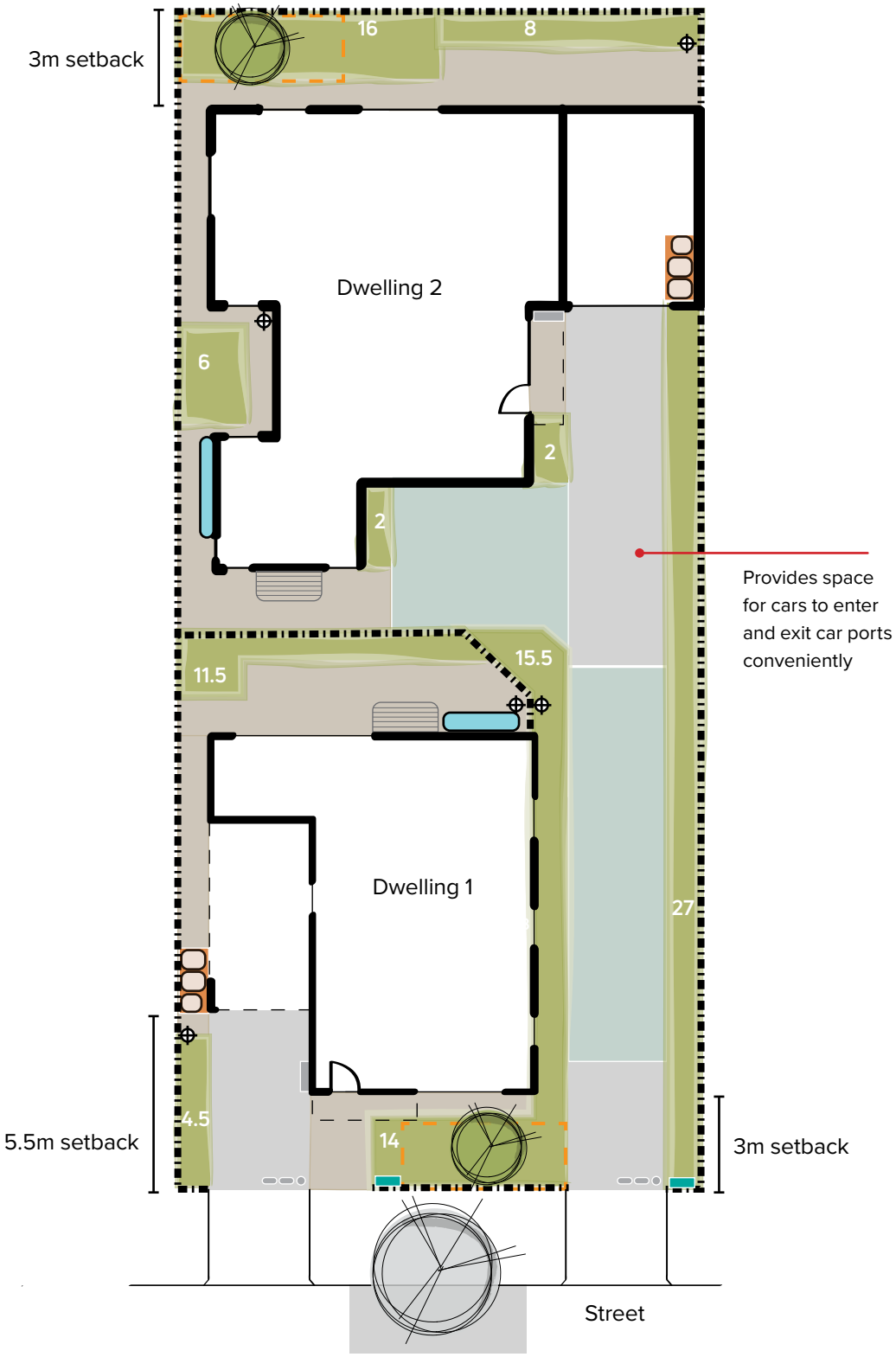
Site statistics	Code requirements
Housing Diversity Neighbourhood Zone	3m front setback 3m rear setback
580m^2 parcel of land 2 dwellings with 198m^2 site area for dwelling 1 and 382m^2 site area for dwelling 2 1 storey 3 bedroom homes	1 small tree per dwelling with min. soil area of 10m^2 with min. dim of 1.5m^2
	15% soft landscaping (dwelling 1) 20% soft landscaping (dwelling 2)
	24m^2 Private Open Space behind building line (dwelling 1) 60m^2 Private Open Space behind building line (dwelling 2)
	Min. 30% soft landscaping between building line and street
	1m wide soft landscaping provided between the driveway and site boundary and driveway and dwelling

Note:

- Garages, driveways and crossovers/access points must comply with AS/NZS 2890.1:2004.
- 'Battle-axe' allotments should be checked by a traffic engineering professional to ensure turn paths provide appropriate maneuverability.
- It is recommended that you seek assistance from your local council or a professional to ensure your plan complies with all relevant requirements.

Common examples

2 trees



Legend

- Driveway / car parking
- Soft landscaping
- Paving
- Permeable surface material
- Building / balcony overhead
- Fence
- Water tank
- Bin storage
- Service cabinet
- Letter box
- Tree
- Soil Area
- x m² soft landscaping
- Tap
- Clothes line
- Service pits

1 3 6m

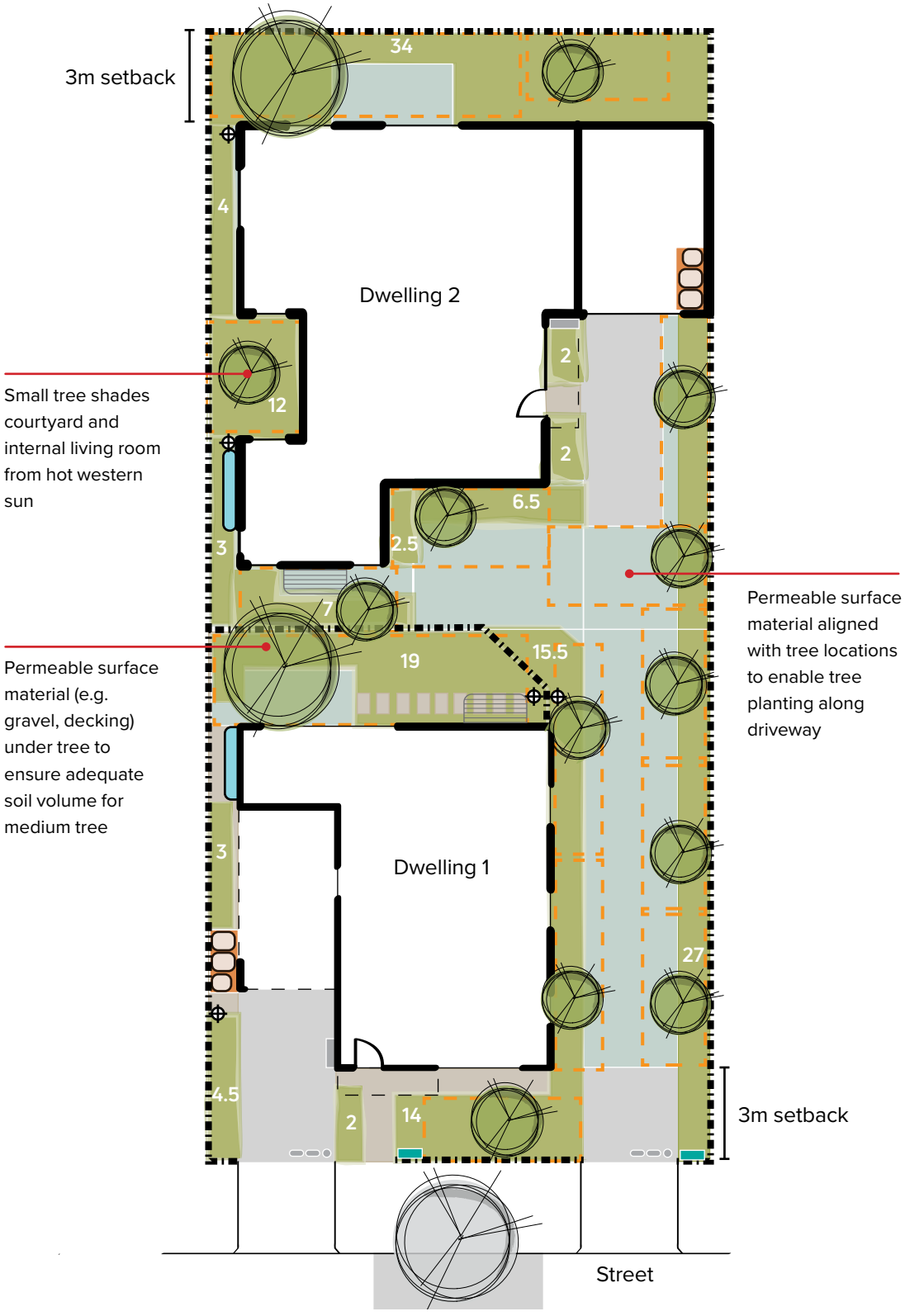
Better greening outcomes for a

Detached ('battle-axe')

This example illustrates better greening outcomes for detached dwellings on a 'battle-axe' allotment in the Housing Diversity Neighbourhood Zone.

Achievable	How	Why
12 small trees	• Consider permeable surface material on driveway over soil area • Consolidated backyard service zones (bin storage, clothes line, water tank) and pathways to achieve soil area required • Small tree located in western facing courtyard of dwelling 2 • Permeable surface material aligned with tree locations to achieve 7 small trees lining the driveway	• Screening trees along the driveway for amenity and privacy • Tree in western facing courtyard to provide shade from afternoon sun
2 medium trees	• 30m^2 soil areas located in back gardens	• Back garden trees provide shade, cooling and amenity to north-facing garden and living spaces • Front garden tree provides cooling and shade to the street and neighbourhood amenity and character
21% soft landscaping (dwelling 1) 30% soft landscaping (dwelling 2)	• Significant reduction in paved spaces • Narrow (0.7m wide) soft landscaping to side setbacks along fences, where regular access is not likely required	• Enhanced appearance from dwellings and street • Enhanced cooling and minimised heat absorption and reflection • Improved stormwater infiltration • Improved contribution to biodiversity
26m^2 Private Open Space (dwelling 1) 60m^2 Private Open Space (dwelling 2)	• Western setback to dwelling 2 to create courtyard space • Northern facing, shaded outdoor space accessible from living rooms, to rear of both dwellings	• Enhanced indoor/outdoor lifestyle benefits • Enhanced wellbeing

14 trees



Legend

- Driveway / car parking
- Soft landscaping
- Paving
- Permeable surface material
- Building / balcony overhead
- Fence
- Water tank
- Bin storage
- Service cabinet
- Letter box
- Tree
- Soil Area
- x m² soft landscaping
- Tap
- Clothes line
- Service pits

1 3 6m

Meeting minimum greening requirements for a

Residential flat building ('battle-axe')

This example illustrates meeting minimum requirements for a residential flat building on a 'battle-axe' allotment in the Housing Diversity Neighbourhood Zone.

Minimum requirements

Site statistics	Code requirements
Housing Diversity Neighbourhood Zone	3m front setback 3m rear setback
940m^2 parcel of land	1 small tree per dwelling with min. soil area of 10m^2 with min. dim of 1.5m^2
4 dwellings with average 235m^2 site area per dwelling (inc. driveway)	20% soft landscaping per site
	24m^2 Private Open Space behind building line
2 storey 3 bedroom homes	Min. 30% soft landscaping between building line and street
Common driveway	Driveway constructed of 50% permeable or porous material

Note:

- This case study assumes that the Urban Transport Routes Overlay and the Major Urban Transport Overlay within the Code do not apply.
- Garages, driveways and crossovers/access points must comply with AS/NZS 2890.1:2004.
- 'Battle-axe' allotments should be checked by a professional to ensure turn paths provide appropriate maneuverability.
- Common driveways servicing a perpendicular parking space should be checked by a traffic engineering professional to ensure turn paths provide appropriate maneuverability.
- It is recommended that you seek assistance from your local council or a professional to ensure your plan complies with all relevant requirements.

Common examples

4 trees

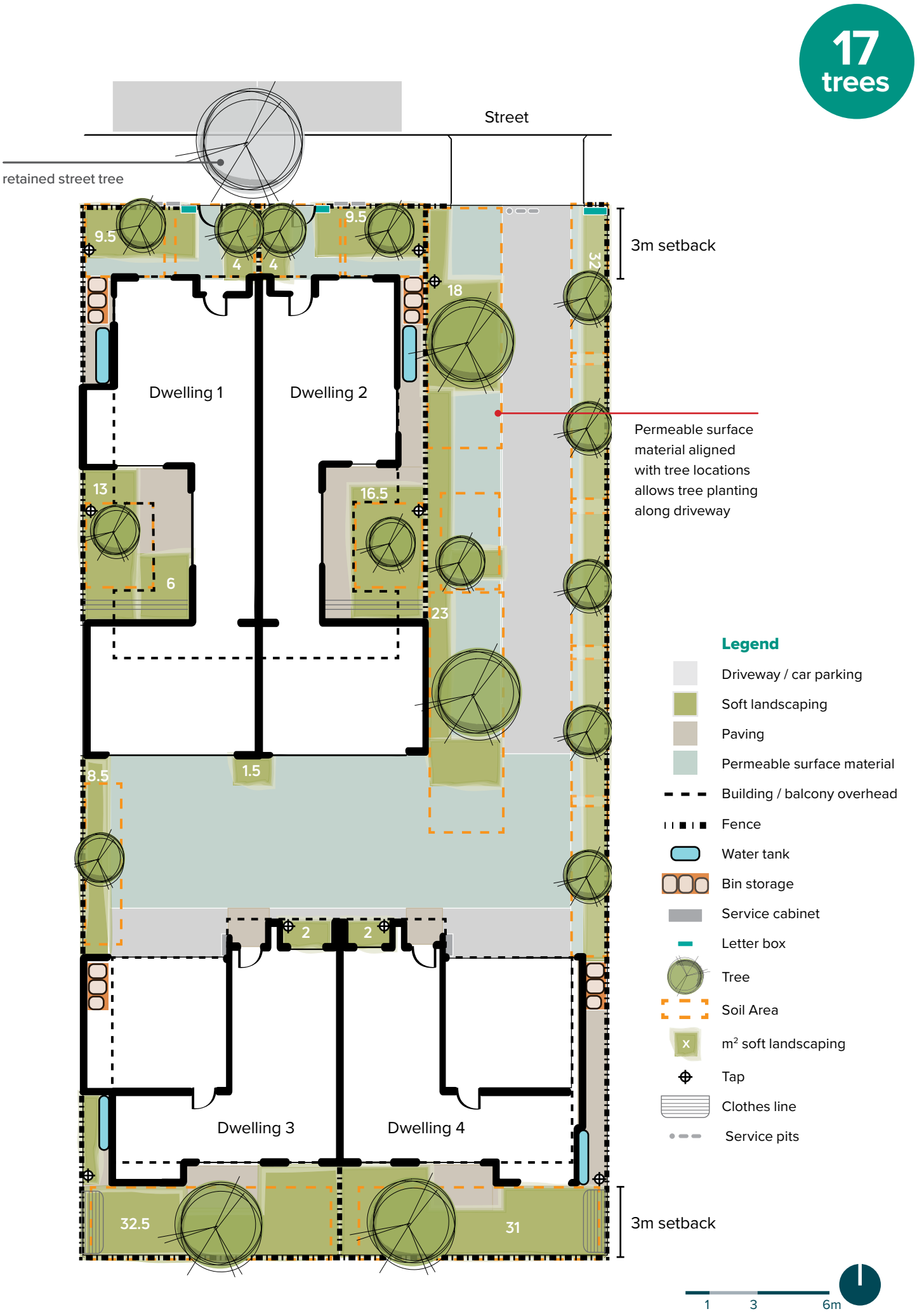

Street
retained street tree
6m
3m setback
5.5m
3m
6.6m visitor car park
3m setback
Dwelling 1
Dwelling 2
Dwelling 3
Dwelling 4
9.5
9.5
4
4
32
16
12
12
15
1.5
8.5
2
2
30
30
Legend
Driveway / car parking
Soft landscaping
Paving
Permeable surface material
Building / balcony overhead
Fence
Water tank
Bin storage
Service cabinet
Letter box
Tree
Soil Area
m² soft landscaping
Tap
Clothes line
Service pits
1
3
6m

Better greening outcomes for a

Residential flat building ('battle-axe')

This example illustrates better greening outcomes for a residential flat building on a 'battle-axe' allotment in the Housing Diversity Neighbourhood Zone.

Achievable	How	Why
13 small trees	• Reduced paved area in courtyard in dwellings 1 and 2 to achieve 10m² soil area	• Enhanced amenity, lifestyle and wellbeing • Shade (especially beneficial for western facing courtyard)
4 medium trees	• Permeable material for driveway zones over soil area • Reduced paved areas in back garden to achieve 30m² soil area	• Large increase in canopy coverage • Shade and cooling • Amenity for back garden and views from living areas
23% soft landscaping	• Narrowed rear driveway area • Reduced paving areas	• Enhanced appearance from dwellings and street • Enhanced cooling and minimised heat absorption and reflection • Improved stormwater infiltration • Improved contribution to biodiversity
25m² Private Open Space (dwelling 1) 24m² Private Open Space (dwelling 2) 35m² Private Open Space (dwelling 3 and 4)	• Courtyard between house and garage (partially covered by 1st floor) for dwelling 1 and 2	• Enhanced indoor/outdoor lifestyle opportunities • Improved wellbeing


17 trees
Street
retained street tree
3m setback
Dwelling 1
Dwelling 2
Permeable surface material aligned with tree locations allows tree planting along driveway
Legend
Driveway / car parking
Soft landscaping
Paving
Permeable surface material
Building / balcony overhead
Fence
Water tank
Bin storage
Service cabinet
Letter box
Tree
Soil Area
m² soft landscaping
Tap
Clothes line
Service pits
Dwelling 3
Dwelling 4
3m setback
1
3
6m

Meeting minimum greening requirements for

Terrace/row dwellings

This example illustrates meeting minimum requirements for row dwellings in a terrace arrangement in the General Neighbourhood Zone.

Minimum requirements

Site statistics	Code requirements
General Neighbourhood Zone	Front setback average of adjoining buildings or 5m 3m rear setback
750m^2 parcel of land 3 dwellings with 250m^2 site area per dwelling 2 storey 3 bedroom homes	1 small tree per dwelling with min. soil area of 10m^2 with min. dim of 1.5m^2
	20% soft landscaping
	24m^2 Private Open Space behind building line
	Min. 30% soft landscaping between building line and street

Common examples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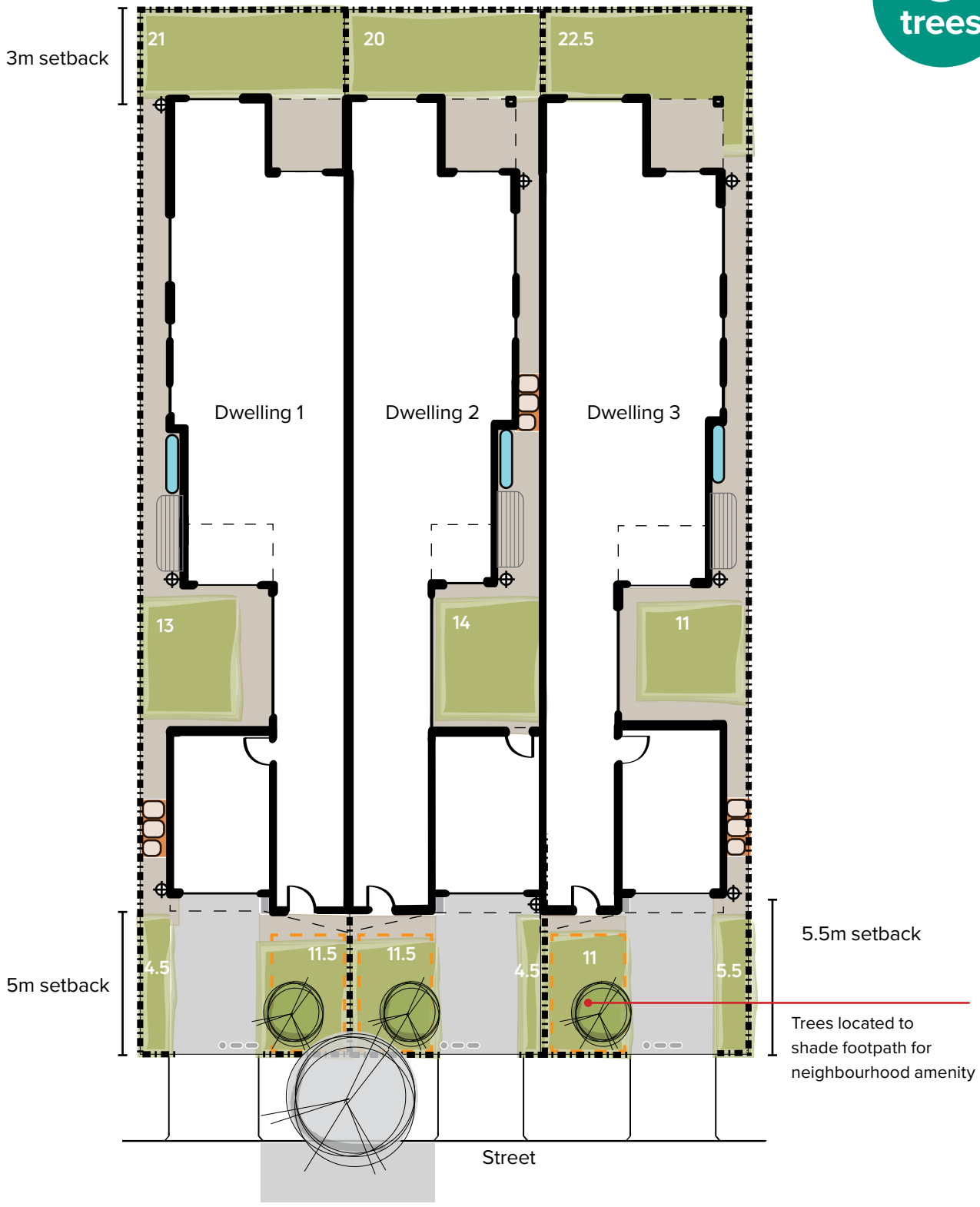
3 trees



Legend

- Driveway / car parking
- Soft landscaping
- Paving
- Permeable surface material
- Building / balcony overhead
- Fence
- Water tank
- Bin storage
- Service cabinet
- Letter box
- Tree
- Soil Area
- x m² soft landscaping
- Tap
- Clothes line
- Service pits

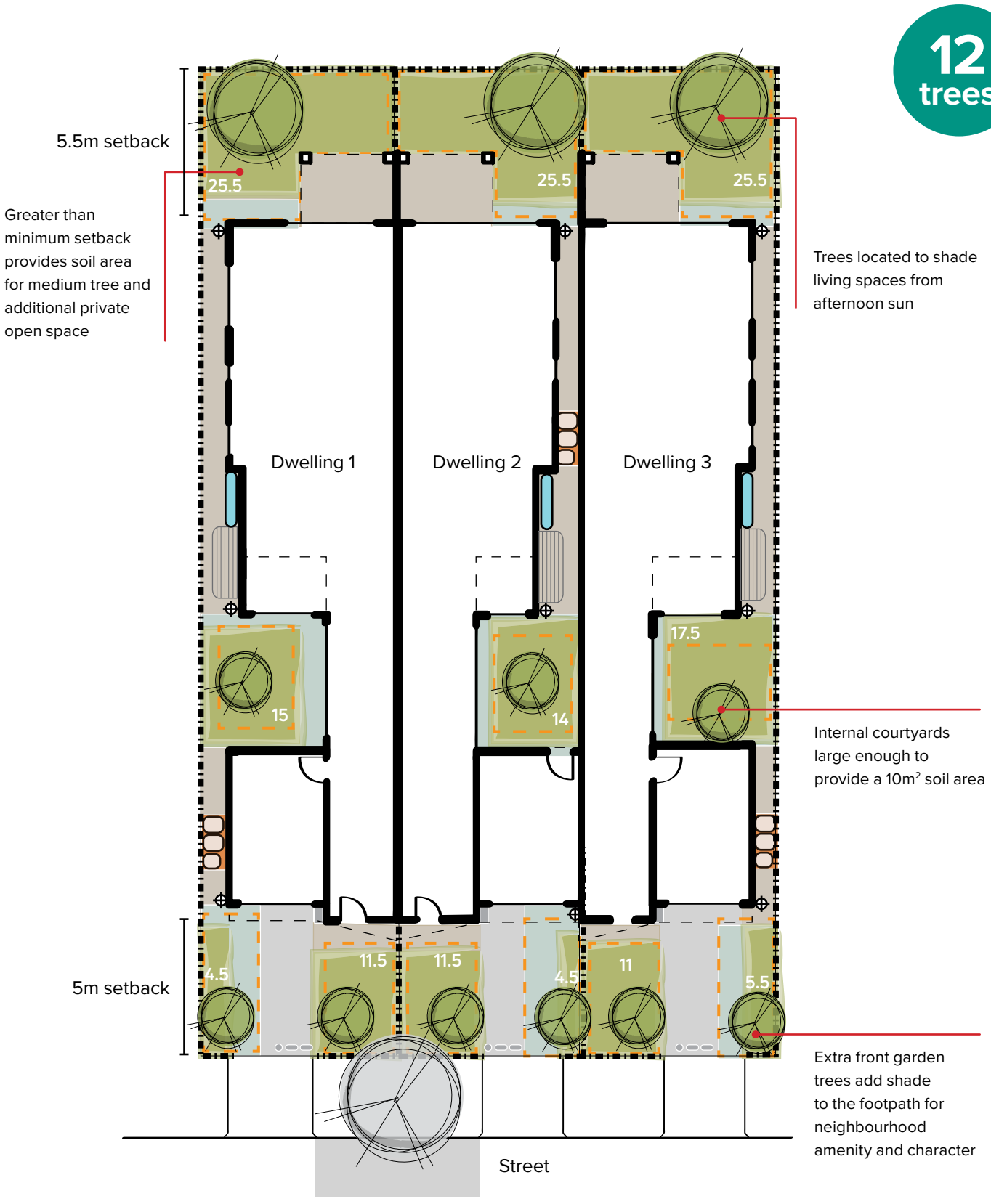
1 3 6m

Better greening outcomes for

Terrace/row dwellings

This example illustrates better greening outcomes for row dwellings in a terrace arrangement in the General Neighbourhood Zone.

Achievable	How	Why
3 medium trees	• Small reduction to width of back verandah to achieve 30m^2 required soil area	• Increased canopy coverage (compared to two small trees) • Increased shade and cooling
9 small	• Small trees added to courtyard spaces	• Enhanced amenity, lifestyle and wellbeing • Shade (deciduous trees in the northern facing courtyards will allow solar access during winter)
23% soft landscaping	• Small reduction in paved areas	• Enhanced appearance from dwellings and street • Enhanced cooling and minimised heat absorption and reflection • Improved stormwater infiltration • Improved contribution to biodiversity
59m^2 Private Open Space (dwelling 1) 52m^2 Private Open Space (dwelling 2) 57m^2 Private Open Space (dwelling 3)	• Small internal courtyard • Rear alfresco area • Reconfiguration of dwelling to allow for greater than minimum setback (5.5m), which provides soil area for medium tree and additional Private Open Space	• Enhanced indoor/outdoor lifestyle opportunities • Improved wellbeing


12 trees
5.5m setback
Greater than minimum setback provides soil area for medium tree and additional private open space
Trees located to shade living spaces from afternoon sun
Dwelling 1
Dwelling 2
Dwelling 3
Internal courtyards large enough to provide a 10m² soil area
5m setback
Extra front garden trees add shade to the footpath for neighbourhood amenity and character
Street
25.5
25.5
25.5
15
14
17.5
4.5
11.5
11.5
4.5
11
5.5
Legend
Driveway / car parking
Soft landscaping
Paving
Permeable surface material
Building / balcony overhead
Fence
Water tank
Bin storage
Service cabinet
Letter box
Tree
Soil Area
m² soft landscaping
Tap
Clothes line
Service pits
1
3
6m

Meeting minimum greening requirements for

Detached dwellings

This example illustrates meeting minimum requirements for low-density detached dwellings in the General Neighbourhood Zone.

Minimum requirements

Site statistics	Code requirements
General Neighbourhood Zone	Front setback average of adjoining buildings or 5m 3m rear setback
1200m^2 parcel of land 4 dwellings with 300m^2 average site area per dwelling 1 storey 2 bedroom homes	1 small tree per dwelling with min. soil area of 10m^2 with min. dim of 1.5m^2 (in example, 1 large has been retained in Dwelling 4 and discount for large tree applied to site, no extra trees required for Dwelling 4)
	20% soft landscaping
	24m^2 Private Open Space behind building line
	Min. 30% soft landscaping between building line and street

Common examples

Legend

- Driveway / car parking
- Soft landscaping
- Paving
- Permeable surface material
- Building / balcony overhead
- Fence
- Water tank
- Bin storage
- Service cabinet
- Letter box
- Tree
- Soil Area
- x m² soft landscaping
- Tap
- Clothes line
- Service pits

1 3 6m

Better greening outcomes for

Detached dwellings

This example illustrates better greening outcomes for low-density detached dwellings in the General Neighbourhood Zone.

Achievable	How	Why
16 small trees	• Adding small trees to areas along-side the dwellings where widths of 1.5m are available for soil area • Permeable material for driveway zones to achieve required soil areas	• Shade house from afternoon sun • Lower power costs • Enhanced views from living rooms
4 medium trees	• Reduced paved area in front gardens to achieve 30m^2 soil area	• Increased canopy coverage and shade
1 large tree retained	• 60m^2 soil area retained - more permeable surface material close to house considered, see page 30-31 for more detail	• Retained canopy coverage • Shaded living room • Lower power costs • Habitat and biodiversity
24% soft landscaping	• Reduced areas of paving	• Enhanced appearance from dwellings and street • Enhanced cooling and minimised heat absorption and reflection • Improved stormwater infiltration • Improved contribution to biodiversity
25m^2 Private Open Space (dwelling 1) 44m^2 Private Open Space (dwelling 2) 45m^2 Private Open Space (dwelling 3) 84m^2 Private Open Space (dwelling 4)	• Wider than minimum requirement setbacks to side and rear of some dwellings	• Enhanced indoor/outdoor lifestyle opportunities • Improved wellbeing

Legend

- Driveway / car parking
- Soft landscaping
- Paving
- Permeable surface material
- Building / balcony overhead
- Fence
- Water tank
- Bin storage
- Service cabinet
- Letter box
- Tree
- Soil Area
- x m² soft landscaping
- Tap
- Clothes line
- Service pits

1 3 6m

Meeting minimum greening requirements for a

Residential flat building

This example illustrates meeting minimum requirements for a residential flat building with a common driveway in the Housing Diversity Neighbourhood Zone.

Minimum requirements

Site statistics	Code requirements
Housing Diversity Neighbourhood Zone	3m front setback 5m rear setback (2 storey)
1000m² parcel of land 5 dwellings with 200m² average site area per dwelling 3 X 2 storey 3 bedroom homes 2 X 2 storey 2 bedroom homes	1 tree per dwelling with min. soil area of 10m² with min. dim of 1.5m²
	15% soft landscaping per site
	24m² Private Open Space per dwelling
	Min. 30% soft landscape between building line and street
	Min. 1m wide soft landscaping between common driveway and boundary and driveway and dwellings
Common driveway	Driveway constructed of 50% permeable or porous material

Note:

- This case study assumes the Urban Transport Routes Overlay and the Major Urban Transport Overlay within the Code do not apply.
- Garages, driveways and crossovers/access points must comply with AS/NZS 2890.1:2004.
- Common driveways servicing a perpendicular parking space should be checked to ensure turn paths provide appropriate maneuverability.
- It is recommended that you seek assistance from your local council or a professional to ensure your plan complies with all relevant requirements.

Common examples

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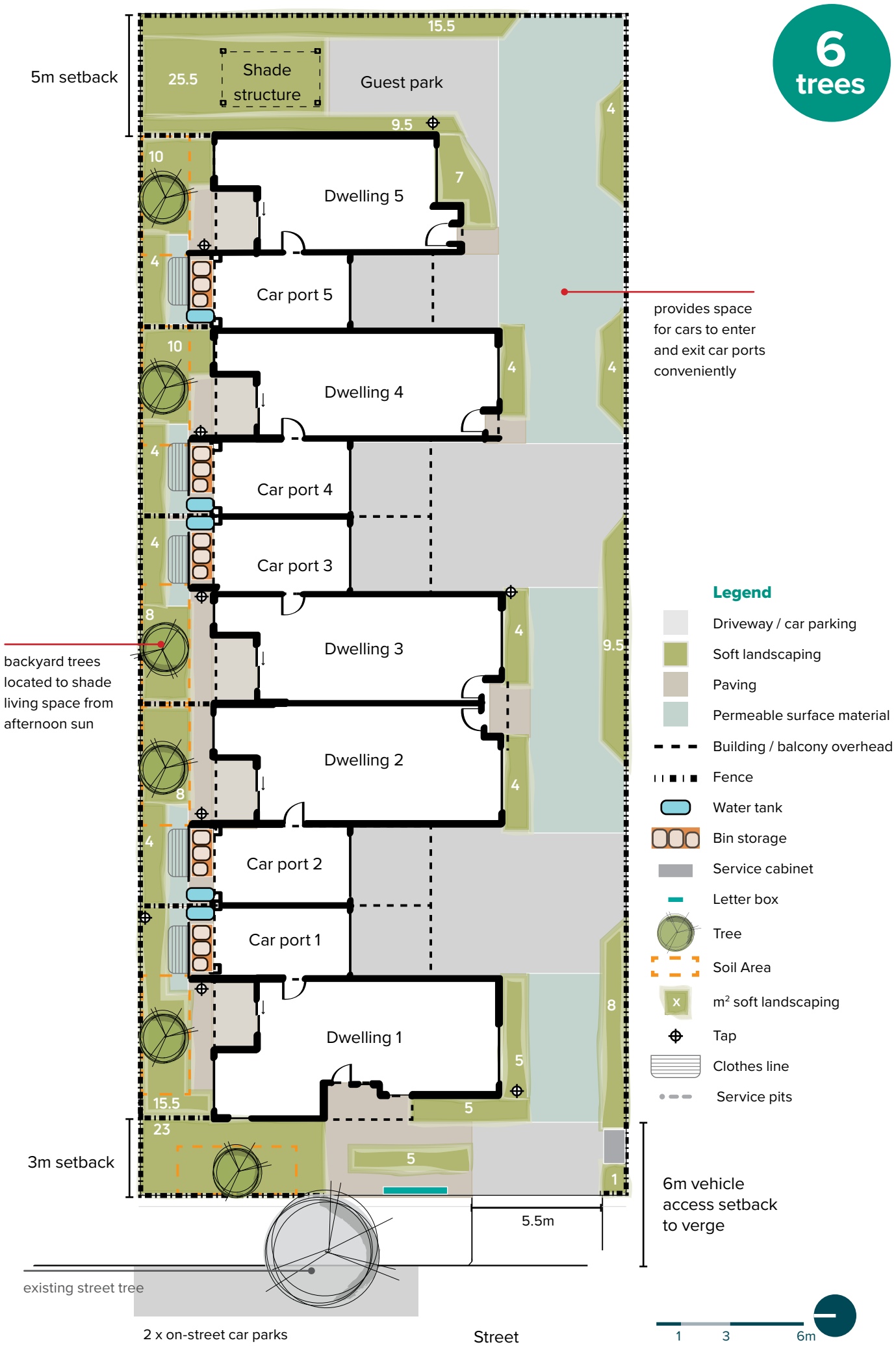
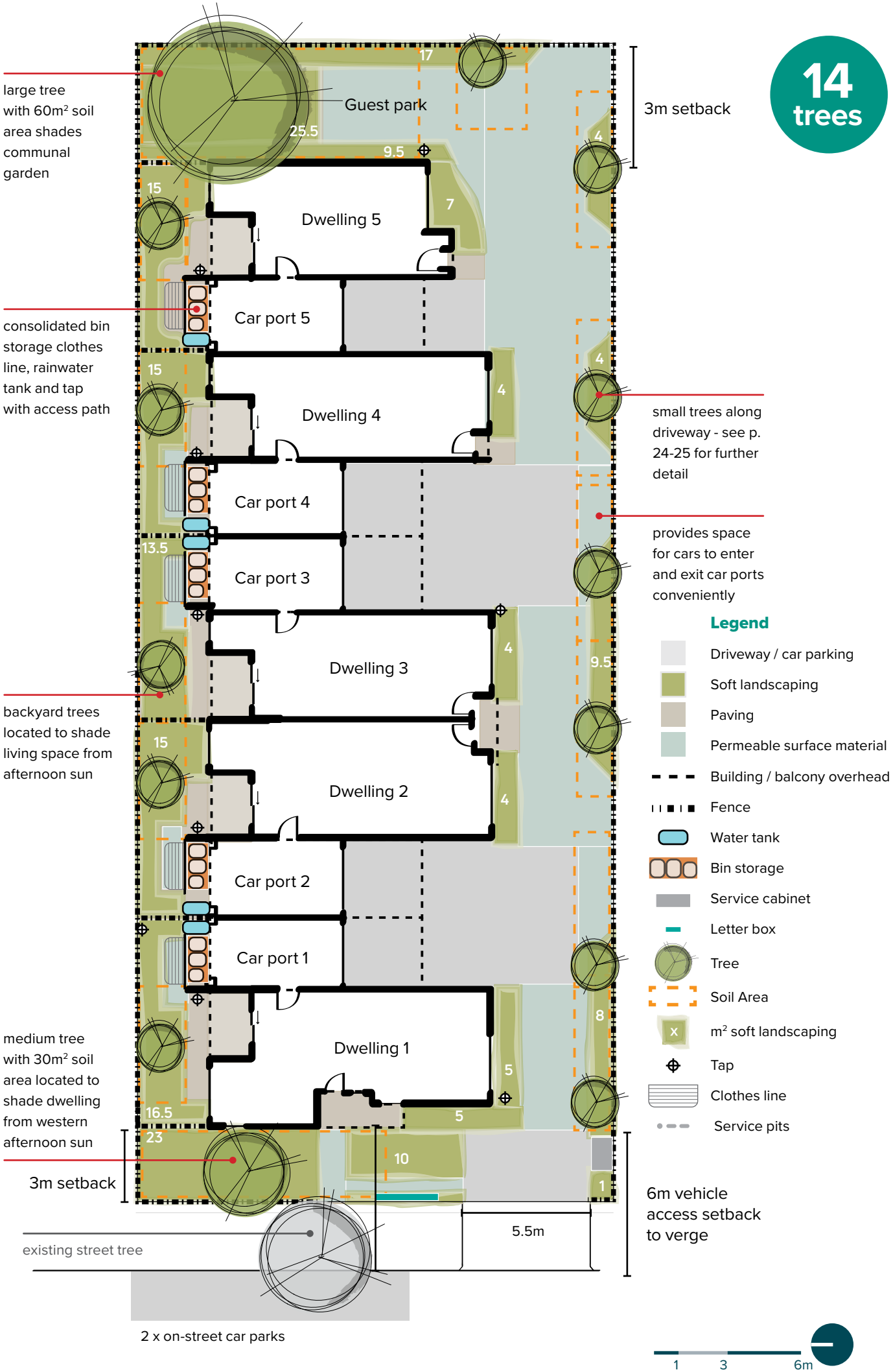

6 trees
5m setback
15.5
25.5
Shade structure
Guest park
9.5
10
Dwelling 5
7
4
Car port 5
provides space for cars to enter and exit car ports conveniently
10
Dwelling 4
4
4
4
Car port 4
4
Car port 3
backyard trees located to shade living space from afternoon sun
8
Dwelling 3
4
9.5
Dwelling 2
8
4
4
Car port 2
Car port 1
8
Dwelling 1
5
15.5
5
23
3m setback
5
1
6m vehicle access setback to verge
5.5m
existing street tree
2 x on-street car parks
Street
Legend
Driveway / car parking
Soft landscaping
Paving
Permeable surface material
Building / balcony overhead
Fence
Water tank
Bin storage
Service cabinet
Letter box
Tree
Soil Area
x
m² soft landscaping
Tap
Clothes line
Service pits
1
3
6m

Better greening outcomes for a

Residential flat building

This example illustrates better greening outcomes for a residential flat building with a common driveway in the Housing Diversity Neighbourhood Zone.

Achievable	How	Why
12 small trees	• Consider permeable surface material on driveway over tree planting soil area • Consolidated backyard service zones (bin storage, clothes line, water tank) and pathways to achieve soil area required	• Screening trees along the driveway for amenity and privacy • Small trees in northern facing backyard provide shade and amenity to indoor and outdoor living areas
1 medium tree	• Reduced hard surfaces and paving, larger soil area in front garden	• Shading the western-facing dwelling from hot afternoon sun
1 large tree	• 5m rear setback and large soil volume area	• Provides a shaded communal garden space • Larger canopy coverage achieved
21% soft landscaping 21m^2 Private Open Space per dwelling + 45m^2 Communal Open Space 47% soft landscape between building line and street Min. 1m wide soft landscaping between driveway and boundary and driveway and dwellings	• Reduced hard surface paving areas	• Enhanced appearance from dwellings and street • Enhanced cooling and minimised heat absorption and reflection • Improved stormwater infiltration • Improved contribution to biodiversity


14 trees
large tree with 60m² soil area shades communal garden
consolidated bin storage clothes line, rainwater tank and tap with access path
backyard trees located to shade living space from afternoon sun
medium tree with 30m² soil area located to shade dwelling from western afternoon sun
3m setback
existing street tree
2 x on-street car parks
3m setback
small trees along driveway - see p. 24-25 for further detail
provides space for cars to enter and exit car ports conveniently
6m vehicle access setback to verge
5.5m
Guest park
Dwelling 5
Dwelling 4
Dwelling 3
Dwelling 2
Dwelling 1
Car port 5
Car port 4
Car port 3
Car port 2
Car port 1
17
25.5
9.5
15
7
4
13.5
9.5
8
5
16.5
23
10
1
Legend
Driveway / car parking
Soft landscaping
Paving
Permeable surface material
Building / balcony overhead
Fence
Water tank
Bin storage
Service cabinet
Letter box
Tree
Soil Area
m² soft landscaping
Tap
Clothes line
Service pits
1
3
6m

Step 2

Design

Carefully consider the home's context and occupants' lifestyle to maximise the environmental, aesthetic and wellbeing benefits of the garden.

Key considerations:

- Indoor/outdoor relationship
- Maximising shade and cooling
- Appearance and 'kerb appeal'
- Biodiversity

This section includes:

- A design checklist
- Lists of popular small, medium and large trees
- 8 different character garden designs and corresponding examples

For additional tree and plant options please see the separate list available at **plan.sa.gov.au**

Design checklist

Carefully consider the home's context and occupants' lifestyle to maximise the environmental, aesthetic and wellbeing benefits.

Carefully manage stormwater run-off

Ensure the dwelling's footing systems are appropriately protected. Consider the local context, soil type and climate for selecting plants.

- ☐ Use paving to create a perimeter (extending at approximately 1m from the foundation edge) so that rain and surface water will runoff and away from the building into the adjacent garden.
- ☐ Manage drainage within your property by directing runoff away from the house and avoid waterlogging garden areas within clay soils.
- ☐ Additional sumps, trench grates and drainage solutions may be required.
- ☐ Landscaping and drainage should be constructed in accordance with the guidance and requirements of your engineer's soil report and site drainage plan particular to your site.
- ☐ Be careful not to direct stormwater towards your neighbours' footings.

For further information:

- House Footings and the tree effect (see page 34 and 35)
- Foundation Maintenance and Footing Performance: A Homeowner's Guide, CSIRO

Consider the local context, soil type and climate when selecting plants

- ☐ What is your garden's soil type? Is it sandy, clay, silty or a good loam mix? A soil test will be required prior to the design and construction of your home to inform you of the physical and chemical composition of the soil.
- ☐ Is the soil in your garden suitable for plants to grow? Too much sand and it will drain well but not hold on to nutrients, too much clay will not drain well and too much silt will make it prone to erosion. It may need to be conditioned with gypsum and/or organic matter, or removed and replaced with good quality garden soil for your trees and plants to thrive.
- ☐ Are you located near the beach? Do you get frosts and extreme cold? Is your house exposed to strong winds? Choose plants that are suitable for the climatic conditions of your area.
- ☐ Manage drainage within your property directing runoff away from house and avoid waterlogging garden areas within clay soils. Additional sumps, trench grates and drainage solutions may be required.

For further information visit:

- Australian Plants for Adelaide Gardens - Soils
- Hardy plants for the Adelaide Plains
- Botanic Gardens of South Australia Plant Selector
- Choosing the right plants for your garden, City of Burnside
- Foundation Maintenance and Footing Performance: A Homeowner's Guide, CSIRO

Maximise efficient solar access and shading to house and garden spaces

An integrated approach to planning your home and garden with optimal solar access and shade can contribute to greatly improving energy efficiency.

For example, shading the western facade of a dwelling with trees can drop total heating and cooling energy costs by between 5 and 10%[7].

- ☐ Locate the living areas of your house and garden areas to the north and east where possible.
- ☐ In a north-facing garden, plant deciduous trees to provide shade from the hot sun and allow warming winter light into your house when the leaves fall.
- ☐ Create spaces to plant evergreen trees to provide shade to your walls, roof and hard pavements from the hot western sun.
- ☐ Plant trees, tall shrubs and integrate pergolas with deciduous vines to shade the hot western summer sun which will cool your house and entertaining areas and reduce air conditioning costs.
- ☐ Locate your vegetable and herb garden and fruit trees in north-facing sunny areas.
- ☐ Plant trees to shade your driveway, walls and pavements to reduce heat absorption and cool your house and environment.
- ☐ Grow vines and climbers on vertical surfaces such as fences and walls to provide shade and cooling.

For further information visit:

- Passive Design, Your Home
- What is Passive House? (FAQs), Australian Passive House Association

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Consider water availability and irrigation when selecting plants

- ☐ Install an irrigation system to keep your garden watered with ease. Are you away from your property for extended periods of time? If so, consider installing an automated system.
- ☐ Include taps in your front and back garden for the easy watering of your garden during the hot months.
- ☐ Using native plants that are adapted to local conditions will reduce ongoing watering requirements.
- ☐ Prioritise drip and weeper irrigation to lower water usage.
- ☐ While native plants use less water, some exotic species will provide greater cooling benefits.
- ☐ It is important that soil receives enough water to enable maximum evaporation for best cooling benefits.

For further information visit:

- Water Sensitive SA Resources
- In your garden, SA Water

Maximise areas of permeable ground materials to achieve larger soil volumes and increase water infiltration

- ☐ **Driveways:** Keep areas of hard driveway pavements to the required trafficable areas. Use other materials outside of this zone for garden beds, tree planting and permeable surfaces (e.g. gravel) to allow runoff to infiltrate into the soil.
- ☐ **Garden paths:** Paths around plantings could be made of steppers, sleepers or pavers with gravel or mulch infill. This will allow rain to infiltrate into the soil.
- ☐ **Outdoor entertaining areas:** Whether these spaces are connected directly to the house or are located in the garden, gaps can be created in paving for water infiltration or materials such as gravel or aggregate can be used
- ☐ **Decking:** Decking offers a high quality addition to your garden which can span over tree root zones and allow water to infiltrate underneath.

For further information visit:

- Adelaide gardens: A planting guide, Green Adelaide


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Design spaces and select plant species that are appropriate for for your lifestyle and level of commitment to maintenance

- ☐ Utilise the template garden designs and planting palettes on the following pages that suit your budget, size of garden, climate and soil, space available, desired uses and the amount of time you will have to maintain the garden.
- ☐ An edible garden will require more time and maintenance to look after while a native garden will require less maintenance as the plants are suited to local conditions.
- ☐ Are you away from your property for extended periods of time for work or holidays? Consider installing an automated irrigation system to keep your garden healthy while you are away.
- ☐ Do you like to entertain? Create a shady and leafy space in your garden with plants and foliage around outdoor seating, table and furniture.
- ☐ Get your children or grandchildren involved to help with maintenance and learn the benefits of gardening.

For further information visit:

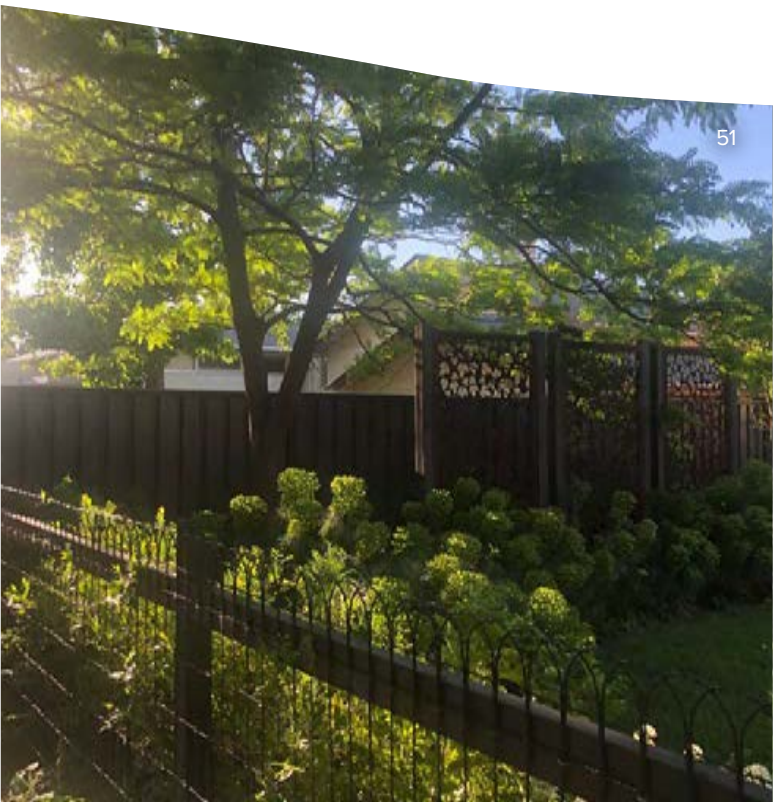
- Water Sensitive SA Resources
- In your garden, SA Water

Consider the sun's movements and work with the microclimate around your home when locating and selecting tree and plant species

- ☐ Plants must be selected on the availability of light and their level of exposure to winds and other climatic factors.
- ☐ In a north-facing garden, plant deciduous trees to provide shade from the hot sun and allow warming winter light into your house when the leaves fall.
- ☐ Plant trees, tall shrubs and integrate pergolas on the western side to cool your house and entertaining areas and reduce air conditioning costs.
- ☐ If garden beds are shaded by buildings, fences or other trees for long periods during the day then plant species that are tolerant to lower light conditions must be selected.
- ☐ Select tree species to maximise canopy coverage in the space available and cool your home and garden.

For further information visit:

- Botanic Gardens of South Australia Plant Selector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Include a variety of plants to provide habitat for wildlife and support biodiversity

- ☐ Consider the changing seasons and incorporate plants that flower at different times of the year to attract birds and butterflies to your garden and to maintain visual interest.
- ☐ Layer your plantings with taller vegetation positioned against fences and vertical surfaces with lower plants at the front. Birds and insects will nest within trees and shrubs where there is protection from predators and exposure.
- ☐ Use native plants that are adapted to local conditions to reduce ongoing watering requirements.
- ☐ Consider including one of the many small to medium native trees that can offer shade and amenity while also providing valuable habitat for birds, insects and animals.

For further information visit:

- Adelaide gardens: A planting guide, Green Adelaide
- Green Adelaide Resources
- Adelaide native plant nurseries

Utilise trees and plants to enhance privacy and views or screen undesirable views

- ☐ Hedging and shrubs planted to screen fencing and blank walls also prevents these surfaces from heating up during the day.
- ☐ Trees can be planted to prevent overlooking from neighbouring properties and street into your house or garden. This could be from the front, side or rear aspect.
- ☐ Create attractive window views looking onto garden areas and plantings.
- ☐ Create outdoor spaces for relaxation, socialising, entertaining and connecting with nature.

Local native plants are adapted to the Adelaide Region and after establishment, generally obtain their water needs from rainfall alone.

The use of indigenous plants will drought-proof your garden, save water and support local wildlife.


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Choose appropriate trees and ensure that footing systems are adequately protected

- ☐ Avoid selecting trees and plants that are known to have aggressive, or highly invasive roots.
- ☐ Choose the right plant for the right space. When planting in a confined space, like an atrium or side setback, check the mature height/size, the soil conditions, sunlight intensity and shade to ensure your plants thrives.
- ☐ Seek advice from a structural engineer and/ or arborist about whether a tree root barrier is recommended for an existing or new tree.

Tree root barriers are usually synthetic sheet or screen material placed vertically underground to stop, limit, or control the growth of roots. It may be placed across a small portion of the ground or along the boundary of a property if required. It may either be permeable or non-permeable, non-permeable tree root barriers also stop water from passing through, and may also effect proper drainage of the property. It is important to note that research has shown that tree root barriers do not provide long term protection and should not be relied upon in lieu of appropriate footing design.


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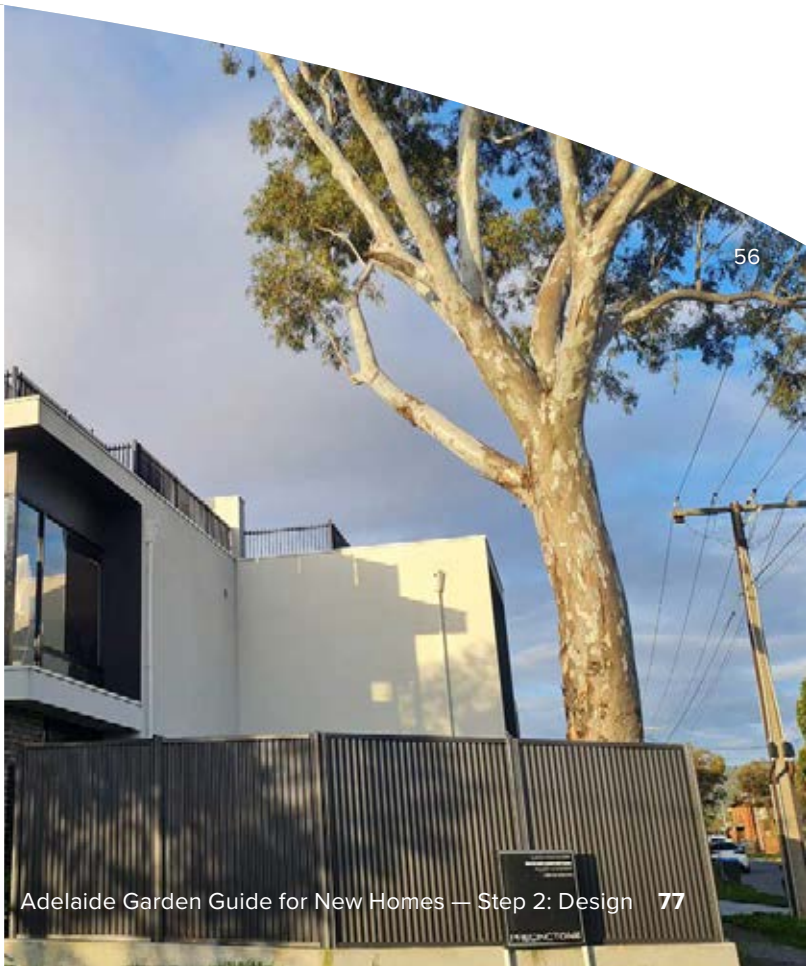
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10 small trees

Australian Natives

4 – 6m height

2m min. mature spread

10m² soil area required

Cottonwood

Hibiscus tiliaceus rubra | H: 4-6m W: 4m

Hardy tropical tree with a broad low crown, large heart-shaped leaves and bright sunny yellow flowers.

Tolerates full sun, to partial shade and most soil types, including clay and salt.

Pink Blueberry Ash

Elaeocarpus reticulatus 'Prima Donna' | H: 6m W: 4m

This evergreen, slender tree with dense foliage is an excellent choice for screens between properties. In late spring masses of blush coloured flowers cover the tree, followed by bright blue fruits.

Silver Banksia

Banksia marginata | H: 5m W: 3m

An Australian native evergreen tree with a dense growth habit.

The large, yellow, cylinder shaped flowers are a stunning feature from spring to autumn and attract natives birds and insects.

Willow Peppermint

Agonis flexuosa 'After Dark' | H: 3-6m W: 3m

An Australian native evergreen tree with a weeping habit and very dark purple foliage.

Prefers well drained soil in a sunny position and tolerates coastal conditions well.

Dwarf SA Blue Gum

Eucalyptus leucoxylon 'Euky Dwarf' | H: 5-6m W: 3-5m

A popular dwarf form of Eucalypt with a single trunk, smooth bark that sheds in flakes and pink, red or cream flowers from late autumn to early summer.

The trees in this guide are non-invasive.

However, please take care when locating trees to minimise interference of roots with underground services.

Exotic

Lemon

Citrus limon 'Eureka' | **H: 4-6m W: 4-6m**

Evergreen, round to oval shaped tree. Traditional lemon variety which can produce fruit year round.

Prefers a rich, well draining, clay soil in a sunny position.

Crepe Myrtle

Lagerstroemia indica | **H: 5-6m W: 4-5m**

A deciduous, vase shaped, deciduous tree. Choice of white, pink and purple blooms that appear in late summer.

Year round interest with autumn colour, bright showy flowers and smooth, mottled bark.

Magnolia 'Little Gem'

Magnolia grandiflora | **H: 4-8m W: 2-5m**

An evergreen magnolia with an oval form. The dark glossy leaves have attractive bronze undersides and the large, fragrant, creamy white flowers are prolific in summer.

Needs to be protected from hot northerly winds.

Chinese Redbud

Cercis chinensis | **H: 5m W: 5m**

Deciduous tree with a vase shaped canopy of attractive heart-shaped green leaves. Groups of pink-purple flowers form in abundant groups in spring.

Suited to most soil types and will tolerate heavy soils and hot, dry periods.

Ornamental Plum

Prunus cerasifera | **H: 6m W: 2-6m**

Hardy and adaptable deciduous tree with attractive autumn foliage and showy spring blossums.

Popular cultivars include the 'Oakville Crimson Spire', a good choice when lateral space is restricted, and the 'Nigra' which has a broader, rounded canopy.

10 medium trees

Australian Natives

6 – 12m height

4m min. mature spread

30m² soil area required

Willow Myrtle

Agonis flexuosa | H: 6-10m W: 5-10m

An Australian native attractive tree with a weeping habit.

Clusters of small white flowers grow on the branches in between the leaves in spring and summer.

Wilga

Geijera parviflora | H: 9m W: 8m

Hardy Australian native, evergreen tree tolerant to a wide range of soil and climate regions. Well-drained soils will result in taller and longer lived examples. Best grown in full sun. Pruning when young is recommended to achieve a neat shape as it matures.

Native Frangipani

Hymenosporum flavum | H: 6-8m W: 5-6m

A rainforest tree, native to Queensland and NSW with large glossy leaves and highly fragrant cream and yellow flowers.

Prefers a well drained, nutritious soil and full sun for optimal growth and flowering, but will tolerate most soil types and part-shade.

Tuckeroo

Cupaniopsis anacardioides | H: 8m W: 7m

An Australian native feature tree with evergreen foliage.

Its rounded form and consistent shape makes it suitable for a range of styles of garden and home.

Hardy and suitable to all soil types, even clay.

Old Man Banksia

Banksia serrata | H: 10m W: 5m

A distinctive, bird attractive tree with cork-like bark and a rounded, gnarly form. It produces silvery grey flower spikes and cones.

This tree likes a well-drained sandy soil making it a good selection for coastal conditions.

The trees in this guide are non-invasive.

However, please take care when locating trees to minimise interference of roots with underground services.

Exotic


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Loquat

Eriobotrya japonica | H: 7-10m W: 6m

Evergreen tree with a rounded crown, short trunk and dark leathery leaves. White flowers appear in late autumn and winter followed by the yellow-orange sweet fruit in early spring.

Prefers a position in full sun, protected from strong winds.


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Chinese Pistachio

Pistacia chinensis | H: 8m W: 6m

A highly ornamental deciduous tree suitable for a wide range of climate and soil regions. Vibrant autumn colour in shades of orange, yellow and red.

Some trimming may be required if located under powerlines


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Ornamental Pear

Pyrus calleryana species | H: 9m W: 7m

A popular tree due to its wide shady canopy, vibrant autumn colour and white spring blossoms. Small fruits follow the flowers that attract birds and wildlife.

Prefers rich, well drained soil and watering during heat waves.


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Maidenhair Tree

Ginkgo biloba | H: 12m W: 5m

Very slow growing and long-lived deciduous tree with an upright and elegant habit. A fantastic feature tree.

Can grow in almost any position, but prefers moist, deep, fertile soil and full sun to part-shade.


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Golden Rain Tree

Koelreuteria paniculatum | H: 6m W: 4m

Elegant, deciduous tree with a slightly weeping, round form once mature. The serrated green foliage turns bronze to gold in autumn.

Will grow best in full sun, relatively drought-tolerant and will perform well in most soil types.

10 large trees

Australian Natives

> 12m height

8m min. mature spread

60m² soil area required

Pink Gum

Eucalyptus fasciculosa | H: <15m W: <12m

A large eucalypt with an open canopy and single trunk. It has prolonged flowering periods throughout the year.

Indigenous to the Adelaide region.

May only be stocked at nurseries specialising in natives.

Blackwood

Acacia melanoxylon | H:<20m W: <10m

An attractive feature or shade tree, native to South Australia.

Long lived and does not shed limbs as frequently as some eucalypts and other acacias. Attracts birds, native butterflies and insects. Requires 3.5m clearance from sewer mains and connections.

Apple Myrtle

Angophora costata | H: 10-20m W: 6-12m

An upright, fast growing tree native to Queensland and NSW.

Attractive smooth pink new growth bark and clusters of white gum blossoms.

Requires 3.5m clearance from sewer mains and connections.

Peppermint Box

Eucalyptus odorata | H: <20m W: <15m

An SA native shade and shelter tree with an open and spreading form.

Attracts nectar eating birds and insects for food and habitat.

Coast Banksia

Banksia integrifolia | H: <20m W: <10m

A large banksia native to eastern Australia and highly tolerant of full coastal conditions.

It is hardy and fast growing. Requires 2m clearance from sewer mains and connections.

The trees in this guide are non-invasive.

However, please take care when locating trees to minimise interference of roots with underground services.

Exotic

Norway Maple

Acer platanoides | H: <20m W: <10m

An upright, deciduous tree with a broad, round crown. Leaves change from green to vibrant orange-yellow before dropping in winter.

Prefers soil rich in organic materials, though will grow in most soil conditions, even compacted soils.

Holm Oak

Quercus ilex | H: 20m W: 15m

This evergreen, Mediterranean oak will thrive in Adelaide's dry climate. The dense canopy is formed of leathery dark-green leaves. Can be trimmed to constrict size.

Prefers rich and moist fertile soil. Salt and drought tolerant once established.

Cimmaron Ash

Fraxinus pennsylvanica | H: 13m W: 8m

A robust deciduous tree with neat upright branch structure and attractive autumn foliage.

Performs best in a sunny position in moist, well-drained soil. Can tolerate high wind and low levels of drought once established.

Chinese Elm

Ulmus parvifolia 'Todd' | H: <15m W: 11m

An upright semi-deciduous tree with a pendular spreading habit and bright green serrated leaves.

Provides great broad summer shade and tolerates most soil types in a sunny position.

Japanese Elm

Zelkova serrata | H: 14m W: 10m

A fast growing deciduous tree with a uniform vase-shaped canopy. The dark green leaves turn to an array of colours ranging from soft yellows to orange and rusty reds in autumn.

Prefers well drained soil in full sun.

Different garden character designs

Native Formal

The Native Formal garden provides a selection of Australian plants which have a neat and compact form and respond well to pruning.

This palette can be applied to common/shared spaces for low maintenance, often water-wise gardens with high visual appeal and biodiversity benefits.

Entertainer

The Entertainer garden offers a range of plant species, both Australian native and non-native, for those with a busy lifestyle who require a low maintenance garden, yet would like to enjoy a highly visual effect for entertaining.

Glossy green foliage, cascading plants and climbers offer options for high impact greening in small backyard spaces.

Coastal

The Coastal garden is made up of a variety of salt-tolerant plants, best suited to homes close to the beach.

These plant species prefer well-drained sandy soils and can handle a level of salt spray and windy conditions. The plant selection is composed of predominately native species.

Habitat

The Habitat garden focuses on species which will attract birds and butterflies. The arrangement suggests ways to provide good protection, water sources and food for a welcoming home for local creatures. Many of the plant species listed for this garden are local to South Australia and seek to attract local fauna back to garden spaces.


94

Edible

The Edible garden character provides a range of edible planting choices suited to Adelaide's climate.

Exotic fruiting trees, perennial shrubs and herbs can be selected to create a functional, sustainable and beautiful garden. Native bushfood plants are also listed, these have been harvested by Kaurna people on Kaurna Country for thousands of years.


95

Native Cottage

The Native Cottage palette is a selection of plants from Australia which are arranged in an informal garden style, giving the feel of a cottage-like garden. Cottage gardens typically have a layered and textured appearance with varying foliage and floral points of interest.


96

Shade

The Shade garden provides species which will offer a more lush, rain forest feel, yet are compatible with Adelaide's hot, dry climate.

This garden character works well in small, shady zones like a southern facing courtyard, side setback or front terrace.


97

Mediterranean

Inspired by the coastal areas surrounding the Mediterranean sea, including Spain, Italy and Croatia, the Mediterranean garden character has a casual elegance.

This garden type is suited to the temperate Adelaide climate with a range of exotic and native water-wise plants. Fruiting and fragrant trees and shrubs are paired with succulents and softer understorey for layered colour, texture and structure.

Garden 1:
Native formal

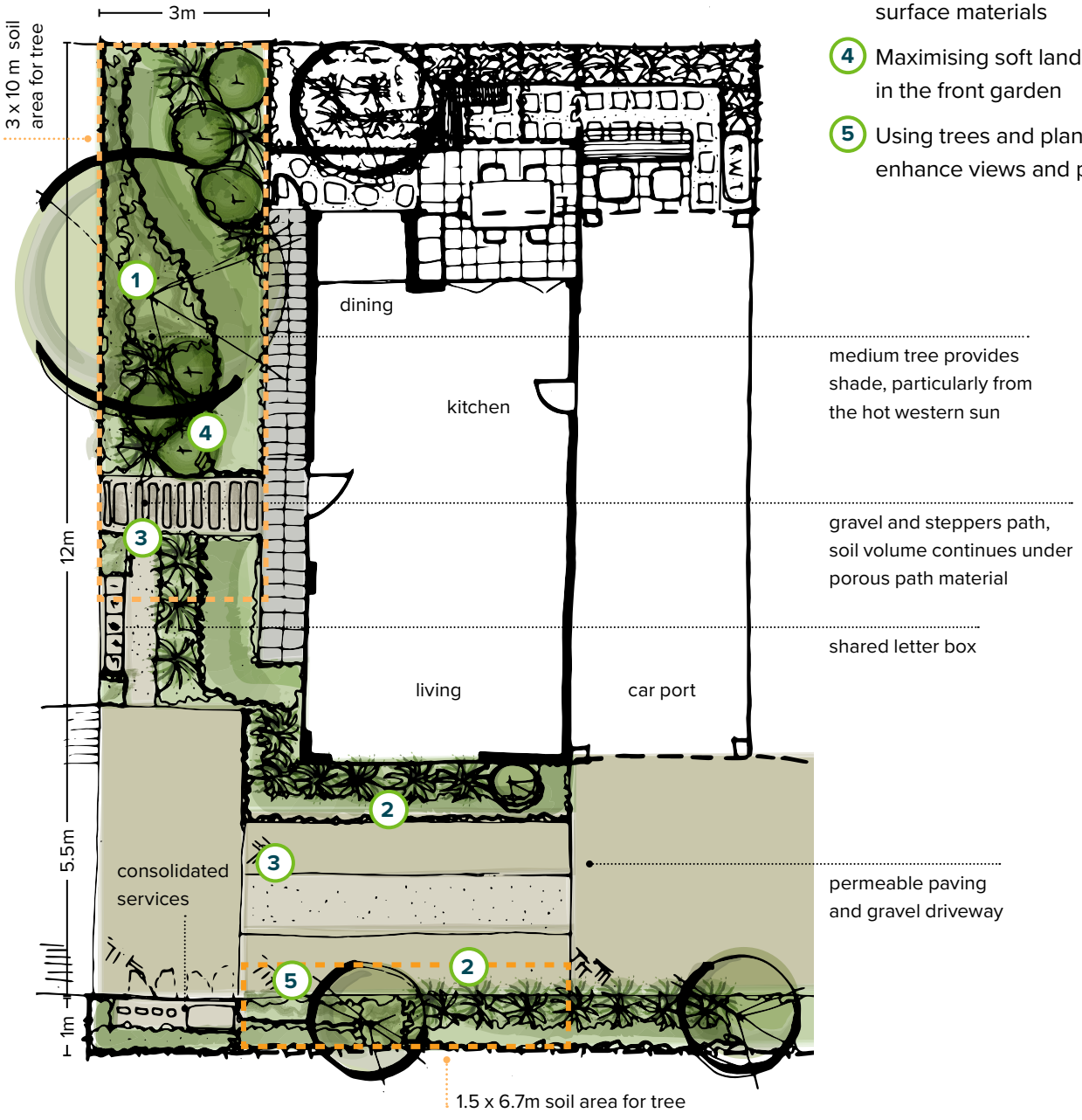
Shared Front Garden + Common Driveway

The **Native formal** garden character is a good choice for a garden space shared or viewed by multiple dwelling occupants or neighbours due its low maintenance yet neat appearance, providing visual kerb appeal.

This is an example of a sunny, west-facing shared front garden with a 3m setback and common driveway for a residential flat building (see PLAN example on page 67).

It illustrates key considerations including:

1. Placing a medium tree to shade dwelling from afternoon sun
2. 1m soft landscaping area between common driveway and boundary and dwellings
3. Maximising permeable/porous surface materials
4. Maximising soft landscaping in the front garden
5. Using trees and plants to enhance views and privacy.



1 3 6m

Large shrubs

Lilly Pilly - *Syzygium australe 'Winter Lights'*

Purple Hop Bush - *Dodonaea viscosa purpurea*

Grasses/strappy leaf

Native Flax - *Dianella caerulea 'Cassa Blue'*

Morning Iris - *Orthrosanthus multiflorus*

Small shrubs

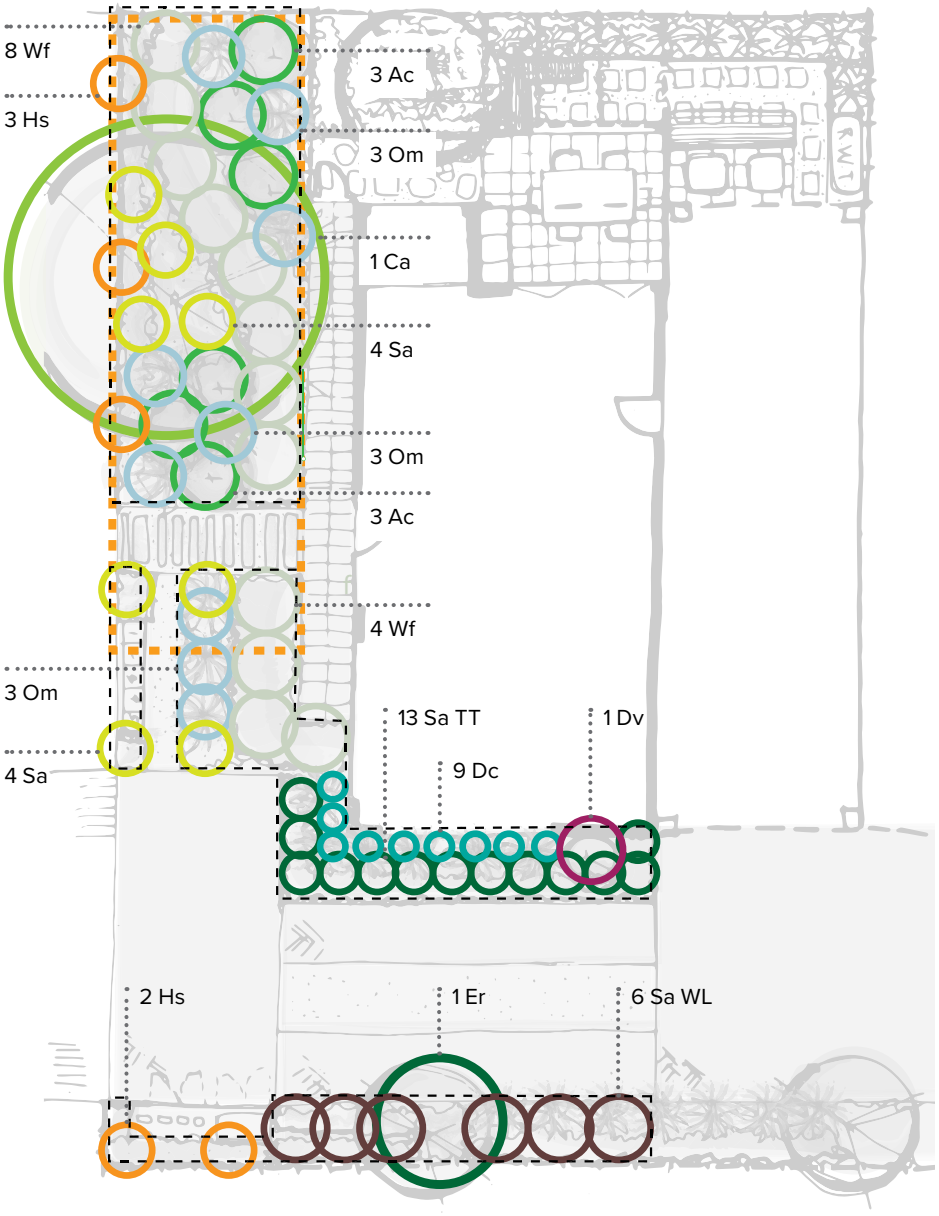
Coastal Rosemary - *Westringia fruticosa*

Lilly Pilly - *Syzygium australe 'Tiny Trev'*

River Wattle - *Acacia cognata 'Bower Beauty'*

Small tree

Pink Blueberry Ash - *Elaeocarpus reticulatus 'Prima Donna'*



Medium tree

Tuckeroo - *Cupaniopsis anacardioides*

Climbers

Guinea Flower - *Hibbertia scandens*

Ground covers

Fan Flower - *Scaevola aemula*

Garden 2:
Entertainer

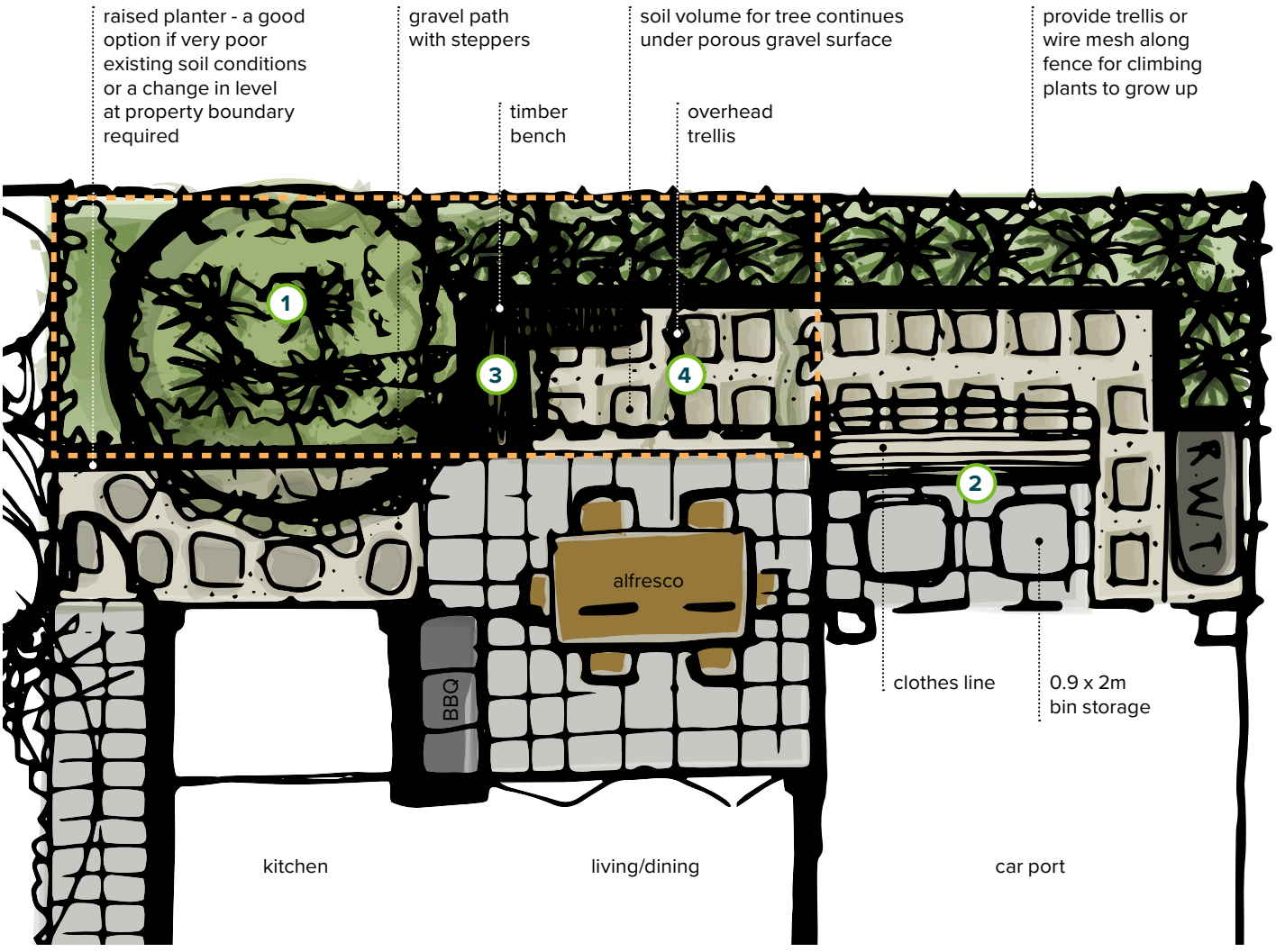
Back garden

Applying the **Entertainer** garden character can create a big visual impact in a small space.

This is an example of a north-facing back garden 3 x 8m in size (see PLAN example on page 67).

It illustrates key considerations including:

1. Placing a small tree to provide shade to the garden from western afternoon sun
2. Consolidating bin storage, rainwater tank and clothesline area to create separation from alfresco/entertaining area and maximise soft landscaping
3. Incorporating a raised planter to provide quality soil, provide seating and address potential level changes between adjoining properties
4. Using pergola structure and trellised plants to create additional shade and amenity to a small outdoor entertaining space



.5 1.5 3m

Small trees

Crepe Myrtle - *Lagerstroemia indica*

Large shrubs

Sweet Viburnum - *Viburnum odoratissimum 'Green Emerald'*

Small shrubs

Xanadu - *Philadendron*

Grasses/strappy leaf

Native Flax - *Dianella 'Sliver Streak'*

Groundcovers

Prostrate Swamp Oak - *Casuarina glauca 'Cousin It'*

Silver Nickel Vine - *Dichondra argentea 'Silver Falls'*

Climbers

Star Jasmine - *Trachelospermum jasminoides*

Alternative planting options:

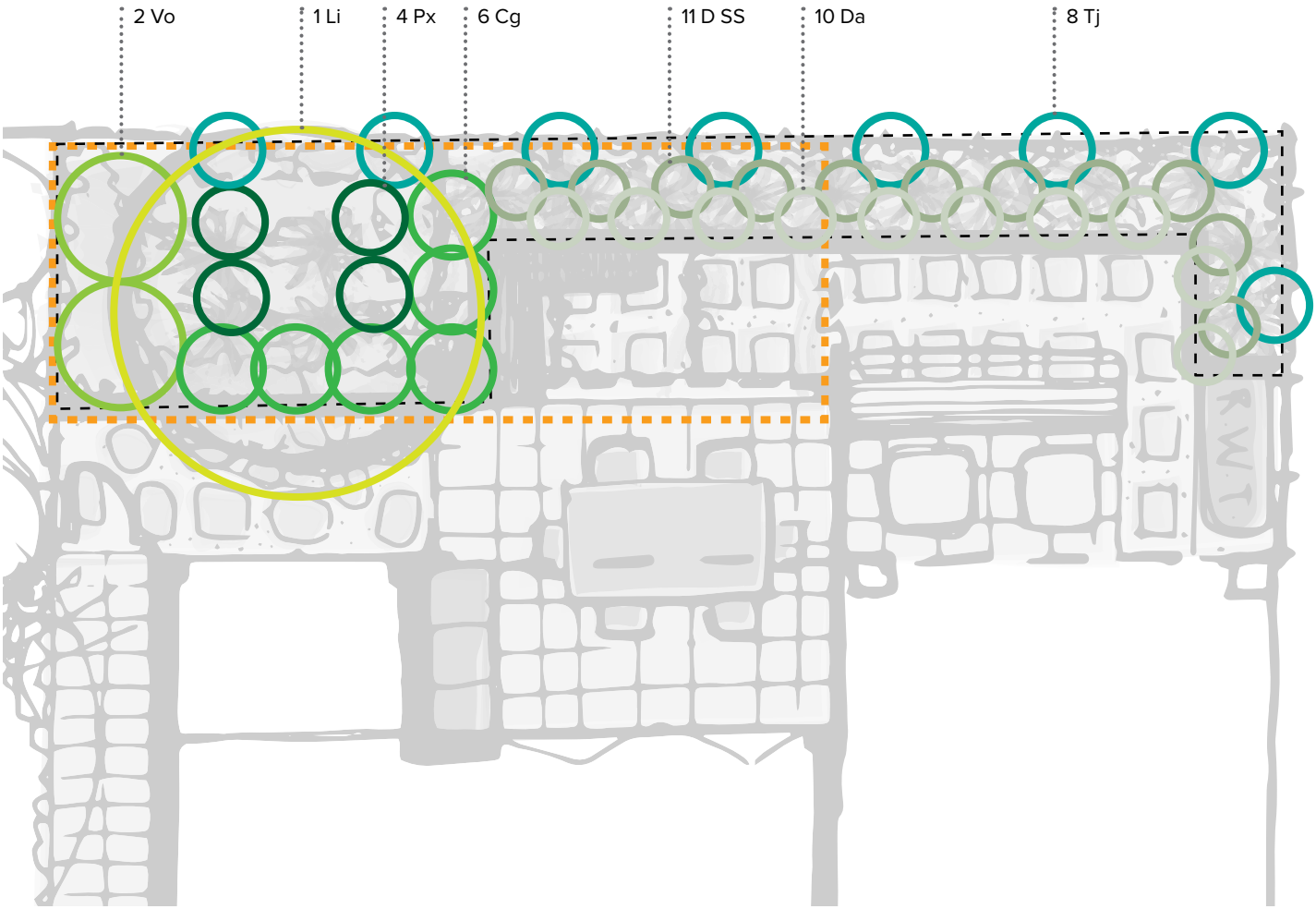
Small trees
- Magnolia grandiflora 'Little Gem'

Large shrubs
- Acmena smithii 'Firescreen'

Small shrubs
- Sedum 'Autumn Joy'

Grasses and strappy leaves
- Liriope muscari 'Isabella'

Climbers
- Pandorea pandorana



Garden 3:
Entertainer

Front garden

This is an example of a very small, south-facing garden 3.5 x 3.5m in size.

It illustrates key considerations including:

1. Accommodating a small tree with adequate soil area in a tight space by ensuring there is good quality soil under porous paving for the entry path
2. Considering the microclimate and solar access of the garden when selecting tree and plant species

Small trees

Chinese Redbud - *Cercis chinensis*

Flowering Plum - *Prunus cerasifera 'Oakville Crimson Spire'*

Small shrubs

Sweet Box - *Sorcococca confusa*

Coral Bells or Alumroot - *Heuchera sp.*

Mona Lavender - *Plectranthus 'Plepalila'*

Grasses / strappy leaf

Renga Renga Lily - *Arthropodium cirratum*

Liriope - *Liriope muscari 'Isabella'*

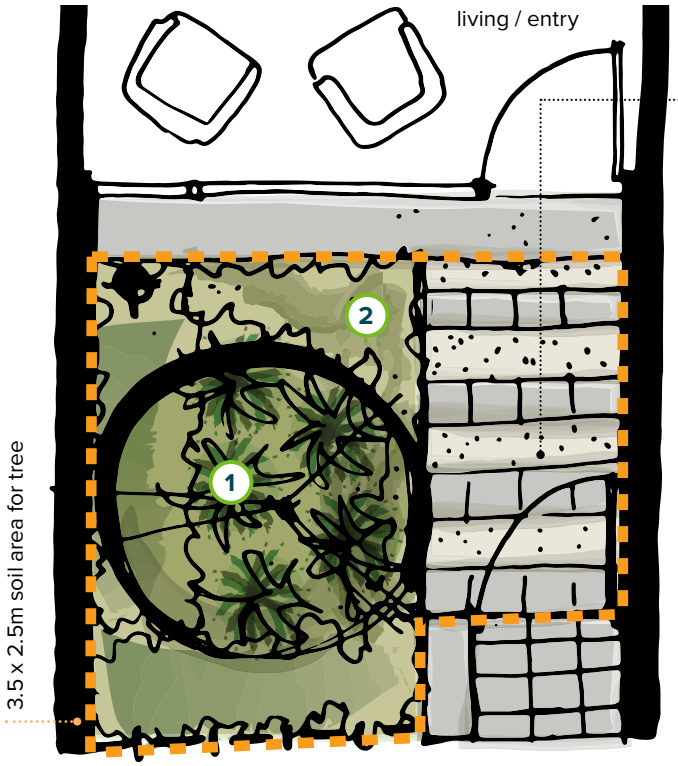
Ground covers

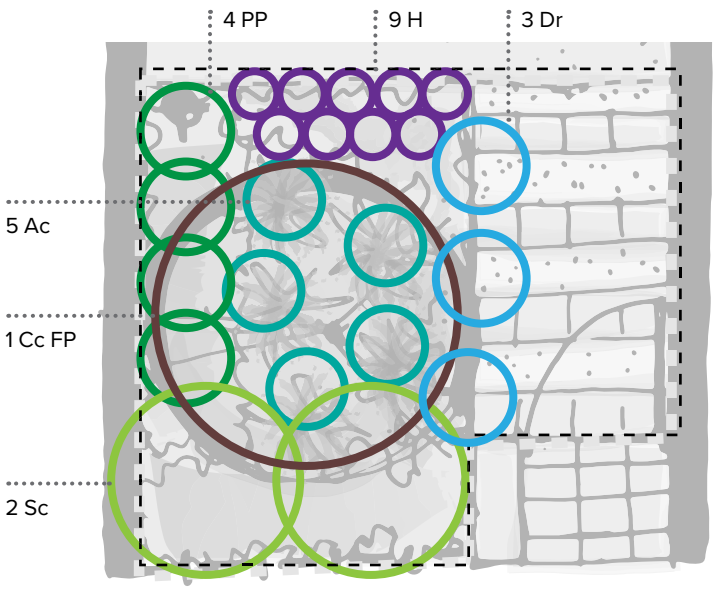
Kidney Weed - *Dichondra repens*

Carpet Bugle - *Ajuga reptans 'Caitlin's Giant'*

Climbers

Star Jasmine - *Trachelospermum jasminoides*





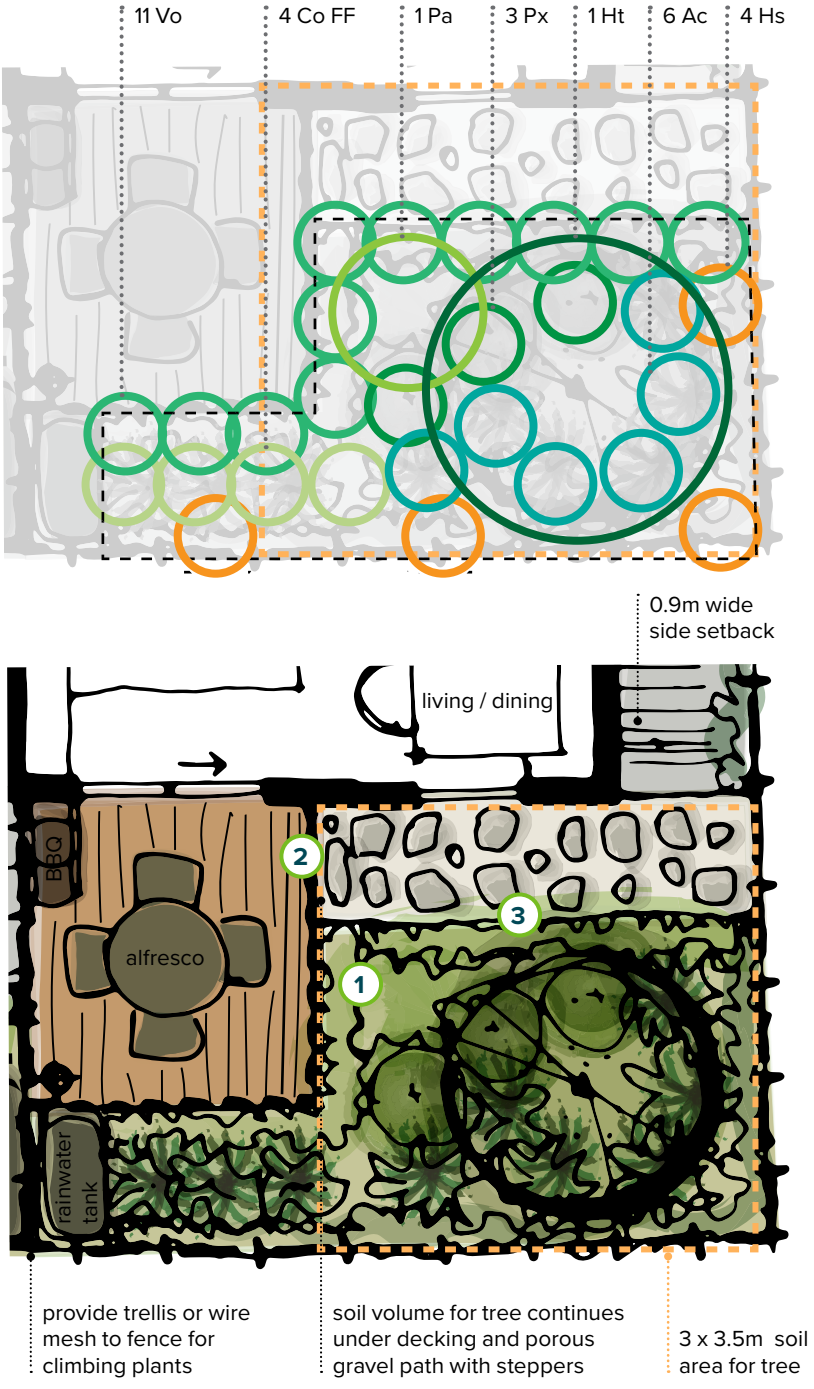
Garden 4:
Shade

Back garden

This is an example of a small, south-facing back garden, shaded by the house 3 x 5m in size.

It illustrates key considerations including:

1. Considering the microclimate and solar access of the garden when selecting tree and plant species
2. Using decking and gravel over a tree soil area instead of non-permeable paving to improve water infiltration to trees
3. Placing trees and plants to enhance views from internal and external living spaces.



Small trees

Cottonwood - *Hibiscus tiliaceus rubra*

Pink Blueberry Ash - *Elaeocarpus reticulatus 'Prima Donna'*

Grasses/strappy leaf

Renga Renga Lily - *Arthropodium cirratum*

Japanese Sedge - *Carex oshimensis 'Feather Falls'*

Small shrubs

Xanadu - *Philadendron*

Climbers

Guinea Flower - *Hibbertia scandens*

Groundcovers

Sweet Violet - *Viola odorata*

Silver Spurflower - *Plectranthus argentatus*

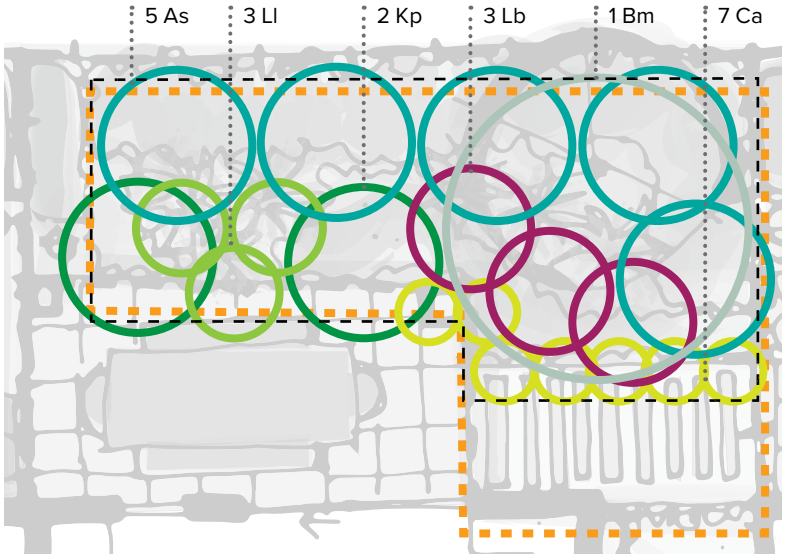
Garden 5:
Coastal

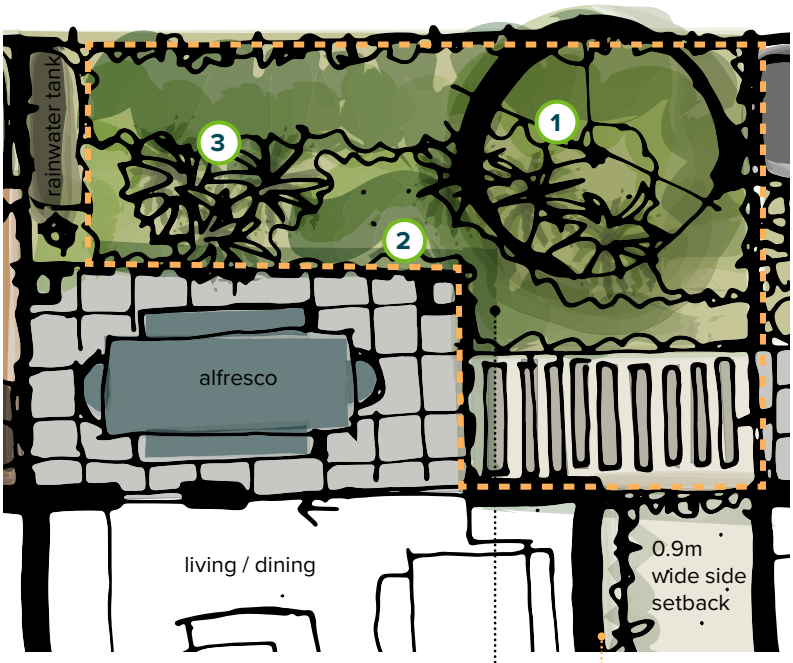
Back garden

This is an example of a small, sunny, north-facing garden 3 x 6 m in size.

It illustrates key considerations including:

1. Locating trees to maximise shade to internal and external living spaces
2. Coordinating of tree placement and covered alfresco area with adequate soil volume provision
3. Designing with the local context, climate and soil type in mind (coastal conditions) through appropriate species selection





soil volume for tree wraps around alfresco area verandah and continues under porous gravel path with steppers

1.5 x 5.5m soil area for tree

Small trees

Silver Banksia - *Banksia marginata*

Willow Peppermint - *Agonis flexuosa 'After Dark'*

Large shrubs

Wooly Bush - *Adenanthos sericeus*

Coastal Rosemary - *Westringia 'Wynnyabbie Gem'*

Small shrubs

Cushion Bush - *Leucophyta brownii*

Grasses/strappy leaf

Mat Rush - *Lomandra longifolia 'Tanika'*

Groundcovers

Running Postman - *Kennedia prostrata*

Yellow Buttons or Common Everlasting - *Chrysocephalum apiculatum*

Garden 6:
Native Cottage

Back garden

This is an example of a small, east-facing garden, shaded from the afternoon sun, 3 x 6m in size.

It illustrates key considerations including:

1. Creating attractive views out of windows looking onto garden areas and plantings
2. Using a variety of plant species to enhance biodiversity
3. Creating a small outdoor seating area nestled into the garden for connecting with nature

Large shrubs

Coffee Bush - *Breynia 'Ironstone Range'*

Tea Tree - *Leptospermum 'Mesmer Eyes'*

Small shrubs

Pimelia Daisy-bush - *Olearia pimeleoides*

Dwarf Waxflower - *Crowea exalata 'Low Dome'*

Groundcovers

Australian Bugle - *Ajuga australis*

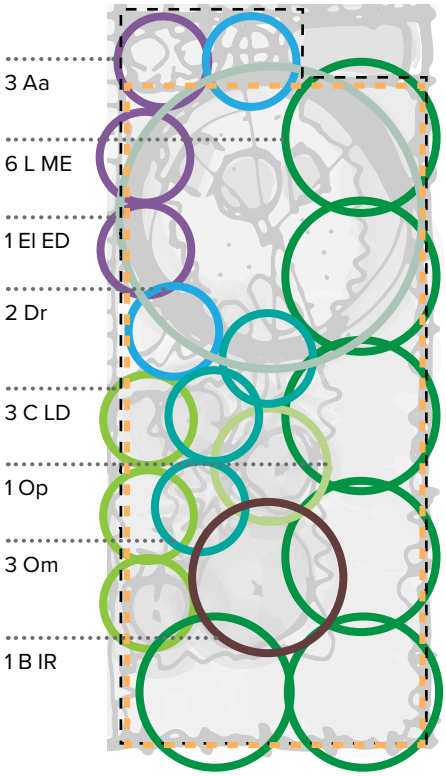
Kidney Weed - *Dichondra repens*

Small trees

Dwarf SA Blue Gum - *Eucalyptus leucoxylon 'Eucky Dwarf'*

Grasses/strappy leaf

Morning Iris - *Orthrosanthus multiflorus*



Garden 7:
Habitat

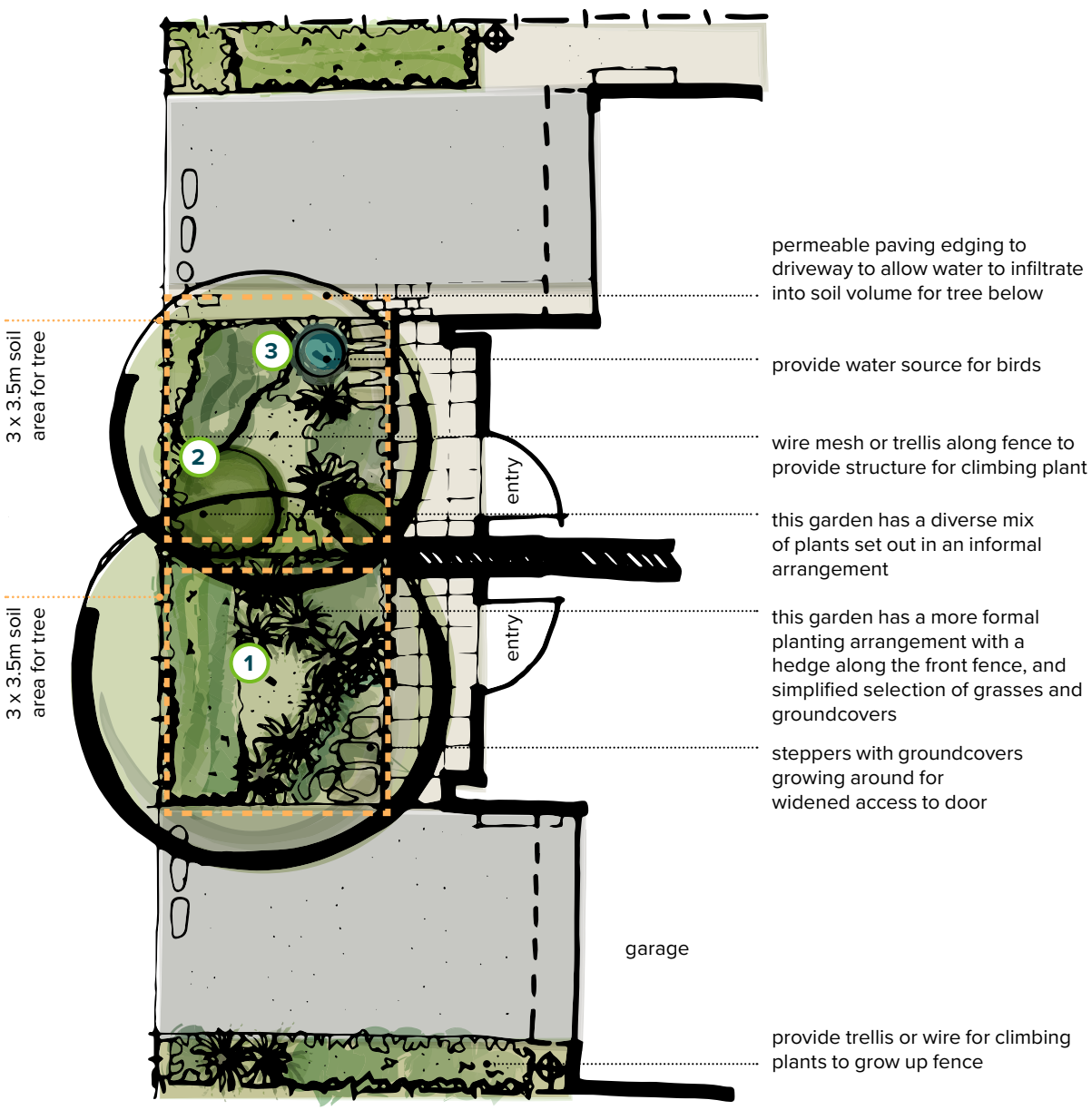
Front garden

This example uses SA native species within the Habitat garden character. Selecting local indigenous species will help attract and provide shelter for local small mammals, birds and butterflies.

This is an example of two, west-facing front gardens 5 x 7m in size.

It illustrates key considerations including:

1. Locating trees to shade dwellings from hot afternoon sun
2. Including a variety of plants to provide habitat and food sources for wildlife and support biodiversity
3. When providing water sources for birds also make sure there are sticks or pebbles for insects to move freely



Small trees

Dwarf SA Blue Gum - *Eucalyptus leucoxylon 'Eucky Dwarf'*

Silver Banksia - *Banksia marginata*

Grasses/strappy leaf

Morning Iris - *Orthrosantus multiflorus*

Spreading Fax Lily - *Dianella revoluta*

Kangaroo Grass - *Themeda triandra 'Mingo'*

Large shrubs

Sticky Hop Bush - *Dodonaea viscosa*

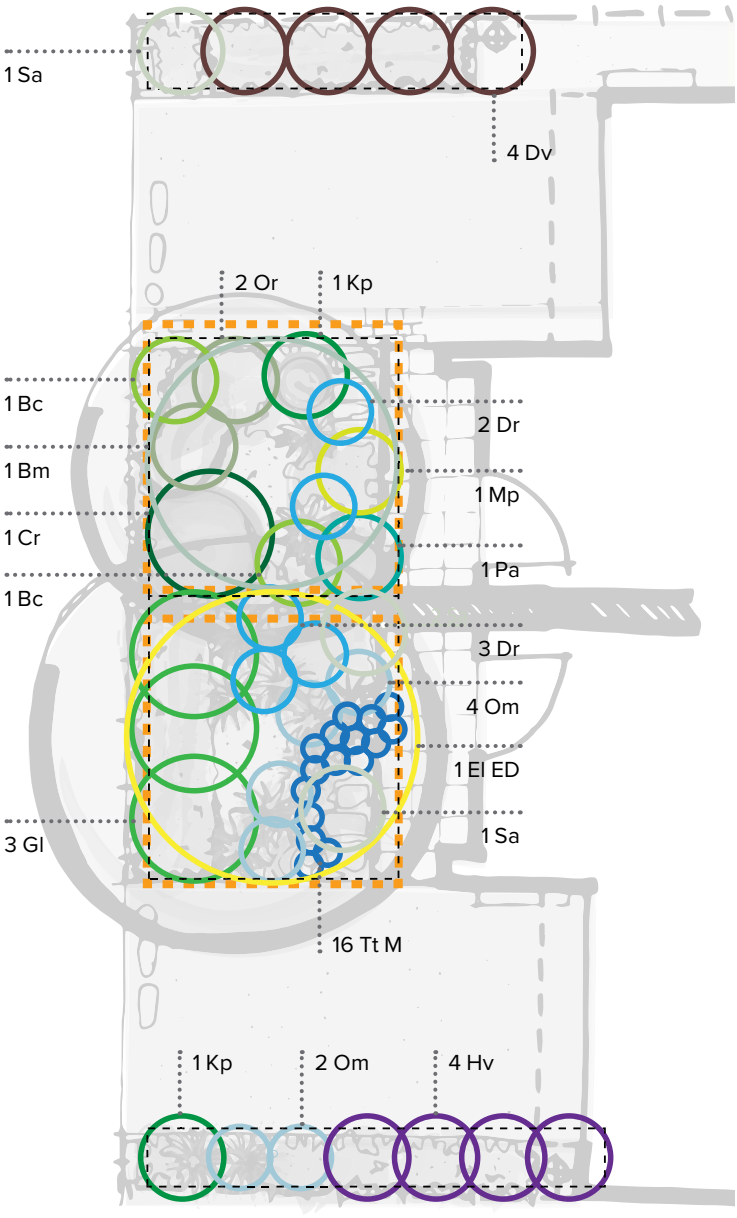
Small shrubs

Twiggy Daisy-bush - *Oleria ramulosa*

Native Geranium - *Pelargonium australe*

Lavender Grevillea - *Grevillea lavandulacea*

Native Fuchsia - *Correa reflexa*



Climbers

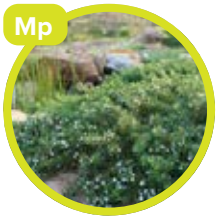
Purple Coral Pea - *Hardenbergia violacea*

Sweet Apple Berry - *Billardiera cymosa*

Groundcovers

Fan Flower - *Scaevola albida*

Running Postman - *Kennedia prostrata*



Creeping Boobialla - *Myoporum parvifolium*

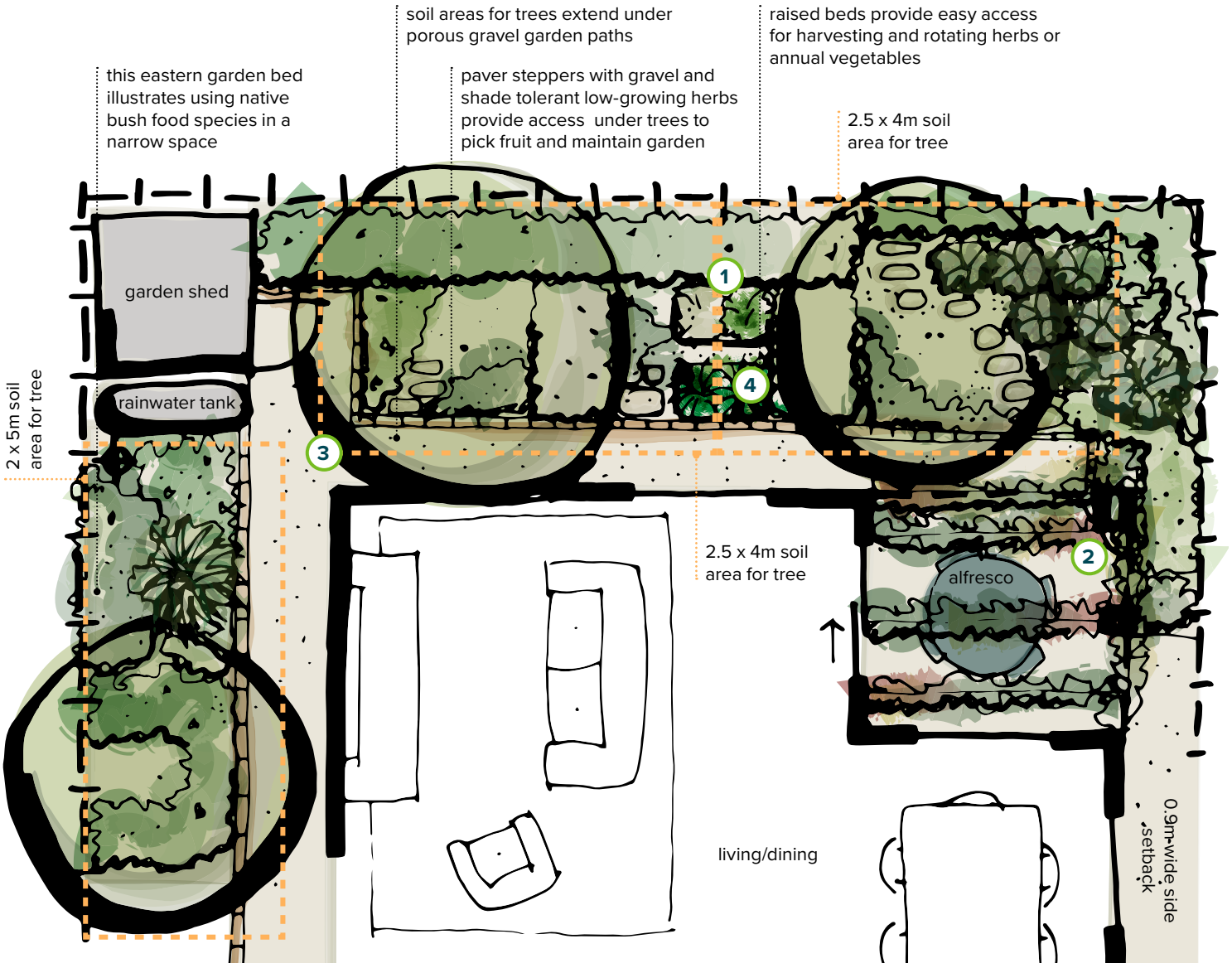
Garden 8:
Edible

Back garden

This is an example of a sunny north-facing back garden 3 x 11m in size (see PLAN example on page 63).

It illustrates key considerations including:

1. Locating vegetable and herb gardens and fruit trees in north facing sunny areas
2. Integrating pergolas with climbing plants to shade the hot western summer sun to cool your house and entertaining areas and reduce air conditioning costs
3. Using porous materials (e.g. gravel and paving steppers) for garden paths into and around planting areas to maximise water infiltration into the soil
4. Incorporate additional raised beds for more continuous harvesting of seasonal veggies and easier maintenance of plants.



Small shrubs

Rosemary - *Rosmarinus officinalis*

Lavender - *Lavandula dentata*

Small trees

Lemon - *Citrus limon 'Eureka'*

Apricot - *Prunus armeniaca*

Quandong - *Santalum acuminatum*

Groundcovers

Muntries - *Kunzea pomifera*

Native Rivermint - *Mentha australis*

Climbers

Black Passionfruit - *Passiflora edulis*

Nodding Saltbush - *Einadia nutans*

Grasses/strappy leaf

Native Lemongrass - *Cymbopogon ambiguus*

Continued planting list:

Small Shrubs

- So — Salvia officinalis (Sage)
- Rr — Rheum rhabarbarum (Rhubarb)
- Cs — Cynara scolymus (Globe artichoke)
- Tv — Thymus vulgaris (Thyme)
- Vv — Vitis vinfera (Grape vine)

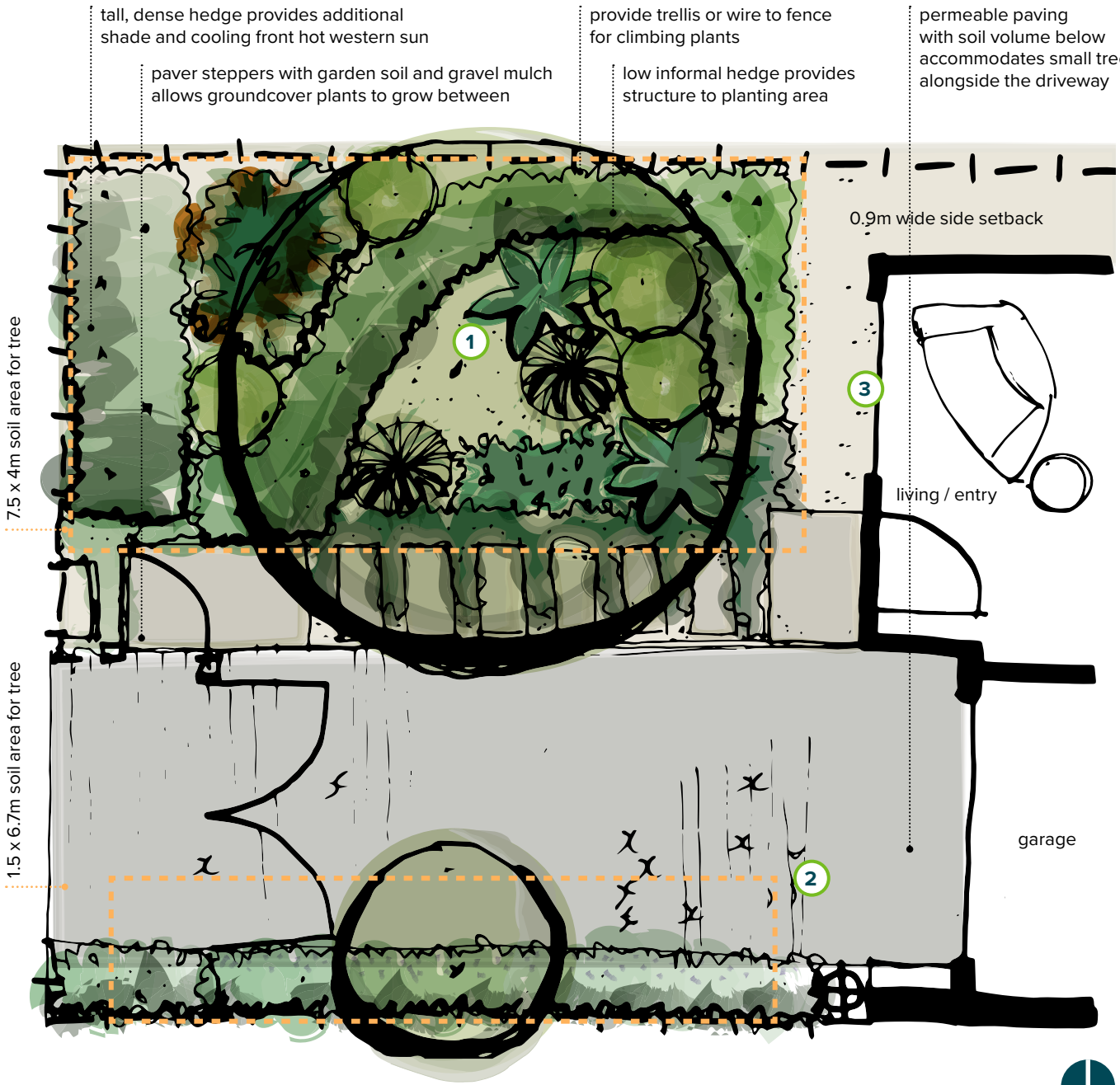
Garden 9:
Mediterranean

Front garden

This is an example of a large, western-facing sunny front garden 8 x 8.5m in size (see PLAN example on page 43).

It illustrates key considerations including:

1. Accommodating a medium sized tree with adequate soil area to shade the house and garden from hot western sun
2. Using permeable driveway surface materials where possible to accommodate extra tree planting along driveways for amenity and shade
3. Creating attractive views out of windows looking onto garden areas and plantings and from the street



Medium trees

Carob - *Ceratonia siliqua*

Small trees

Crepe Myrtle - *Lagerstroemia indica*

Large shrubs

Bay Tree - *Laurus nobilis*

Grasses/strappy

Wild Iris - *Dietes grandiflora*

Groundcovers

Blue Chalksticks - *Senecio mandraliscae*

Small shrubs

Common Sunshine Conebush - *Leucadendron salignum*

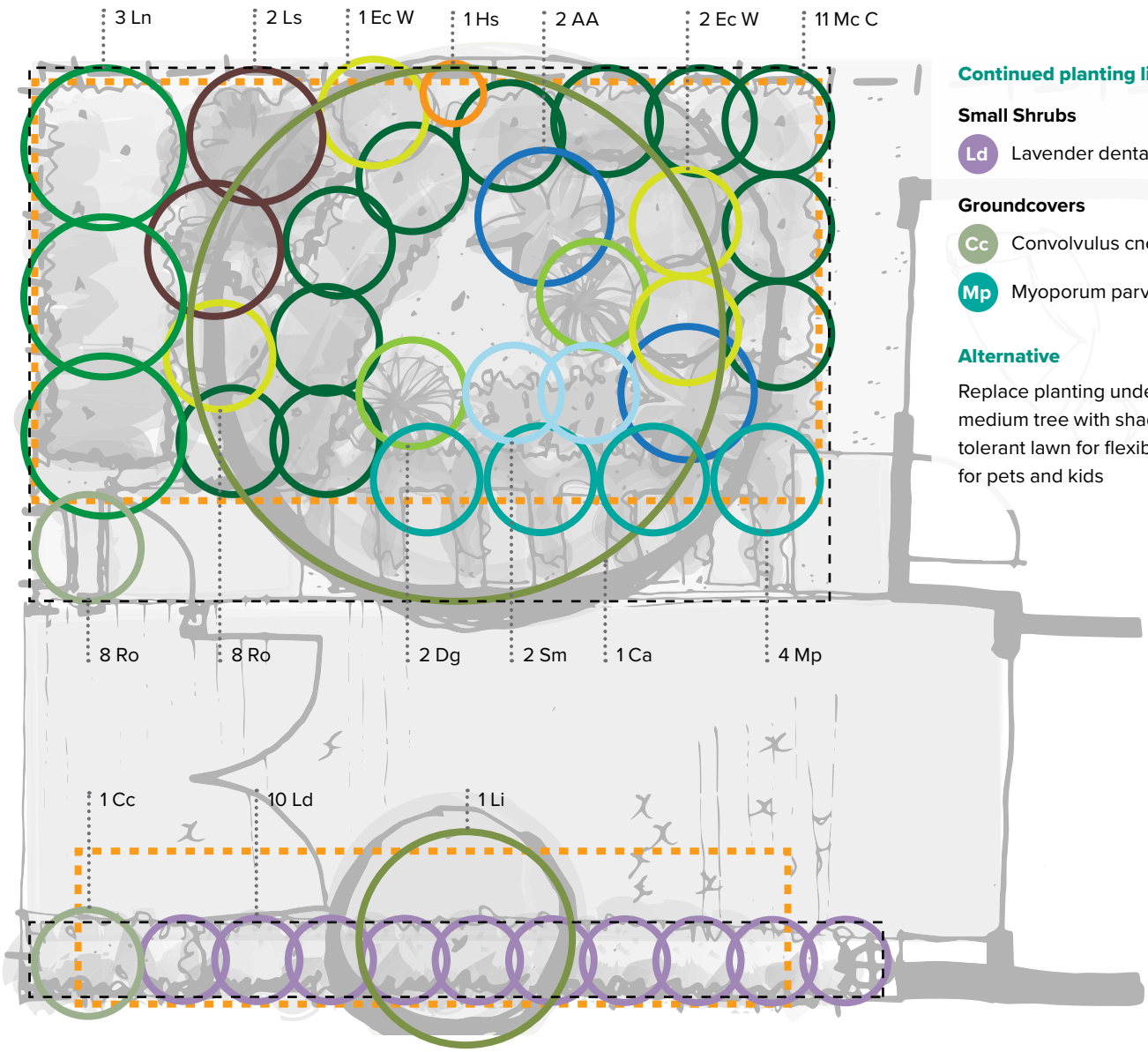
Common Myrtle - *Myrtus communis 'Compacta'*

Mediterranean Spurge - *Euphorbia characias ssp.wulfnii*

Foxtail Agave - *Aloe attenuata*

Climbers

Guinea Flower- *Hibbertia scandens*



Continued planting list:

Small Shrubs

Ld Lavender dentata

Groundcovers

Cc Convolvulus cneorum

Mp Myoporum parvifolium

Alternative

Replace planting under medium tree with shade tolerant lawn for flexible area for pets and kids

Under an existing tree

Soft landscaping under larger trees requires careful consideration. Select species that are tolerant of reduced light conditions and are shallow rooted so as not to compete with the existing tree roots. Shade loving native groundcovers are usually a good choice. A selection of plants are provided for different conditions.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Small shrubs

Native Fuschia - *Correa sp.*

Silver Spurflower - *Plectranthus argentatus*

Groundcovers

Fan Flower - *Scaevola aemula*

Australian Bugle - *Ajuga australis*

Carpet Bugle - *Ajuga reptans*

Grasses/strappy leaf

Bush Lily - *clivia miniata*

Renga Renga Lily - *Arthropodium cirratum*

Tasman flax-lily - *Dianella tasmanica*

Liriope - *Liriope muscari*

Mountain Flax - *Phormium cookianum*

Climbers

Guinea Flower - *Hibbertia scandens*

Star Jasmine - Trachelospermum jasminoides

Side setbacks

0.9m – 2m

Side setbacks offer further opportunities for planting to shade and cool houses, provide attractive views from living spaces and increase biodiversity.

See below for a selection of narrow trees, tall shrubs and climbers to suit varying widths of side setbacks and conditions.

Small trees

Flowering Plum - *Prunus cerasifera 'Oakville Crimson Spire'*

Ornamental Pear - *Pyrus calleryana 'Capital'*

Crepe Myrtle - *Lagerstroemia indica*

Tall shrubs

Lilly Pilly - *Syzygium australe 'Pinnacle'* or *'Straight and Narrow'*

Bottlebrush - *Callistemon viminalis 'Slim'*

Climbers

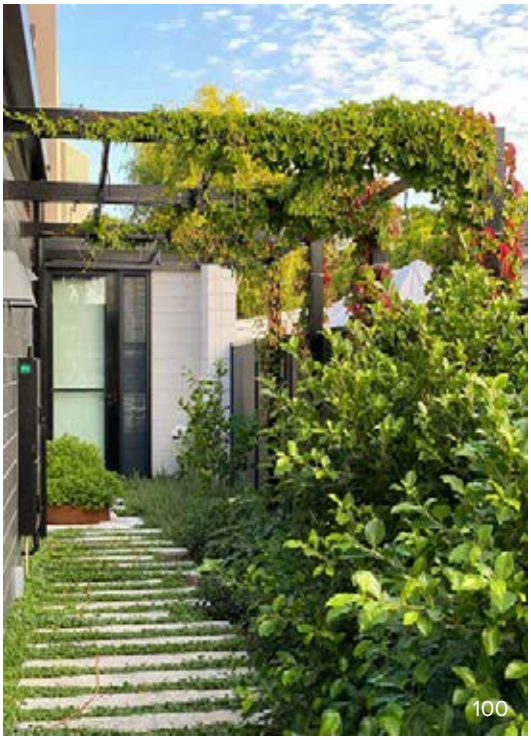
Guinea Flower - *Hibbertia scandens*

Apple Berry - *Billardiera scandens*

Wonga Wonga Vine - *Pandorea pandorana*

Purple Coral Pea - *Hardenbergia violacea*

Crimson Glory Vine - *Vitis coignetiae*



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Step 3

Plant

Prepare for, construct and plant the garden to create the conditions for long-term health.

Key considerations:

- Soil preparation
- Irrigation
- Plant selection
- Optimal planting

This section includes:

- A checklist of key tips with accompanying photos and diagrams

Plant checklist

Prepare for, construct and plant the garden to create the conditions for long-term health

Retain and protect existing trees during construction

- ☐ Follow the guidelines as defined in the **Australian Standard AS 4970-2009 Protection of trees on development sites**. Access to this standard may need to be acquired through your builder, developer or Council.
- ☐ Ensure tree/s to be retained and Tree Protection Zones (TPZ) are shown accurately on site and building plans.
- ☐ If pruning is required, seek the advice of a qualified arborist.
- ☐ Install temporary protective fencing around the TPZ to prevent machinery and workers causing damage.
- ☐ Ensure heavy machinery does not drive over the root zone and do not store building materials over the TPZ.
- ☐ To ensure the tree/s stay healthy during and after the construction period, place mulch over the root zone and provide adequate water during dry weather.

For further information visit:

- Soil Preparation, Gardening Australia Factsheets
- Australian Plants for Adelaide Gardens - Soils

Install an irrigation system for efficient watering

- ☐ Consider installing an automated irrigation system to reduce requirements and time demands of hand watering.
- ☐ Prioritise drip and weeper irrigation to lower water usage.
- ☐ If possible, connect your irrigation system to your rainwater tanks, recycled water network (purple pipes) or grey-water system, if available, to save on water usage bills.
- ☐ Where possible, install stormwater drainage pits away from building/paving edge and keep surface drainage pits clean and clear to ensure stormwater can discharge away from the site appropriately during rain events.

For further information visit:

- Drip Irrigation Design Guidelines, My Smart Garden

Select healthy trees and plants to purchase

- ☐ Buy trees and plants from established, reliable nurseries who can provide advice about the plants they sell.
- ☐ Investigate whether your council has tree and plant giveway offers to apply for.
- ☐ Avoid plants that have browning or off-colour foliage and appear wilted or show signs of pests and diseases.
- ☐ Select trees with a straight trunk and well developed leader (vertical stem at the top of the trunk).
- ☐ Avoid trees and plants that appear pot-bound. They may look too big for their container or roots may be escaping through drainage holes.

Prepare your garden area prior to planting

- ☐ Protect garden areas from construction waste during the building phase. Ensure builders have removed any stray construction offcuts, rubble and rubbish from garden areas prior to completion of the build.
- ☐ Remove weeds from the garden area prior to planting.
- ☐ Ensure you have located all underground services prior to digging.
- ☐ If possible, prepare your soil for planting in Autumn when the temperature is cooler, soil is still warm and hopefully some rain has increased soil moisture.
- ☐ Add compost, topsoil and additives based on your soil type and condition.
- ☐ Position your tree/s and plants in their containers as per your planting plan to check location and spacings prior to planting.

Understand the condition and type of your soil to undertake improvements and enhance the availability of nutrients, aeration and drainage

- ☐ Gain an understanding of the type of soil in your garden. Generally, homes in Adelaide's coastal areas will have alkaline sandy soils, homes on the plains will have alkaline loam over clay and homes towards the hills will have acidic sandy loam over clay.
- ☐ Better understand your soil by referring to the soil testing undertaken by your engineer or builder. This test will have determined the reactivity of the soil, but also indicate the type of soil in your garden.

You can also undertake an at home test. Dig down ten centimeters and grab a handful of moist soil and squeeze it into a ball.

- ☐ **Clay soil** consists of fine particles and will form a smooth, round ball and feel slippery to touch. The benefits of clay soil is that it holds onto moisture and nutrients and may mean that plants need to be watered less frequently. However, the down-side is that without adequate drainage and aeration, it easily becomes waterlogged. Break up and improve the texture by mixing in gypsum. Add organic matter such as compost or aged manure as they are important for all soils.
- ☐ **Loamy soil** will form a rough ball that easily crumbles. It is an ideal mix of fine and coarse particles with varying degrees of organic content and usually good drainage. Improve by adding organic matter such as compost or aged manure.
- ☐ **Sandy soil** has larger and coarse particles and will not stay together in your hand. Often sandy soil does not have good water holding capacity and can become hydrophobic or water repellent. Mix a fifty-fifty mix of compost and aged manure through the soil to improve water holding capacity. Try adding organically derived, biodegradable soil wetters.

For further information visit:

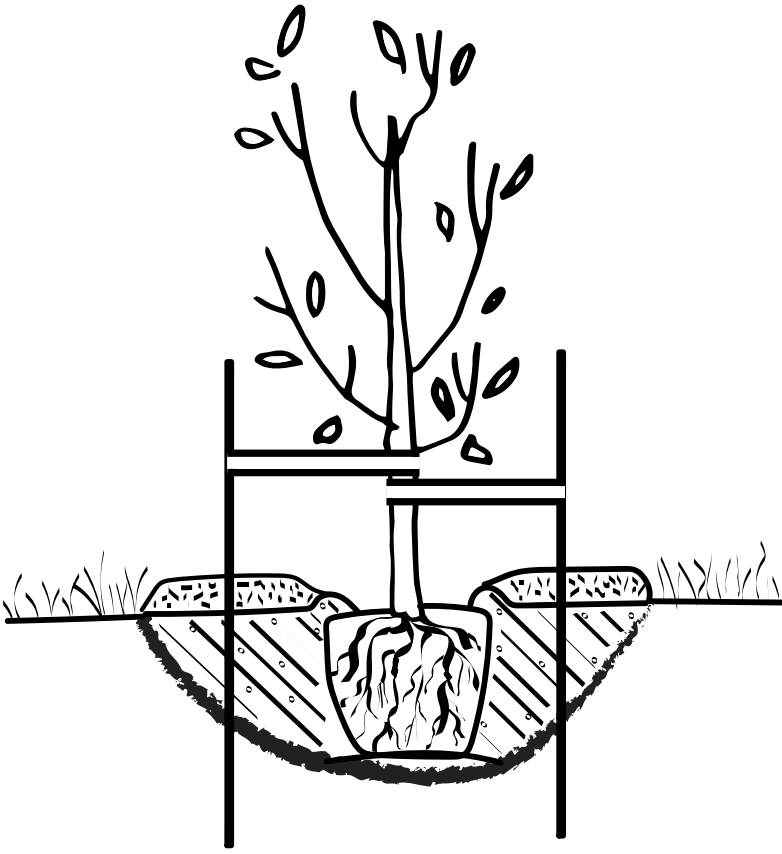
- Soil Preparation, Gardening Australia Factsheets
- Australian Plants for Adelaide Gardens - Soils

Plant your trees and plants carefully to help them establish successfully

- ☐ Dig a wide and shallow hole - two to three times wider and no deeper than the container or the tree/plant. Rough up the sides of the hole with the spade - smooth edges can make it hard for roots to penetrate.
- ☐ Half fill the hole with water and let it soak in before planting
- ☐ Place slow release fertiliser in the hole, if compatible with the species being planted, and brush over soil to avoid direct contact with roots
- ☐ Gently tickle out and loosen the outer roots of the root ball
- ☐ Gently place the plant/tree into the hole ensuring that it is straight and that the top of the root ball is level with the surrounding soil level. The root ball should be placed on a level and firm base to prevent sinking.
- ☐ Gently backfill the hole with moistened existing soil free of clumps, mixed with compost if required. Backfill hole until it is level with the top of the rootball. Firm down gently.
- ☐ Make a mounded ring or 'bund' around the base of the tree to direct water to the roots and aid in deep watering.
- ☐ Water in well
- ☐ Apply 75-150mm of organic mulch to the garden area, leaving a 50-100mm gap from the base of the plant/tree.
- ☐ To stabilise trees, place two stakes outside of the rootball in solid ground. Wrap flexible (eg. hessian) ties in a figure eight around the trunk and staple to each stake.

For further information visit:

- Tree planting tips, City of Burnside



Step 4

Maintain

Care for the trees and plants to maintain the garden's health and enjoy its many benefits.

Key considerations:

- Watering
- Pruning
- Weeding
- Mulching

This section includes:

- A checklist of key maintenance tasks to undertake throughout the year to keep your garden healthy

Maintain checklist

Care for the trees and plants to maintain the garden's health and enjoy its many benefits.

Water your garden efficiently to maintain a green, healthy and cooling garden.

- ☐ Water your plants deeply and less often to encourage deep and resilient root systems and help trees and plants become more heat and drought tolerant.
- ☐ Water the drip zone, the area directly below the outer foliage of the tree or plant, rather than the trunk. This will target the feeder roots that take up the water.
- ☐ Avoid quick, light and frequent watering of gardens as this encourages roots to grow up towards the drying topsoil and cause plants to become stressed and wilt.
- ☐ Water in the cool of the morning, especially in summer. This will reduce evaporation loss and allow the water to percolate into the soil to the roots.
- ☐ Generally, water new plants deeply twice a week for the first month, then once a week for the next month. This frequency will need to increase during hot, dry periods.
- ☐ If you've planted local species, or trees and plants that are adapted to Adelaide's natural rainfall patterns, you may only need to water during particularly hot periods in summer or long periods without rain, once plants are established.

For further information visit:

- Watering Wisdom, Gardening Australia
- Smart Watering, Gardening Australia
- In your garden, SA Water
- Consider Native Plants, SA Water

Re-mulch your garden to suppress weeds and help conserve water.

- ☐ Top up the mulch in garden beds in late winter or early spring to help conserve water during summer.
- ☐ Organic mulches such as straw-based and bark will break down over time and add organic matter into the soil to improve structure and drainage.
- ☐ Inorganic mulches including gravel, scoria and pebbles don't break down, will require less topping up and can look effective. However, in an exposed location they may get too hot and stress plants by raising the soil temperature.

For further information visit:

- How to Mulch, Gardening Australia

Maintain healthy soil and fertilise your plants to provide their required levels of nutrients and encourage growth, flowering and fruiting

- ☐ Most plants will benefit from adding animal manures, compost or worm castings to the top soil in spring to improve the soil and encourage new leaf growth.
- ☐ Australian native and indigenous plants will benefit from a feed of an organic based fertiliser (blood and bone, pelletised chicken manure) in spring and autumn. Avoid manufactured and chemical fertilisers high in phosphorous.
- ☐ Most plants only use fertiliser in times of high growth. A light application of slow release fertiliser in spring and autumn will keep the majority plants happy throughout the year.

For further information visit:

- Feeding Your Plants, Sustainable Gardening Australia
- Fertiliser dos and don'ts, Gardening Australia
- Maintaining Natives, Gardening Australia

Ensure irrigation and stormwater systems are well installed and maintained

In areas of heavy clay soils, movement of the ground is most variable and noticeable when rapid changes between wet and dry weather occurs.

- ☐ Help mitigate this effect by providing a consistent ground moisture condition, through watering trees in drier weather, and providing appropriate drainage for stormwater.
- ☐ Ensure irrigation systems do not cause overwatering of the soil. When this occurs at a localised portion of the site, it can cause the building structure to settle or heave unevenly to drier parts of the site and leads to framing movements and possibly cracks appearing, particularly to masonry structures.
- ☐ Regularly check any irrigation systems so that there are no leaks or breakages which may cause a sudden variation to the site's soil condition.

Prune trees and plants to promote healthy and neat growth

- ☐ Deadhead flowering shrubs regularly to direct the plant's energy into growing flowers and foliage.
- ☐ Most Australian native and indigenous plants flower from winter into early spring. Tip prune just after their flowering period to maximise growth and help create a dense and bushy plant to withstand the oncoming summer heat.
- ☐ Trim plants you want to form a hedge or keep a consistent size or shape twice a season to create a compact and dense form. Prune out thicker internal stems every two or three years to promote new growth in the middle of the plant.
- ☐ Annual pruning of young trees helps to maintain their shape, strength and structure as they mature. Remove weak branches, suckers and double leaders and thin out lateral branches. Research your tree species to better understand pruning requirements. Generally, prune deciduous trees in winter to promote vigorous new growth. Enhance flowering trees by pruning after their flowers have faded.
- ☐ If major pruning is required, undertake this when the plant is dormant - for deciduous plants this is in winter, for many natives this is in summer.
- ☐ For large trees, always seek advice from a qualified arborist to ensure the health of the tree and your safety.
- ☐ Regular inspection of the trees is recommended to check for the extent and reach of roots. Where tree roots may be at risk of damaging buildings or structures, the root can be trimmed (if required) and dammed with root barriers to prevent further growth.

For further information visit:

- Pruning 101, Gardening Australia
- Pruning Natives, Gardening Australia
- The Fantastic Guide to Tree Pruning, Fantastic Gardeners Blog
- How to Prune Young Shade Trees, Arbor Day Foundation

Glossary

Comparison of zones where the Urban Tree Canopy Overlay applies

The following table outlines Zones where the Urban Tree Canopy Overlay applies. While the table has captured a range of requirements please note that there are many variables, including:

- Technical Numeric Variations exist across Councils resulting in varied values for site area, setbacks and site coverage
- Site area variations add further variation depending on the housing type being proposed for each zone i.e, a detached dwelling generally has a larger site area requirement than a group dwelling.

It is always recommended that you speak to your local Council or access SAPPA to find out what variations apply to your individual circumstances.

Zones	Site Area	Front setback	Side setback	Rear setback	Site coverage	Private open space	Soft landscaping
Hills Neighbourhood	Varied 290 - 2200m²	Av. of adjoining building(s) or 8m	1.9m	4m	40-50%	< 301: 24m² > 301: 60m² 3m min. dimension	< 150: 10% 150-200: 15% 200-450: 20% > 450: 25% • 0.7m min. width • 30% of front yard • 1m along common driveway
Established Neighbourhood	Varied 125 - 2000m²	Av. of adjoining building(s) or 8m+	0.9m	4m	Varied 33.5-70%		
Suburban Neighbourhood	Varied 300 - 1500m²	Av. of adjoining building(s) or 8m	0.9m	3-4m	50%		
General Neighbourhood	250-300m²	Av. of adjoining building(s) or 5m	0.9m	3-4m	60%		
Housing Diversity Neighbourhood*	120 - 330m²	3m	0.9m	3m (0m on laneway)			
Urban Renewal Neighbourhood*	~ 70 dwellings/ha	1.5-3m	0.9m	3m (0m on laneway)			
City Living*	Varied 100-600m²	Av. of adjoining building(s) or Varied	Av. of adjoining building(s)****	3m			
Waterfront Neighbourhood Zone	Varied 150 - 7,500m²	Av. of adjoining building(s) or Varied	0.9m	Varied 3-6m (0m on laneway)	60-80%		

Primary zones where minor infill occurs. The minimum requirement in these zones is usually a small or medium tree.

* Payment into the Urban Tree Canopy Off-set Fund is available where the Urban Tree Canopy Off-set Scheme applies (this also includes areas with a 'Designated Soil Type') Find more information on PlanSA.

Terms defined in the Planning and Design Code

Battle-axe allotment	An allotment or site that comprises a: a. driveway or 'handle' (and any related open space) that leads back from a road to the balance of the allotment or site; and b. balance of the allotment or site that is the principal part of the allotment or site that does not have a boundary with a road. NOTE: 'battle-axe allotments' are often referred to as 'hammerhead' or 'flag pole' allotments.
Building line	In relation to a building on a site, means a line drawn parallel to the wall on the building closest to the boundary of the site that faces the primary street (and any existing projection from the building such as a verandah, porch, balcony, awning or bay window is not to be taken to form part of the building for the purposes of determining the relevant wall of the building, provided that the projection is not more than 1.5m).
Communal open space	Open space shared by more than one dwelling but is not publicly accessible. It excludes any of the following: a. private open space b. public rights of way c. private streets d. parking areas and driveways e. service and storage areas f. land with a minimum dimension less than 2.0m.
Detached dwelling	A dwelling comprising one dwelling on its own site which has a frontage to a public road, or to a road proposed in a plan of land division that is the subject of a current development authorisation.
Dwelling	A building or part of a building used as a self-contained residence.
Group dwellings	A group of two or more detached dwellings, each of which is used as a dwelling and one or more of which has a site without a frontage to a public road or to a road proposed in a plan of land division that is the subject of a current development authorisation.
Private open space	A private outdoor area associated with a dwelling that: a. is for the exclusive use of the occupants of that dwelling b. has a minimum dimension of 2.0m for ground level areas and 1.8m for balconies c. is screened from public view by a building, fence, wall or other similar structure with a minimum height of 1.8m above ground level and a maximum transparency of 20%. Private open space may include verandahs, alfrescos, balconies, terraces, decks where not enclosed on all sides. Private open space does not include areas used for bin storage, laundry drying, rainwater tanks, utilities, driveways or vehicle parking areas.
Residential flat building	A single building in which there are two or more dwellings.
Row dwelling	A dwelling: a. occupying its own site and has a frontage to a public road, or to a road proposed in a plan of land division that is the subject of a current development authorisation; and b. comprising one of three or more dwellings erected side by side, joined together and forming, by themselves, a single building.

Semi-detached dwelling	A dwelling: a. occupying its own site and has a frontage to a public road or to a road proposed in a plan of land division that is the subject of a current planning authorisation; and b. comprising 1 of 2 dwellings erected side by side, joined together and forming, by themselves, a single building.
Soft landscaping	Landscaped areas that are pervious and capable of supporting the growth of plant species. It does not included artificial turf or any form of pervious paving or paved/hardstand areas used for pedestrian and/or vehicle movement.
Terrace arrangement	A group of three or more detached dwellings erected side by side and abutting each other but not joined by way of a party wall or party walls.

Additional technical terms

Arborist	A dedicated professional who specialises in tree care and has learnt about safe tree work operations through formal education in arboriculture. Services an arborist can provide include: • Pruning • Tree removal • Emergency tree care • Planting and species recommendations • Plant health care • Other services (consulting services, tree risk assessment, cabling and bracing and tree care programs).
Assessment pathways	Categories or classifications of development applications under the Planning, Development and Infrastructure Act 2016. Can include deemed-to-satisfy development (consent must be granted) and performance assessed development (assessed on merit).
Biodiversity	The variety of plant and animal life in a place that makes it resilient and allows it to provide clean air, water and a stable setting in which humans and other species can live.
Canopy cover	The amount of cover the crown of the tree provides over an area of land when seen from above. It is usually expressed as a percentage of or square metres. As an individual tree grows and the crown expands, the canopy cover increases.
Deciduous	Trees which lose their leaves once a year, usually in Autumn at the end of their growing season. Deciduous trees, provide cooling shade in Summer and let the light and the sun's warmth in during Winter.
Housing type	Refers to the physical type of dwelling. For example, unit, apartment, townhouse, duplex, detached house or specialist accommodation.
Impervious	Impervious surfaces impede the filtration of water into the soil and are mainly artificial structures such as pavements, roads and buildings.
Infill	Infill is the rededication of land in an urban environment to new construction. Infill also applies within an urban area to construction on any undeveloped land that is not on the urban fringe.
Infill housing	Infill housing is the development or construction of additional housing units into an existing subdivision or neighbourhood. These can be provided through the division of existing land or homes into multiple units or by creating new residential lots by further subdivision or boundary adjustments. Units may also be built on vacant lots.

Green cover	Natural or planted vegetation covering a certain area of terrain, functioning as protection against soil erosion, protecting the fauna, and balancing the temperature.
Green infrastructure	The network of green spaces and water systems that delivers multiple environmental, social and economic values and services to urban communities.
Liveability	This is a measure of city residents' quality of life and is used to benchmark cities around the world. It includes socio-economic, environmental, transport and recreational measures.
Local native plant	Local native plants are species that evolved to suit local conditions such as soil type, temperature and water availability. They are also called 'indigenous plants'.
Low-rise housing	Buildings of between one and two storeys in height.
Mature tree	A tree that has reached a desired size or age for its intended use. Complete in natural development or growth.
Minor infill housing	Housing development sites that are typically less than 4,000m2 and are created by the demolition, subdivision and redevelopment of existing residential land parcels within existing suburbs. It is estimated that minor infill represents around one-third of the total dwelling stock growth in metropolitan Adelaide each year.
Ornamental	Ornamental trees are grown for their aesthetic value and the enjoyment of having them in the garden. For example, they may have outstanding flowers and fragrance, an interesting shape, colourful or unusual bark, excellent autumn colours, or a combination of these and other features.
Permeable paving	Permeable (or porous) paving is an alternative to conventional impermeable pavements, with many stormwater management benefits. These surfaces allow water to percolate into the soil (to recharge the water table) or is filtered back to the drainage system.
Regulated tree	A regulated tree has: • a single trunk with a circumference of two metres or more - when measured one metre above natural ground level • multiple trunks with a total circumference of two metres or more and an average circumference of 625 millimetres or more – when measured at one metre above natural ground level.
Significant tree	A significant trees has: • a single trunk with a circumference of three metres or more measured at a point one metre above natural ground level • multiple trunks with a total circumference of three metres or more and an average circumference of 625 millimetres or more when measured one metre above natural ground level. The legal requirement also applies to any tree identified as a significant tree in Part 10 of the Planning and Design Code.
Soil area	An area of natural or newly prepared ground with no structure located below or above it.
Stormwater infiltration	The process by which rainfall and stormwater runoff flows into and through the subsurface soil and recharges natural water systems.

Structural root zone (SRZ)	The area around the base of a tree required for the tree's stability in the ground. This zone considers a tree's structural stability only, not the root zone required for a tree's long-term health. The radius of the SRZ is calculated for each tree using the below formula: Radius of SRZ = $(D \times 50)^{0.42} \times 0.64$ D= the trunk diameter (metres), measured above the root buttress
Tree canopy	Health establishment of a typical branching structure, foliage and crown of the tree.
Tree Protection Zone (TPZ)	The key method of protecting trees on development sites. The TPZ is a combination of the root area and crown area requiring protection. It is an area protected from construction disturbance, so that the tree remains healthy. The radius of the TPZ is calculated for each tree by multiplying the trunk diameter at 1.4m above the ground level (or diameter at breast height – DBH) x 12 i.e. Radius of TPZ = DBH x 12
Tree spread	Tree spread is simply how wide the trees branches will eventually grow once fully mature.
Urban cooling	Growing evidence shows we can effectively lower local temperatures by planting trees to create more shade and thus achieve urban cooling.
Urban environment	An urban environment or 'urban area' is the region surrounding a city. They are very developed, meaning there is a density of human structures such as houses, commercial buildings, roads, bridges, and railways. The urban environment or urban areas can refer to towns, cities, and suburbs and includes the city itself, as well as the surrounding areas.
Urban green cover	Examples include remnant bushland, private and community gardens, parks, nature reserves and trails, sporting ovals, street trees and rooftop gardens.
Urban heat islands	Urban areas that are significantly warmer than surrounding rural or natural areas due to human activities and land uses.
Urban infill	The development or construction of additional housing units into an existing subdivision or neighbourhood within the current built-up urban area of metropolitan Adelaide. It excludes the greenfield and township areas within the Greater Adelaide region.
Walkable neighbourhood	A 'walkable neighbourhood' is where the daily needs of most residents can be met within a short walk of where they live or work. It provides close access by foot, bike or public transport – through the provision of well-designed infrastructure – to jobs, shopping, learning, open space, recreation, and other amenities and services.
Water Sensitive Urban Design	An approach to the planning and design of urban environments focused on integrating the urban water cycle (including potable water, wastewater and stormwater) with the built and natural urban landscape. Examples include, rain gardens, permeable paving.

References

1 Government of South Australia (2022) Raising the bar on Residential Infill, https://plan.sa.gov.au/__data/assets/pdf_file/0009/730746/Raising_the_bar_on_Residential_Infill_in_the_Planning_and_Design_Code.pdf [Accessed June 2022]

2 Government of South Australia (2017) The 30-Year Plan for Greater Adelaide. 2017 Update, http://livingadelaide.sa.gov.au [Accessed June 2022]

3 Government of South Australia (2020) Guide to climate projections for risk assessment and planning in South Australia, Department for Environment and Water https://data.environment.sa.gov.au/Climate/Science-and-Knowledge/Pages/default.aspx

4 Astell-Burt, T. and Feng, X. (2019) *Association of Urban Green Space With Mental Health and General Health Among Adults in Australia*. JAMA Open Network, https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2739050

5 Ennos, R. (2015) *Can trees really cool our cities down?* The Conversation

6 Ossola, A., Staas., Keishman, M.R. (2020) Urban Trees and People's Yards Mitigate Extreme Heat in Western Adelaide. Macquarie University, Sydney, Australia, https://doi.org/10.25949/5df2ef1637124

7 Plant, L. (2016) *Making the case for planning and investment in green infrastructure: a case study of street trees and property value impacts in Brisbane, Australia*. The University of Queensland

8 Kardan, O., Gozdyra, P., Misic, B. et al (2015) *Neighbourhood greenspace and health in a large urban center*. Scientific Reports 5, 11610, https://doi.org/10.1038/srep11610

9 McAliney, M. (1993) *Arguments for Land Conservation: Documentation and Information Sources for Land Resources Protection*, Trust for Public Land, Sacramento, CA, December, 1993

10 Wilderness Society (2019) Why are hollow-bearing trees so important?, https://www.wilderness.org.au/news-events/why-is-it-vital-that-we-preserve-hollow-bearing-trees

11 Akbari, H., Pomerantz, M., Taha, H. (2001) *Cool Surfaces and Shade Trees to Reduce Energy Use and Improve Air Quality in Urban Areas*. ResearchGate, https://www.researchgate.net/publication/222581591_Cool_Surfaces_and_Shade_Trees_to_Reduce_Energy_Use_and_Improve_Air_Quality_in_Urban_Areas/

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50. CLOVER Green Space
51. CLOVER Green Space
52. CLOVER Green Space
53. CLOVER Green Space
54. CLOVER Green Space
55. CLOVER Green Space
56. CLOVER Green Space
57. Green Adelaide
58. https://raraflora.com.au
59. www.warners.com.au
60. https://malleedesign.com.au
61. www.pacifichorticulture.org
62. https://malleedesign.com.au
63. https://medium.com
64. https://sandcreeknursery.net
65. www.gardensonline.com.au
66. www.pinterest.com.au/
67. www.facebook.com/flemingsnurseries/
68. Green Adelaide
69. www.louiesnursery.com
70. https://sites.redlands.edu
71. https://leafland.co.nz
72. https://gympielandcare.org.au
73. https://sv.wikipedia.org
74. https://sharonpalmer.com/
75. www.thetutuguru.com.au/
76. https://www.specialitytrees.com.au/trees/pyrus-calleryana-bradford-fb2wp
77. www.willemsefrance.fr/arbre-aux-40-ecus-c2x33222088
78. https://waterwisegardenplanner.org
79. Department for Environment and Water
80. Ivan Holliday, Flickr. https://www.flickr.com
81. iPlantz, https://www.iplantz.com
82. https://selectree.calpoly.edu
83. https://de.wikipedia.org/wiki/Eucalyptus_odorata
84. https://livingheritage.lincoln.ac.nz
85. www.vdberk.ro/
86. www.acheterunarbre.fr
87. www.theplantcompany.co.nz
88. https://horizonlandscapingjax.com
89. https://plants.ces.ncsu.edu
90. Dover Heights, Fig Landscapes, Jessie Ann Harris
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102. CLOVER Greenspace
103. CLOVER Greenspace
104. CLOVER Greenspace
105. CLOVER Greenspace
106. CLOVER Greenspace
107. Canshare Farms: https://www.chanshare.com/tag/water-wise-it/
108. USDA: https://www.nrcs.usda.gov/wps/portal/nrcs/detail//?cid=nrcs142p2_026831
109. Den's Garden: https://dengarden.com/gardening/How-to-Determine-Your-Soil-Type-For-Planting-Success
110. Modern Native Garden, King's Landscaping and Pools
111. Green Adelaide
112. CLOVER Green Space
113. Jan Juc on the Hill, Kings Gardens and Pools, Simon Griffiths
114. George Street, Landskap, Alex Game

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- SA Power Network
- SA Water
- State Planning Commission
- Treenet
- Urban Development Institute Australia
- URPS
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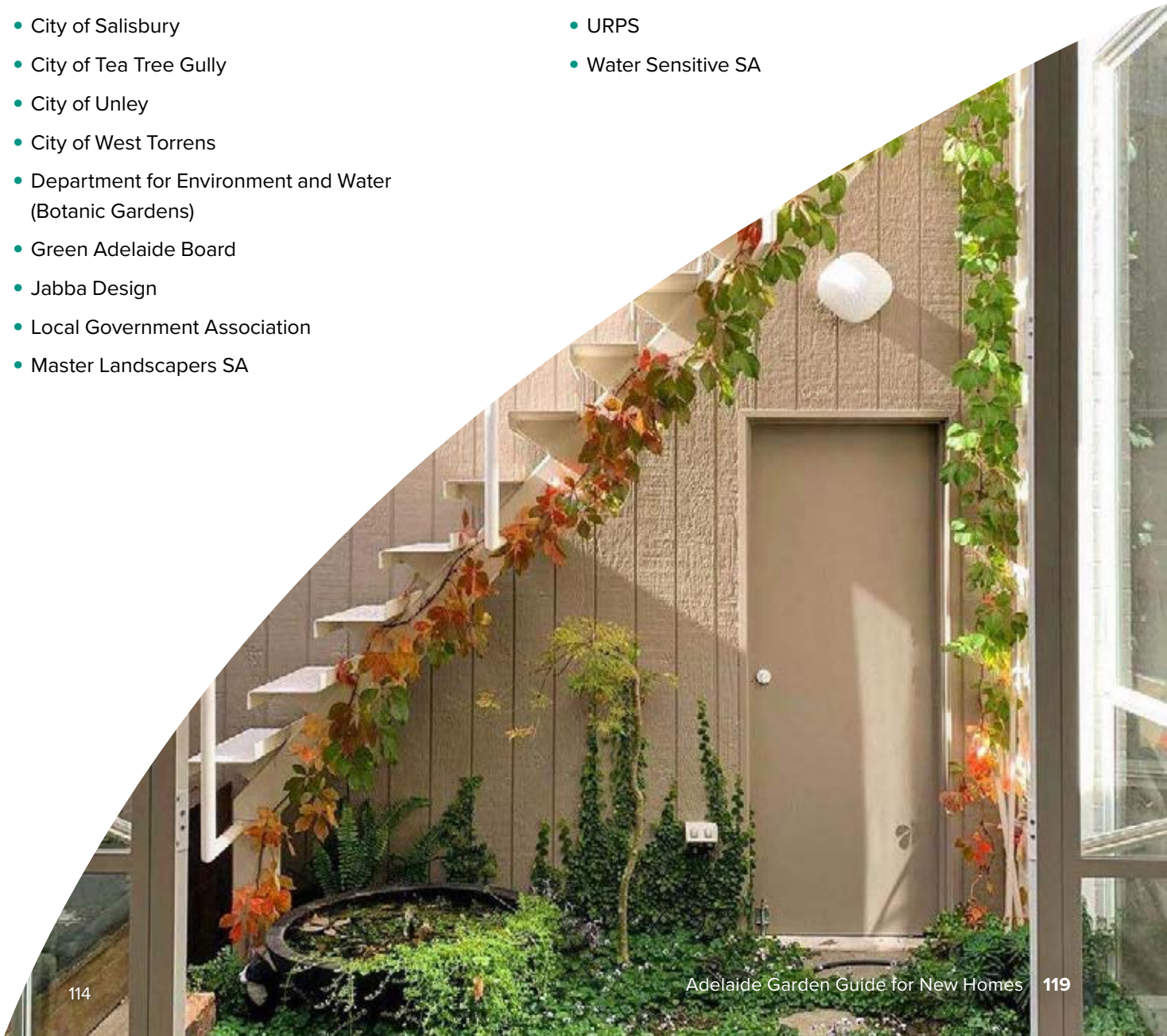

For further information:

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Green Adelaide was established by the South Australian Government to help create a cooler, greener, wilder and climate-resilient city.

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