



Dedicated to a better Brisbane

Design-led City

Brisbane Green Factor

User guide



DRAFT ONLY

Acknowledgement of Country

Brisbane City Council acknowledges this Country and its Traditional Custodians. We acknowledge and respect the spiritual relationship between Traditional Custodians and this Country, which has inspired language, songs, dances, lore and dreaming stories over many thousands of years.

We pay our respects to the Elders, those who have passed into the Dreaming; those here today; those of tomorrow. May we continue to peacefully walk together in gratitude, respect and kindness in caring for this Country and one another.

'Caring for Country - Land, Water and Sky' by Riki Salam (Mualgal, Kaurareg, Kuku, Yalanji),
We are 27 Creative.



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Introduction

Brisbane City Council has a vision to create a world-class, design-led city that drives and facilitates excellence. Council's award-winning Brisbane Green Factor plays a key role in ensuring new developments contribute to Brisbane's sustainability, quality of life and support its subtropical sense of place.

The Brisbane Green Factor, originating from a globally recognised term and formula first established in Berlin in 1994, has been adopted in cities worldwide to enhance the quantity and quality of urban green spaces. This innovative approach addresses the challenge faced by Council and the development industry in balancing the growing need for housing with the creation of high-quality urban landscaping outcomes. The integration of green infrastructure serves as a creative solution to meet these demands, contributing to regulating urban temperatures, enhancing biodiversity, reducing stormwater runoff, and deeply connecting people with nature in urban settings.

The Brisbane Green Factor was generated with these pressures and benefits in mind and provides a user-friendly, innovative way of capturing and measuring both the quantity and quality of green infrastructure on a development site. This guide seeks to improve understanding of the Brisbane Green Factor and provide useful guidance for those seeking to improve their scores and deliver better urban landscaping outcomes.

Image: Trellis, South Brisbane









Part A

Understanding the Brisbane Green Factor

Part A provides a high-level overview of the Brisbane Green Factor and the imperative for improving greening outcomes in Brisbane.

This section unpacks the fundamental mechanisms for how the Brisbane Green Factor assesses greening outcomes, including how individual planting initiatives are weighted and valued, and provides strategies for improving scores.

Image: 14 Stratton Street, Newstead.

What is the Brisbane Green Factor?

The Brisbane Green Factor is an award-winning non-statutory online tool that supports urban development professionals assess the quality of proposed green infrastructure in new developments. It was designed to measure a development site's contribution to 6 Ecosystem Service Areas that are integral to providing healthy urban places and align with Brisbane's strategic objectives.

Stormwater Management 20%

Reduce the quantity and improve the quality of runoff by providing deeper soils in all green infrastructure categories.

Wellbeing and Health 15%

Contribute to mental and physical wellbeing by improving access to vegetation in urban environments.

Habitat Provision 15%

Provide habitat opportunities by considering local fauna in planting selection and design.

Food Production 5%

Incorporate productive vegetation in accessible communal areas.

Urban Temperature Regulation 20%

Reduce urban heat island effects and improve comfort by providing larger trees and more vegetation at ground and lower levels.

Sense of Place 25%

Enhance Brisbane's sub-tropical identity by providing significant vegetation visible to the public. Vegetation also helps soften the visual impact of built form.

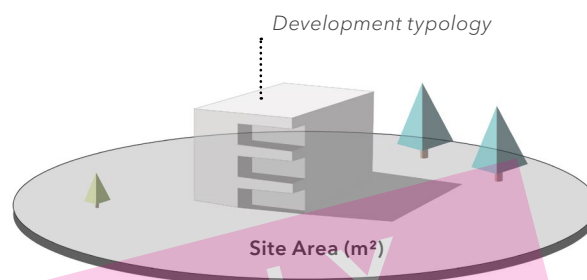
Ecosystem Service Areas

How the Brisbane Green Factor works

The Brisbane Green Factor seeks to measure the quantity and quality of green infrastructure on development proposals. It achieves this through measuring the total amount of green elements, and weighting the value of each against the 6 Ecosystem Service areas. The synthesis of these factors is then measured against the site area to calculate the Green Factor Score.

Building typology and site area

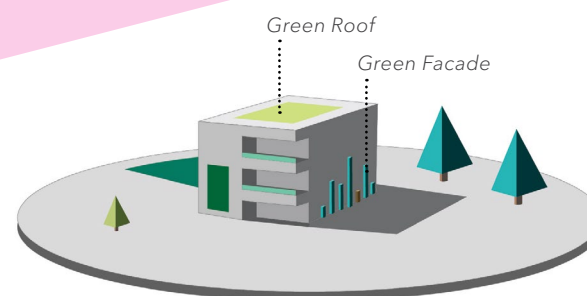
The Brisbane Green Factor takes **total site area** and the **development typology** into account when assessing the proposal's overall score, recognising the different economic and feasibility pressures developments face. The development typology determines the **base score** against which the green factor tool is assessed.



Quantifying green elements

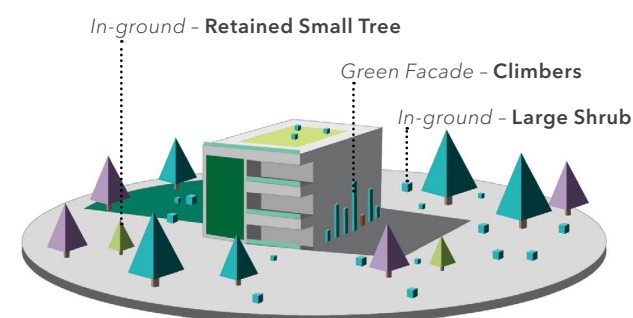
Brisbane Green Factor users input Green Element quantities in a proposed development under the following categories:

- in-ground planting
- green walls
- green facades
- green roofs
- planting on structure.



Green Factor Area

Vegetation and soil media in each Green Element Category are measured in or converted to meters and multiplied by the **Element Rating**. The element is a calculation based on the green element category, vegetation and growing media type and the project characteristics. This is explained in detail on the next page. The sum of these areas over the project is called the **Total Green Factor Area**.



Green Factor Score

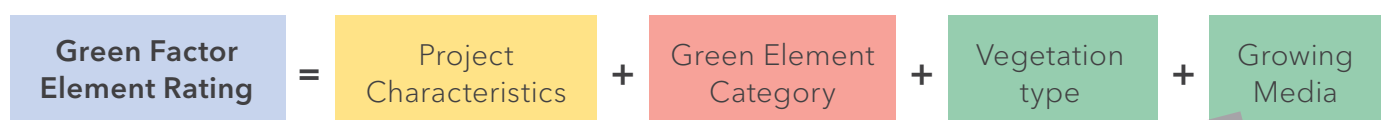
The ratio of the **Total Green Factor Area** against the Site Area is called the **Green Factor Score**. A high score in comparison to the **base score** reflects a desirable outcome, while a low score indicates the proposal is underperforming.

$$\text{Green Factor Score} = \frac{\text{Green Factor Area (m}^2\text{)}}{\text{Site Area (m}^2\text{)}}$$

Green Element weighting

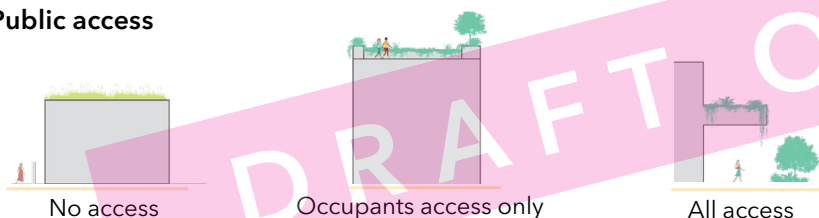
Not all greenery is valued equally by the Brisbane Green Factor. Key desirable outcomes have been prioritised based on their performance against the 6 Ecosystem Service areas to deliver better greening outcomes for the community and the environment. The Brisbane Green Factor is configured to place greater value on the following high-level priorities.

Unpacking Element Ratings



Project Characteristics

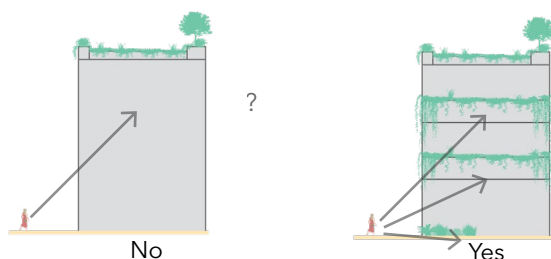
Public access



LESSER VALUE

GREATER VALUE

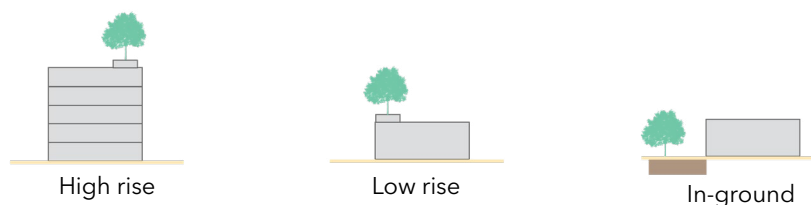
Public visibility



LESSER VALUE

GREATER VALUE

Element location



LESSER VALUE

GREATER VALUE

Species type



Exotic



Native



Productive



Indigenous

LESSER VALUE

GREATER VALUE

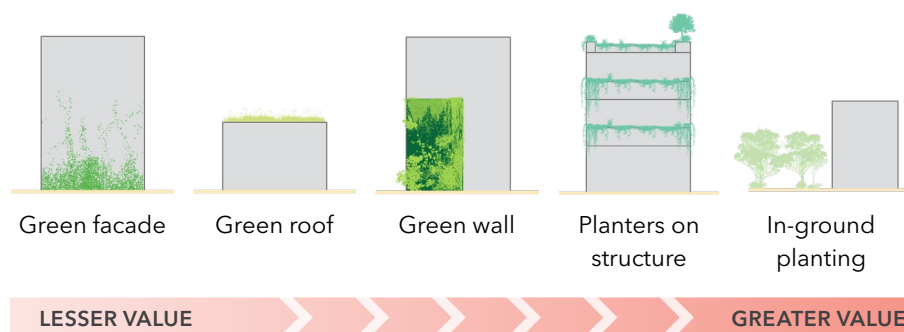
Key Points

Choices in **Project Characteristics** can significantly change the outcome of scores.

Planting at a human scale, accessible and visible to the public is prioritised over private planting. The tool generalises these characteristics, therefore if project has the majority of planting in-ground, then that option should be chosen for that green element type.

Plants that are indigenous to Brisbane, productive or native are preferred over exotic species. Please refer to SC6.24 in the planning scheme for suggestions.

Green Element Category



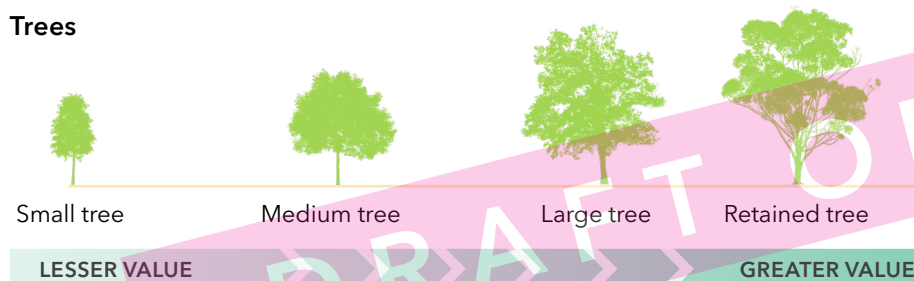
Key Points

The order of the Green elements within the tool are not representative of their weighting. Typically element ratings will range between 0-2.5.

In-ground planting is valued highest on the Brisbane Green Factor. Minimising the basement footprint can maximise the area for in-ground planting.

Vegetation types

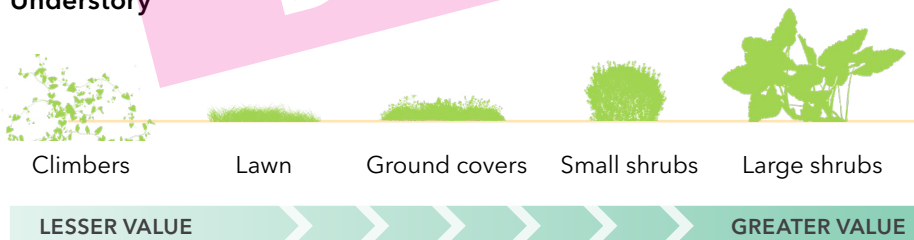
Trees



Refer to brisbanegreenfactor.brisbane.qld.gov.au for canopy size ranges.

Soil volumes for trees should be joined if possible.

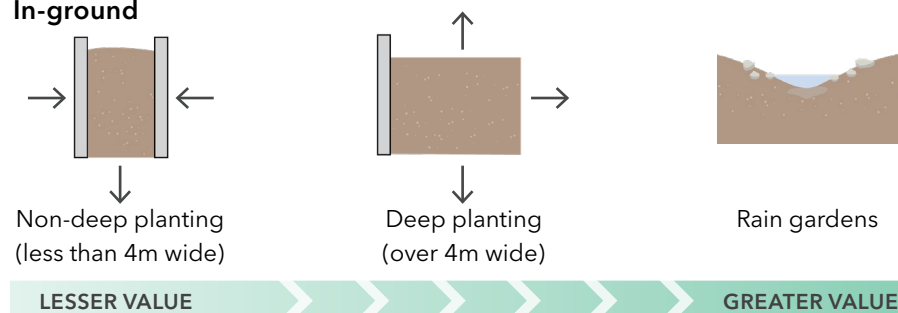
Understory



Though climbers have a low score, they are able to have a high meter rate as it is a measurement of vertical plane coverage.

Growing media

In-ground

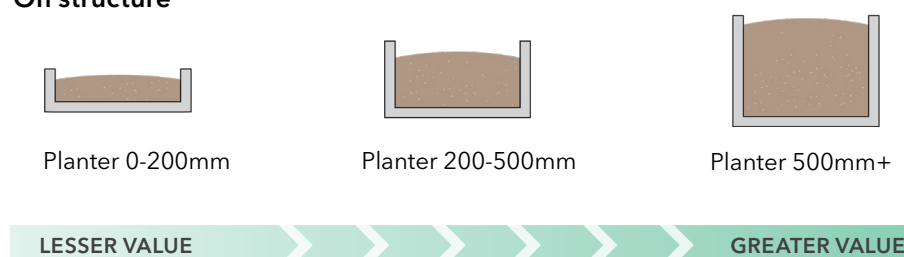


Refer to brisbanegreenfactor.brisbane.qld.gov.au for exact definition of deep planting but generally it is:

- no structure above or below, or obstruction of future canopy area
- a minimum dimension of 4m in any direction.

Rain Gardens are counted in addition to soil.

On structure

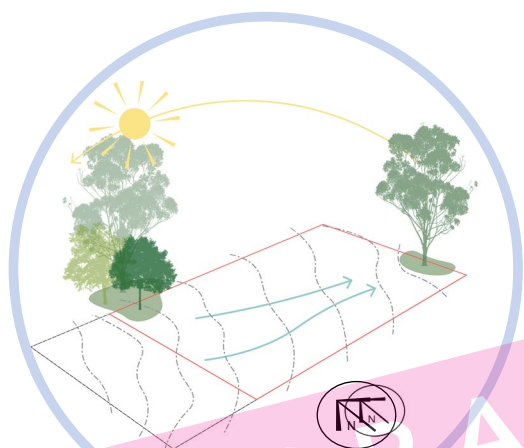


Soil can be mounded for suitable tree soil depths.

Recommended minimum width of planters and planting beds is 400mm.

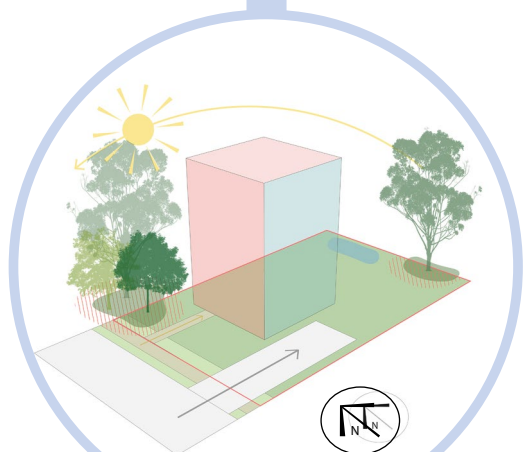
Improving the Design Process

Integrating planting design considerations throughout the design process maximises the proposed impact and benefit of greening elements.



Site analysis

- Visit site with project team to review site conditions (Architect, Landscape Architect, Arborculturalist and Ecologist).
- Identify key planting opportunities and key items for retention and note areas of deep planting to retain existing trees.
- Survey the cultural landscape and regional ecosystems of the site.
- Understand the underlying soil conditions.
- Understand site topology, natural drainage, sun and prevailing wind directions.



Constraints and opportunities

- Define clear objectives for sustainability, biodiversity and aesthetic values related to planting design, ensuring these goals guide the entire project.
- Select location and green element type by understanding long-term maintenance requirements.
- Review page on Green Factor Elements Scoring to optimise the project to the highest score possible.
- Create margins at boundaries for visual buffers and areas for biodiversity and integrate rain gardens.
- Identify points of entry for pedestrians and vehicles.
- Understand the effects of the orientation of the site (impacts of the sun, wind and shade).



Concept development

- Identify areas for planting that benefit the ecosystem services. Stormwater Management (green roofs, planters, on structure, rain gardens, permeable paving), biodiversity (using indigenous, productive native species, bio-solar), Urban Temperature Regulation (shading walls, roofs and hardstand) etc.
- Prioritise adjacently accessible and common areas for planting to ease future planting maintenance.
- Maximise planting on western frontages and roofs.
- Minimise basement footprint to maximise in-ground planting.
- Coordinate underground services to maximise areas for trees.



Design development

- Use planting to embed the development into the local urban fabric (create areas for public access and visibility, rejuvenate adjacent ecosystems and create vistas at ground or on structure).
- Refine plant palette for specific building/development microclimatic and environmental conditions.
- Check high-level installation, ongoing maintenance and replacement costs.
- Use Brisbane Green Factor to estimate score.



Design validation

- Coordinate irrigation and maintenance systems with architects and irrigation specialists, for ease of future maintenance and refurbishment.
- Plan and budget for maintenance and replacement of planting areas on structure.
- Refine Green Factor Score and attach scorecard to your development application.

The Green Factor Score

A development proposal's overall performance can be assessed by comparing its Green Factor Score against a Base Score. Each building typology has a corresponding Base Score. As a general rule, larger-scale developments have a higher Base Score. Developments that score below the Base Score are determined to be lacking in sufficient greenery, while developments that exceed the Base Score are deemed to achieve high-performing, desirable and exceptional outcomes.

Typology Base Scores

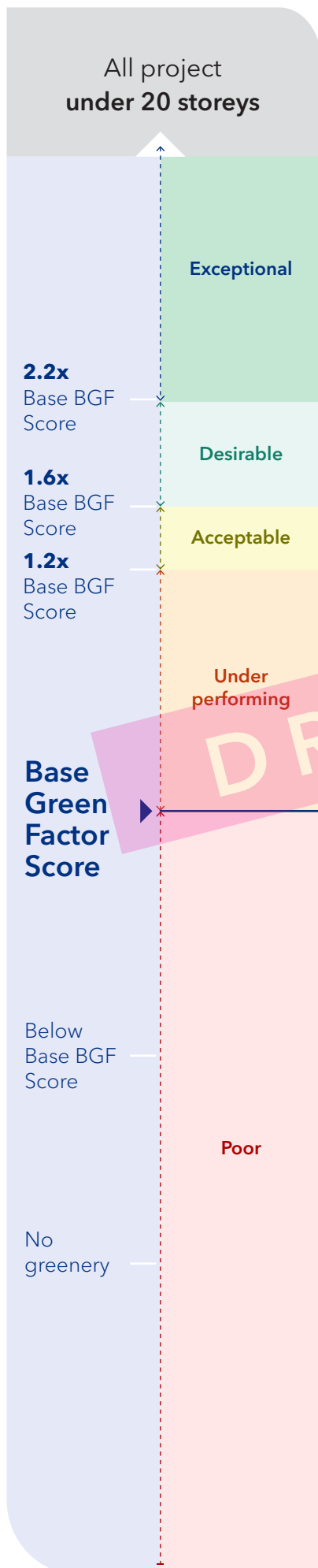
Different types of buildings and projects face different economic and feasibility pressures and challenges in delivering greening outcomes.

In recognition of this complexity, different Base Scores have been assigned and are detailed in the following table.

Site typology	Base score
Small-scale residential	0.4
Medium-scale residential	0.5
Large-scale residential	0.6
Hotel or other accommodation	0.5
Retail, shop or service	0.25
Shopping centre	0.4
Public building	0.5
Community facility	0.4
Commercial office	0.5
Light industrial or warehouse	0.25
Service station	0.3

Image: Canvas, Love St Bulimba.





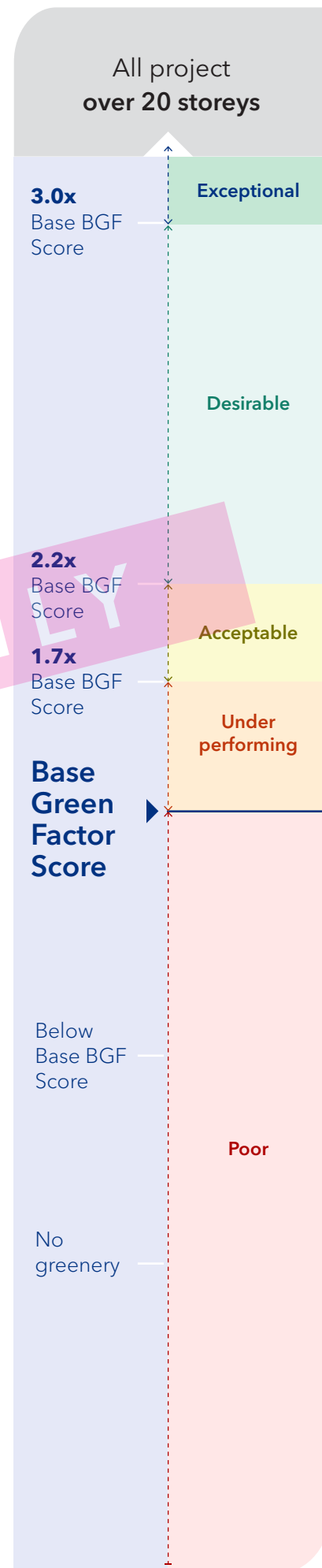
Desirable outcome

- Existing significant trees retained.
- More accessible in-ground planting.
- Car park includes rain gardens and tree trenches.
- Diverse and highly visible planting.
- Well distributed greenery throughout built form.



Underperforming outcome

- Minimal in-ground vegetation coverage.
- Lacking trees.
- Minimal vegetation diversity.
- Balcony planting located on higher levels.
- Lack of planting diversity.
- Green roof not accessible or visible to the public.





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DRY FIRE HYDRANT
BOOSTER INLET



Part B

Green Element Guidance

Part B details the 5 key Green Element categories identified by the Brisbane Green Factor. It highlights preferable design outcomes and access and maintenance considerations. These strategies are supported by case studies that showcase best practice examples.

Image: Canvas, Love St Bulimba.

Green Element Categories

The 5 overarching green elements of the Brisbane Green Factor unlock significant gains in realising the 6 Ecosystem Service Area outcomes. This section defines key considerations for achieving these outcomes.

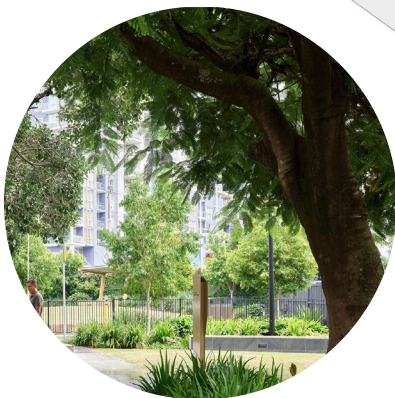
Green roof



Planters on structure



Green facade



In-ground planting



Green wall



In-ground planting

In-ground planting zones help retain and establish large subtropical shade trees in our urban environments. These zones improve stormwater infiltration, mitigate urban heat and enhance a site's biodiversity.



Improving outcomes

- Retain and celebrate existing significant trees.
- Rationalise building and basement extents to provide consolidated in-ground planting areas.
- Strategically locate in-ground landscape to enhance street frontages, public realm and communal open space whilst using planting to screen/buffer low-amenity areas.
- Integrate Water Sensitive Urban Design (WSUD) elements to optimise passive irrigation of in-ground landscapes.
- Incorporate permeable paving and structural soil cells to maximise soil volume for expanded tree root access.
- Ensure that the planting zones are planned free of services and development infrastructure.
- Orientate in-ground large canopy shade trees to improve site and building microclimatic conditions.
- Install trellis and climber planting in deep planting zones to maximise their well being.

In-ground planting elements

The Brisbane Green Factor considers the following elements for successful in-ground planting.

- Trees – removed, retained and new (#)
- Shrubs, ground cover and climbers (m²)
- Lawns and turf (m²)
- Raingardens (m²)
- Deep and non-deep planting areas (m²)
- Permeable surfaces (m²).

Access and maintenance tips

- WSUD elements will require maintenance access. Design without compromising areas for trees and planting.
- Access for maintaining trees may need agreement from adjoining properties.
- Fixing points and access for maintaining climbers may be required.
- Designing for low maintenance means undertaking maintenance every 6 months after the establishment maintenance period (commonly 1 year).



Case study

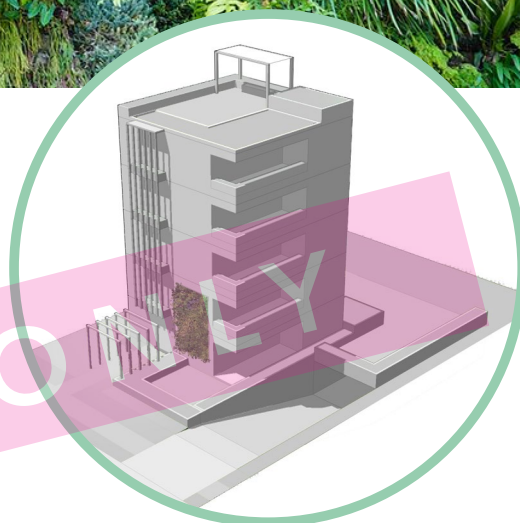
Grange Residences, Grange

- Generous spaces for in-ground planting and large mature trees throughout the site.
- Driveways include garden beds minimising overall amount of hard surfaces.
- Site design incorporates landscaped walkable connection through to adjacent park.
- Mature trees retained as key entrance statement.
- Facade design encourages vertical ground plant climbers.

*Image (this page): RBCH, South Brisbane.
(Opposite page): Grange Residences, Grange.*

Green wall

Green walls provide living ecosystems that enhance biodiversity and provide a highly visible and recognisable feature for a development. Due to their inherent complexity, they must be incorporated into early stages of the design process to ensure success.



Improving outcomes

- Identify and understand the ultimate asset owner to ensure capability for ongoing maintenance and legacy.
- Orientate installations to maximise visibility and connection to public areas and communal spaces.
- Integrate into architectural design as a seamless installation into the structure of the facade.
- Coordinate with the structural and hydraulic engineers to ensure appropriate structural and drainage integration and coordinate fire risk and mitigation requirements.
- Address wind impacts at higher levels.
- Consider opportunities to combine green walls with additional elevated planting including planters and trellises.
- Select plants to maximise biodiversity and respond to contextual conditions.
- Consider solar access and incorporate additional lighting to optimise plant growth where necessary.

In-ground planting elements

The Brisbane Green Factor considers the following elements for successful in-ground planting.

- Shrubs, ground cover and climbers (m^2)
- Growing media (soil/substrate) (m^2).

Access and maintenance tips

- Conceal maintenance and supporting infrastructure.
- Increase maintenance during warmer months, directly after establishment and any extreme weather event.
- Utilise modular, easily-replaceable elements and vertical planter panels.
- Incorporate an automated irrigation system with failure alert system.
- Design drainage system to prevent waterlogging and root rot.
- Use lightweight growing media to reduce structural weight.



Case study

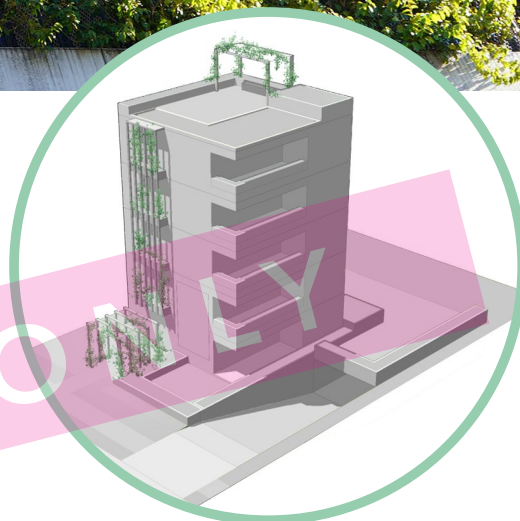
Botanica Apartments, South Brisbane

- Project incorporates two outdoor walls and one indoor green wall, over 300m².
- More than 50 species used in subtropical planting design.
- Outdoor green walls address primary street frontages and soften driveway entrance.
- Foam growing medium fed by hydroponic system reduces structural weight.
- Provides habitat for fauna.

*Image (this page and opposite):
Edmonstone St, West End*

Green facade

Facades present an opportunity to incorporate climbing species into the built form, providing visible greenery from both the private and public realm. Green facades protect and cool buildings and adjacent spaces from the harsh Queensland sun.



Improving outcomes

- Position on northern and western facing walls to maximise temperature regulation benefits.
- Design trellises and climbing frames seamlessly into the fabric of the architectural design.
- Ensure the building structure can support the proposed climbing support structure including the ultimate weight of the climbing plants.
- Ensure building airflow and ventilation is unobstructed by expected plant growth.
- Provide planter volumes to support and sustain the expected climber size and spread.
- Use built form structures such as fences, mesh panels, trellises or pergolas to support climbing plants to provide privacy screening and shade.
- Use stainless steel cables, mesh or wires arranged in a grid pattern to guide growth.
- Consider plant species that climb on surface structure with no mechanical requirements.
- Ensure the design complies with various building codes including fire hazards.

In-ground planting elements

The Brisbane Green Factor considers the following elements to facilitate successful green facades.

- Climbers (m²).

Access and maintenance tips

- Utilise support systems that can be easily removed or adjusted to assist with plant maintenance.
- Carefully consider and provide maintenance access to structures.
- Consider installing maintenance hatches to provide direct access to key areas without the need for external scaffolding or lifts.
- Integrate automated irrigation systems to ensure plants receive consistent water. Drip irrigation can be effective in reducing water waste while ensuring deep watering.



Case study

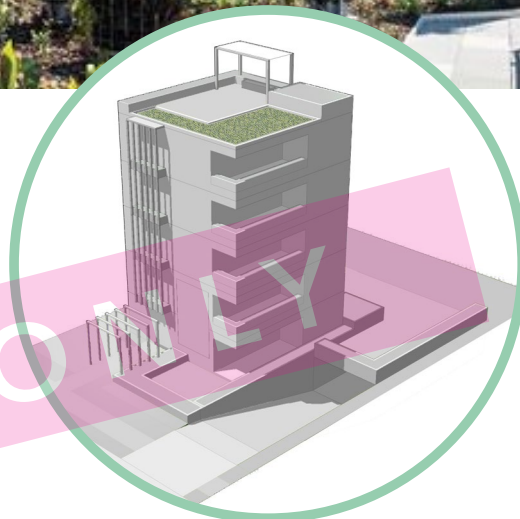
The Eminence, Fortitude Valley

- Every level incorporates articulated planted balconies.
- North-east facing green facade provides protection from harsh weather.
- Provides 2 landscaped communal balconies.
- Winner of 2021 Lord Mayor's Buildings that Breathe Architecture Award.

*Image (this page and opposite):
The Eminence, 89 McLachlan St
Fortitude Valley.*

Green roof

Green roofs enhance biodiversity by creating habitats for diverse flora and fauna. They regulate urban temperatures by absorbing heat and insulating buildings, reducing reliance on artificial climate control and can incorporate sustainable technologies like rainwater harvesting and solar energy.



Improving outcomes

- Incorporate specialised design and construction, including consultation with architects and structural engineers to ensure building can support its weight.
- Incorporate lightweight, well-draining growing mediums to reduce structural load and prevent waterlogging.
- Growing medium to include nutrients to support plant health or consider a 'fertigation' system.
- Incorporate a drainage layer, filter layer and a waterproof root barrier layer to protect roof structure and ensure proper drainage.
- Select ground covers that reduce weed growth and soil erosion.
- Minimise water use with automated irrigation system design.
- Select plant and material suitable for exposed weather conditions.

In-ground planting elements

The Brisbane Green Factor considers extensive green roofs made of lightweight substrates under 200mm depth, including the following elements.

- Shrubs, ground cover and climbers (m^2).
- Growing media (soil/substrate) (m^2).

Access and maintenance tips

- Provide safe and convenient access for personnel via walkways, guardrails and anchor points.
- Install leak detection systems to prevent damage.
- Prioritise pre-grown modular systems for their easy installation and replacement.
- Replace waterproofing elements approximately every 20 years.

Case study

Queensland Children's Hospital

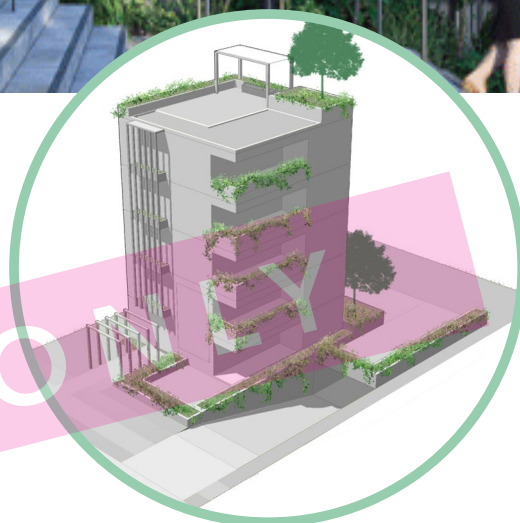
- Large sloping roof with over 1400 individual modular planting cassettes and 23,000 plants.
- Shallow 300mm root zone provides a flush finish between paving and planting.
- Automated garden irrigation.
- Pavement material and grading maximises passive irrigation.
- Accessible green roof.

Image (this page and opposite):
RBCH, South Brisbane.



Planting on structure

Planters located across buildings can provide a unique subtropical aesthetic, urban cooling and biodiversity benefits and their location should be considered early in the design process. Sensitively designed and integrated planters capable of holding soil volumes can support small and medium tree species located across buildings and rooftops.



Improving outcomes

- Strategically install planters in areas that can be easily accessed from communal spaces.
- Integrate planter design, placement and orientation with the overall architectural design and massing.
- Ensure building structure supports additional weight from planters, soil volumes and mature vegetation.
- Allow soil surface area and volume to accommodate future root systems supporting growth.
- Install waterproof membranes and protection systems to prevent building damage.
- Ensure irrigation system and moisture sensors optimise water usage and prevent overwatering.
- Use soil mix with adequate structure and drainage requirements while minimising weight and settlement.
- Maintain low organic soil percentages to minimise settlement and toxic anaerobic conditions.
- Manage excess water and prevent waterlogging.

In-ground planting elements

The Brisbane Green Factor considers the following planting elements.

- Small and medium trees (#)
- Shrubs, ground cover and climbers (m²)
- Growing media (soil/substrate) (m²)

Access and maintenance tips

- Incorporate drain inspection upstands with screen cap covers over planter drains to allow visual inspection of drainage systems.
- Consider the need for dedicated harness fixing points, walkways, ladders and access points to allow for regular upkeep.
- Use integrated building maintenance units (BMUs) or temporary catwalks and maintenance platforms around large planting areas, especially on intensive green roofs.

Case study

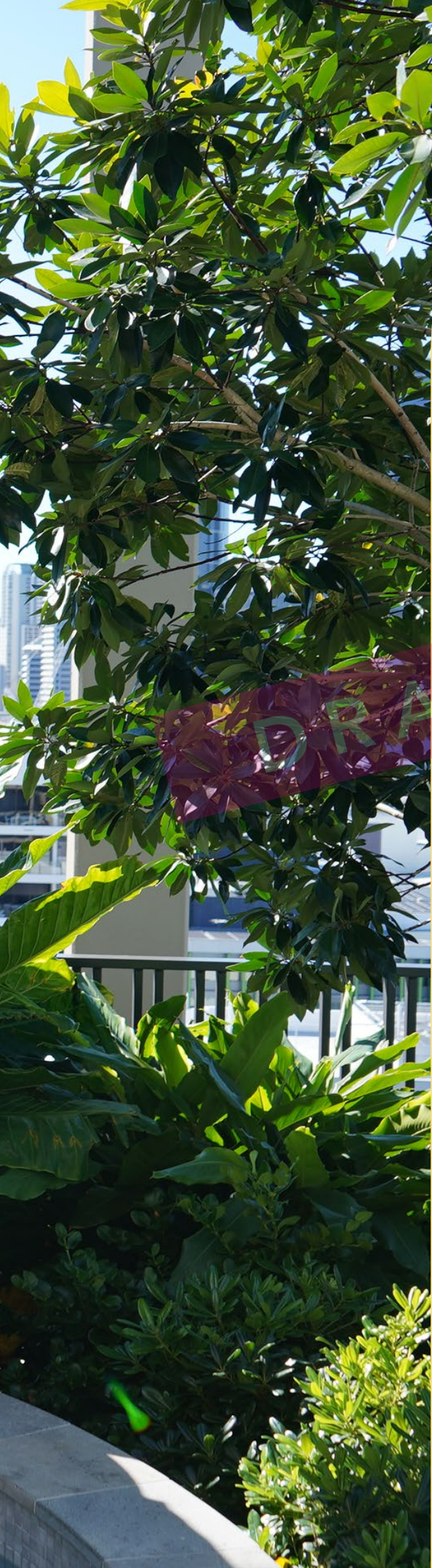
Herston Quarter, Herston

- Achieves 70% plant coverage throughout the precinct with planting on structure.
- Features broad range of planting on structure elements in courtyards, balconies and outdoor staircases.
- Public staircase planter design allows substantial soil volume to support large trees and other varied planting.

Image (this page and opposite):
STARS, Herston.







Part C

Desired Typology Outcomes

Part C uses a series of contextual scenarios to communicate desired outcomes across the range of development typologies that the Brisbane Green Factor can assess.

Each scenario provides an illustrative diagram that describes a series of opportunities, priorities and examples for improving greening outcomes and achieving a higher Green Factor Score.

Image: Trellis, South Brisbane.

Typology Base Scores

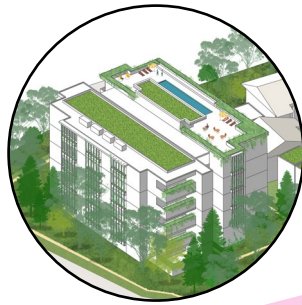
Individual buildings and projects face different spatial, economic and feasibility pressures and challenges in delivering greening outcomes. The Brisbane Green Factor assigns a different Base Score to each built form typology.



Large-scale residential

Residential buildings with shared access, common areas and facilities greater than 5 stories in height.

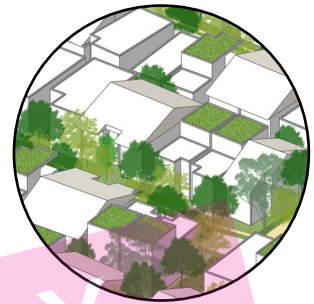
Base Score: 0.6



Medium-scale residential

Residential buildings with shared access, common areas and facilities up to 5 stories in height.

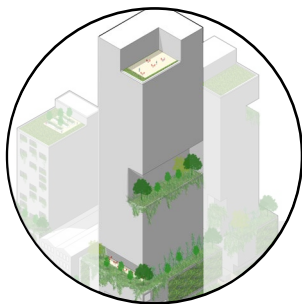
Base Score: 0.5



Small-scale residential

Single detached and attached dwellings and townhouses one to two storeys in height, with private or communal ground level open space.

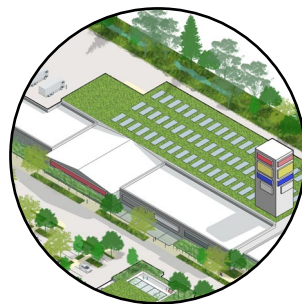
Base Score: 0.4



Commercial office

Large and smaller-scale office buildings used for professional or commercial purposes.

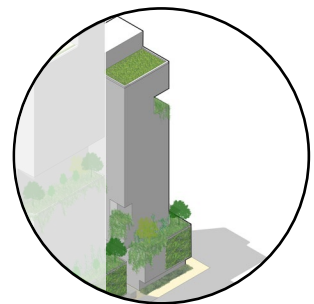
Base Score: 0.5



Shopping centre

Multiple shops, retail or service spaces forming an integrated shopping complex or centre.

Base Score: 0.4

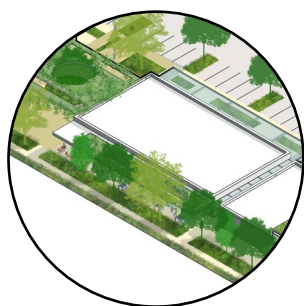


Hotel/other accommodation

Multistorey buildings for long term or temporary accommodation, such as hotels, motels or guest houses.

Base Score: 0.5

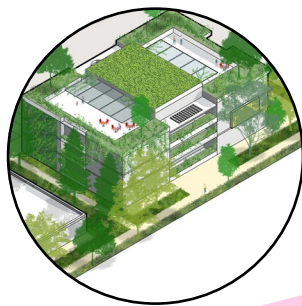
Typology Base Scores (continued)



Retail, shop or service

Individual small-scale use of premises for displaying, selling or hiring goods or providing personal services to the public.

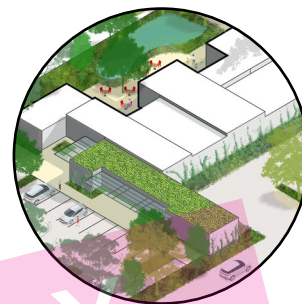
Base Score: 0.25



Community facility

Buildings that provide a community service such as childcare centres, places of worship or local libraries.

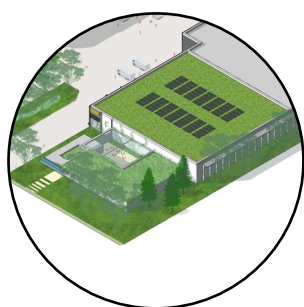
Base Score: 0.4



Public building

Large-scale public or private buildings such as hospitals, schools and art galleries.

Base Score: 0.5



Light industrial

Single or multiple buildings such with large areas of hardstand for industrial uses.

Base Score: 0.25



Warehouse

Single or multiple buildings such with large areas of hardstand for industrial uses.

Base Score: 0.25

High-rise context

A higher density scale which supports high rise building typologies such as hotels, commercial/office and residential towers. Green infrastructure can reinforce Brisbane's subtropical sense of place by softening intense city and inner city urban environments. In-ground planting along street interfaces can buffer traffic and support wellbeing and health. Importantly, landscaping has a significant role to play in mitigating the urban heat island effect, providing shaded outdoor spaces and reducing the energy consumption of buildings through passive cooling.



Key priorities

- Improve access to nature
- Reduce hard surfaces
- Provide street-level amenity
- Soften the urban environment

Green element priorities

1 In-ground planting

- Address street-level comfort, amenity and human scale by increasing greenery at ground and lower levels.
- Create additional shade with larger trees and planting to reduce hard surfaces.
- Plant elements to screen roads and support ground floor active edge functions.
- Passively irrigate and incorporate WSUD elements to improve stormwater runoff.

2 Green wall

- Provide visual greening to buildings and reinforce subtropical sense of place.
- Provide weather protection to the building and ground plane spaces.
- Offer more visual and physical access to nature for residents/users.
- Consider plant selection to promote biodiversity and provide habitat.

3 Green facade

- Add greenery to soften hard surfaces and inactive edges.
- Use vegetation to soften and break up building mass and bulk.
- Provide amenity and shelter from heat loads.

4 Green roof (extensive)

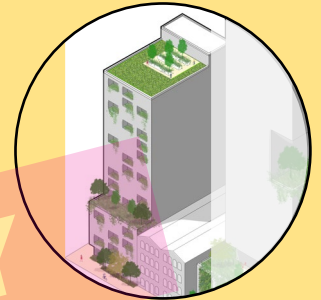
- Incorporate productive vegetation and solar energy.
- Use WSUD for rainwater capture.
- Use plant selection to improve biodiversity and provide habitat.

5 Planters on structure

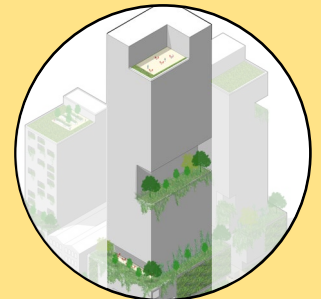
- Recess landscapes spaces to break up building mass and bulk.
- Present vegetation through various levels of buildings.
- Incorporate planters in communal or private spaces.

Brisbane Green Factor typologies

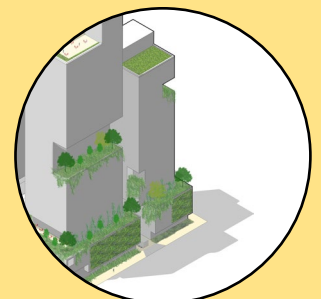
Large-scale residential



Commercial office

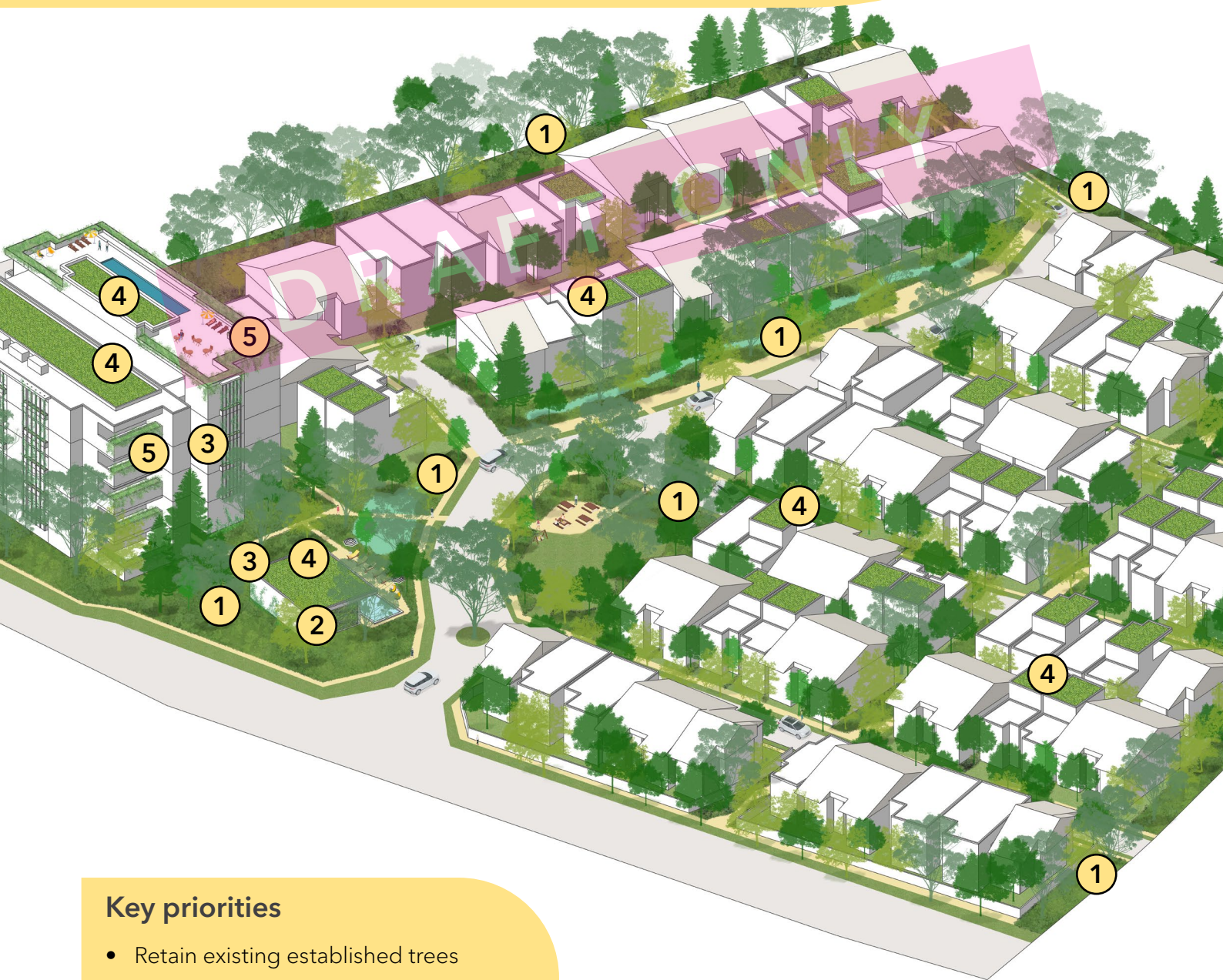


Hotel/other accommodation



Mid-rise context

A medium-density scale that supports townhouses and residential building typologies typically no more than 5 storeys delivered as an integrated site. Greening elements strengthen suburban environments by boosting the presence of habitats for biodiversity and contributing to the strength of wider regional ecological networks. In particular, WSUD has a critical role to play in stormwater management to improve resource capture and management, while providing functional open spaces and reducing the heat island effect.



Key priorities

- Retain existing established trees
- Reduce impermeable surfaces
- Provide green links and pocket parks
- WSUD supports site-wide drainage

Green element priorities

1 In-ground planting

- Retain existing established trees and integrate into site design.
- Large trees and significant planting along internal roads improve street-level comfort and reduce heat loads.
- Establish densely planted pocket parks and green links to improve fresh air and break up intensity of built form.
- Use WSUD to improve site-wide stormwater management using existing topography to minimise site disturbance.
- Plant elements to screen from roads and provide usable communal space.

2 Green wall

- Consider for larger-scale developments given overall cost of design, construction and ongoing maintenance.

3 Green facade

- Install entrance structures with trellises to incorporate plants and climbers.
- Use planting for privacy screening and along western facades.
- Incorporate climbers along blank walls, fencing and inactive edges.

4 Green roof (extensive)

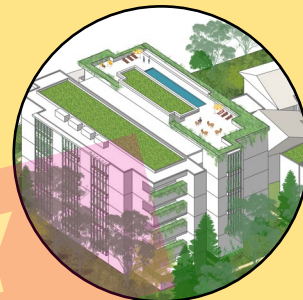
- Plant selection to improve biodiversity and provide habitat.
- Incorporate rainwater collection.

5 Planters on structure

- Support use of rooftop as communal area.
- Improve street-level presentation along primary frontages and entrance statements.
- Install vegetation on every level of the building.

Brisbane Green Factor typologies

Medium-scale residential

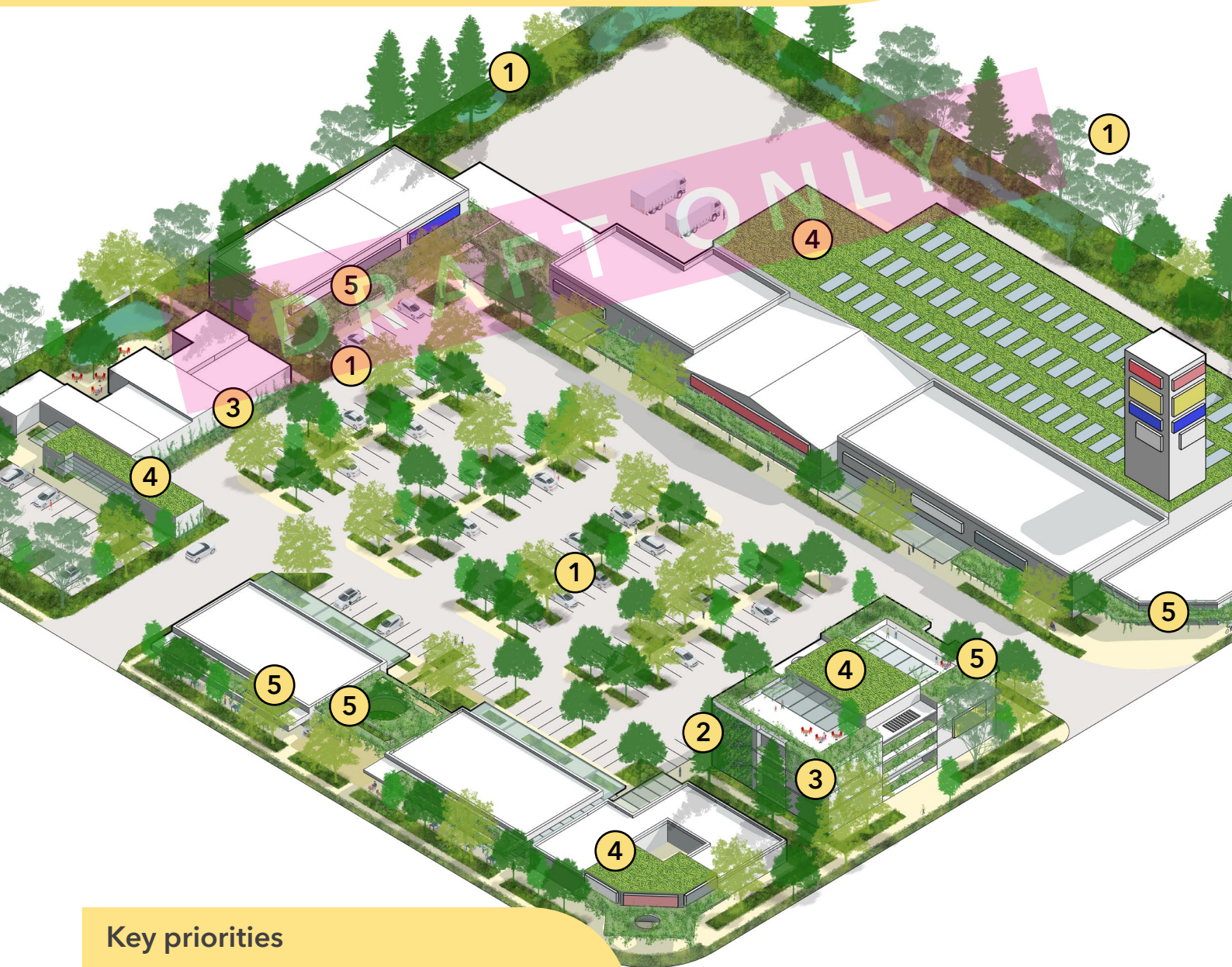


Small-scale residential



Low-rise commercial context

This context supports commercial and retail typologies typically no more than 5 storeys and often delivered as an integrated site. Green infrastructure can support local retail and commercial centres, creating attractive and distinctive environments that promote a sense of place. The integration of green infrastructure like rain gardens and permeable pavements can improve stormwater management, reducing risk of flooding. Additionally, urban greenery creates shade across large open concrete areas, mitigating the heat island effect.



Key priorities

- Use vegetation to break up built form scale
- Reduce hard surfaces
- Incorporate WSUD for natural drainage
- Increase tree canopy cover

Green element priorities

1 In-ground planting

- Retain existing established trees and integrate into site design.
- Install screening plants at ground level to separate pedestrian areas and roads.
- Provide sufficient soil volumes and spaces to support large trees.
- Provide tree outstands and planting areas in at grade car parking to reduce hardstand and provide shade.
- Passively irrigate and incorporate WSUD elements to improve stormwater runoff.
- Densely plant pocket parks and green links to improve permeability and break up intensity of built form.

2 Green wall

- Consider for larger scale developments given cost of design, construction and ongoing maintenance. Maximise their impact by installing at entrances.

3 Green facade

- Add greenery to soften hard surfaces and inactive edges.
- Use vegetation to break up building mass and bulk.
- Provide amenity and shelter from heat loads.

4 Green roof (extensive)

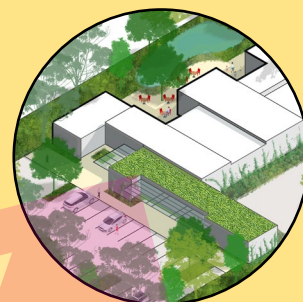
- Incorporate productive vegetation and solar energy.
- Install WSUD for rainwater capture.
- Select variety of plants to improve biodiversity and provide habitat.

5 Planters on structure

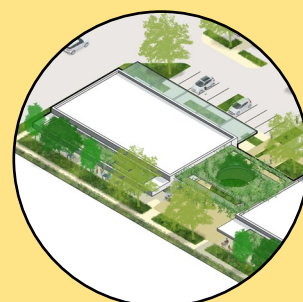
- Break down building facades and building mass with planting that provides small-scale articulation across buildings.
- Plant vegetation through various levels of buildings.
- Incorporate planters in communal or private spaces.

Brisbane Green Factor typologies

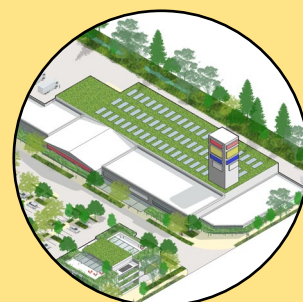
Public building



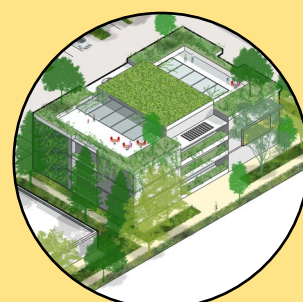
Retail, shop or service



Shopping centre

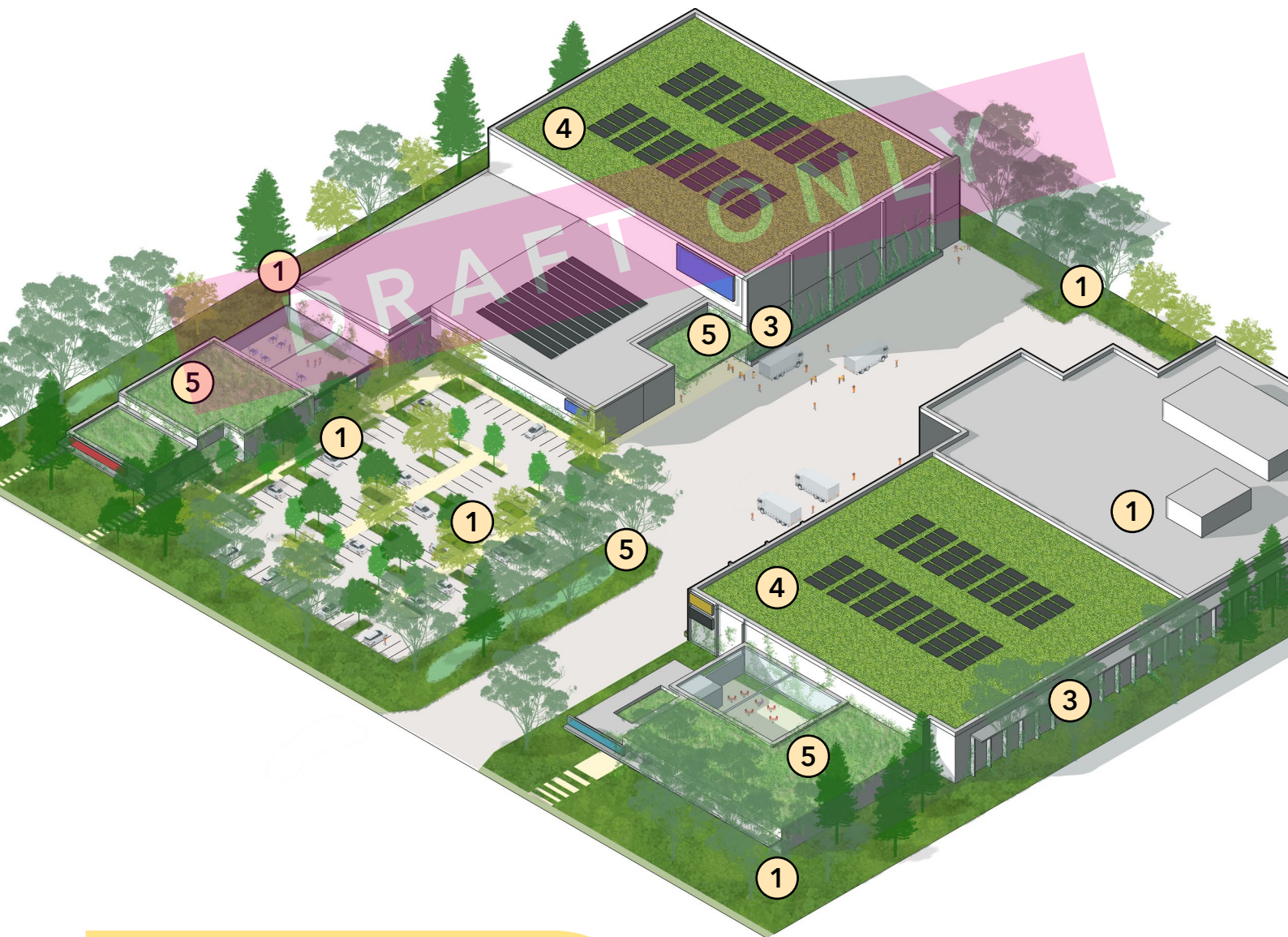


Community facility



Light industrial context

This context supports light industrial and warehouse typologies that are typically low density and no more than 3 storeys. Green infrastructure can enhance light industrial developments by creating a more attractive and cohesive sense of place, which can improve worker satisfaction and community perception. Bioswales and green roofs reduce runoff and mitigate flooding. Extensive greenery helps regulate temperatures and supports biodiversity by providing habitats for local wildlife, contributing to a more sustainable and pleasant industrial environment.



Key priorities

- Provide amenity for staff
- Reduce hard surfaces
- Incorporate WSUD for natural drainage
- Increase tree canopy cover

Green element priorities

1 In-ground planting

- Install plants to minimise hardstand and screen inactive facades and edges.
- Provide sufficient soil volumes and spaces to support large trees.
- Provide tree outstands and planting areas in at grade car parking to reduce hardstand and provide shade.
- Plant elements to screen busy roads and harsh urban environments.
- Passively irrigate and incorporate WSUD elements to improve stormwater runoff.

2 Green wall

- Provide visual greening to buildings with extensive blank wall surfaces.
- Use plant variety to promote biodiversity and provide habitat.

3 Green facade

- Add greenery to soften hard surfaces and inactive edges.
- Use vegetation to break up larger footprint building mass and bulk.
- Provide amenity and shelter from heat loads.

4 Green roof (extensive)

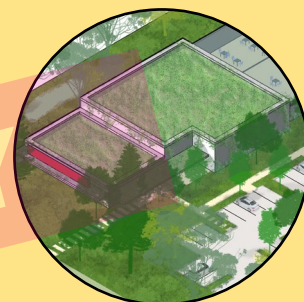
- Incorporate productive vegetation and solar energy.
- Install WSUD for rainwater capture.
- Use plant variety to improve biodiversity and provide habitat.

5 Planters on structure

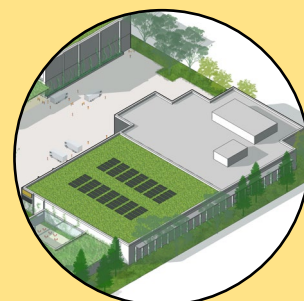
- Provide planters in communal or private spaces.
- Create interest on primary frontages and main entrances.

Brisbane Green Factor typologies

Light industrial



Warehouse







Part D

Planting Design Guidance

Part D provides a series of useful strategies for improving planting design outcomes across a broad range of themes. These include:

- orientation
- microclimatic conditions
- soil treatment and volume, irrigation
- structural weighting
- planting heights
- maintenance
- planting replacement considerations.

These strategies will guide planting design and maximise the potential impact and benefit for any proposed green elements.

Image: Trellis, South Brisbane.

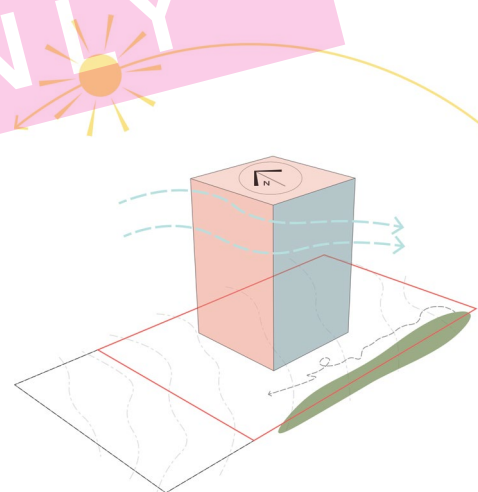
Design, construction and maintenance

It is critical, for creating sustainable and resilient landscapes, to consider planting design throughout the entire lifecycle of a project – design, construction, and operations. By addressing planting needs holistically, designers can achieve success, preserving the aesthetic appeal, functionality and ecological integrity of green elements in the long-term.

Context and orientation

Context and orientation plays a critical role in maximising environmental benefits and outcomes of planting design. Refer to the following key considerations.

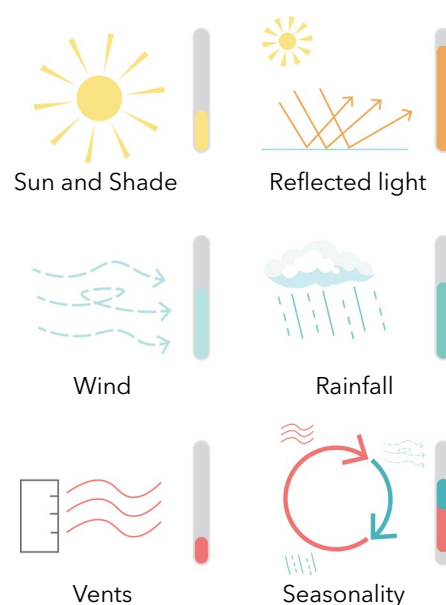
- Optimise exposure to natural light. Choose appropriate species suited to predicted natural light levels.
- Enhance natural ventilation and ensure prevailing winds can flow through spaces to improve air quality and reduce cooling costs.
- Minimise direct sunlight to reduce heat loads. Planting elements on north and west-facing walls can absorb heat during the day, moderating indoor temperatures.
- Design planting areas to support continuous pathways for pollinators.



Microclimatic conditions

Provide optimal growing environments for plants through careful consideration and design of microclimates. Refer to the following key considerations.

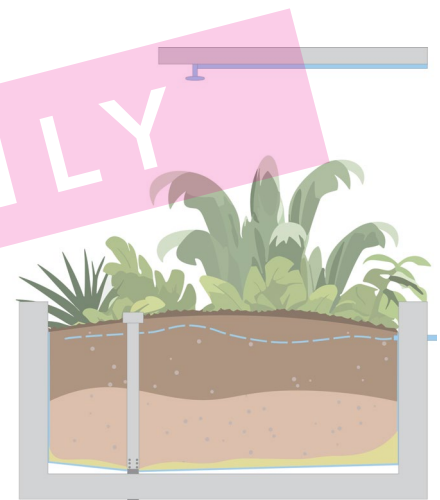
- Use strategically placed screening to create windbreaks that protect plants from damage and desiccation and/or create sheltered, warmer areas.
- Consider positioning of reflective surfaces and paving to avoid leaf burns and maximise plant health.
- Install pergolas, arbors and recessed spaces to create partial shade and microclimates for shade-loving plants.
- Utilise artificial light to aid plant health in low natural light levels.
- Avoid creating pockets of hot air from air conditioning vents.



Irrigation and drainage

Carefully design and integrate irrigation systems to maintain plant health, water efficiency and sustainability. Refer to the following key considerations.

- Accommodate pipes, valves and controllers within walls, floors and outdoor spaces.
- Integrate with Heating, Ventilation and Air Conditioning (HVAC) systems to utilise condensate for irrigation where practical.
- Provide drip irrigation/inline fertigation systems to target watering needs of individual plants while minimising water wastage and evaporation and systems to deliver water directly to the root zone.
- Utilise sprinkler systems for larger ground-level planting areas, with low-flow nozzles to conserve water.
- Install a system with early warning irrigation failure alerts.
- Consider the need to periodically rinse the foliage of undercover plants in maintenance schedules.
- Capture and store rainwater from roofs and hardscapes for irrigation use.



Soil treatment and volume

Provide appropriate soil surface areas and volumes to ensure planting health and resilience. Refer to the following key considerations.

- Ensure sufficient soil area, volume and depth for root systems; trees, shrubs and large perennials require broader and deeper soil areas.
- Improve soil quality with organic matter and consider specific plant needs. Consider worm farms and composting to maintain optimal nutrient levels in soils.
- Maintain consistent soil moisture through mulching and the use of ground covers.
- Supply tree planter depth between 800mm to 1,200mm.
- Request soil compliance certificates for all installed soils.
- Use appropriate soil horizons for optimum drainage.

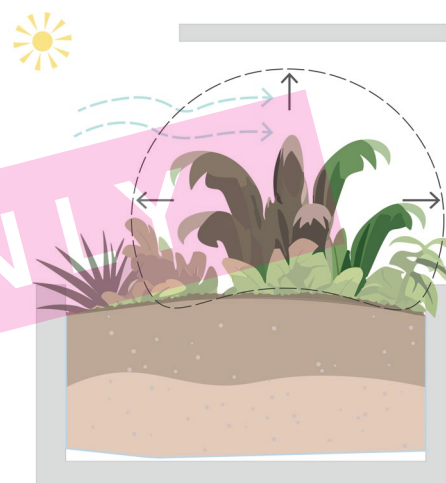


Design, construction and maintenance (continued)

Planting heights

Considering the ultimate plant height is essential for aesthetics, functionality, safety and long-term maintenance. Refer to the following key considerations.

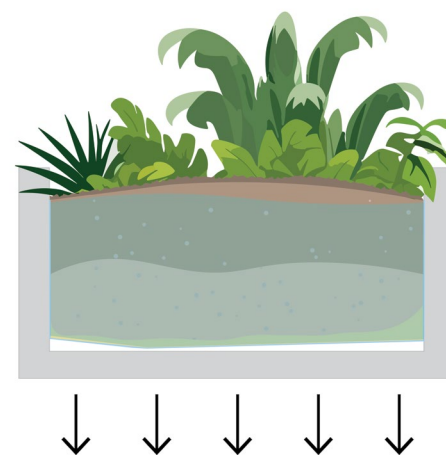
- Plan and design for the long-term growth of plants, considering how their height and spread will evolve over time.
- Arrange plants of varying heights to achieve a balanced composition with visual interest. Taller plants can serve as focal points or backdrops, while shorter plants can fill in foregrounds.
- Consider the angle of the sun throughout the year and use taller plants to provide natural shade for outdoor spaces.
- Position robust tall plants as windbreaks to protect building entrances and outdoor areas from strong winds.
- Avoid placing tall plants near walkways, driveways and building entrances where visibility is important.
- For rooftop or balcony gardens, choose plants that do not pose a risk of falling over in high winds.



Planting and infrastructure weight

Account for the weight of green elements and infrastructure to ensure structural integrity and safety. Refer to the following key considerations.

- Undertake a detailed structural load analysis to account for the additional weight of soil, plants, water, and related infrastructure.
- Use specifically designed soil mixes for green roofs and on-structure planters to reduce the overall weight load.
- Use a layering approach with lightweight materials like foam at the base, topped with soil to reduce overall weight, or make on-structure planters shallower where possible.
- Ensure drainage systems prevent water accumulation in saturated soil and reduce load.
- Factor in dynamic loads such as wind and human activity that can affect the stability of green elements.



Maintenance and access

Ensure the long-term health and vitality of planting design by considering maintenance early in the design process. Refer to the following key considerations.

- Involve landscape maintenance professionals early in the design process to provide input on maintenance and access requirements and plant selection, placement and care requirements.
- Consider leasing and tenure models in choosing which green elements to introduce.
- Ensure that design decisions align with practical maintenance needs and operational considerations.
- Supply maintenance schedule which includes seasonal assessments for plant health, practice adjustment and monitoring irrigation systems.
- Embed infrastructure for maintenance activities, such as irrigation systems and storage space for tools and equipment.



Plant replacement

Allow for the transition of aging or damaged vegetation, maintaining the integrity of green elements over time and mitigating the impact of plant loss. Refer to the following key considerations.

- Incorporate a mix of perennial and annual plants into planting design.
- Plant a range of species in larger beds to reduce the visual impact of plant failure.
- Integrate self-seeding or naturalising plants to ensure ongoing regeneration and succession, reducing the need for frequent replanting.
- Undertake periodic assessments of plant health and viability to identify plants to replace.



Glossary

Base score – assigned score for different building typologies in the Brisbane Green Factor Tool.

Bio swale – a natural, low maintenance, stormwater management system that usually includes shallow vegetated channels to catch stormwater runoff and naturally filter it.

Brisbane Green Factor – an award-winning non-statutory online tool that supports urban development professionals when assessing the quality of proposed green infrastructure in new developments.

Development typology – a categorised development type based on use, occupation and other identifying characteristics.

Ecosystem service areas – key sustainable measurables that are integral to delivering healthy urban places and align with Brisbane's strategic objectives.

Element rating – a score allocated to each Brisbane Green Factor Element.

Food production – incorporate productive vegetation in accessible communal areas.

Green element categories – key elements measured in the Brisbane Green Factor tool: In-ground planting, Green walls, Green facades, Green roofs and Planting on structure.

Green Factor Area – total amount of calculable green infrastructure.

Green factor element rating – a rating that measures total greening of a development in the Brisbane Green Factor tool.

Green Factor Score – the ratio of the Total Green Factor Area against the Site Area.

Green facade – a vegetated facade system.

Green infrastructure – Green vegetation network that replicates natural systems to achieve environmental benefits.

Green roof – a roof structure designed to promote the growth of vegetation on buildings.

Green wall – a vertically built structure intentionally covered with vegetation.

Habitat provision – provide habitat opportunities by considering local fauna in planting selection and design.

High rise context – a tall, multi-storey structure, typically requiring elevations and exceeding 8 storeys or more.

HVAC – Heating, Ventilation and Air Conditioning.

In-ground planting – existing or new plants grown directly in natural, uncompacted soil with no obstructions to the tree roots and canopy in an area that is of sufficient size and dimension to support large subtropical shade tree species.

Low-rise commercial context – a lower-density scale of building form that supports commercial and retail buildings no more than 5 storeys in height.

Light industrial context – a lower-density scale of development that supports light industrial and warehouse typologies typically no more than 3 storeys in height.

Mid-rise context – a medium-density scale of development that supports townhouse and residential building typologies typically no more than 5 storeys in height.

Planting on structure – comprise planters within a container located at ground level, on balconies, podiums and roofs and support small and medium trees and plants.

Stormwater management – reduce the quantity and improve the quality of runoff by providing deeper soils in all green infrastructure.

Sense of place – enhance Brisbane’s sub-tropical identity by providing significant vegetation visible to the public.

Site area – total land within the property lines of a parcel or combination of parcels that make up the site for a land use project.

Urban Temperature Regulation – reduce urban heat island and improve comfort by providing large trees and more vegetation at ground and lower levels.

Wellbeing and health – contribute to mental and physical wellbeing by improving access to vegetation in urban environments.

WSUD – Water sensitive urban design.

Useful resources

Council's approved [street tree list and landscape character precinct map](#) (still to come via Council's Open Data Portal).

Council's [Planting species planning scheme policy](#) – preference for amended versions to support Multiple dwelling code amendments

Council's [Landscape design planning scheme policy](#) – preference for amended versions to support Multiple dwelling code amendments

[Brisbane Green Factor tool](#)

[Brisbane Climate maps](#)

[Brisbane rainfall maps](#)

[Which plant where tool](#) (which plant where)

Queensland Health [Shade Tree guidance and canopy cast tool](#)

DRAFT ONLY



Dedicated to a better Brisbane

More information

For more information on the design strategy and related projects, please contact Council.



Visit brisbane.qld.gov.au and search 'Brisbane Green Factor'.



E-mail DesignStrategy@brisbane.qld.gov.au



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