



Responsible Division	Community and Development
Responsible Business Unit/s	Development and Place
Responsible Officer	Manager Development and Place
Affected Business Unit/s	Development and Place

Purpose

The purpose of this policy is to provide guidance on sustainable design for new development to make the City of Bayswater a more climate change resilient and liveable City.

Objectives

The objectives of this policy are to:

1. Provide guidance to developers on how to address sustainability as part of planning and development within the City of Bayswater.
2. Support an increase in sustainable design within the City of Bayswater.
3. Make the City of Bayswater a more climate change resilient and liveable City.
4. Respond to the changing needs of the community, environment and the economy over time in an efficient, functional and attractive manner.
5. Incorporate sustainable building designs that befit the local climate and provide comfortable living conditions while reducing greenhouse gas emissions.

Background

The City of Bayswater is committed to making the City a more sustainable place to live, work and play. This policy provides a framework for early consideration of environmental sustainability at the building design stage in order to achieve the following efficiencies and benefits:

- Easier compliance with building requirements through passive design;
- Reduction of costs over the life of the building;
- Improved affordability over the longer term through reduced running costs;
- Improved amenity and liveability;
- More environmentally sustainable urban form; and
- Integrated water management.

If environmentally sustainable design is not considered early in the design process at the time of planning approval, the ability to achieve environmentally sustainable development may be compromised by the time these matters are considered as part of a building approval. In addition, there may be difficulties or extra costs associated with retro-fitting the development to implement environmentally sustainable design principles.

Chapters

- 1.0 Cool Roofs
- 2.0 Biophilic Design

Related Legislation

This policy is adopted under all Local Planning Schemes in force within the City of Bayswater, in accordance with Schedule 2, Part 2, of the *Planning and Development (Local Planning Schemes) Regulations 2015*.

Relevant Delegations	TP-D01
Council Adoption	24 May 2022

1.0 COOL ROOFS

Purpose

To outline the objectives and requirements for cool roofs in the City of Bayswater.

Objectives

The objectives of this policy are to:

1. To reduce the impact of urban heat.
2. To reduce the severity of urban heat and its associated impacts, including:
 - (a) Expected heat related death increases.
 - (b) Heat stress - leading to illness or mortality for humans and animals.
 - (c) Decreased productivity of workforces.
 - (d) Increased water use from air conditioning and irrigation.
 - (e) Declined water quality such as algal blooms.
 - (f) Disruption to ecosystems as they are pushed over their tipping points.
 - (g) Increased energy consumption from air conditioning and use of motor vehicles.
 - (h) Infrastructure failure.
 - (i) Increased pollution levels.
 - (j) Walkability and liveability decline.
 - (k) Effect of hot weather on recreational pursuits such as weekend sports.
3. To promote and foster a better understanding and use of cool roofs across residential and commercial developments within the City of Bayswater.

Introduction

Projected heat related deaths in Perth are expected to increase from 294 in 2014 to 673 in 2020 and 1,419 in 2050 (Cool Communities: Urban Trees, Climate and Health, Curtin University).

The Victorian Centre for Climate Change Adaptation suggests that dealing with heat stress in Australian cities is of increasing concern. Heat is already an issue affecting people, buildings and infrastructure all evidenced as being vulnerable to episodes of extreme heat. It is likely that urban heat will be further amplified by increasing urbanisation and increasing temperatures associated with global climate change.

Over the last 60 years the urban form of the City of Bayswater has changed from a landscape covered with natural surfaces such as large properties, farms and natural areas; to a suburban form dominated with hard surfaces such as roads, housing and carparks. In this process of urbanisation cooling ecosystem services in the landscape, such as shade from trees and evaporation from wetlands, have been removed and replaced with man-made surfaces which act as urban heaters. There are a number of potential impacts associated with urban heat as referenced in the objectives section of this policy.

Alongside other policy provisions, cool roofs help to mitigate the impact of urban heat. Essentially a cool roof is a roof that has a high level of solar reflectance, meaning that it better reflects the sun's heat, relative to other roofs. As cool roofs reflect the majority of heat back into the atmosphere, they are considerably cooler than other roofs and significantly effective in reducing the impact of urban heat.

For the purposes of this policy, cool roofs are measured in relation to solar absorbance, which is the opposite of solar reflectance. Solar absorbance is measured in a range between 0 and 1 and typically ranges from about 0.1 for fresh snow (which has a low level of solar absorbance) to 0.96 for charcoal (which has a high level of solar absorbance).

It is considered that requiring a maximum solar absorbance rating of 0.45 is appropriate as it aligns approximately with the Building Codes of Australia and the Building Sustainability Index classifications for light and some medium roofs and provides an appropriate balance between allowing for choice in roof colour and material and ensuring roofs provide a reasonable level of solar reflectance to minimise urban heat impact.

Cool roofs generally equate to lighter coloured roofs and certain materials are generally cooler than others. While this can be seen to limit the range of roof choice available, there are solutions. Many roof materials in any colour can be treated with a reflective coating, giving them a lower solar absorbance rating than the standard version of that material.

Scope

1. The requirements in this policy apply to development applications for the following proposed development:
 - (a) Three or more dwellings.
 - (b) Non-residential or mixed use development, excluding those involving only a change of use or internal works.
2. Any development that does not meet the thresholds specified in Clause 1 is to have consideration of the objectives and provisions contained in this policy, at the discretion of the City of Bayswater.

Definitions

Cool roof is a roof or roof coating with a maximum solar absorbance rating of 0.45.

Requirements

1. The external surfaces of all roofs detailed by the scope of this policy are to be cool roofs.
2. A property listed on the City of Bayswater Heritage Survey or Heritage List or within a Character Protection Area may not need to adhere to the requirements of Clause 1, where it can be demonstrated that the provision of a cool roof will have a detrimental impact to the property's heritage fabric and value.
3. Green roofs, solar panels and the like are exempt from the requirements of Clause 1.

2.0 BIOPHILIC DESIGN

Purpose

To outline the objectives and requirements for biophilic design in the City of Bayswater.

Objectives

The objectives of this policy are to:

1. Provide guidance to developers on how to address biophilic design as part of planning and development within the City of Bayswater.
2. Incorporate sustainable design that befits the local climate and provides comfortable living conditions while reducing greenhouse gas emissions.
3. Increase landscaping as a fundamental element of design, to:
 - (a) Occur in a meaningful and functional manner.
 - (b) Increase biodiversity within the City of Bayswater.
 - (c) Reduce the severity of urban heat.
 - (d) Encourage a stronger connection with nature.
 - (e) Reduce energy consumption from air conditioning.
 - (f) Complement and soften the built environment and reduce hard surfaces.
4. To promote the benefits of biophilic design, which include:
 - (a) Assist in making an area more resilient to any environmental stressor it may face.
 - (b) Improved air quality, through removing pollutants from the air.
 - (c) Reduced urban heat island effect by introducing vegetation onto roofs and walls to assist in the reduction of temperatures.
 - (d) Improved stormwater management as the vegetated areas can absorb and retain water.
 - (e) Increased amenity of an area through reducing the visual impact of buildings on the surrounding area.
 - (f) Increased amenity through orienting development toward nature within a development as well as maintaining views of nature in the surrounding area.
 - (g) A greater return on investment, as research indicates that properties which are more aesthetically desirable and environmentally friendly, have increased property values.
5. To promote and foster a better understanding and use of biophilic design across residential and commercial developments within the City of Bayswater.

Introduction

Biophilic design aims to bring nature into urban areas. It includes green corridors, green spaces and green building elements. It aims to put nature at the core of design and planning, not as an afterthought. Biophilic design methods are considered to have an individual development or building scale, neighbourhood scale or citywide scale.

A major threat to biophilic design in the City of Bayswater is urban infill development however it also presents major opportunities to improve the amenity of new development. An example of the type of urban infill development that occurs in the City of Bayswater and the changes to the amount of greenery is demonstrated below. The completed development highlights the limited opportunities for replacing greenery that was removed during pre-construction land clearance. The lack of shade and vegetation, and the increase in hard surfaces are likely to result in a significantly hotter microclimate for these dwellings and other environmental issues.



Scope

1. This policy shall be read in conjunction with the City's Landscaping Policy and Landscaping Guidelines.
2. The requirements in this policy apply to development applications for the following proposed development:
 - (a) Three or more single houses.
 - (b) Three or more grouped dwellings.
 - (c) Non-residential or mixed use development, excluding those involving only a change of use or internal works.
3. Any development that does not meet the thresholds specified in Clause 2 shall have consideration of the objectives and provisions contained in this policy.
4. This policy does not apply to multiple dwelling developments which are assessed under State Planning Policy 7.3 – Residential Design Codes Volume 2 Apartments.

Definitions

Green driveway is a driveway to a building that is partially or completely covered with vegetation, with a stabilising base beneath.

Green roof is a roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproofing membrane. It may also include additional layers such as a root barrier and drainage and irrigation systems. Container gardens on roofs, where plants are maintained in pots, are not considered to be green roofs.

Green wall is a vertical structure that has different types of plants or other greenery attached to it, which may be free-standing or part of a building that is partially or completely covered with vegetation. The greenery is often planted in a growth medium on the surface or structure of the wall, consisting of soil, stone, or water. As the walls have living plants in them, they contain built-in irrigation systems.

Environmental Stressors are things or events in our surroundings that cause stress, such as destructive weather events, noise, and air quality.

Orientation Requirements

1. Single Houses and Grouped Dwellings are to be oriented towards areas of natural vegetation, including the river, parks and reserves.
2. Where public open space is provided as part of the redevelopment of a lot, the proposed lots are to comprise a dwelling(s) with a major opening which is oriented towards the public open space.
3. Where a lot adjoins public open space any proposed development or redevelopment of the lot is to comprise a dwelling(s) with a major opening which is oriented towards the public open space.

Landscaping Requirements

1. The landscaped area is to comprise a minimum soil depth of 300mm, excluding removable planter boxes/pots, artificial turf, green walls and porous paving areas.
2. A minimum of 10% of the lot shall be provided as soft landscaping.
3. Where a variation is proposed to Clause 1 to 2 above, the City will consider the following alternative designs outcomes:
 - (a) A green roof with similar dimensions to the required area of landscaping, subject to the vegetation covering a minimum of 30% of the available rooftop space.
 - (b) A green wall with similar dimensions to the required area of landscaping, subject to the vegetation covering a minimum of 25% of the available wall space.
 - (c) A green driveway with similar dimensions to the required area of landscaping, subject to the vegetation covering a minimum of 50% of the available driveway space.
 - (d) Green roofs or walls are required to be designed by a suitably qualified practising landscape architect.
4. The required landscaping is to comprise local native and drought resistant species to reduce reliance on water and fertilisers.
5. Landscaped areas are to be reticulated and maintained to the satisfaction of the City of Bayswater.