LPP 1.3 – Sustainable Development

Introduction

The City's Local Planning Policy 1.3 – Sustainable Development (LPP 1.3) requires all applicable development to incorporate a minimum standard of sustainability in the design. This information sheet provides additional information on how the policy works, and details the sustainability measures available for proponents under Table 1 of the policy.

Applicable Development

In accordance with LPP 1.3, the following development is applicable:

- All new single houses and grouped dwellings; and
- Significant additions and/or alterations, defined in the policy as those that result in an additional floor area greater than 50 per cent of the existing building footprint (e.g. for an existing 150m^2 dwelling, any additions and/or alterations greater than 75m^2 are applicable).

Note: *Applications for change of use or minor development are not applicable.*

Requirements

As per clause 3.1 of the policy, all new single houses and grouped dwellings are to reach 100 points under Table 1. Under clause 3.4, significant additions and/or alterations are entitled to a reduced point amount of 75 points.

Supporting information required to be submitted with the development application (DA) include:

- The sustainability measures reflected on the development plans;
- Form 1 – Sustainability Checklist;
- Form 2 – Tree Survey Form – Existing Tree (as required); and
- Form 3 – Tree Survey Form – New Tree (as required).

The proponent can choose the sustainability measure(s) best suited to their site context and financial budget. Any combinations are permitted, as long as the points under clauses 3.1 or 3.4 of the policy are met. The options are outlined below.

Note: *items 1,2,3,6, 7, 11, 12 of Table 1 are minimum sizes only. The proponent is to include the most appropriate size to their development context.*

Sustainability Measures

1. Solar Photovoltaic System

Solar photovoltaic (PV) systems involve the use of both solar panels and inverters. Solar panels generate direct current (DC), whereas inverters work to convert this power to alternating current (AC). As dwellings primarily consume AC power, both components are required to generate consumable energy.

The size of solar panels and inverters are generally rated in kilowatts (kW) or watts (W). The appropriate sized inverter is generally determined based on the size of the solar panel array on a 1:1 ratio. For example, if you are installing a 6kW solar panel system, the appropriate inverter size will be approximately 6000W (plus or minus a small percentage).

As prescribed under item 1 of Table 1 in LPP 1.3, the minimum size of inverters are as follows:

- 3kW for dwellings with 2 or less bedrooms; or
- 5kW for dwellings with 3 or more bedrooms;

for 25 points.

The standard size solar PV system for homes in Australia ranges between 5kW-7kW. However, the size of the system should be determined on the advice of the nominated solar provider based on the energy usage and needs of each household.

2. Solar Battery Storage

Solar batteries operate to store excess electricity generated by solar PV systems. The optimum solar battery size is determined with reference to the scale of the solar PV system and the average energy consumption of each dwelling.

On average, 1kW of solar PV system produces approximately 4 kilowatt-hours (kWh) of power per day. A typical residence uses approximately 20kWh of solar energy per day.

As prescribed under item 2 of Table 1 in LPP 1.3, the minimum size of solar battery storage systems are as follows:

- 4kWh for each dwelling with 2 or less bedrooms; or
- 6kWh for each dwelling with 3 or more bedrooms;

for 25 points.

3a. Solar Hot Water System

Solar hot water systems absorb solar heat using panels mounted on either the roof or the ground. The heat from the panels is used to warm the water in the tank, ready to be used within the household.

In the case that there is not enough solar energy generated by the solar panels to meet the needs of the dwelling, a gas or electric booster can be used to provide the extra heat required. It is not recommended a gas booster be used, as it predominately made up of methane – a greenhouse gas that is more potent than carbon dioxide and a contributor to climate change. Other Australian States (e.g. Victoria) have already committed to phasing gas out for new residential homes.

An electric booster connected to the solar system is the most sustainable booster solution. It is recommended that this option be chosen in conjunction with item 1 of Table 1 in LPP 1.3 (solar PV system), to maximise sustainability.

As prescribed under item 3 of Table 1 in LPP 1.3, the minimum capacity for a solar hot water system is a 300L tank with 2 panels of solar collector area for 25 points

3b. Heat Pump Hot Water System

Heat pump hot water systems operate through extracting heat from surrounding air and compressing it into a hot vapour. The vapour then flows through a heat exchanger which heats water stored in an insulated tank, ready to be used within the household.

Heat pump hot water systems require installation in locations that remain in the range of 4.4º–32.2ºC year-round, with approximately 28.3 cubic meters of air space around the water heater.

Unlike solar hot water systems, heat pumps do not have an electric or gas boosting system. Instead, heat pump hot water systems rely on electricity to operate the evaporator and compressor when they're heating water.

It is recommended that heat pump hot water systems are used in conjunction with a solar photovoltaic system to maximise ongoing cost savings.

As prescribed under item 3 of Table 1 in LPP 1.3, the minimum capacity for a heat pump hot water system is a 300L heat pump hot water system for 25 points

4. Roof Colour

The colour of a roof can affect the temperature of a dwelling by a significant margin. Lighter coloured roofs tend to reflect sunlight, whereas darker colours will absorb the suns heat. Heat absorbed by the roof will ultimately be re-radiated into the roof cavity and eventually into the house itself. This impacts the heating and cooling costs for a home.

Solar Absorptance (SA) of a surface refers to the fraction of the sun's radiation that the surface absorbs. Roofing materials are classified using a SA value ranging from 0 to 1. Higher values indicate the surface absorbs a larger amount of solar radiation. Roofing manufacturers will provide a SA value for each individual roofing colour that they offer. For example, a standard zincalume roof has a SA value of 0.35, and can be used to meet the requirements of this option. Further examples are provided in **Figure 1**.

As prescribed under item 4 of Table 1 in LPP 1.3, the Solar Absorptance value of roofing may not exceed 0.45 for 25 points.

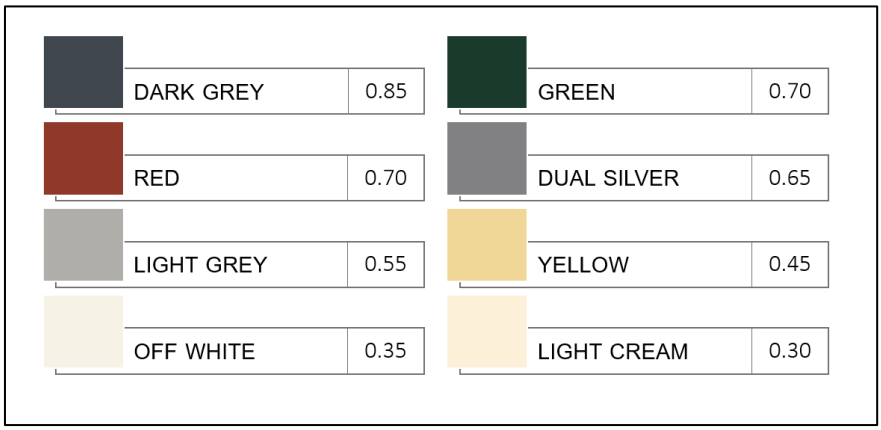

Figure 1 – Example of SA Values for Roofing Colours

5a. Double Glazing
Glazing refers to any glass openings in your home including windows, doors and skylights. Double glazing windows and doors are insulated through providing two glass panes with a 6-20mm gap which is filled with insulating gas to provide an added layer of insulation. This option requires 100% of windows in the dwelling to be double glazed for 25 points.

It is a common misconception double glazing is only effective against cold weather, when it is in fact an excellent tool for keeping the heat out in summer. It ultimately increases the comfort in your home by decreasing energy consumption (and therefore decreasing the cost of bills), and reducing greenhouse gas emissions. Additionally, it will reduce noise, reduce condensation, and increase the security of your home.

5b. Triple Glazing
Triple glazing windows work essentially the same as double glazing however there is a third layer of glass to provide an extra layer of protection. This option requires 100% of windows in the dwelling to be triple glazed for 50 points.

Triple glazed windows have been proven to be 2 degrees cooler then double-glazed windows. They provide better energy efficiency, noise reduction, reduction of condensation, and increased security. They are typically utilised in places with extreme weather conditions and are implemented alongside solar orientation methods. However, they are becoming more common in Australia.

6. Rainwater Tank
Households can reduce water consumption through installing rainwater tanks. Introducing a rainwater tank to your household can reduce bills as your home will be less reliant on scheme water. However, HealthyWA advises that rainwater tanks in urban areas be used for non-potable water only due to the pollution which can accumulate in the tank.

Non-potable water refers to water that is unsafe for drinking. HealthyWA advises the following uses for non-potable water; watering your garden, flushing your toilet, washing your clothes, or washing your car.

A licensed plumber must install the rainwater tank to prevent backflow into the scheme water supply.

As prescribed under item 6 of Table 1 in LPP 1.3, the minimum size of rainwater tanks is a 3,000L capacity tank plumbed into a toilet and/or laundry for 25 points.

7. Grey Water Reuse
Grey water re-use is a process which involves recycling the water generated from washing machines, baths, wash basins, spa baths, the laundry, tubs and the kitchen. It excludes blackwater recycling, which is the water generated from toilets, urinals and bidets. Using grey water can reduce bills as your home will be less reliant on the scheme water.

The water which is recycled is non-potable, meaning it is not safe to drink. HealthyWA advises the following uses for non-potable water; watering your garden, flushing your toilet, washing your clothes, or washing your car. Grey water is recycled through installing a third pipe scheme in your home, ensuring that drinking water is kept separate and protected.

As prescribed under item 7 of Table 1 in LPP 1.3, the minimum capacity of a grey water reuses system tank is a 3,000L capacity, that collects grey water from the laundry and bathroom and redirects it for garden irrigation for 25 points.

8. Permeable Driveway

This option requires a permeable driveway to be constructed, in lieu of a standard non-permeable driveway, for 25 points. Permeable driveways are made of materials which allow for increased water drainage through the driveway, and reduced heat penetration. Traditional driveways are typically made of impermeable materials reducing the amount of rainfall your garden can absorb, which increases the risk of flooding, and contributes to the urban heat island effect*.

**Urban Heat Island Effect is when hard surfaces absorb the heat from the sun during the day releasing it during the night when it should be cooler, increasing the temperature of the surrounding area.*

The aim of a permeable driveway is to prevent flooding, increase water absorption to your garden, and reduce the urban heat island effect. The material which is applied acts as a drainage solution and a way for the surrounding garden to be able to increase rainfall absorption, relieving the surrounding sewerage systems.

Figure 1 – Example of grass driveway with paving strip

Figure 2 – Loose stone/ gravel driveway

Figure 3 – Example of plastic grid system

Figure 4 – Example of permeable paving

Figure 5 – Example of permeable concrete/ asphalt

The most common and affordable methods of permeable driveways include having a grass driveway, or a grass driveway with two paving strips for the cars tyres to run along (**Figure 1**), or to apply loose stones and gravel (**Figure 2**). To prolong the life of your grass or gravel driveway, it is advisable to place a plastic grid system underneath (**Figure 3**), which can prevent issues such as potholes and increase permeability. A more modern approach is to apply permeable paving (**Figure 4**) or permeable concrete and asphalt (**Figure 5**). These appear the same as a traditional concrete, however allow for water penetration. These permeable concrete and asphalt driveways are typically made up of natural stone or recycled glass which is bound together, leaving gaps between the materials to allow permeability.

9. Waterwise Landscaping

A waterwise garden aims to be better suited to Perth's hot, dry climate. Waterwise gardens include plants that require less water and less maintenance.

This option requires 75% (minimum 15m^2) of the total landscaping area (minimum 20m^2) to comprise waterwise plants for 25 points. The acceptable waterwise plants can be found through the Water Corporation (insert the relevant suburb into the search bar). A landscaping plan must be provided with the application.

Endemic plants include species which can only be found in a certain region. Endemic plants can improve biodiversity and create healthy ecosystems. Please also refer to the Endemic Plant Species Information Sheet, which provides a list of endemic plants to the area.

The minimum landscaping size of 20m^2 has been included to align with the State Planning Policy 7.3 – Residential Design Codes (R-Codes) deemed-to-comply requirement for part 5.3.1 – outdoor living area, of having two-thirds of the outdoor living area without roof cover (**Table 1**).
Note: *Deemed to comply = development satisfies the requirements of the R-Codes.*

Table 1: Deemed-to-comply Outdoor Living Area Requirements		
R-Coding	**Deemed to comply minimum outdoor living area**	**Deemed to comply minimum uncovered area (two-thirds)**
R20 – R25	30m^2	20m^2
R30 – R35	24m^2	16m^2
R40	20m^2	~13.3m^2
R50 – R80	16m^2	~10.7m^2

10. Tree Retention

Tree retention is a vital tool in retaining tree canopy coverage and reducing urban heat island effects. Retaining mature trees is a way to protect local biodiversity and can ensure the health of the surrounding soil.

In order for the applicant to gain the points for this item, an arborist report is required to determine the health of the selected tree to ensure it can be protected into the future. This is to be provided along with a Form 2 – Tree Survey Form – Existing Tree, which can be filled out using the information provided in the arborist report. Final approval of tree will be granted by the City's Parks and Environment Department.

As prescribed under item 10 of Table 1 in LPP 1.3, applicants must retain one mature tree on-site for current and future protection with a tree height of:

- Under 10m for 50 points; or
- 10m or higher for 75 points.

If a proponent chooses this option, the tree will be included on the City's internal tree register (different to the Significant Tree Register under Local Planning Scheme No. 5), so that the City can ensure the tree is protected in perpetuity. Notification of the tree being a condition of

development approval (which runs with the land in perpetuity), will also be provided to new purchases of the land through the Orders and Requisition certificate provided as part of settlement.

11. New Tree

Under part 5.3.2 – landscaping of the R-Codes, applicants must plant a new tree for all new dwellings. The deemed-to-comply requirements are provided in **Table 2**. This option requires the applicant to plant an additional tree, than what is required by the R-Codes. The associated planting area is to be free of impervious material covers.

Table 2: Deemed-to-comply Tree Planting			
Dwelling Type		**Deemed to comply minimum tree requirement**	**Deemed to comply maximum tree planting area**
Single house and grouped dwellings (tree per dwelling)		**1 tree**	**2m x 2m**
Multiple dwellings (tree per site)	**Less than 700m**	**2 trees**	
	700-1000m	**3 trees**	
	Greater than 1000m	**4 trees**	

The additional tree must be native (see Endemic Plant Species Information Sheet with a list of recommended endemic species) and must be between 45L to 200L depending on the points sought. The 'L' (litres) refers to the pot size of the plant, at the time of planting. The tree must:

- have a minimum 2x2m tree planting area; and
- have a free draining unimpeded base; and
- have a minimum soil depth of 1m; and
- be retained in perpetuity.

As prescribed under item 11 of Table 1 in LPP1.3, applicants will gain the points according to the size of the tree as outlined below:

- between 45L and 100L for 25 points
- between 100L and 200L for 50 points

A Form 3 – Tree Survey Form – New Tree is required to be submitted in conjunction with the development application and is to contain the relevant information regarding the additional tree. The new tree will need to be reflected in the development plans (including site, floor and elevation plans), in line with the R-Codes. Final approval of tree will be granted by the City's Parks and Environment Department.

12. Electric Vehicle Charger

As electric vehicle (EV) numbers rise in line with national emission reduction targets, you may want to future proof your home by installing an EV charger. This option requires a Level 2, single phase, 7kW EV charger to be installed to at least one car parking space for 25 points. This is a standard charging system, generally providing most EVs with an overnight EV charge.

You may need to consider different EV chargers depending on the model of the EV (if applicable), and if your home can support an additional EV charging load.

13. NatHERS Rating

A Nationwide House Energy Rating Scheme (NatHERS) rating refers to achieving a minimum energy efficiency rating for your home. This option requires the dwelling to achieve a NatHERS rating in one star excess of the National Construction Code (NCC) requirement for 75 points.

Currently in Western Australia (WA), all single houses and grouped dwellings must meet a minimum NatHERS rating of 6 stars (therefore, 7 stars is currently required if this option is chosen). The 2022 updates to the NCC require all new Australian houses and apartments to meet a minimum energy efficiency rating of 7 stars (at which time, 8 starts will be required for this option). This implementation is being delayed in WA until May 2025.

Some sustainability measures to improve the NatHERS rating include:

- solar orientation;
- double or triple glazing;
- increasing the number of internal doors to create 'zones' in order to control temperature easier, in your home by including more internal doors, increasing insulation including in the ceiling,
- installing fans; and
- using lighter colours on external surfaces.

The design must be certified by a NatHERS accreditor and the applicant must include a NatHERS Certificate with the development application. The City will then verify the NatHERS certificate.

14. Passivhaus ('Passive House')

'Passive House' refers to a performance-based design standard which achieves maximum thermal comfort through implementing a range of passive design tools. Examples of the measures used in a Passive House design include correct insulation to reduce the need for heating and cooling, airtightness, appropriate windows and doors, correct ventilation systems with heat recovery and elimination of thermal bridges.

This option does not require specific materials or products. Rather, it requires the ability of a design to meet the Passive House specific performance standard, for 100 points. Once a building has met specific Passive House performance standards a certified (by the Passive House Institute) practitioner can administer certification. The City will check against the list of accredited Passive House Certifying organisations as recognised by the Passive House Institute.

15. Alternative Sustainability Measure(s)

The City recognises that sustainability technologies are an emerging field. Additionally, there are a wide range of sustainability measures available to landowners to include in their design to increase the sustainability of their home.

Under clause 3.6 of LPP 1.3, this option provides the opportunity for applicants to self-nominate a sustainability measure(s). If choosing this option, it is recommended that the applicant contact

the City for advice on the suitability of the measure prior to lodgement of the development application. The City will advise if further sustainability measures in addition to the alternative sustainability measure is required to achieve the points required in accordance with clause 3.1 and 3.4.

Final approval of the sustainability measure(s) is made by the City's Climate Change Officer.

Revision

Version	Date	Comment
1.1	4 November 2023	Published on website