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## 53.XX ELEVATED ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT

### Purpose

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To ensure that new buildings and significant alterations and additions are planned and designed in a manner which incorporate environmentally sustainable development (ESD) principles, mitigates and adapts to climate change, protects the natural environment, reduces resource consumption and supports the health and wellbeing of future occupants.

### 53.xx-1 Application

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This clause applies to an application under a provision of a zone to construct a building, or construct or carry out works, other than the following applications:

- An application under a provision of the Farming Zone, Green Wedge Zone, Green Wedge A Zone, Low Density Residential Zone, Public Conservation and Resource Zone, Transport Zone 2, Transport Zone 3, Rural Activity Zone, Rural Conservation Zone, Rural Living Zone or Urban Floodway Zone.
- A VicSmart application.
- An application to construct or carry out works associated with one dwelling on a lot.
- An application for development associated with the use of land for agriculture or earth and energy resources industry.
- An application to alter, extend or make structural changes to an existing building provided the gross floor area of the building is not increased by more than 1000 square metres.
- An application to construct a building with a gross floor area not exceeding 50 square metres.
- An application to construct or carry out works with an area not exceeding 50 square metres.
- An application lodged before the approval date of Amendment XX.
- An application for an amendment of a permit under section 72 of the Act, if the original permit application was lodged before the approval date of Amendment XX.

For the purpose of this provision:

**Other non-residential uses** includes development associated with the following uses:

- Education Centre
- Leisure & Recreation
- Place of Assembly
- Hospital

**Net zero carbon emissions** means the amount of carbon emissions associated with the building's operational energy on an annual basis is zero or negative.

**Operational energy use** means any energy required to facilitate the day-to-day operations of the development.

**Residual operational energy** means any additional energy required by the development to operate which remains after accounting for energy efficiency and onsite renewable energy infrastructure.

**Green Infrastructure** means planned elements of building and landscape design that are designed and managed to deliver a wide range of ecosystem services, generally in the form of vegetation.

**EV enabled** means development that has been constructed to include the enabling infrastructure for EV charging facilities through the installation of end point charging infrastructure to be provided at a future point in time.

**Equivalent standard development** means a development which shares similar characteristics to the proposed development but has only undertaken the minimum steps to meet any applicable targets or requirements of relevant regulatory controls.

### 53.xx-2 Operation

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The provisions of this clause contain:

- **Objectives.** An objective describes the desired outcome to be achieved in the completed development.
- **Standards.** A standard contains requirements to meet the objective. A standard should normally be met.

### 53.xx-3 Requirements

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An application to construct a building or construct or carry out works:

- Must meet all of the objectives of Clauses 53.XX-4 to 53.XX-11.
- Should meet all the Standards or performance measures specified in this clause. However, if the responsible authority is satisfied that an application for an alternative solution meets the objective, the alternative solution may be considered.

An application must be accompanied by details of proposed environmentally sustainable development measures, including a response to the Standards of this clause, in a Sustainability Management Plan.

### 53.xx-4 Operational Energy

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#### Objectives

To ensure new development achieves net zero carbon emissions from operational energy use.

To support the inclusion of renewable energy generation and ensure a transition to renewable energy sources.

To ensure higher levels of energy efficiency and reduce pressure on energy networks.

To support effective energy load management and storage.

To support development that demonstrates innovation in the delivery of carbon positive emission outcomes.

#### Standards

##### Standard A1

All residential developments should achieve an average 7 Star NatHERS rating.

**Standard A2**

All developments should provide the following minimum requirements for onsite renewable energy generation:

| DEVELOPMENT  | REQUIREMENT  |
|--|--|
| Single dwelling, Two or more dwellings on a lot (multi- dwellings other than apartments) | A 3kW minimum capacity solar photovoltaic (PV) system should be installed for each 1-2 bedroom dwelling and an additional 1.0kW per bedroom for each bedroom there-after.  |
| Apartment development  | Provide a solar PV system with a capacity of at least 25W per square metres of the development's site coverage,<br><br>OR 1kW per dwelling.  |
| Office, Retail, Place of Assembly.   | Provide a solar PV system with a capacity of at least 25W per square metres of the development's site coverage.  |
| Industrial & Warehouse   | A solar PV system that is sized to meet the energy needs of the building(s) services (lighting, air-conditioning, industrial processes). When no industrial process is proposed, minimum 1.5kW per tenancy plus 1kW for every 150m <sup>2</sup> of gross floor area must be provided,<br><br>OR Where an energy intensive industrial process is likely, maximised based on the available unencumbered roof area. |

*Note: Alternative renewable energy sources where it can be established that the generation would be equal or greater than that generated by solar PV on site are acceptable.*

**Standard A3**

All development should be designed to reflect the following hierarchy in achieving net zero carbon emissions from all operational energy use:

1. Design buildings to be all electric;
2. Design building orientation, envelope and openings to increase energy efficiency;
3. Selection of energy efficient systems, equipment and appliances;
4. Onsite generation of renewable energy;
5. Purchase of offsite renewable energy.

**Standard A4**

All new development should be designed to avoid consumption of natural gas or other onsite fossil fuels.

**Standard A5**

All developments should prioritise the use of passive design to maximise thermal comfort while minimising energy consumption for heating and cooling, including through the following:

- Optimising building siting and orientation.
- Optimising building envelope design to access winter warming sun, limit summer solar heat gain and access dominant cooling breezes.
- Managing wall to glazing ratios.
- External design which uses elements such as wingwalls, balconies, external shading devices to provide effective external shading of glazing in habitable rooms from summer solar heat loads.

- Design which allows for containment of spaces that are artificially heated and cooled.

#### Standard A6

All development should be designed to minimise energy use including:

- Provision of clotheslines to allow natural drying of clothes and bedlinen, that do not impact the amenity of external secluded private open space, or internal room function.
- Provision of appropriate energy management systems (such as load management) to support use of renewable energy generated onsite and efficient energy consumption throughout the day.

#### Standard A7

All development should maximise potential utilisation of solar energy and where appropriate, wind, through the following measures:

- Ensuring electrical systems are designed to optimise the onsite consumption of generated electricity.
- Optimising roof form, pitch and orientation for photovoltaic arrays and/or solar air or water heating.
- Minimising shading and obstructions.
- Designing for appropriate roof structure to accommodate and access equipment.
- Consider spatial requirements for future renewable energy storage or other energy management systems.

#### Standard A8

All residual operational energy should be 100% renewable, purchased through government accredited off-site Green Power, power purchasing agreement or similar.

### **53.xx-5 Embodied Carbon**

#### **Objectives**

To encourage development that considers the lifecycle impacts of resource use and supports lower carbon emissions.

#### **Standards**

##### Standard B1

Development should reduce the impact of embodied carbon emissions in materials used through a combination of the following measures:

- Reusing all, or part, of existing buildings.
- Use of reclaimed or repurposed materials where appropriate.
- Use of new materials with a recycled content.
- Identifying opportunities to substitute high impact materials, such as concrete or steel, with materials with lower embodied carbon.
- Selecting materials from sources which have undertaken offsetting of any carbon emissions.

##### Standard B2

Development should demonstrate consideration of the potential for future adaptation and / or alternate uses where relevant, in the design of buildings.

Standard B3

Development should contribute to the reduction in future embodied carbon through careful material selection, including:

- Utilising materials that are durable, reducing need for replacement.
- Utilising materials and construction methods which facilitate future recycling of materials.
- Considering the application of 'design for disassembly' principles.

**53.xx-6 Sustainable Transport**

**Objectives**

To ensure development supports sustainable and equitable transport patterns through the provision of transport infrastructure that prioritises active transport.

To support and encourage zero emissions transport.

To support development that is designed to encourage behavioural changes to reduce transport related emissions and congestion.

To ensure that development is designed to accommodate the expected increase in use of lower emission modes of transport through the provision of infrastructure that is efficient and can adapt to meet changing needs and innovations in transport technology.

## Standards

### Standard C1

All development should provide the following rates of bicycle parking:

| DEVELOPMENT   | REQUIREMENT   |
|---|---|
| New residential development                         | <p>A minimum of one secure undercover bicycle space per dwelling. Where a lesser provision of bicycle parking is proposed, development should demonstrate how additional space (i.e. car parking spaces) could be repurposed for bicycle parking should demand arise.</p> <p>A minimum of one visitor bicycle space per 4 dwelling.</p> |
| New retail development                              | <p>A minimum of one secure undercover employee bicycle parking space per 100 sqm net leasable area.</p> <p>Visitor bicycle spaces equal to at least 5% of the peak visitors capacity.</p>   |
| New development associated with a Place of Assembly | <p>A minimum of 2 secure staff bicycle spaces per 1500 sqm of a place of assembly.</p> <p>A minimum of four visitor spaces for the first 1500 sqm and 2 additional spaces for every 1500 sqm thereafter.</p>  |
| New office development                              | <p>A minimum of one secure undercover staff bicycle parking space per 100 sqm net leasable area of office.</p> <p>A minimum of one visitor space per 500 sqm net leasable area of office.</p>   |
| For all other non-residential uses                  | Provide bicycle parking equal to at least 10% of regular occupants.   |

### Standard C2

All non-residential developments should provide:

- One shower for the first 5 employee bicycle spaces, plus 1 to each 10 employee bicycle spaces thereafter.
- Personal lockers are to be provided with each bicycle space required if 10 or more employee bicycle spaces are provided.
- If more than 30 bicycle spaces are required, then a change room should be provided with direct access to each shower. The change room may be a combined shower and change room.

Standard C3

All development should be designed to support the use of electric vehicles through the provision of:

| DEVELOPMENT  | REQUIREMENT   |
|--|---|
| Single dwellings / Two or more dwellings on a lot            | Appropriate infrastructure and cabling to support at least moderate speed, efficient EV charging (with / without the EV charger unit) in each garage / carport.   |
| Apartment development  | <p>Electrical capacity capable of supporting the provision of an appropriate moderate speed, efficient EV charging outlet to all car parking spaces.</p> <p>Appropriate EV infrastructure and cabling must be provided to ensure peak demand is managed for example, distribution boards, power use metering systems, scalable load management systems, and cable trays or conduit installation.</p>  |
| Non-residential development under 5,000 sqm gross floor area | <p>Electrical capacity capable of supporting the provision of an appropriate moderate speed, efficient EV charging outlet to 20% of all staff car parking spaces (or a minimum of one space).</p> <p>Appropriate EV infrastructure and cabling must be provided to ensure peak demand is managed, for example, distribution boards, power use metering systems, scalable load management systems, and cable trays or conduit installation.</p>  |
| Non-residential development over 5,000 sqm gross floor area  | <p>Installed EV charging infrastructure complete with chargers and signage to 5% of all car parking spaces.</p> <p>Electrical capacity capable of supporting the provision of an appropriate moderate speed, efficient EV charging outlet to 20% of all staff car parking spaces (or a minimum of one space).</p> <p>Appropriate EV infrastructure and cabling must be provided to ensure peak demand is managed for example, distribution use metering systems, scalable load management systems, and cable trays or conduit installation.</p> |

Standard C4

All bicycle parking facilities should be designed for convenient access, including:

- Locating the majority of bicycle parking facilities for occupants at ground level, where this does not compromise other relevant objectives.
- For bicycle parking not at ground level, providing the majority within 10 metres of vertical pedestrian access ways (i.e. lifts, stairs).
- Providing safe access to bicycle parking facilities in basement car parks via a separate line of travel or by clearly signalling cycle priority through surface treatments and to facilities accessed via lanes by providing suitable lighting and surveillance.
- Ensuring any lifts used to access bicycle parking areas are at least 1800mm deep.
- Ensuring at least 20% of residential bicycle parking facilities are of a type which support equitable access through a combination of well-spaced ground level facilities to

support ease of use and provision of parking spaces to accommodate a diverse range of bicycles (such as cargo bikes or three wheeled bikes).

#### Standard C2

All car parking facilities should be designed to support the charging of shared or visitor vehicles through:

- The provision of a minimum of one EV enabled shared parking space if visitor or shared parking spaces are proposed.
- Locating shared EV charging space(s) in highly visible, priority locations.
- Providing clear signage indicating that EV charging is available at the shared space(s).

#### Standard C3

All car parking facilities should be designed to support the charging of motorcycle, moped, electric bicycle or scooters through:

- Providing electrical capacity for appropriate charging outlets at the parking / storage area.
- Providing a general power outlet for every six vehicle parking spaces to support charging.

#### Standard C4

All development should be designed to support modal shift to more sustainable forms of transport through:

- Locating low and zero emission vehicles in a prominent, accessible locations within parking facilities.
- Designing car parking facilities to be adaptable to other uses.
- Adopting flexibility in the allocation of car parking spaces to facilitate adaptable uses or transfer of ownership.

### **53.xx-7 Integrated Water Management**

#### **Objectives**

To support development that minimises total operating potable water use.

To support development that reduces the amount of stormwater runoff on site, and improves its quality of stormwater, and impacts for stormwater that leaves a development.

To ensure development considers and addresses the impact of future climate conditions in the management of water resources.

To encourage development that supports innovation in the use and reuse of water

#### **Standards**

##### Standard D1

All development should be designed to reduce potable water use on site by at least 30% in interior and irrigation uses, in comparison to an equivalent standard development, with use of roof harvested rainwater supply prioritised in the delivery of reductions.



Standard D2

Design developments to use water resources efficiently through a range of measures, including;

- Collection of rainwater from above ground catchments, and appropriate filtering for on-site use for toilet flushing as a minimum, and additional uses such as laundry, irrigation, wash down facilities, etc.
- Capture of fire-test water for on-site reuse.
- Collection of stormwater for on-site reuse.
- Considering opportunities for onsite recycling of wastewater through the installation of approved greywater or blackwater systems.
- Reducing potable water use for irrigation by selection of drought tolerant landscaping, design for passive irrigation, and selection of efficient irrigation systems where needed.
- Connecting to a precinct scale Class A recycled water source if available and technically feasible (including a third pipe connection to all non-potable sources).
- Providing water efficient fixtures, fittings and equipment.

Standard D3

Reduce the volume and flow of stormwater discharging from the site by appropriate on-site detention and on-site retention strategies, consistent with catchment scale IWM objectives and targets.

Standard D4

Improve the quality of stormwater discharging from the site by meeting best practice urban stormwater standards.

**53.xx-8 Green Infrastructure****Objectives**

To deliver development that protects existing landscape values on and adjoining the development site, including canopy, vegetation, and habitat for biodiversity.

To deliver development that increases vegetation, particularly indigenous and native vegetation, and enhances existing landscape values, connects biodiversity corridors and increases the resilience of ecosystems.

To ensure landscaping proposed as part of development will be resilient to future climate conditions and supports integrated water management and energy efficiency outcomes.

To support development that increases amenity, improves connections to surrounding natural landscapes and supports health and wellbeing.

To encourage development that provides opportunities for on-site food production.

## Standards

### Standard E1

All new development should achieve a Green Factor score of 0.55 (0.25 for industrial and warehouse uses)

OR

A minimum of at least 40% of the total site coverage area (20% for Industrial or Warehouse) must comprise green cover (external landscaping) that delivers at least one of the following:

- A minimum of 65% of the required green cover area as new or existing canopy planting and a minimum of 35% as understory planting. Canopy planting and understory planting can overlap.
- Species selection and associated planting arrangement comprising native and / or indigenous species which provides habitat for native fauna.
- Green cover which is located to provide maximum benefit in relation to the cooling of the adjoining public realm. Green walls or facades under this pathway must benefit the public realm and be on the lower levels of the building.

### Standard E2

Green infrastructure should:

- Support the creation of complex and biodiverse habitat.
- Provide a layered approach, incorporating both understory and canopy planting.
- Provide either native, indigenous and/or climate change resilient exotic plants that provide resources for native fauna.
- Support the creation of vegetation links between areas of high biodiversity through planting selection and design.
- Ensure species selection is appropriate to address expected future climate conditions.

### Standard E3

Siting of buildings should seek to retain existing mature canopy trees (excluding invasive species) or significant areas of other green cover which contribute to biodiversity corridors and habitat.

### Standard E4

Development should ensure appropriate measures are integrated to support the establishment and ongoing maintenance of landscaping

## 53.xx-9 Climate Resilience

### Objectives

To improve the resilience of the built environment to climate change related hazards and natural disasters.

To deliver development that reduces the urban heat island effect.

## Standards

### Standard F1

Provide at least 75% of the development's total site area with a combination of the following elements to reduce the impact of the urban heat island effect:

- Green infrastructure.
- Roof and shading structures with cooling colours and finishes that have a solar reflectance index (SRI) of:
  - For roofing with less than 15 degree pitch, a SRI of at least 80.
  - For roofing with a pitch of greater than 15 degrees, a SRI of at least 40
- Water features or pools.
- Hardscaping materials with SRI of minimum 40.

### Standard F2

New development should demonstrate that future climate impacts have been considered and addressed in any design response.

### Standard F3

Pedestrian pathways should be designed with thermal comfort in mind. This includes incorporating landscaping (tree canopy and other vegetation), shading and covered structures.

## **53.xx-10 Indoor Environmental Quality**

### **Objectives**

To support development that achieves safe and healthy indoor environments, specifically addressing:

- Thermal comfort.
- Thermal safety.
- Access to clean, fresh air.
- Access to daylight and sunlight.
- Harmful indoor air pollutants.

To deliver development that considers the impact of future climate conditions on indoor environment quality.

## Standards

### Standard G1

Buildings should be designed to be able to provide appropriate levels of thermal comfort without reliance on mechanical heating and cooling systems, as follows:

| DEVELOPMENT  | REQUIREMENT  |
|--|--|
| Single dwellings<br><br>Two or more dwellings on a lot (other than apartments) | All habitable rooms should be cross ventilated.  |
| Apartment development<br><br>Residential Buildings                             | 60% of all apartments should be effectively naturally ventilated, either via cross ventilation, single-sided ventilation or a combination<br><br>At least 40% of apartments on every floor to be cross ventilated. |
| Non-Residential development  | All regular use areas of non-residential spaces should be effectively naturally ventilated; or commensurate mechanical measures provided.  |

### Standard G2

Buildings should achieve a daylight level across the entirety of every habitable room of 100 lux and of 50 lux across the entirety of any other regularly occupied space.

### Standard G3

Internal spaces in buildings should utilise natural light to minimise the use of artificial lighting during daylight hours, unless the proposed use of the room is contrary to the provision of glazing.

### Standard G4

Primary living areas of at least 70% of all dwellings in a development should achieve direct sunlight for 2 hours on the 21<sup>st</sup> day of June to at least 1.5m deep into the room through glazing.

### Standard G5

Development should include openable external windows to circulation corridors and lift lobbies to facilitate natural ventilation for residential development below six storeys.

Standard G6

Development should use materials which are low toxicity in manufacture and use, and that do not cause harm to people or ecosystems.

**53.xx-11 Waste and Resource Recovery****Objectives**

To facilitate development that supports functional waste recovery and management.

To enable the continuous improvement of sustainable waste management and resource recovery.

**Standards**Standard H1

Development should include:

- Adequate waste and recycling infrastructure to manage the waste demand of the development in a sustainable manner and to support recycling, such as an appropriate number of bins, waste chutes, and cleaning facilities.
- Waste and recycling infrastructure and enclosures which are:
  - Adequately ventilated.
  - Integrated into the design of the development.
  - Located and designed for convenient access by occupants and made easily accessible to people with limited mobility
  - Signposted to support recycling and reuse.
- Adequate facilities or arrangements for bin washing.

Standard H2

Development should be designed to facilitate:

- Collection, separation and storage, and where appropriate, opportunities for on-site management of food waste through composting or other waste recovery as appropriate.
- Collection, storage, and reuse of garden waste, including opportunities for on-site treatment, where appropriate, or off-site removal for reprocessing.
- Collection and storage of glass recycling
- Collection and storage of containers under any Container Deposit Scheme as appropriate for the proposed use and scale.
- The provision of adequate circulation space on site to allow waste and recycling collection vehicles to enter and leave the site without reversing.
- Waste and recycling separation, storage and collection designed and managed in accordance with an approved Waste Management Plan, if required by the responsible authority.
- For apartment development, the provision of space for communal storage of additional waste streams including E waste, hard waste and textiles.

Standard H3

An application should demonstrate through the provision of a Construction / Demolition Waste Management Plan, if required by the Responsible Authority, that all practical and feasible practices and activities to minimise waste and increase resource recovery will be implemented.

**53.xx-12 Decision guidelines**

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Before deciding on an application, in addition to the decision guidelines in Clause 65, the responsible authority must consider:

- *The extent to which the development meets the objectives and requirements of this policy from the design stage through to construction and operation.*
- *Whether alternative design responses to the identified Standards would achieve greater alignment with precinct specific objectives related to environmental sustainability.*
- *Whether the proposed environmentally sustainable development initiatives are reasonable having regard to the type and scale of the development and any site constraints.*
- *The response to any other matters relating to environmentally sustainable development outlined in this planning scheme.*
- *Any relevant water and stormwater management objective, policy or statement set out in this planning scheme.*
- *The contribution the development makes to mitigation of the urban heat island effect and adaptation to changing climatic conditions.*
- *The feasibility and approach to maintenance of proposed green infrastructure.*
- *The quality of the integrated water management approach proposed for the development.*
- *The impact of the removal of any mature canopy trees or vegetation which contributes to natural ecosystems and the measures proposed to mitigate these impacts.*