INFORMATION SHEET

CITY OF VINCENT

Image: Arcologic Design

ENVIRONMENTALLY SUSTAINABLE DESIGN REQUIREMENTS FOR SINGLE HOUSES AND GROUPED DWELLINGS

The City's Built Form Policy includes Local Housing Objectives related to achieving a development which incorporates Environmentally Sustainable Design (ESD) principles.

These principles seek to achieve new developments which have a reduced environmental impact, improved energy and water efficiency, and reduced reliance on non-renewable energy sources. The development of energy efficient buildings also delivers medium to long-term savings for owners and occupants.

By considering these principles of ESD through the development application process, a more holistic approach can be taken towards incorporating ESD principles into the building design, rather than retrospectively once the building design has been completed.

The Local Housing Objectives in the Built Form Policy are performance-based, which requires consideration as to how each of these have been achieved.

To assist landowners and applicants in preparing a development application, the below table outlines the Local Housing Objectives applicable to Single Houses and Grouped Dwellings, and information on how these can be addressed through principles of ESD.

For further information and further examples of what you could provide, please refer to the City's Environmentally Sustainable Design Information Sheet HERE. Alternatively, feel free to contact the City's Development and Design team on 9273 6000.

Please outline how each of the following elements have been addressed and attach any relevant or supporting photos, images, diagrams or drawings where applicable.

What does this mean and how can I achieve this?	Applicant Comment – How I have achieved this objective
Environmental Impact *Development that considers the whole of life environmental impact of the building and incorporates measures to reduce this impact.*	
The environmental impact of developments can be impact by considerations such as building orientation, design and construction materials. Construction materials which are durable and are low maintenance generally have a low environmental impact. Some examples of building materials and design choices with reduced environmental impacts include: • Incorporating an east-west orientation (where possible); • Minimising the extent of the building footprint; • Incorporating good solar-passive design; • Reverse brick veneer (internal thermal mass, external insulation); • Low emission concrete; • Lightweight, recycled, non-toxic, minimally processed and recyclable materials; • Gabion walls filled with demolition waste; • High quality (durable), energy and water saving fixtures and fittings (such as reversible ceiling fans, water efficient taps and toilets); and • Installation of appropriate and effective insulation.	
Thermal Performance *Development that optimises thermal performance of the building throughout the year through design elements and material selection.*	
Thermal performance relates to the efficiency of buildings and materials to retain or transmit heat. In summer, a development with poor thermal performance will often absorb and retain more heat, resulting in the inside of the building feeling hotter. Design elements which can assist with achieving a high level of thermal performance relate to solar-passive design and includes the orientation and layout of the building, the placement of thermal mass, and the use of insulation. Material selection which can assist with achieving a high level of thermal performance can include those which have thermal mass (such as concrete, brick, tile, rammed earth) and insulation properties (such lightweight cladding, wood, recycled plastic composite, range of insulation materials, strategic use of air gaps).	

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Solar Passive Design *Development shall incorporate site planning principles that maximise solar passive design opportunities for both summer and winter*	
Where the long axis of building runs east-west, the majority of glazing being provided to the north, with limited glazing provided to the east and west; and/or The inclusion of a central light well or courtyard can help to maximise access to northern light.	
Sunlight and Ventilation *The provision of natural ventilation and daylight penetration to reduce energy consumption*	
• Rooms provided with ventilation openings on both sides to allow cross-flow of air; • Maximum glazing provided to north-facing living areas; • Bedrooms being located on the south; and/or • Utility rooms and garages being located on east and west sides of a dwelling.	
Solar Heating *The provision of daytime areas with north-facing glazing to allow passive solar heating during winter*	
• Up to 80% of the glazing provided to north facing living areas being unshaded in winter, and fully shaded by external structures in summer.	
Cross Ventilation *The provision of openable windows and/or ceiling fans to habitable rooms or occupied spaces that allow natural and cross ventilation*	
• Windows located on north and south side of the dwelling being openable to utilise cooling breezes in summer; and/or • Reversible ceiling fans facilitate cooling in summer and improve air dispersion for more efficient heating in winter.	
Water Re-use *The provision of recovery and re-use of rainwater, storm water, grey water and/or black water for non-potable water applications*	
• Rainwater captured in tank/s above or below ground and plumbed into toilet and laundry; • Greywater used for garden irrigation, or hand basin draining into toilet cistern for flushing; and/or • Soft landscaping is maximised to increase on-site stormwater infiltration.	

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Solar Gain *Incorporation of shading devices to reduce unwanted solar gain in summer and increase passive solar gain in winter*	
• Eaves, pergolas and other external shade structures designed to the correct depth to provide 0% shading in mid-winter and 100% shading in mid-summer. • Such structures may also be movable, (e.g. mobile screens and adjustable pergolas) to allow increased control over light and heat gain.	
Energy Consumption *Integration of renewable energy and energy storage systems to optimise energy consumption.*	
• Solar photovoltaic system (with or without battery storage) for electricity generation; • Solar or heat pump hot water system; and/or • Smart-wired home to enable automated diversion of excess solar energy to power air conditioners and other appliances and reduce energy use at other times.	
Solar Absorptance ***Flat roof*** *structures that are not visible from the street or adjacent properties shall have a maximum solar absorptance rating of 0.4* or ***Pitched roof*** *structures or roof structures that are visible from the street or adjacent properties shall have a maximum solar absorptance rating of 0.5, unless a suitable alternative is identified in the Urban Design Study*	
Solar absorptance rating is a measure of how much solar energy a material absorbs and therefore how hot it gets when exposed to the sun. A rating of zero means no absorption and the material remains cool. A rating of 1 is 100% absorption and the material becomes very hot. As a general rule, light roof colours have lower absorptance values than dark roof colours. Roofing material suppliers can provide the absorptance values of their colour range. Roofs that are visible from the street or adjacent properties are permitted a higher absorptance value because lighter colours (which have lower absorptance values) may be visually less comfortable for some neighbours.	

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Environmental Performance Demonstrate that the development is capable of achieving the following performance standards when compared against the Perth statistical average for residences: • 50% reduction in global warming potential (greenhouse gas emissions); and • 50% reduction in net fresh water use. The acceptable method for demonstrating this is an independently reviewed EN15978 compliant Target Setting life cycle assessment (LCA) with a 20% factor of safety applied to improvement strategies	
Applications for new Single Houses and Grouped Dwellings should be accompanied by a target setting LCA which measures the environmental performance of the building over its lifetime, to understand how the design contribute towards reduced environmental impacts. You can find an LCA assessor by contacting the Australian Life Cycle Assessment Society (ALCAS) or by doing a general internet search. Please ensure that you or the assessor you engage use methodologies compliant with: • Environmental standard EN15978 – Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method; and • That the system boundary includes all Life Cycle Modules (A1-2, B1-7, C1-4 and D) in addition to non-integrated energy (plug loads). As an alternative to the LCA for Single and Grouped Dwellings, the City may accept an 8 star NatHERS rating, in conjunction with the development meeting the other local housing objectives listed above. The City can also consider other environmental sustainable design reports, however it is recommended these be discussed with the City prior to engaging someone, to ensure that the report will be accepted by the City.	

Please complete all sections of this template and send to **mail@vincent.wa.gov.au** along with all relevant attachments. Alternatively, you can submit your application in person at our **Administration Centre (244 Vincent Street, Leederville)** or post to **PO Box 82, Leederville, 6902**.