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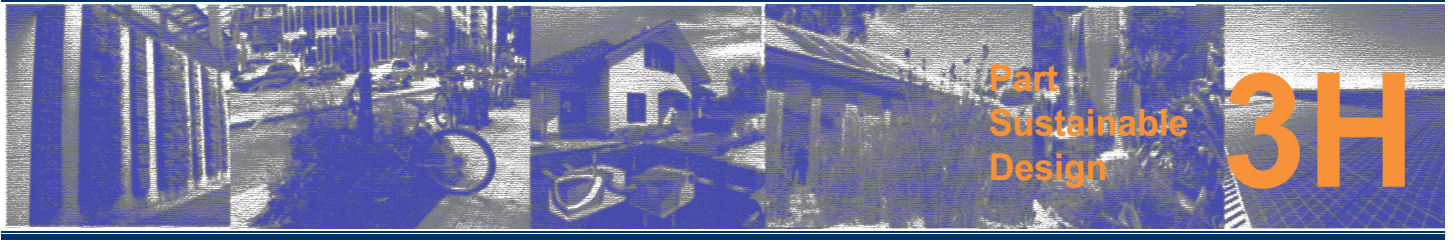
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3H.1 Introduction

This Part considers the implementation of Ecologically Sustainable Development (ESD) principles for development within the City of Botany Bay and contains controls to improve the environmental sustainability of the Botany Bay environment.

This Part establishes new sustainability targets in construction, planning and design through the implementation of ESD (Environmentally Sustainable Development) principles and policies. It has been prepared having regard to the objectives of the Environmental Planning and Assessment Act which encourages: “*ecologically sustainable development*.”

Five key principles of ESD are:

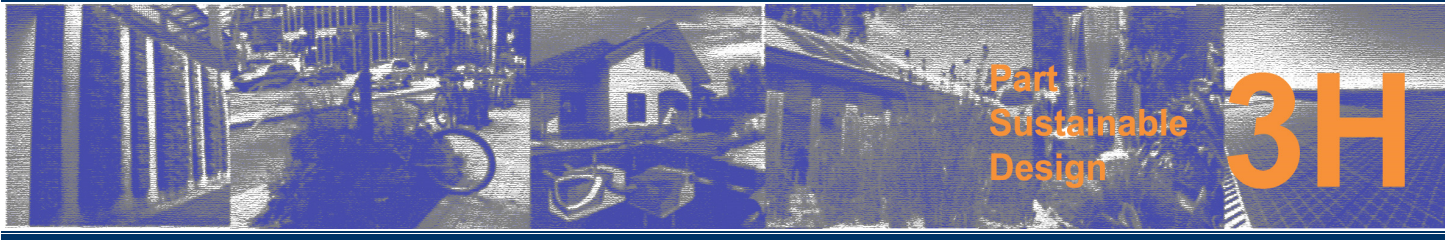
- Integrating economic and environmental goals in policies and activities (the integration principle);
- Ensuring the environmental assets are properly valued (the valuation principle);
- Providing for equity within and between generations (the intergenerational principle);
- Dealing cautiously with risk and irreversibility (the precautionary principle); and
- Recognising the global dimension. (Department of Environment and Water Resources, 2007).

3H.1.1 Land to which this Part Applies

The controls in this Part applies to all land within the City of Botany Bay where development consent is required.

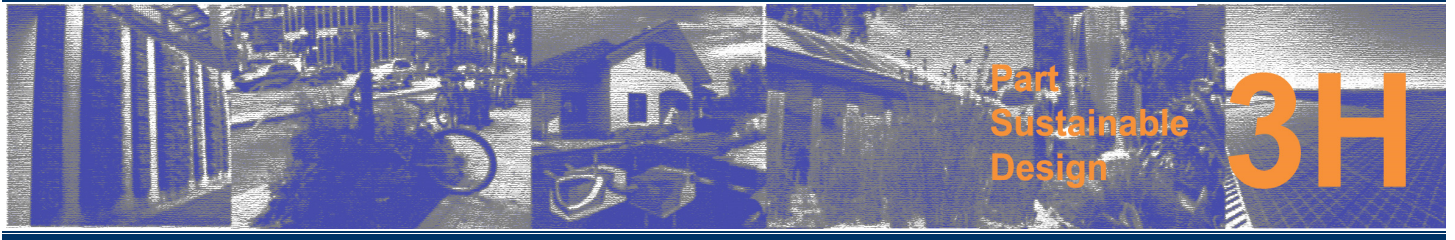
This Part needs to be read in conjunction with:

- Part 1 - Introduction
- Part 2 - Notification and Advertising
- Part 3 - General Provisions
- Part 4 - Residential Development
- Part 5 - Business Centres
- Part 6 - Employment Zones
- Part 7 - Other Development Types and Land Uses
- Part 8 - Character Precincts
- Part 9 - Key Sites
- Part 10 – Technical Guidelines



3H.1.2 General Objectives

- O1** To minimise consumption of resources including energy, water, waste and soil;
- O2** To provide a comprehensive set of ecologically sustainable development requirements which will assist in the assessment of development applications;
- O3** To ensure the design and construction of development will minimise the adverse impacts on the environment;
- O4** To improve resident, employee and construction workers' comfort and health;
- O5** To minimise pollution of air, soil and water;
- O6** To promote environmentally sensitive design and construction of buildings; and
- O7** To encourage design for durability and long life and promote the use of renewable energy sources and materials.



3H.2 Energy and Water Efficiency

3H.2.1 Energy & Water Efficiency for Building Sustainable Index (BASIX) Development

This Section of this Part applies to residential development including:

- New dwelling houses;
- Multi unit housing and residential flat developments;
- Alterations and additions to residential dwellings throughout NSW with a total estimated cost of works of more than \$50,000; and
- New pools with a volume of 40,000 litres or more.

State Environmental Planning Policy Building Sustainability Index 2004 (BASIX) sets provisions that aim to reduce energy and water consumption for residential development. BASIX is designed to reduce the impacts of new housing on the environment by identifying the minimum standards that a development is to achieve.

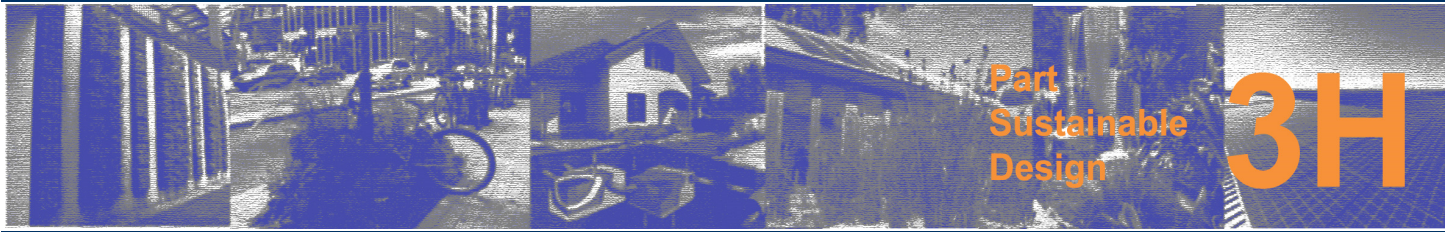
All new developments are required through design, construction and choice of appliance, to maximise use of renewable energy sources (such as sunshine) and use less energy more efficiently. This helps to preserve scarce resources, reduce the level of greenhouse gas emissions and provide significant savings.

The BASIX tool currently assesses the potential performance of proposed new housing against various sustainability indices, including landscape, stormwater, water, thermal comfort and energy. The results of a BASIX assessment are presented as a 'schedule of commitments', which are detailed within a BASIX Certificate. As a minimum, a new development must be able to demonstrate the commitments selected will use 40% less mains water, and 25% less energy than conventional buildings of a similar type.

Residential developments must meet the BASIX benchmarks.

Objectives

- 01** To apply principles and processes that contributes to ecologically sustainable development (ESD);
- 02** To ensure that energy efficiency is a fundamental component of the design and construction of all developments;
- 03** To minimise green-house gas emissions and conserve non-renewable energy sources;
- 04** To design developments to improve water conservation and increase on-site storage of rainwater for reuse;
- 05** To ensure efficient and effective use of rain water;
- 06** To encourage development that reduces energy consumption throughout all aspects and phases of the construction, occupation, utilisation and lifecycle of the building/development;



- O7** To ensure development that utilises sustainable natural resources (sun, wind, water) to create naturally comfortable environments that are reliant on efficient, cost effective and ecologically sustainable provision of energy; and
- O8** To ensure development takes into consideration neighbouring active solar technologies in the design of the building.

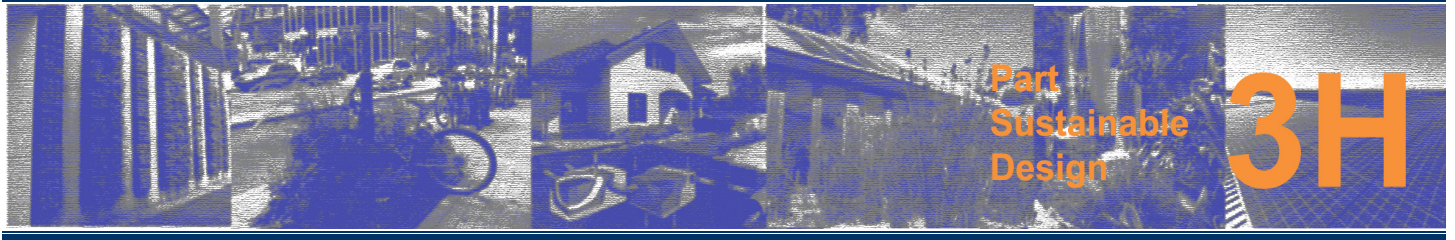
Controls

General

- C1** For all proposed residential development where BASIX applies, the development application or Complying Development Certificate is to be accompanied by a BASIX (Building Sustainability Index) Certificate. To obtain a certificate, applicants must complete an online assessment using the BASIX tool. Details are at www.basix.nsw.gov.au.

Solar Panels

- C2** Solar hot water systems are encouraged to be installed in all new developments and major alterations and additions. Where solar access is poor, alternative high efficiency systems are to be used, such as:
 - (i) High efficiency gas storage system;
 - (ii) High efficiency electric heat pump; or
 - (iii) Instantaneous gas hot water for premises with low level hot water usage.
- C3** The location and placement of photovoltaic solar panels is to take into account the potential permissible building form on adjacent buildings.
- C4** Proposals for new buildings, alterations and additions and major tree planting are to maintain solar access to existing photovoltaic solar panels.



3H.2.2 Energy & Water Efficiency for Non-BASIX Development

The City of Botany Bay Council encourages energy efficient buildings. Energy efficient buildings require less energy for construction and maintenance, heating and cooling, lighting and ventilation. A building's operating energy can be conserved through passive heating and cooling features such as insulation, double-glazing, thermal mass, shading, and natural ventilation.

A building's embodied energy can be reduced by constructing it from locally sourced and/or recycled materials, and by making it easy to dismantle and recycle in its turn. Large buildings can also conserve energy by installing cogeneration units, which use the waste heat from electricity generation. Solar hot water heaters on roof tops can offset demand for electricity and gas by using sunlight to heat water.

The design of buildings should follow the general principles of 'green building design' to reduce consumption of non-renewable energy sources and thereby:

- Use energy efficiently;
- Minimise the use on non-renewable energy;
- Reduce the peak demand on energy supply systems;
- Reduce greenhouse gas emissions;
- Make buildings more comfortable for occupants all year round; and
- Reduce energy bills and the lifecycle cost of energy services.

The National Australian Built Environment Rating System (NABERS) is a performance-based rating system for existing buildings managed by the NSW Office of Environment and Heritage (OEH). NABERS rates a building on the basis of its measured operational impacts on the environment.

Note: The Building Code of Australia (Section J) introduced energy efficiency provisions that apply to commercial buildings (Class 5-9) in 2006 that must be read in conjunction with these controls.

Objectives

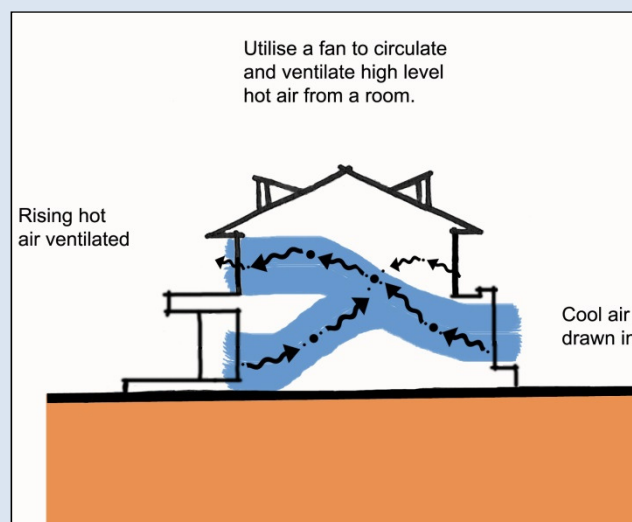
- O1** To ensure commercial and industrial development incorporates ecologically sustainable design principles;
- O2** To encourage passive solar design through site layout, orientation of buildings;
- O3** To encourage design and construction which reduces the need for mechanical heating and cooling systems;
- O4** To design development to improve water conservation and increase on-site storage of rainwater for reuse;
- O5** To ensure efficient and effective use of rain water; and
- O6** To encourage the installation and use of active solar technologies.

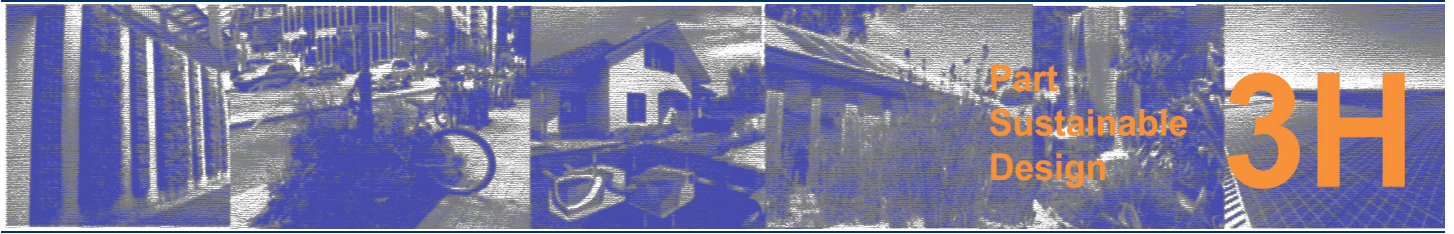
Controls

Passive Design

- C1** Buildings are to be oriented and designed to achieve optimum solar access and natural ventilation where practical.
- C2** Measures to reduce heat loss and gain in winter and summer must be incorporated into the building design. Details to be provided at DA stage.
- C3** The following design elements must be incorporated in regards to the natural ventilation of buildings:
 - (i) Windows and doors are to be sited to allow for cross flow ventilation from prevailing winds (refer to **Figure 1**);
 - (ii) Landscaping and water features are to be used to provide evaporative pre-cooling;
 - (iii) Internal walls and partitions are to be positioned to allow for any prevailing passage of air through the building; and
 - (iv) Insulation is to be used in external walls and roofs to reduce heat escaping from a building in winter and to maintain a lower internal temperature in summer.

Figure 1 - Natural Wind Flow





Solar Panels

- C4** Solar hot water systems are encouraged to be installed in all new developments and major alterations and additions. Where solar access is poor, alternative high efficiency systems are to be used, such as:
- (i) High efficiency gas storage system;
 - (ii) High efficiency electric heat pump; or
 - (iii) Instantaneous gas hot water for premises with low level hot water usage.
- C5** The location and placement of photovoltaic solar panel is to take into account the potential permissible building form on adjacent building.
- C6** Where possible proposal for new building, alterations and additions and major tree planting are to maintain solar access to existing photovoltaic solar panel having regard to the performance, efficiency, economic viability and reasonableness of their location.
- C7** Roof mounted solar collector panels are to be provided for new development to the rooftop area of each new building, of which 20% of power generated shall be returned to the Ausgrid network together with tariff rebates.