

Part A – Introduction

Chapter A2: Ecologically Sustainable Development

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1.1 Introduction

Council encourages the application of ecologically sustainable development (ESD) for all development in the Wollongong local government area. Ecologically sustainable development, as defined by the *Environmental Planning and Assessment Act 1979*, requires the effective integration of economic and environmental considerations in decision-making processes. Ecologically sustainable development can be achieved through the implementation of the following principles and programs:

- (a) the precautionary principle—namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

In the application of the precautionary principle, public and private decisions should be guided by:

- (i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
 - (ii) an assessment of the risk-weighted consequences of various options,
- (b) inter-generational equity—namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,
- (c) conservation of biological diversity and ecological integrity—namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,
- (d) improved valuation, pricing and incentive mechanisms—namely, that environmental factors should be included in the valuation of assets and services, such as:
 - (i) polluter pays—that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,
 - (ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,
 - (iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The *State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004* mandates provisions relating to reduced consumption of mains-supplied potable water, reduction of greenhouse gases emissions and improved thermal comfort for all residential development. Council encourages applicants to go beyond the minimum BASIX requirements for their development.

1.2 Objectives

Through the application of ESD, development should be sited, designed and constructed taking into consideration the principles of ESD, and comply with the following objectives.

- (a) Greenhouse gas emissions will be reduced.
- (b) Potable water use will be reduced.
- (c) Development can adapt to climate change.

- (d) Waste will be reduced.
- (e) Recycling of waste and use of products from recycled sources will be increased.
- (f) Energy that is used will be renewable and low carbon.
- (g) Indoor environmental quality is improved.
- (h) The environmental impacts from building materials will be reduced through reduction, reuse and recycling of materials, resources and building components.
- (i) Biodiversity values are improved.

Council also encourages the application of an environmental building rating tool e.g. Green Star or NABERS, to document and demonstrate the environmental performance of a proposed development.

1.3 Sustainability principles

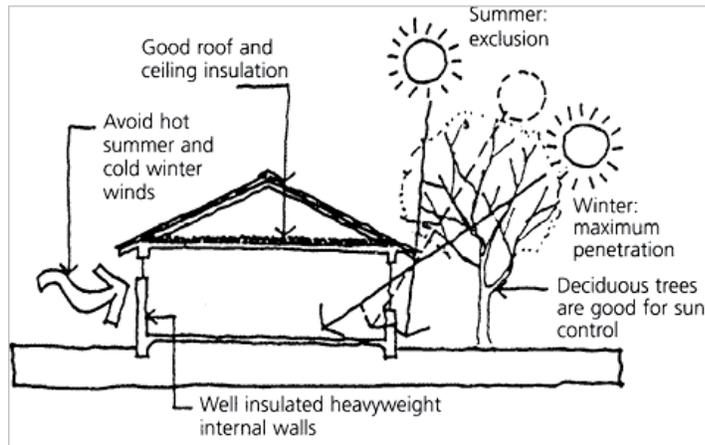
Taking into consideration the site and context analysis, the principles of passive solar design should be used to refine the design and siting of the development. Passive solar design involves designing a development for the local climate, orientating to achieve good passive solar heating in winter and cooling in summer, insulating, glazing and considering the thermal mass of construction materials.

Council encourages the use of the most efficient water and energy appliances and systems, natural ventilation, efficient heating and cooling systems and renewable energy in order to minimise greenhouse gas emissions resulting from the development.

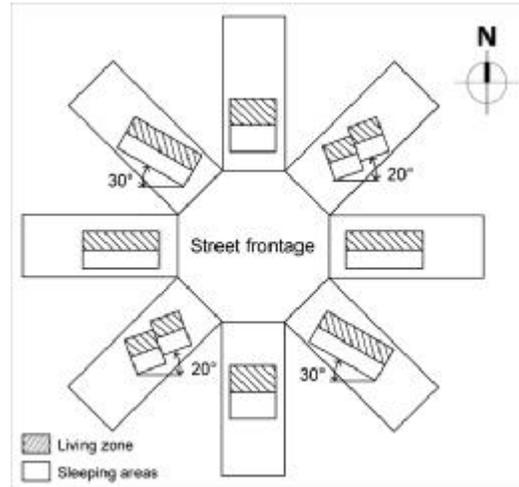
The development must aim to maintain, conserve and enhance indigenous species, populations and ecological communities present prior to, during and post construction. Consideration should also be given to:

- The use of local indigenous species to enhance wildlife corridors and contribute to the amenity of the area.
- Maintaining and enhancing existing vegetation. Landscaped areas should aim to enhance existing wildlife corridors onsite and adjacent to the site, and may include the preservation and reuse of topsoil.
- The use of deciduous trees to provide shade in summer and allow sunlight infiltration during winter.
- Increasing landscaped areas to enable water infiltration and decrease hard surfaces.
- For larger developments, the incorporation of green roofs and walls is encouraged. Green roofs and walls assist in the regulation of the buildings temperature, as well as acting as insulation, improving air quality, enhancing biodiversity and reducing stormwater runoff.

Careful analysis and selection of building materials can result in improvements to the thermal comfort and long term efficiency of the development. The embodied energy of construction materials should be considered when selecting building materials and during construction. Embodied energy includes all the energy associated with mining and processing of materials, manufacturing, transportation and eventual delivery of the product.



Above: Dwelling diagram incorporating passive solar design principles (source www.yourhome.gov.au).



Above: Examples of residential lots orientated towards a street and a preferred living / sleeping zone orientation for passive solar performance (source www.yourhome.gov.au).

1.4 Development Controls

Development controls to improve the sustainability of development throughout Wollongong are integrated into the relevant chapters of this DCP. The Land Use based DCP chapters, for example B1 Residential Development, B3 Mixed Use Development, B5 Industrial Developments, and B6 Development in the Illawarra Escarpment, relay objectives relating to the application of ESD, for example energy efficiency, maximising retention of significant remnant trees and other vegetation, and encouraging innovative housing design. These DCP chapters include development controls relating to landscaping, deep soil zones, building character and form, adaptable and universally designed housing.

Chapter B2: Residential Subdivision and D16 West Dapto Urban Release Area include objectives and development controls which aim to ensure subdivisions are designed to take into account the principles of ecological sustainable development. They include focus on lot orientation for future solar efficiency and walkability. The DCP chapter include development controls relating to subdivision design, lot layout, provision for street tree planting and stormwater drainage.

Chapter D13 Wollongong City Centre Precinct includes objectives relating to the application of ESD, as well as provisions relating to energy and water efficiency and conservation for non-residential developments.

Please refer to relevant chapters of the Wollongong DCP 2009 for specific development controls.

1.5 Resources for further information

Australian Government, 2013, Your Home Australia's guide to environmentally sustainable homes, <http://www.yourhome.gov.au/>, viewed February 2016.

City of Sydney, December 2014, Green roofs resource manual, <http://www.cityofsydney.nsw.gov.au>, viewed February 2016.