

Ecologically Sustainable Development

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1 Introduction

This section sets out objectives and controls to provide a framework for the application of sustainable development principles in the design, construction and operation of buildings across Randwick City.

The built environment is a major contributor to greenhouse gas emissions and energy consumption in Australia, accounting for approximately 22% of the nation's total greenhouse emissions (COAG July 2009). Much of this is attributed to the resources and materials used in building construction as well as pollution and waste resulting from development activity. The actual operation of a building can also contribute significantly to energy and water consumption.

Sustainable development (as referenced in this DCP) refers to a building that is environmentally responsible and resource efficient throughout its life cycle, while reducing the overall impact on the environment and human health.

Buildings that are sustainable use environmentally friendly construction materials and fittings, are energy and water smart, have healthy and comfortable indoor environments, and yield considerable cost savings to property owners and tenants.

Key environmental, economic and social benefits of sustainable development include:

- A reduction in greenhouse emissions
- Savings in household bills and business running costs
- Improved health and well being of building occupants
- Potable (drinking) water and energy conservation
- Improved indoor temperature moderation
- Assists in retaining infrastructure capacity
- Waste reduction and improved storm water management.

Sustainable development is a fundamental element of the planning framework and is part of all land use, development and environmental management decisions in Randwick City.

This section applies to all developments in Randwick City. The integration of sustainability measures into a building is the most effective and least costly when considered at the earliest stage of development.

This section of the DCP should be read in conjunction with:

- Part A – Introduction, Part B - General Controls; and
- Other sections of the DCP for specific development types, locations or sites, if relevant to the application.

1.1 Objectives

- To ensure that the design, construction and operation of development minimises adverse impacts on the natural and built environment.
- To reduce the use of resources, pollution and waste resulting from development activity.
- To improve the quality of life, health and well being of residents and workers.
- To promote the use of renewable energy sources and materials.
- To promote education on key elements of sustainable development and maintenance.

2 Building Materials and Finishes

Explanation

The materials used in construction, renovation and/or refurbishment can significantly enhance or impact on the environment and/or the health and well being of building occupants.

Objectives

- To maximise the selection and use of environmentally responsible and robust construction materials and finishes.
- To ensure healthy indoor environments.
- To encourage use of materials that are non-polluting in manufacture, use and disposal.

Controls

- i) Submit a schedule of materials with the DA that maximises the use of the following:
 - Materials that are durable with low maintenance requirements.
 - Materials with low embodied energy content.
 - Renewable materials.
 - Locally sourced products.
 - Salvaged or recycled materials.
 - Timber from plantation or sustainable managed re growth forests.
 - Low volatile organic compound (VOC) emitting materials.
 - Mechanical fittings instead of adhesives or glues.
 - Toxin free flooring.
- ii) Rainforest timbers or timbers cut from old growth forest must not be used.
- iii) Design for the adaptive re use of existing building facades, building structures and fittings where feasible.

Notes:

1. Examples of materials that should be minimised include:

- Chrome, cadmium, lead, mercury, cyanide and formaldehyde
- Materials, sealants and adhesives containing volatile organic compounds (VOCS)
- PVC
- Wood treated with Copper Chrome Arsenate (CCA)
- Solvents.

2. Examples of common building materials that can contain recycled content include: concrete, steel, insulation, composite timber products, carpet, underlay and many cladding materials. Consideration should be given to recycling and re using bricks within a development.

3. Renewable natural materials encouraged for interior finishes and furnishings include: bamboo, jute, sisal and, cork. Applicants should also consider using low VOC/plant based paints and plant based oils for floor boards.

4. PVC products produced in compliance with 'Best Practice Guidelines for PVC in the Built Environment' are supported.

5. The Forest Stewardship Council (FSC) is an international, independent, not-for-profit organisation that provides standards for responsible forest management and an accreditation system for sustainable forest products. Further information is available at www.fscaustralia.org

6. Good Environmental Choice Australia (GECA) is an independent, not-for-profit organisation that runs an internationally recognised Ecolabelling Program that certifies products in line with ISO 14024. Further information is available at www.geca.org.au

7. Further information on the use of environmentally friendly materials in the design, construction or renovation of homes is available at www.yourhome.gov.au

3 Energy and Water Efficiency

Explanation

Buildings that are energy and water efficient offer substantial benefits including savings on the running costs of heating, cooling, lighting and equipment, as well as reducing greenhouse gas emissions and potable water use.

The Building Code of Australia (BCA) Section J contains minimum energy efficiency standards.

In NSW energy and water efficiency measures for most residential development is covered by BASIX (the Building Sustainability Index), a web based tool aimed at reducing water usage and greenhouse gas emissions. The tool provides a framework to assess energy and potable water consumption against specific targets which vary according to location and building type. Proposals that meet the targets are issued with a BASIX certificate which must be submitted with a DA before it is processed.

For further information on the implementation of BASIX refer to www.basix.nsw.gov.au

These controls apply to buildings not affected by BASIX.

Objectives

- To promote energy and water efficiency in the design and operation of buildings.
- To minimise greenhouse gas emissions.
- To reduce the reliance on mechanical heating and cooling.
- To reduce energy and water bills and the whole of life cost of energy services.

Controls

3.1 Residential alterations and additions not affected by BASIX

- i) All new or replacement electrical appliances must achieve the highest available energy rating at the time of development.
- ii) All new or replacement domestic type gas hot water systems must be the most energy efficient option available at the time of development.
- iii) Electric hot water heating must not be installed.
- iv) All new or replacement products regulated for water efficiency under WELs must achieve the highest rating at the time of development (e.g. dishwashers and washing machines). WELs rated water saving devices must be installed including: 4 star dual flush toilets, 3 star shower heads, 4 star taps, and 3 star urinals.

Note:

BASIX does not apply to residential alterations and additions valued < \$50,000, swimming pools with a capacity of 40,000 litres or less or visitor accommodation.

3.2 Non- Residential Development (commercial premises, industrial and hotel and motel accommodation)

- i) Buildings are to be oriented and designed to achieve optimum solar access and natural ventilation where practical.
- ii) On site renewable energy systems (e.g. solar energy, heat pump technology and the like) are to be installed where practical and effectively integrated to complement the overall building design.
- iii) New or replacement solar and heat pump hotwater systems must be eligible for at least 24 Renewable Energy Certificates (RECs). All new or replacement domestic type gas hot water systems must be the most energy efficient option available at the time of development.
- iv) Electric hot water heating must not be installed.
- v) Heating and cooling systems are to be designed to target only those spaces which require heating or cooling at any one time, not the whole building.
- vi) All new or replacement air conditioners of domestic/residential scale are to be MEPs rated: minimum 4 star on one cycle and 3 star for reverse-cycle models.
- vii) All new or replacement electrical appliances must achieve the highest available energy rating at the time of development.
- viii) Energy efficient LED lighting, dimmers, motion detectors and/or automatic turn off switches are to be installed where appropriate. Lighting systems should be designed to target only those spaces which require lighting at any "off-peak" time, not the whole building.
- ix) Openable windows are to be installed in common areas to improve natural ventilation where appropriate (e.g. staff rooms, bathrooms etc).
- x) Internal walls and partitions are to be positioned to provide cross flow ventilation through the building.
- xi) All new or replacement products regulated for water efficiency under WELs must achieve the highest rating at the time of development (e.g. dishwashers and washing machines). WELs rated water saving devices must be installed including: 4 star dual flush toilets, 3 star shower heads, 4 star taps, and 3 star urinals.
- xii) New commercial premises and hotel and motel accommodation with a floor area of 1,000m² or more must achieve a minimum 4 star NABERS rating for the base building and undertake a Commitment Agreement. DAs must include an ESD Statement prepared by an accredited professional providing design evidence that the required NABERS rating can be achieved.

Notes:

1. Details on type and location of renewable energy systems and water heaters must be clearly marked on relevant plans and specifications. Details on energy and water efficient appliances must be provided with the DA.

2. Renewable Energy Certificates reduce the purchase cost of solar and heat pump water heaters. Further information is available at www.rec-registry.gov.au/home.shtml

3. The Federal Government's website www.energyrating.gov.au lists the Minimum Energy Performance Standards (MEPs) and Energy Rating Labels (ERLs) on a range of products and appliances including refrigerators, washing machines, televisions, air conditioners etc.

4. The Federal Water Efficiency Labelling and Standards Scheme (WELs) labels a range of products for water efficiency, helping households to save water and money. Further information is available at www.waterrating.gov.au

5. The National Australian Built Environment Rating System (NABERS) managed by the NSW Office of Environment and Heritage, measures the environmental performance of buildings and/or tenancies during their operation.

For the purposes of clause (xii), owners and/or occupiers are required to sign a NABERS – Energy Commitment Agreement to deliver the required rating and submit a copy to the Principal Certifier prior to the issue of a Construction Certificate. . Further information on the NABERS rating system including a list of accredited professionals to prepare the ESD Statement is available at (www.nabers.gov.au).

6. The Green Star rating system, managed by the Green Building Council of Australia, is a voluntary environmental rating system that evaluates the environmental design and construction of buildings. A 4 star rating signifies 'Best Practice' in environmentally sustainable design and/or construction.

Although Green Star certification is not mandated by this DCP, applicants are encouraged to use the Green Star tools to improve the environmental attributes of their proposed development. Further information including guidance on the certification process is available from (www.gbca.org.au)

4 Environmental Education

Education has a fundamental role in informing the community about the sustainable design features of a development and encouraging environmentally responsible practices that will help to achieve a more sustainable built environment.

The ability to make informed choices and ways of dealing with environmental problems can assist towards sustainable living.

Tips on sustainable household/office practices are available at www.savepower.nsw.gov.au and www.yourhome.gov.au;

Objectives

- To educate residents, workers and other building occupants on the sustainability features of development.
- To encourage the use and maintenance of water efficient and energy efficient design features of the development over time.

Controls

- i) Submit an Environmental Toolkit with all DAs for new residential and mixed use development containing 5 or more dwellings, and commercial and industrial development with a floor area of more than 1,000m².

The Environmental Toolkit must detail the sustainability features of the development and maintenance requirements including (but is not limited to these):

- Rainwater tanks.
 - Total water cycle management (including water conservation devices and stormwater treatment).
 - On site renewable energy systems (including information on connection options and wiring).
 - Lighting, energy and water efficient appliances, fixtures and fittings and associated ratings.
 - Composting.
 - Landscaping.
 - Transport (including access to public transport).
 - Any other site specific initiatives where relevant.
- ii) Maintenance instructions are to be attached to the particular feature where practical (e.g. rainwater tank, solar panel).
 - iii) The Environmental Toolkit may be complemented with information from Randwick City Council (such as the *Local Native Plants for Sydney's Eastern Suburbs* brochure) and/or other relevant material.
 - iv) The Environmental Toolkit is to be retained by building management with copies readily available to maintenance personnel, residents, tenancies and the like.