

7.1 ENERGY SMART, WATER WISE

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1 Introduction

1.1 Purpose of this Part

The purpose of this Part is to provide a strategic framework for achieving sustainable development throughout the City of Ryde.

This Part has controls and design objectives for most new building works, including home renovations through to larger residential, commercial, retail and industrial developments. All new developments are required to comply with a minimum energy performance standard. The energy performance of a structure will be assessed with reliable and consistent energy rating tools as outlined in the Plan.

At present, a rebate of up to \$1000 may be made available from the Federal Government to applicants who install a solar or heat pump water heater. Rebates for solar electric (photovoltaic) systems may also be available. For further up-to-date information regarding eligibility for rebates and Renewable Energy Certificates please contact the Energy Smart Information Centre on (02) 8303 0565 and the Office of the Renewable Energy Regulator on (02) 6274 2192.

The City of Ryde is a part of the Sustainable Energy Development Authority's (SEDA's) Energy Smart Homes and Energy Smart Business Programs.

Local councils have been called upon by the State and Federal Government to incorporate minimum standards for energy and water efficient practices.

The basis of energy efficiency is the reliance on natural forces such as the sun and the wind to provide a more cost effective and environmentally friendly energy source.

By carefully examining the existing site conditions at the beginning of the design stages, new developments and improvements to existing buildings can benefit from more comfortable and economic living and working environments. Environmental benefits, such as the reduction in the emission of greenhouse gases can also be achieved.

1.2 Objectives of this Part

The primary objectives of the Part are:

- To encourage the design of energy efficient buildings in the City of Ryde.
- To ensure site planning and building design optimise solar access to land and buildings.
- To decrease the total energy use in buildings through reductions in heat loss and energy consumption for the purposes of heating and cooling.

- To encourage the construction and use of buildings that reduce the current level of attributed greenhouse gas emissions and natural resource consumption.

1.3 Structure of this Part

This Part is divided into three sections.

Section 1 - Introduction provides an overview of the aims, objectives and the relationship of this Development Control Plan with other Council planning instruments.

Section 2 - Development Policies are divided into the following six categories:

- Alterations and Additions to a Dwelling
- New Dwelling House, Duplex Building, Villa Homes or SEPP 5 Developments
- Residential Flat Buildings (RFB) including those contained in Mixed RFB/ Commercial Developments
- Residential Conversion of Former Industrial Buildings
- New Shops, Industrial and Commercial Premises
- New and Major Alterations to Motels, Hotels, Backpacker Hostels and Boarding Houses
- All Other Developments (Schools, Hospital, etc.)

For each Development Policy category there are a number of 'objectives' that explain the specific aims of each category. The 'provisions' detail the manner the requirements that are to be met to ensure compliance and the 'concessions' outline any circumstances in which Council may consider variations from the House Energy Rating provisions. An application to Council for variations from the House Energy Rating provisions of this Plan must be addressed in the Statement of Environmental Effects.

Section 3 – Information Guide summarises the key provisions of the Plan and provides an explanation of the information that you may be required to submit.

If you require further information on issues such as building materials and techniques, a list of useful references has been provided in Schedule 1.

It is strongly suggested that you consult with your architect, builder or draftsman on these requirements prior to lodging an application to Council. You should also seek advice from Council officers in the formative stages of your proposal.

2 Development Policies

This section is divided into six categories. For each Development Policy category there are 'Objectives' that explains what compliance with the development policy seeks to achieve. The 'Provisions' detail the requirements that are to be met to achieve compliance. 'Concessions' outline any circumstances in which Council may consider variations to those provisions.

Depending on the Development Policy category, a development proposal will be required to meet differing levels of energy and water efficiency. Whilst the basic principles of energy and water efficiency can be applied to all development, the means by which it is implemented and monitored may differ.

2.1 Alterations and Additions to a Dwelling

Council has recognized that the densely built-up nature of Ryde's residential area makes it difficult for people undertaking smaller developments to satisfy the full range of energy and water efficiency principles. Therefore minor and major alterations and additions to dwelling houses (ie works affecting the existing floor area) will be required to meet the most basic and effective objectives.

Objectives

- Maximizing solar access to rooms and areas that are used most (living areas, family rooms and kitchens) through orientating rooms to the north, preferably within a range of 30° east and 20° west of true north. Note: the 30° east and 20° west range for 'north-facing' elements represents the limits to energy efficient orientation. Any further variance to these angles will have a significant impact on energy consumption or the comfort levels of a dwelling.
- Managing solar access to additional or replacement windows through the use of either vertical or horizontal shading devices such as pergolas, verandas, blinds or shutters to control the penetration of sunlight.
- Preserving solar access to north facing windows, solar panels and clothes drying facilities in adjacent residential development.
- Reducing household consumption of water, electricity and gas.

Controls

- a) Additional or replacement ceiling/roof and walls must be fitted with insulation. Ceiling/roof insulation must be rated R3.0 or equivalent and wall insulation must have an R1.5 or equivalent rating. Insulation of cavity brick walls is not required.
- b) Any new hot water system or any replacement hot water system must have a minimum 3.5 Star Greenhouse Score. The energy rating of the hot water system should be visible on the product at the place of purchase.
- c) Water Efficient Fixtures: where new or replacement fittings are required showerheads and toilet cisterns shall be at least AAA rated water efficient;

- bathroom and kitchen taps shall be fitted with aerators; and water closets shall have a dual flush cistern.
- d) An external yard space or sheltered well-ventilated space for clothes drying must be provided.

Information to be Submitted with Application

- Details of insulation on plan information.
- Details and location of hot water system on plan information.
- Details of outdoors clothes drying area on plan information.

2.2 New Dwelling Houses, Duplex Buildings, Urban housing or SEPP (Senior Living) Developments

By ensuring that simple and sensible objectives are a primary consideration at the start of the design process new dwellings will easily attain a high level of energy efficiency.

Objectives

- Ensuring each new dwelling reaches an efficient level of thermal performance, as determined by the National House Energy Rating Scheme (NatHERS).
- Maximizing solar access to rooms and areas that are used most (living areas, family rooms and kitchens) through orientating rooms to the north, preferably within a range of 30° east and 20° west of true north. Note: the 30° east and 20° west range for 'north-facing' elements represents the limits to energy efficient orientation. Any further variance to these angles will have a significant impact on energy consumption or comfort levels.
- Managing solar access to windows through the use of either vertical or horizontal shading devices such as pergolas, verandas, blinds or shutters to control the penetration of sunlight.
- Preserving solar access to north facing windows, solar panels and clothes drying facilities in adjacent residential development.
- Reducing household consumption of water, electricity and gas.

Controls

- a) Each dwelling must achieve a minimum 3.5 Star NatHERS energy rating of internal thermal comfort.
- b) Any hot water system/s installed as part of a development must achieve a minimum 3.5 Star Greenhouse Score. The energy rating of the hot water system should be visible on the product at the place of purchase.
- c) The ceiling/roof area and walls must be fitted with insulation. Ceiling/roof insulation must be rated R3.0 or equivalent and wall insulation must have an R1.5 or equivalent rating. Insulation of cavity brick walls is not required.

- d) Water Efficient Fixtures: showerheads and toilet cisterns shall be at least AAA rated water efficient; bathroom and kitchen taps shall have be fitted with aerators and water closets shall have a dual flush cistern.
- e) An external yard space or sheltered well-ventilated space for clothes drying must be provided.

Information to be submitted with Application

- NatHERS certification from an Accredited Assessor. Any information used to carry out the rating should be included on all sets of plans.
- Details and location of hot water system on plan information.
- Details of insulation on plan information.
- Site Analysis (including placement of clothesline).

Concessions

Where Council or an Accredited Assessor considers the case for a concession is justified, a development application may be provided with an exemption from part or all of the National House Energy Rating (NatHERS) requirement.

A concession will only be granted where the development application is shown to fall within one of the six scenarios listed below. Depending on the scenario, either Council or an Accredited Assessor will determine whether a concession will be granted. An application to Council for concession from the National House Energy Rating (NatHERS) must be submitted as a part of the Statement of Environmental Effects.

The six scenarios under which a concession may be granted are as follows:

- Conflicting Guidelines – any immediate or surrounding property conditions, development conditions, other Environmental Planning Instruments, or any other policy or guideline(s) that Council considers to over-ride or have priority over this Part (e.g. Environmental Heritage). **[determined by Council]**
- Block Overshadowing – such that at least 80% of the area of dwelling facades from North-East is overshadowed for at least 4 hours between 9am and 3pm between 22nd April and 22nd August, and the dwelling cannot be reasonably located on the block to improve solar access to glazing (e.g. adverse slope, existing or planned obstruction on immediate or surrounding property). **[determined by Accredited Assessor]**
- Block Topography or Geology – such that a dwelling on the allotment cannot have slab-on-ground construction for at least 50% of its ground or lowest floor/s (e.g. slope, drainage, and mine-subsidence). This condition may be established by the following and attached to the application: **[determined by Accredited Assessor]**
 - Written approval from Council staff with delegated authority; or
 - Written confirmation (e.g. geotechnical report) from a qualified professional.

- Adverse Impact on material amenity of adjoining land and buildings. **[determined by Council]**
- Insulation - where an Accredited Assessor considers that complete insulation of the ceiling/roof and walls adversely effects the total thermal performance of a dwelling. **[determined by Accredited Assessor]**
- Novel Construction – where an Accredited Assessor considers a dwelling to be of novel construction, that is, the design and/or construction features can not be appropriately modelled by current version of NatHERS (or equivalent), it will be referred to the HMB Expert Panel. If the panel deems that the panel is complying this will be noted on the HMB Assessor Certificate as 'Complying with Concessions'. **[determined by HMB Expert Panel]** For more information, please contact the HMB on 02 9385 5593 or www.hmb.net.au

2.3 Residential Flat Buildings (RFBs) including those contained in Mixed RFB/Commercial Developments Residential Conversion of Former Industrial Buildings

Due to the advantage of economies of scale, Residential Flat Buildings and the like can easily maximise the thermal performance, thermal comfort and energy efficiency of all dwellings.

Objectives

- Ensuring each new unit reaches an efficient level of thermal performance, as determined by the National House Energy Rating Scheme (NatHERS).
- Maximizing solar access to rooms and areas that are used most (living areas, family rooms and kitchens) through orientating rooms to the north, preferably within a range of 30° east and 20° west of true north. Note: the 30° east and 20° west range for 'north-facing' elements represents the limits to energy efficient orientation. Any further variance to these angles will have a significant impact on energy consumption or comfort levels.
- Managing solar access to windows through the use of either vertical or horizontal shading devices such as pergolas, verandas, blinds or shutters to control the penetration of sunlight.
- Preserving solar access to north facing windows, solar panels and clothes drying facilities in adjacent residential development.
- Reducing household consumption of water, electricity and gas.

Controls

- a) Each new dwelling must achieve a minimum 3.5 Star NatHERS energy rating of internal thermal comfort.
- b) Where a hot water system is of domestic/residential scale it must achieve a minimum 3.5 Star Greenhouse Score. The energy rating of the hot water system should be visible on the product at the place of purchase.

- c) Ceiling/roof and walls must be fitted with insulation. Ceiling/roof insulation must be rated R3.0 or equivalent and wall insulation must have an R1.5 or equivalent rating. Insulation of cavity brick walls is not required.
- d) Where electric clothes dryers are to be installed as a part of a development, each dryer must have a minimum Greenhouse Score of 3.5 (see Appendix 2).
- e) Water Efficient Fixtures: showerheads and toilet cisterns shall be at least AAA rated water efficient; bathroom and kitchen taps shall have be fitted with aerators; and water closets shall have a dual flush cistern
- f) An external yard space or sheltered well-ventilated space for clothes drying must be provided.

Information to be submitted with Application

- Certification from an Accredited NatHERS Assessor. Any information used to carry out the rating should be included on all sets of plans.
- Energy Efficiency Performance Report (for proposals with 13 or more units).
- Details and location of hot water system on plan information.
- Details of insulation on plan information.
- Site Analysis (including placement of clothesline).

Concessions

Where Council or an Accredited Assessor considers the case for a concession is justified, a development application may be provided with an exemption from part or all of the National House Energy Rating (NatHERS) requirement.

A concession will only be granted where the development application is shown to fall within one of the six scenarios listed below. Depending on the scenario, either Council or an Accredited Assessor will determine whether a concession will be granted. An application to Council for concession from the National House Energy Rating must be submitted as a part of the Statement of Environmental Effects.

The six scenarios under which a concession may be granted are as follows:

- Conflicting Guidelines – any immediate or surrounding property conditions, development conditions, other Environmental Planning Instruments, or any other policy or guideline(s) that Council considers to over-ride or have priority over this Development Control Plan (e.g. Environmental Heritage). **[determined by Council]**
- Block Overshadowing – such that at least 80% of the area of dwelling facades from North-East is overshadowed for at least 4 hours between 9am and 3pm between 22nd April and 22nd August, and the dwelling cannot be reasonably located on the block to improve solar access to glazing (e.g. adverse slope, existing or planned obstruction on immediate or surrounding property). **[determined by Accredited Assessor]**
- Block Topography or Geology – such that a dwelling on the allotment cannot have slab-on-ground construction for at least 50% of its ground or

lowest floor/s (e.g. slope, drainage, and mine-subsidence). This condition may be established by the following and attached to the application:

[determined by Accredited Assessor]

- Written approval from Council staff with delegated authority; or
- Written confirmation (e.g. geotechnical report) from a qualified professional.
- Adverse Impact on material amenity of adjoining land and buildings.
[determined by Council]
- Insulation - where an Accredited Assessor considers that complete insulation of the ceiling/roof and walls adversely effects the total thermal performance of a dwelling. **[determined by Accredited Assessor]**
- Novel Construction – where an Accredited Assessor considers a dwelling to be of novel construction, that is, the design and/or construction features can not be appropriately modelled by current version of NatHERS (or equivalent), it will be referred to the HMB Expert Panel. If the panel deems that the panel is complying this will be noted on the HMB Assessor Certificate as 'Complying with Concessions'. **[determined by HMB Expert Panel]** For more information, please contact the HMB on 02 9385 5593 or www.hmb.net.au

2.4 New Shops, Industrial and Commercial Premises (involving a gross floor area of greater than 1000m²)

The need to be resource efficient and environmentally friendly in the running of commercial, retail and industrial properties is increasingly recognised and prioritised, especially since adopting energy 'smart' measures can lead to a decrease in the operating costs of properties.

Objectives

- A base building that incorporates appropriate energy conservation measures.
- Reducing the consumption of water, electricity and gas for the purposes of lighting, heating and cooling.
- Substantial reductions in water consumption through the use of water efficient fixtures and water efficient landscaping.

Controls

- The total anticipated energy consumption for the base building is no greater than 450 Mega Joules/annum/metre square [MJ/am²] (commercial) and 900 Mega Joules/annum/metre square [MJ/am²] (retail).
- Where a hot water system is of domestic/residential scale it must achieve a minimum 3.5 Star Greenhouse Score. The energy rating of the hot water system should be visible on the product at the place of purchase.
- Water Efficient Fixtures: showerheads and toilet cisterns shall be at least AAA rated water efficient; bathroom and kitchen taps shall have be fitted with aerators; and water closets shall have a dual flush cistern.

- The use of electrical appliances such as dishwashers, refrigerators, freezers, and washing machines with a minimum Energy Star Rating of 3.5 Stars are encouraged.
- The installation of energy efficient lighting, motion detectors and dimmers are encouraged.

Information to be submitted with Application

- Energy Efficiency Performance Report. This report shall include evidence from a suitably qualified consultant to confirm compliance with the total anticipated energy consumption.
- Details of complying water heater type and location on plan information.
- Site Analysis.

2.5 New and Major Alterations to Motels, Hotels, Backpacker Hostels and Boarding Houses

Due to the advantage of economies of scale, larger developments can achieve a greater range of energy 'smart' measures. Careful consideration of simple and sensible objectives and design outcomes at an early stage of a development can create a comfortable environment whilst decreasing the operating costs of a building. (Major alterations is defined as works affecting more than 50% of the existing floor area.)

Objectives

- Maximizing solar access to rooms and areas that are used most (living areas, family rooms and kitchens) through orientating rooms to the north, preferably within a range of 30° east and 20° west of true north. Note: the 30° east and 20° west range for 'north-facing' elements represents the limits to energy efficient orientation. Any further variance to these angles will have a significant impact on energy consumption or comfort levels.
- Managing solar access to windows through the use of either vertical or horizontal shading devices such as pergolas, verandas, blinds or shutters to control the penetration of sunlight, ensuring optimal access and use of renewable energy sources.
- Substantial reductions in water consumption through the use of water efficient fixtures and water efficient landscaping.
- Installation of energy efficient appliances and lighting that minimises green house gas generation.

Controls

- a) Additional or replacement ceiling/roof and walls must be fitted with insulation. Ceiling/roof insulation must be rated R3.0 or equivalent and wall insulation must have an R1.5 or equivalent rating. Insulation of cavity walls is not required.

- b) Where a hot water system is new or a replacement system and is of domestic/residential scale it must achieve a minimum 3.5 Star Greenhouse Score. The energy rating of the hot water system should be visible on the product at the place of purchase.
- c) Water Efficient Fixtures: showerheads and toilet cisterns shall be at least AAA rated water efficient; bathroom and kitchen taps shall have be fitted with aerators; and water closets shall have a dual flush cistern.
- d) The use of electrical appliances such as dishwashers, refrigerators, freezers, and washing machines with a minimum Energy Star Rating of 3.5 Stars are encouraged.
- e) The installation of energy efficient lighting and low loss ballast's, motion detectors and dimmers are encouraged.

Information to be submitted with Application

- Details of insulation on plan information.
- Details of water heater type and location on plan information.

2.6 All Other Developments (School, Hospital, etc)

All other development may include developments such as schools, hospitals and universities. Due to varying nature of such development the range of energy and water efficiency requirements for each of these uses are not listed in this Plan. The development are however required to meet the minimum elements of energy and water efficiency principles.

Objectives

- Maximizing solar access to rooms and areas that are used most (living areas, family rooms and kitchens) through orientating rooms to the north, preferably within a range of 30° east and 20° west of true north. Note: the 30° east and 20° west range for 'north-facing' elements represents the limits to energy efficient orientation. Any further variance to these angles will have a significant impact on energy consumption or comfort levels.
- Managing solar access to windows through the use of either vertical or horizontal shading devices such as pergolas, verandas, blinds or shutters to control the penetration of sunlight.
- Preserving solar access to north facing windows, solar panels and clothes drying facilities in adjacent residential development.
- Reducing the consumption of water, electricity and gas.

Controls

- a) Additional or replacement ceiling/roof and walls must be fitted with insulation. Ceiling/roof insulation must be rated R3.0 or equivalent and wall insulation must have an R1.5 or equivalent rating. Insulation of cavity brick walls is not required.

- b) Where a hot water system is new or a replacement system and is of domestic/residential scale it must achieve a minimum 3.5 Star Greenhouse Score. The energy rating of the hot water system should be visible on the product at the place of purchase.
- c) Water Efficient Fixtures: showerheads and toilet cisterns shall be at least AAA rated water efficient; bathroom and kitchen taps shall have be fitted with aerators; and water closets shall have a dual flush cistern

Information to be submitted with Application

- Details of water heater type and location on plan information.
- Provide details of insulation on plans.

3 The Information Guide

The Information Guide provides both an overview of the type of information that is required to be submitted with a development application and a glossary of the terms used in the Plan. A reference table summarising how Council assesses the energy and water efficient factors of your development, as well as the information you need to submit with your application is also included.

3.1 The Assessment Summary Table

The Assessment Summary Table outlines the provisions contained within each Development Policy category that you must comply with and the information that you need to supply with your development application. More detailed explanations of the development controls are provided in Part 2 – Development Policies. An explanation of the main terms used in the summary table are provided in Section 3.2.

To use the Assessment Summary Table, choose your development type from the left-hand column and then refer across to the next three columns to find; Council's planning controls, the type of information you need to submit with your development application and any concession that may be applicable to your development application.

Your Development Type	What You Must Comply With	Information To Be Submitted With Your Application	Concessions
Alterations and Additions to a Dwelling House	<ul style="list-style-type: none"> • Insulation of additional or replacement ceiling/ roof and walls. Ceiling/roof insulation must have a minimum R3.0 rating. Wall insulation must have a minimum R1.5 rating. • New or replacement hot water system/s must achieve a minimum Greenhouse Score of 3.5 Stars. • Where new or replacement fittings are required: showerheads and toilet cisterns must be AAA rated water efficient; aerators on bathroom and kitchen taps and dual flush 	<ol style="list-style-type: none"> 1. Provide details of insulation on plans. 2. Provide details and location of hot water system/s on plans. 	

	<p>toilet cisterns.</p> <ul style="list-style-type: none"> External well ventilated area for clothes drying. 		
<p>New Dwelling Houses, Duplex Buildings, Villa Homes or SEPP 5 developments.</p>	<ul style="list-style-type: none"> A minimum 3.5 Star NatHERS energy rating of internal thermal comfort for each new dwelling. Insulation of roof and walls. Ceiling/roof insulation must have a minimum R3.0 rating. Wall insulation must have a minimum R1.5 rating. A hot water system with a minimum Greenhouse Score of 3.5 Stars for each new dwelling. All showerheads and toilet cisterns must be AAA rated water efficient, aerators on bathroom and kitchen taps with and dual flush toilet cisterns. External well ventilated area for clothes drying. 	<ol style="list-style-type: none"> Certification from an accredited NatHERS Assessor. Provide details of insulation on plans. Provide details and location of hot water system/s on plans. Site analysis. 	<ul style="list-style-type: none"> Conflict with other Council guidelines Block Overshadowing Block Topography or Geology Adverse Impact Novel Construction Insulation <p>(Please refer to page 8 of the DCP for a full explanation to assess whether you are able to apply for a concession. An application to Council for concession must be addressed in the Statement of Environmental Effects.)</p>
<p>Residential Flat Buildings (RFB) including those in mixed RFB/Commercial developments.</p> <p>Residential conversion of former Industrial buildings.</p>	<ul style="list-style-type: none"> A minimum 3.5 Star NatHERS energy rating of internal thermal comfort for each new dwelling. Insulation of ceiling/ roof and walls. Ceiling/roof insulation must have a minimum R3.0 rating. Wall insulation must have a 	<ol style="list-style-type: none"> Certification from an Accredited NatHERS Assessor. Energy Efficiency Performance Report (for proposals with 13 or more units). 	<ul style="list-style-type: none"> Conflict with other Council guidelines Block Overshadowing Block Topography or Geology Adverse Impact

	<p>minimum R1.5 rating.</p> <ul style="list-style-type: none"> • Where a hot water system is of domestic/residential scale it must achieve a minimum Greenhouse Score of 3.5 Stars. • Where clothes dryers are installed as a part of development, each dryer must have a minimum Greenhouse Score of 3.5 • All showerheads and toilet cisterns must be AAA rated water efficient, aerators installed on bathroom and kitchen taps with and dual flush toilet cisterns. External well ventilated area for clothes drying. 	<ol style="list-style-type: none"> 3. Provide details of insulation on plans. 4. Provide details and location of hot water system/s on plans. 5. Site analysis 	<ul style="list-style-type: none"> • Novel Construction • Insulation <p>(Please refer to page 10 of the DCP for a full explanation to assess whether you are able to apply for a concession. An application to Council for concession must be addressed in the Statement of Environmental Effects.)</p>
<p>New Commercial Premises, Shops and Industrial Buildings (involving a gross floor area of greater than 1000m²).</p>	<ul style="list-style-type: none"> • The total anticipated energy consumption be no greater than 450MJ/am² (commercial) and 900MJ/am² (retail). • Where a hot water system is of domestic/residential scale it must achieve a minimum Greenhouse Score of 3.5 Stars. • All showerheads and toilet cisterns must be AAA rated water efficient, aerators on bathroom and kitchen taps with and dual flush toilet cisterns. 	<ol style="list-style-type: none"> 1. Energy Efficient Performance Report. This report shall include evidence from a suitably qualified consultant to confirm compliance with the total anticipated energy consumption. 2. Provide details and location of hot water system/s on plans. 3. Site analysis. 	

<p>New And Major Alterations To Motels, Hotels, Backpackers Hostels and Boarding Houses.</p>	<ul style="list-style-type: none"> • Insulation of additional or replacement ceiling/ roof and walls. Ceiling/roof insulation must have a minimum R3.0 rating. Wall insulation must have a minimum R1.5 rating. • New or replacement hot water system/s which are of domestic/ residential scale must achieve a minimum Greenhouse Score of 3.5 Stars. • All showerheads and toilet cisterns must be AAA rated water efficient, aerators on bathroom and kitchen taps with and dual flush toilet cisterns. 	<ol style="list-style-type: none"> 1. Provide details of insulation on plans. 2. Provide details and location of hot water system/s on plans. 	
<p>All Other Development</p>	<ul style="list-style-type: none"> • Where a hot water system is of domestic/ residential scale it must achieve a minimum Greenhouse Score of 3.5 Stars • Insulation of additional or replacement ceiling/ roof and walls. Ceiling/roof insulation must have a minimum R3.0 rating. Wall insulation must have a minimum R1.5 rating. • All showerheads and toilet cisterns must be AAA rated water efficient, aerators on bathroom and kitchen taps with and dual flush toilet cisterns. 	<ol style="list-style-type: none"> 1. Provide details and location of hot water system/s on plans 2. Provide details of insulation on plans. 	

3.2 What type of information may be submitted?

Anticipated Energy Consumption Certification

An energy target has been incorporated as a guideline to provide a basis for the assessment of the annual estimated energy consumption of new commercial and retail buildings with gross floor areas exceeding 1000m². In line with current practice, the energy targets of 450 Mega Joules/annum/metre square (MJ/am²) for commercial buildings and 900 MJ/am² for retail buildings have been set.

A report from a suitably qualified energy consultant will be required to confirm that the above targets can be achieved.

Clothes Drying Areas

External yard space or sheltered well-ventilated spaces should be provided for clothes drying as an alternative to tumble dryers. Sunlight should be available to a clothes-drying area for at least four hours on June 21, to a plane one metre above the finished ground levels under the drying lines.

Concessions

Where site restriction are deemed to adversely affect a developments ability to comply with the House Energy Rating (NatHERS), a development application may be provided with an concession/exemption from part or all of the House Energy Rating requirement. Concessions will only be granted if the development application is shown to fall under one of the following six scenarios:

1. Conflicting Guidelines [determined by Council]
2. Block overshadowing [determined by Accredited Assessor]
3. Block topography or geology [determined by Accredited Assessor]
4. Adverse impact on material amenity of adjoining land [determined by Council]
5. Insulation [determined by Accredited Assessor]
6. Novel Construction [determined by House Energy Management Body Expert Panel]

Complete details of the six scenarios under which concessions may be granted are provided in Sections 2.2 and 2.3 of this Part. An applicant applying to Council for a concession must address the matters raised in Sections 2.2 or 2.3 of this Part.

An application to Council for a concession from the House Energy Rating must be submitted as a part of the Statement of Environmental Effects.

Electrical Appliances

The use of energy efficient appliances can easily minimise greenhouse gas generation. Where possible, electrical appliances such as a washing machines,

dishwashers or refrigerators that are installed as a part of a development should meet a minimum 3.5 Energy Star Rating.

Electric Clothes Dryers

Where electric clothes dryers are installed as a part of a new development, it is a requirement that the installed clothes dryer achieves a minimum Greenhouse Score of 3.5.

The Greenhouse Score of an electric clothes dryer is the equivalent of the Energy Star Rating. It gives a star rating between one and five stars, where the greater the number of stars the higher the efficiency of the appliance.

Schedule 2 provides an easy to read conversion table for use in determining the Greenhouse Score of an electric clothes dryer. The rating system provided in Schedule 2 may also be required if the electric clothes dryers installed do not have a dry-load of 4.0kg and over.

Energy Efficiency Performance Report

An Energy Efficiency Performance Report from an accredited consultant is required to demonstrate how the intent of the DCP has been met. Lists of accredited consultants are available from the Sustainable Energy Development Authority on 1300 138 638 or www.seda.nsw.gov.au.

The report should evaluate the performance of the development in relation to (but not necessary limited to) the following issues:

- The levels of solar access that have been achieved for north facing windows, solar hot water systems and clothes drying areas.
- How energy efficiency influences the design in general.
- Justification of hot water systems selection.
- Justification of clothes dryer selection.
- Overshadowing of adjoining properties.
- Total anticipated energy consumption.
- AAA water efficient fixtures.
- How demand for water and discharge of wastewater will be minimised.
- Details of the potential for the treatment and re-use of effluent or stormwater.

Energy Star Rating Label

The efficiency of a product can be measured using the ENERGY STAR, which should always be displayed on appliances at the point of sale. Energy Star is an international standard for energy-efficient electronic equipment. It was created by the US Environment Protection Agency (EPA) in 1992 and has now been adopted by several countries around the world, including Australia.

The Energy Star Rating label gives a star rating between one and six stars. The greater the number of stars the higher the efficiency. Total energy consumption in kWh per year under test conditions is also shown (in the red box). If two suitable appliances have the same star rating choose the one with the lower energy consumption.

Insulation

Insulation is a vital component of energy efficient dwelling design, helping to eliminate or drastically reduce the need for mechanical heating and cooling systems, as well as enhancing the efficiency of any such systems.

The R-value of insulation, which should be visible on the product, measures the resistance to heat flow. The higher the R-value the higher the level of insulating performance.

A minimum "R3.0" or equivalent insulation is required for roof and ceilings. R1.5 or equivalent insulation installed to any additional or replacement walls. Insulation of cavity walls is not required.

The details of insulation must be provided in any plan information or specification.

Greenhouse Score for Water Heaters

Where a new hot water system that is of residential scale is installed as part of any development it must achieve a minimum 3.5 Star Greenhouse Score. The star rating should be visible on the product at the place of purchase. For a comprehensive list of products and manufacturers' visit the Sustainable Energy Development Authority (SEDA) Energy Smart website (www.energysmart.com.au) or if you do not have access to the internet, contact SEDA on ph. 1300 138 638.

The Greenhouse Score Table provided below can be used as a guide to determine whether your hot water system meets the minimum 3.5 Star Greenhouse Score. The table gives a star rating between one and five stars. The greater the number of stars the greater the efficiency of the hot water system.

The details and location of the hot water system/s must be provided on any plan information or specification.

Greenhouse Score Table: typical Star rating for water heaters.

Water Heater Type Star Rating		
Solar-Gas Boost	Storage	5
Gas	Instantaneous	4
Gas-Storage	High Efficiency	4
Electric-Storage	Heat Pump	4
Gas-Storage	Low Efficiency	4
Solar-Electric Boost*	Continuous	4
Solar-Electric Boost*	OP2	4
Electric	Instantaneous	2
Electric	Continuous	1
Electric-Storage	Storage (OP1,OP2)	1

*Greater than 50% solar contribution

NatHERS Certification

The National House Energy Rating System (NatHERS) is a sophisticated thermal modeling tool designed for use by experienced Accredited Assessors to simulate and rank thermal performance of building types across a wide variety of climatic zones.

Accredited House Energy Rating Assessors conduct NatHERS assessments and are accredited by the House Energy Rating Management Body (HMB). The type of information that may be required by an Accredited Assessor is as follows:

- Drafted and dimensioned plans, sections and elevations of the dwelling/s including a site plan showing the orientation and neighboring structures and large trees at a scale of 1:100.
- Indication of wall, ceiling and floor insulation on the drawings and specification.
- Indication of internal and external window coverings or shading devices and floor coverings.
- Indication of colour of external walls and roofs.

A NatHERS certificate with a rating of at least 3.5 Stars is required to meet the building envelope requirements of this policy. To obtain a NatHERS certificate from an Accredited Assessor, contact the NSW House Energy Rating Management Body on (02) 9385 5593 or www.hmb.net.au

Site Analysis

Site analysis involves consideration of a range of environmental factors that will influence the site and the building/s to be developed on it. These factors may

well be both internal and external to the site. The complexity of the site analysis will depend on the size and complexity of the project.

For small alterations and single residential infill projects, a simple annotated plan/diagram showing key site characteristics including true solar north, and relationships to existing trees, buildings and streets may be all that is necessary. For larger sites a complete analysis including infrastructure will be required.

The following list gives an example of information that may be relevant to a site analysis:

- Topographical characteristics and the direction of true north.
- Site context, e.g. adjacent buildings or structures, relationship to the street or road.
- Placement of clotheslines and drying equipment.
- Existing causes of overshadowing, e.g. adjacent buildings or trees.
- Views and any prevailing winds.
- Shadow diagrams of the overshadowing of any adjacent properties solar hot water system created by the proposed development.
- The arrangement of new lots, and the footprint of buildings for each lot (for major residential subdivision proposals).
- Details of existing natural features including waterways, views, vegetation or other important features on or affecting the site

Water Efficient Fixtures

The water efficiency of a structure can be greatly improved by providing AAA rated fixtures, dual flush toilet cisterns and aerators on bathroom hand basins and kitchen sinks. The AAA rating is an Australian Standard that should be clearly visible on the product. The AAA rating operates by restricting the flow rates of different fixtures to the following:

- Showerheads – 9 litres or less per minute
- Basins – 6 litres or less per minute
- Kitchen sinks – 9 litres or less per minute.

Schedule 1 – Further Information

General Sustainable Building Guides

Your Home Your Future www.yourhome.gov.au

Mendler, S. and Odell, W. 2000 *The HOK Guidelines to Sustainable Design*. John Wiley & Sons.

Mobbs, M. 1998 *Sustainable House – Living for Our Future*. Choice Books.

Sustainable Building Materials and Products

Gertsakis, J (ed) 1999. *Ecospecifier – A guide to Sourcing Environmentally Preferable Materials*. A comprehensive database on sustainable building materials developed by Centre for Design at RMIT and Society for Responsible Design. See the website for a more up to date list <http://ecospecifier.rmit.edu.au/flash.htm>

Builder Database on PVC Alternatives. Greenpeace has launched a new international database that helps builders choose environmentally friendly alternatives to PVC products. The PVC Alternatives Database features more than 200 products from companies based in 17 countries that avoid the use of polyvinyl chlorides (PVCs), which have been linked to a range of health problems: <http://archive.greenpeace.org/toxics/pvcdatabase/>

Environment Australia. 2001 *Shop Smart Buy Green – A consumer's guide to saving money and reducing environmental impacts*. Provides guidelines on how to make the environmental based purchasing decisions. Available at Council.

NSW Waste Boards. *The Buy Recycled Guide*. 2nd Edition. Includes construction and building materials, household and industrial products and office supplies.

Energy

Energy Star – www.energystar.gov.au – provides a comprehensive description of energy star, and how to activate energy star on computers.

Energy ratings www.energyrating.gov.au/– includes a list of appliances, their star ratings and energy consumption.

Live Energy Smart www.energysmart.com.au/

Green Power www.greenpower.com.au/

Hollo, N. *Warm House, Cool House*. Choice Publications.

Sustainable Energy Development Authority (SEDA). Includes information on greenpower, grants for solar power and hot water, www.seda.nsw.gov.au

SEDA 1999. Energy Smart Allies Directory 2000. A comprehensive directory of suppliers of hot water systems, appliances, office equipment, insulation, heating and air conditioning systems and building management contractors. Available at Council.

Schedule 2 – Determining Greenhouse Score for Clothes Dryers

Wherever clothes dryers are installed in new developments, it is a requirement that the installed clothes dryer attracts a minimum Greenhouse Score of 3.5.

Energy Star Rating Label	Greenhouse Score
5.0	5.5
4.5	5.0
4.0	4.5
3.5	4.0
3.0	3.5
2.5	3.0
2.0	2.5
1.5	2.0
1.0	1.5

Clothes Dryers 4.0kg and over

Electric clothes dryers with dry-loads 4.0kg and over are currently given a Greenhouse Score.

To determine the Greenhouse Score of a clothes drier, check the star rating on its Energy Rating Label (typically found on the front of the clothes drier). Now match it with the Greenhouse Score in the Conversion table above. If it achieves a Greenhouse Score of 3.5 or greater, the clothes drier has passed.

These conversions are for electric systems only. The Greenhouse Score of gas-powered clothes dryers will generally pass the minimum requirements.

To determine the energy rating of electric clothes dryers, the Department of Primary Industry and Energy relies on AS 2442.