



EC3 GLOBAL

Environmental Sustainability Development (ESD) Analysis

**RISE BILAMBIL HEIGHTS WEST TWEED NORTHERN NSW AUSTRALIA
Major Project Application No.MP08-0234 – RISE Concept Plan**

Richard Moore 31 March 2009
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1. INTRODUCTION

Rise achieved **Green Globe** Certification using the EC3 Global Precinct Planning and Design Standard (**PPDS**) for Ecological Performance Improvements on large mixed use developments.

PPDS is an integrated tool which is the significant outcome from 5 years of research and testing at **The Centre for Sustainable Design - University of Queensland**. The work a federal funded initiative with the Sustainable Tourism Cooperative Research Centre (**STCRC**) and is undertaken in collaboration with EC3 Global (**Earthcheck™**) and several industry partners.

The integrated tool provides organisations with environmental design frameworks, energy and water models, social and economic guidelines and checklists. These enable the assessment of the development and its operations in terms of outcomes and overall enhancement of total ecological or 'triple bottom line' performance.



For RISE to achieve 'Industry Best Practice' level it gave environmental, social and economic commitments to establish a set of 'Environmentally Sustainable Development' (ESD) related goals to assist in aligning its development outcomes with ethical and socially responsible business principles.

These have been translated into the following 'ESD Analysis' which provides an overview of the general criteria, specific issues and major initiatives for this large mixed use precinct.

For a more detailed report see – R Moore, 2008: Rise Certification Case Study Report, EC3 Global Brisbane Qld Aus.

2. CORE PRECINCT INITIATIVES

ENVIRONMENT		
<i>Criteria</i>	<i>Specific Issue</i>	<i>Major Initiative</i>
Flora and Fauna	Noxious Species	All noxious or environmentally invasive species to be removed.
	Exotic Species	Existing horticultural plantings of exotic species will generally be removed, except where they are not environmentally invasive and have positive values in terms of fauna habitat or food, aesthetic significance or heritage/cultural conservation

		values.
	Landscape Planting	<p>Low total impermeable site coverage.</p> <p>Major regeneration plan for 63 hectares of environmentally valuable land.</p> <p>A vegetation plan involving some 100,000 new trees most of which are rare, threatened or native linked to a tree planting strategy throughout the precinct aimed at the mitigation of emissions creating a carbon neutral residential development.</p> <p>The landscape design and species selection to optimise year round microclimate moderation.</p> <p>Species requiring minimal watering once established have been selected.</p> <p>No synthetic fertilisers, herbicides or pesticides will be used.</p> <p>In ground water saving and natural fertilizer products will be used in all new landscape planting throughout the precinct.</p> <p>Only recycled content compost, soil conditioners and mulches made to Australian Standards AS4454, AS 3743, AS 4419 will be used.</p>
Animals	Native	<p>Reforestation and propagation of local native flora and fauna and habitat pathways to encourage wider biodiversity particularly native animal species.</p> <p>A 'Chemical Use' plan for construction and post-occupancy phases which dispenses with a need for the broad use of surface fertilizers on infrastructure and open space.</p> <p>A set biodegradable chemicals use target for cleaning chemicals, pesticides, and herbicides to be employed throughout the Precincts educational, resort, retail and commercial buildings.</p>
	Pets	<p>Numbers and types of domestic animals will be controlled under the requirements of the Precincts Community Title Scheme.</p> <p>All marketing material and individual strata titles will clearly indicate that domestic animals will be controlled by the CTS.</p>
Pests	Insects	<p>Buildings will be sealed and caulked and points of entry will be protected by adequate mechanical means from insect and pest entry.</p> <p>Properly fitting door seals will be provided on all exterior and exposed hallway doors.</p> <p>Implementation of an environmentally sensitive program regarding mosquito and insect control.</p>
Landform	Flooding and Drainage	<p>No change to the existing 'Low Hazard Storage' flooding classification of the site.</p> <p>No significant reduction in the flood storage capacity of the site.</p> <p>Excavations and cut and fill operations are limited to the minimum practicable with natural landforms being preserved</p>

		or reinstated to the greatest degree practicable.
Water	<p>Conservation</p> <p>Impervious Areas</p>	<p>Roof water will be captured and directed to rainwater tanks for re-supply into precinct non potable water systems.</p> <p>Rainwater tank overflow in storm events will be directed to gravel infiltration trenches and dams and then infiltrated into the groundwater system via discharge onto the proposed future landscaping and environmental restoration areas.</p> <p>No impervious areas will connect directly to the drainage system. All such areas will be drained via:</p> <ul style="list-style-type: none"> - <i>Rainwater tanks;</i> - <i>Grassed swales and buffer strips;</i> - <i>Porous driveways;</i> - <i>Gravel infiltration trenches; or Infiltration basins and dams.</i> <p>Gravel infiltration trenches and dams will fully contain the 'first flush' from all car parks and driveways.</p> <p>All drainage paths will be vegetated.</p>
	Water Quality	<p>Construction works to be guided by a comprehensive soil and water management plan.</p> <p>Discharge of stormwater from the precinct will not exceed the following 'pre-development' criteria:</p> <p><i>Total Suspended solids: 213kg/ha/yr</i></p> <p><i>Total Phosphorus: 0.53 kg/ha/yr</i></p> <p><i>Total Nitrogen: 3.59 kg/ha/yr</i></p> <p><i>Gross Pollutants: 0 kg/ha/yr</i></p>
	Ground Water	Ground water will not be extracted or used for any purpose.
	Sewage Treatment and Disposal	<p>No sewage will be stored, treated or disposed of on-site.</p> <p>All sewage will be piped via a new rising main to be constructed and linked to the <i>Tweed Shire's Banora Point Sewage Treatment Plant.</i></p>
	Potable Water	Potable water will be obtained from the existing town supply and augmented by the precinct accommodating two new 5 megalitre regional town water reservoirs.
	Water Reticulation	<p>The water reticulation system for the precinct will include both a potable town water system and a separate system for the reticulation of reclaimed water from the:</p> <ul style="list-style-type: none"> - <i>precinct stormwater retention system;</i> - <i>series of catchment dams located throughout the precinct.</i>
	Appliances	<p>Only the highest star rated appliances that are commercially available (preferably 5 star) will be installed.</p> <p>Only low flow (9l/min) shower heads and aerating taps will be installed.</p>

		AAA rated water fixtures to be used throughout the resort hotel and promoted in all precinct dwellings.
	Hot Water	Only energy efficient HWS systems will be used. It is intended to run a town gas system throughout the precinct (subject to authority approval) so that most / all HWS can be gas fired.
	Toilet Flushing	Rainwater tanks (boosted by town water if required) will be used for toilet flushing. Only dual Flush 6/3l toilets will be installed.
	Landscape Irrigation	Irrigation systems will be water efficient drip type with automatic timers and rain/soil moisture sensor shut offs. Town water will NOT be used for irrigation. Reclaimed stormwater from the Integrated Water Cycling Management system will be used.
Construction	All Buildings	Buildings on land sloping more than 23% will be of piered construction to 'sit lightly' on the land, minimising cut and fill and landform disturbance. Lightweight, prefabricated, modular building techniques will be used wherever practicable to minimise site disturbance.
	Works	Construction works will be guided by a comprehensive soil and water management plan Wherever removed, existing topsoil on site will be stockpiled and rehabilitated for reuse, except where so doing may cause weed reinfestation. Potential disturbance of acid sulphate soils is reduced by using screw piled foundations and minimising excavation depth for sewerage reticulation and other utility services, plus the terrain of the precinct dictates a very low risk of Acid Sulphate contamination.
Energy	Power	The precinct will be connected to the mains power grid, but will incorporate photovoltaic panels on roofs throughout the precinct where ever practical to do so.
	Lighting	Natural lighting by building design will be optimised. Mean lighting power density will not exceed 2.5W/m ² /100lux. All external lighting will have a maximum upward component of 2%.
	Comfort	Climatic comfort is provided by passive ventilation design and ceiling fans. Landscape and precinct design to optimise access to winter sun and summer shading All dwellings to be naturally cross ventilated and oriented to capture cooling south - easterly summer breezes. Air conditioning use will be kept to a minimum by smart design and building covenants.

		Wood fuelled heaters will not be permitted.
	Hot Water	Hot water will be supplied from energy efficient HWS. Heating will be provided by gas boosted solar panels or direct gas heating where possible.
	Cooking	Gas cooking appliances will be used (subject to gas supply authority approval).
	Appliances	Only the highest star rated appliances that are commercially available (preferably 5 star) will be installed.
	Cogeneration	Opportunities for the implementation of energy cogeneration will be examined and implemented where appropriate.
Resources	Materials	<p>Development of specific 'Precinct Architectural and Landscaping Guidelines' for residential building which offer advice on how to minimize environmental impacts.</p> <p>Construction materials and products will be selected based on balancing the following environmental criteria:</p> <ul style="list-style-type: none"> <i>Recyclability</i> <i>Sustainable sourcing</i> <i>Embodied energy</i> <i>Pollution from manufacturing</i> <i>Transport cost and local availability</i> <i>Durability and maintenance</i> <i>Toxicity</i> <i>Eco-labelling and certification</i> <i>Total life cycle energy use</i> <p>The proposed buildings adopt a light weight architectural style that minimises the quantity of building materials employed in their construction.</p>
	Fuel	Wood fuelled heaters will not be permitted.
	Noise	Sleeping areas of dwellings will be oriented away from roads and noise generating uses in other precincts.
	Demolition Waste	<p>At least 70% by weight of any demolition material will be re-used or recycled, subject to local recycling availability.</p> <p>An on-site recycling system will be implemented for demolition waste materials (timber for re-use, concrete and bricks for crushing and steel and copper for recycling)</p>
	Waste Collection	The precinct will be served by a common garbage system provided by council with separate bins to permit two way recycling of waste.
	'Green' Waste	All common property landscape green waste will be mulched

		for on-site re-use, unless contrary to an adopted Management Plan (e.g. noxious weed removal)
	Sewage	A low and high pressure pumping system will collect sewage from each suite in the precinct and pipe it to the council's Sewerage Treatment Plant.
SOCIAL		
Archaeology	Aboriginal	<p>If required, regular inspections will be undertaken by suitably qualified personnel during any land surface disturbance.</p> <p>If any aboriginal relics or sites are encountered, then the project archaeologist and the NSW DECC will be immediately informed. Work in the vicinity of the relic or site will cease until appropriate management strategies are developed and required permits obtained.</p>
	Character	Low scale village character consistent with unique hilltop setting
	Quality of Life	Specific 'Quality of Life' Guidelines developed for the precinct which recognises the developments socio-economic goals.
	Movement	The precinct will be provided with secure dedicated bicycle and electrical buggy pathways and parking stands located in safe, highly visible locations.
	Traffic Safety and Air Quality	Appropriate speed limits will apply throughout the precinct.
	Crime and Public Safety	<p>All public areas have been designed, and will be detailed and lit in response to the recommendation of "Crime Prevention through Environmental Design" published by the NSW Police.</p> <p>The project will include on site security as part of the Community Title Scheme</p>
	Noise and Visitor Comfort	Sleeping rooms in the precincts resort suites will be oriented away, and/or will be screened from sources of noise such as car parks, plant and outdoor dining/activity in other precincts.
Education	Programmes	<p>An induction program will be provided for all staff explaining the ecological sensitivities of the site, the environmental sustainability initiatives of the precinct and how to do their job sensitively</p> <p>Future owners and visitors will be provided with a 'Precinct Information Pack' explaining:</p> <ul style="list-style-type: none"> ✓ <i>The ecological sensitivities of the site.</i> ✓ <i>Implementing the environmental sustainability initiatives of the precinct.</i> ✓ <i>Bushfire Evacuation Plan.</i> <p>Additional copies of the handbook will be publicly available from the precinct manager.</p>

		Controls over resident and guest access and use of environmental areas will be embedded in the CTS By Laws.
ECONOMIC		
Investment	Inward Income	In addition to being able to holiday in their dwellings, the owners of individual dwellings will generate income from tourist and permanent leasing through the centre management. Part of this revenue will be payable to the body corporate to fund ongoing management of the public domain, community facilities and bushland management.
	Area Income	<p>Guests of the precincts hotel will augment patronage of planned businesses in the Town Centre.</p> <p>Income generation for the area will flow from the precincts fixed community and visitors in the form of rates, use of services and patronage of regional facilities.</p>
Employment	Opportunities	<p>Local employment opportunities will be created in both the construction and ongoing management stages, particularly as managed accommodation will be provided in the hotel, leading to employment in a range of servicing capacities.</p> <p>The other commercial components of the precinct, including the planned Arts Community stage, will also generate solid employment.</p>
Ecological	Performance	The environmental sustainability of the precinct will set a new benchmark for environmental performance in the Tweed Shire, and reinforce the marketing of RISE as an 'ecological' lifestyle community and destination.
Community	Tenure and Ownership	The proposed Community Title and Strata Title system of tenure will establish a body corporate (or similar) that can equitably administer the levying and expenditure of funds required to manage common property, administer precinct facilities, provide security, and implement ongoing environmental management programs in the conservation precinct.
Funding	Revenue Generation	Revenue generated by the Community Title Scheme levies within the precinct will contribute to the long term management of the rehabilitated environmental areas and costs associated with the public domain and community facilities.