WELLES THOMAS PLAZA
CHATSWOOD NSW

ESD REPORT

MERITON GROUP

Client

PTW ARCHITECTS

Architect

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Sustainability Consultants

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SECTION 1 INTRODUCTION

EMF Griffiths have been engaged by Meriton as ESD consultants for this project, Welles Thomas Plaza, Chatswood.

ESD, or environmentally sustainable design, has been described as:

'....using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased'

Buildings consume 32% of the world's resources, including 12% of the world's fresh water and up to 40% of the world's energy. Buildings also produce 40% of waste going to landfill and 40% of air emissions.

This report sets out to describe the ESD initiatives adopted for this project and to demonstrate how the Client's commitment to Environmentally Sustainable Design is to be followed through from the initial design phase to project completion and the building's ongoing operation.

1.1 BUILDING DESCRIPTION

The proposed mixed use development is bounded by Thomas Street, Albert Lane and Albert Avenue in Chatswood NSW and incorporates titled land on Thomas Street Lot A DP 381223, Lot B DP 381223, Lot 13 DP 2983 and on Albert Street DP2983 for Lots 23 to 30.

The proposed development comprises twin towers, with 5 basement car parking levels, an active ground floor comprising external areas, retail spaces, food premises, and building lobbies, and a child centre on level 1.

The East tower, Building 1, comprises 29 storeys of residential apartments and the West tower, Building 2, comprises 28 storeys of serviced apartments.

The building project that this plan has been prepared for is the construction of a mixed use development consisting of the following:

Activity	Level
East Tower Retail	Ground Level and Level 1
East Tower Residential Common Area	Level 1
East Tower Residential	Levels 2 – 30
West Tower Retail	Ground Level
West Tower Serviced Apartments Back of House	Mezzanine, Upper Basement 1
East Tower Residential Common Area	Ground Level
West Tower Serviced Apartments	Levels 1 – 28
Common Carpark	Basement 1 – Basement 5

1.2 STRATEGY

An integrated approach to ESD, whereby all design team members are aware of the incremental effect of their actions on the overall project, is by far the most effective path to achieving a strong ESD outcome. Active systems can be implemented to enhance a building's performance, but unless the fundamentals have been addressed, the optimum outcome cannot be assured.

The key indicators employed to track the environmental performance of the project as are follows:

1. The residential component of the development will be designed to comply with BASIX requirements;
2. The serviced apartments and retail components of the development will be designed to the BCA Section J 'Energy Efficiency' compliance; and
3. The development will meet the Willoughby City Council's Sustainable Principles set in Willoughby DCP.

These separate elements represent stages in the ESD strategy which build on each other and ensure that the end result encompasses all components of ESD, introduced and implemented at the appropriate time and carried through from the inception of the project to delivery and operation.

SECTION 2 ESD INITIATIVES

The ESD initiatives included in the building design have been categorised under the following headings:

- Passive design;
- Emissions;
- Energy / Greenhouse gas abatement;
- Indoor environmental quality and thermal comfort;
- Landscaping and biodiversity;
- Sustainable building materials;
- Waste;
- Water conservation;
- Noise; and
- Management.

Sustainability Scorecard shows how the project meets the Willoughby City Council's sustainable development requirements, refer to Attachment A.

2.1 PASSIVE DESIGN

Being a mixed use development consisting of multi-unit residential and serviced apartments, there is little opportunity for alteration in orientation to provide optimal orientation for all apartments. However the characteristics of the four facades shall be addressed via appropriate glazing, shading and façade treatment.

The extent of proposed glazing and shading devices will take advantage of solar heat gain at winter time to maintain thermal comfort while blocking unwanted summer heat gain. Hence the need for artificial heating and cooling can be reduced.

The design of the proposed building provides good levels of daylight for building users due to the extent of glazing and high window head height.

2.2 EMISSIONS

The ESD initiatives in emission reduction include:

- Minimising light pollution by appropriate design of external lighting requirements.
- Insulant ODP – Insulation will be specified and selected where no ozone depletion substances are used in the manufacture and composition of insulating materials.
- Refrigerant ODP – Air conditioning units will use refrigerants with zero (0) ozone depletion potential (ODP).
- Provision of refrigerant leak detection system for major chiller plant (where located within an enclosed room) to minimise ODP and GWP emissions.
- Secure bike racks are available in all basement levels and the site is in close proximity to Chatswood Transport Interchange which will encourage the use of public transport.

2.3 ENERGY / GREENHOUSE GAS ABATEMENT

The ESD initiatives in energy include:

- Building fabric, glazing and building sealing of retail premises and serviced apartments to comply with deemed to satisfy requirements of BCA section J.
- BASIX Certificate – The residential tower will comply with BASIX energy requirements by reducing energy use by at least 20%.
- Provision of energy efficient appliances e.g. dishwasher, clothes washer and dryer in the apartments to improve the BASIX energy score.
- Residential air conditioning will be reverse cycle water cooled package units providing energy efficient heating and cooling to the apartments.

- Solar access or cross ventilation for clothes drying – Solar access will be assessed and allowed for where available for clothes drying. This will reduced the energy used by clothes dryers substantially, and thus, reduce the greenhouse gas emissions from providing the energy.

- Installation of energy efficient lighting and fixtures.

- The car park ventilation system design will be based on an engineered solution to minimize the volume of supply and exhaust air required. The reduced air flow allows the fan size and motors to be reduced providing significant energy savings. CO monitors will be installed in the car park and interlocked with the ventilation system to keep fan operation speeds and operation times to a minimum saving energy.

2.4 INDOOR ENVIRONMENTAL QUALITY AND THERMAL COMFORT

Indoor environmental quality and thermal comfort initiatives proposed for the development include the following:

- Daylighting is optimised to provide the residents with a sense of connection to the outside world and also to save on lighting energy used.

- Artificial lighting will be designed to comply with the requirements of BCA Section J6 and lighting loads will not exceed the BCA Section J requirements.

- Lighting to residential and serviced apartments will be fluorescent or LED type light fixtures in accordance with the BASIX Certificate.

- High frequency electronic ballasts – The use of high frequency electronic ballasts in commercial areas reduce the unfavourable symptoms to which some people suffer (e.g. eyestrain and headaches).

- BASIX Thermal Comfort – The residential units will be designed to comply with the BASIX's thermal comfort section requirements. This will result in less energy required in the use of heating and cooling of the residential apartments.

- All apartments will have opening windows and balcony doors to allow natural ventilation.

- Low VOC interiors paints – Internal paint with zero or low Volatile Organic Compounds will be specified.

- Low VOC flooring – flooring with zero or low Volatile Organic Compounds will be specified.

- Low Formaldehyde - All composite wood products specified to be of the low formaldehyde type.

2.5 LANDSCAPING AND BIODIVERSITY

The proposed ESD initiatives for biodiversity include:

- 70% locally indigenous plant species – Landscape design of the development will have at least 70% locally indigenous plant species. This will reduce the impact of the building development on the local environment ecology and enhance the development through the re-introduction of indigenous species.

2.6 SUSTAINABLE BUILDING MATERIALS

The proposed ESD initiatives for sustainable building materials include:

- Materials chosen for the building shall be durable and low maintenance materials.

- The volume of concrete used in construction is reduced by the use of oversized aggregate and/or aggregate is replaced with industrial waste product.

- Steel reinforcing used in concrete and steel beams will contain ≥50% post consumer recycled product.

- The design team will investigate options for providing building materials, fittings and finishes which are recycled, made from recycled materials or have been certified as 'environmentally friendly' by a recognised third party certification scheme such as Good Environmental Choice of Australia (GECA).

- Every attempt will be made to minimise the embodied energy of the project.

2.7 WASTE

The proposed ESD initiatives for reduction of material waste include:

- The project is aiming to reuse or recycle a minimum 85% of construction waste. Construction waste will be recycled for reuse.
- Basement storage areas for recycling waste to encourage recycling.
- Waste chute and waste storage area for recycling waste on every residential floor.

2.8 WATER CONSERVATION

The ESD initiatives in water conservation include:

- BASIX Certificate – The residential tower will be compliant with BASIX water requirements to achieve 42% saving in potable water use.
- Residential and serviced apartments' fittings and fixtures will provide the following ratings:
    - 4 star WELS rated water closets;
    - 6 star WELS rated bathroom tapware;
    - 5 star WELS rated kitchen tapware; and
    - 3 star WELS rated showers.
- Water efficient appliances in the apartments e.g. dishwasher and clothes washer to improve the BASIX water saving score.
- Drip feed irrigation – The landscaped area will have drip feed irrigation with timed switching.
- Rainwater will be collected to a rainwater tank located in the basement and used for common area toilet flushing, filling of pool water and landscape irrigation.
- Provision of a chlorine elimination system for the pool and spa backwash facility to enable recycling for landscape irrigation purposes.
- Fire systems will be designed to save water during test mode. Test water from the system will drain into a tank for reuse for basement and common area toilet flushing, filling of pool water and landscape irrigation.
- Water meters will be installed for all major water uses in both buildings.

2.9 NOISE

The ESD initiatives for noise reduction include:

- Selection and location of equipment plant – Mechanical plant will be selected, acoustically treated and located in plant rooms and areas less sensitive to noise.
- The external and internal wall materials will be selected and constructed to comply with relevant standards.

2.10 MANAGEMENT

The ESD initiatives in management include:

- Owners Corporation Manual – An Owners Corporation Manual will be provided prior to occupation. The Manual will describe ESD initiatives proposed for the development including energy saving measures, water saving measures, waste management, etc.

SECTION 3 SUMMARY

Within the constraints of the site, the proposal makes considerable effort to conserve energy consumption and improve the environmental and ecological value of the site.

From the assessment the project has clear objectives to achieve and maintain environmental sustainability through compliance with BASIX and BCA, inclusion of passive building design features, energy efficiency initiatives for services and management and construction methods to minimise waste.

The following individual components of environmentally sustainable design are being addressed to ensure the best possible ESD outcome for Welles Thomas Plaza:

- The extent of proposed glazing and shading devices will take advantage of solar heat gain at winter time to maintain thermal comfort while blocking unwanted summer heat gain to reduce the need for artificial heating and cooling;
- Provision of energy efficiency lighting, air-conditioning and hot water systems to conserve energy;
- Water conservation by proving water efficient fittings and fixtures;
- Monitoring of water usage to detect inconsistencies and faults immediately;
- Alternative water supplies in place of potable water will be investigated;
- Recycle/reuse waste from construction to minimise the embodied energy of the development and to minimise waste;
- Good access to public transport;
- Provision of ample bicycle parking for building occupants;
- Improved indoor air quality to enhance the comfort and well being of building occupants;
- Use of sustainable materials where possible; and
- Emission reduction to minimise environmental damage.

By employing an integrated strategy from the initial design stages of the proposed development the building owners are demonstrating their commitment to the principles of ESD and ensuring they are mandated through the use of their building into the future.

APPENDIX A

SUSTAINABILITY SCORECARD

SUSTAINABILITY SCORECARD

Sustainability Measures	Mandatory	Maximum Credit	Compliance	Commitment
Atmosphere				
No use of ozone depleting products and materials		2	2	ODP of thermal insulation and HVAC refrigerants are required to be 0.
No products and materials manufactured using ozone depleting substances		2	2	Ozone-depleting substances are avoided in manufacture and composition of thermal insulation.
Secure Bicycle Storage for all units (numbers in accordance with DCP) - DCP Guidance: 1 bicycle locker per 10 units, plus 1 bicycle rail/rack per 12 units for residential development.	Mandatory		✓	Secure bicycle storage spaces are provided on all basement levels. Total number of lockers/rails/racks to be confirmed.
Development of a Transport Access Guide (submitted with Owner's Corporation Manual)		2	2	Transport Access Guide to be included with draft Owners Corporation Manual.
Energy, water conservation and thermal comfort				
Submission of a BASIX certificate	Mandatory		✓	Refer to BASIX Certificates issued on 29 October 2009
Minimum 3 hours solar access for outdoor clothes drying on June 22nd or common cross-ventilated clothes drying area	Mandatory		✓	Refer to shadow diagrams for solar access.
Biodiversity				
70% locally indigenous plant species (of planted garden area)		2	2	Landscape design of the development will have at least 70% locally indigenous plant species, refer to landscape architect's documentation.
Plants for food (vegetables, citrus trees, fruit trees)		2	0	None provided for the common areas but tenants can provide plants for food on their balconies.
Building materials				
Physical barrier systems for termite protection (instead of chemical treatments)		4	TBC	Termite protection system is to be confirmed.
Use of recycled or plantation		2	2	Recycled materials such as industrial waste products used instead of aggregate, post consumer recycled steel etc., used when possible.
Use of no or low VOC interior paints in living and bedroom areas		2	2	Low VOC paints will be used in internal applications.
Waste				
Minimum of 85% recycling of construction waste	Mandatory		✓	The project is aiming to recycle at least 85% of construction waste. Waste Contractor to provide waste dockets. Refer to Waste Management Plan for details of initiatives.
Minimum of 75% recycling/composting of greenwaste from landscaping		2	TBC	To be confirmed if greenwaste will be recycled or composted.
Waste cupboard or storage area for recycling and garbage on every floor	Mandatory (units over 3 storeys)		✓	Refer to architectural drawings for the location of garbage rooms on every level.
Space provided for waste and recycling service area	Mandatory		✓	Refer to architectural drawing A-0111 Basement 1 Plan for the location of general and recycling waste storage.

Sustainability Measures	Mandatory	Maximum Credit	Compliance	Commitment
Noise				
Appliance and equipment selected and located to minimise noise impacts		1	1	Appliances and equipment shall be chosen and located to minimise noise impact.
Noise mitigation measures incorporated into dwelling on main and arterial roads or adjacent to rail corridors		4	TBC	Acoustic engineer to provide advice on noise mitigation measures.
Management				
Provision of a draft Owners Corporation manual is required prior to occupation. Refer o Clause 14 of "Information to submit with a Multi Unit Residential Development application" Attachment 3.	Mandatory		✓	Owners Corporation Manual will be provided prior to occupation.
TOTAL		**25**	**13**	

A minimum credit score of 10 is required for medium density residential development. A credit score of 10 is in addition to meeting the mandatory requirements.

A minimum credit score of 12 is required for high density residential development. A credit score of 12 is in addition to meeting the mandatory requirements.