

## **Sustainable Design Initiatives and Planning Principles**

**87 Bay Street, Glebe**

**M&T Management Pty Ltd**

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**Prepared for**  
M&T Management  
Pty Ltd

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## 1. Executive summary

This report has been prepared to outline the Sustainable Design initiatives and Planning principles to be established for the proposed Bay Street Development located in Glebe, Sydney. This report has been prepared on behalf of M&T Management Pty Ltd and forms part of the planning submission documents.

### Project Specific Sustainable Requirements

The Planning approach for this development has been to prepare a project specific planning document to inform the design and meet the City of Sydney expectations. The development will apply best practice to Sustainable Development through:

- o Sustainable Design considerations that demonstrates how the project will incorporate ESD principles in the design, construction and ongoing operation phases of the development
- o Assessment of the project against industry best practice standards for sustainable design
- o Description of how the project will incorporate the principles of ecologically sustainable development in the design, construction and ongoing operation of the project; and
- o Description of the measures to be implemented to minimise consumption of resources, especially energy and water

### Project Sustainable Commitment

The Design team for the proposed Bay Street development is committed to minimise the impact on the environment through implementation of sustainable design initiatives within their discipline.

Below are some of the key Sustainable initiatives identified and adopted by the project;

- o Environmental Urban Planning framework
- o Sustainable Building design initiatives
- o Energy Initiatives
- o Water Initiatives
- o Waste minimisation
- o Material selection
- o Transport and accessibility
- o Greening Landscape

The proposed development is looking at adopting sustainable design initiatives derived from both International and National environmental scheme in achieving the following environmental rating benchmarks. For further details on the proposed initiatives we refer to Section 4.3 of this report.

## 2. Introduction

This report has been prepared to outline the Sustainable Design initiatives and Planning principles to be established for the proposed Bay Street Development located in Glebe, Sydney. The project includes the establishment of new mixed use development of multi-residential dwelling buildings with retail and commercial facilities. This report has been prepared on behalf of M&T Management and forms part of the planning submission documents.

### 2.1 Project Description

The development includes the demolition of existing site buildings and establishment of new mixed use development which includes a number of multi-residential buildings with retail and commercial facilities. The proposed development will include through site links that will add connection to the surrounding residential developments and local retail outlets along with communal external spaces that can be utilised by the site population.

The proposed development is looking at implementing environmental and social integration by developing effective design initiatives which will add value to the existing district and community.

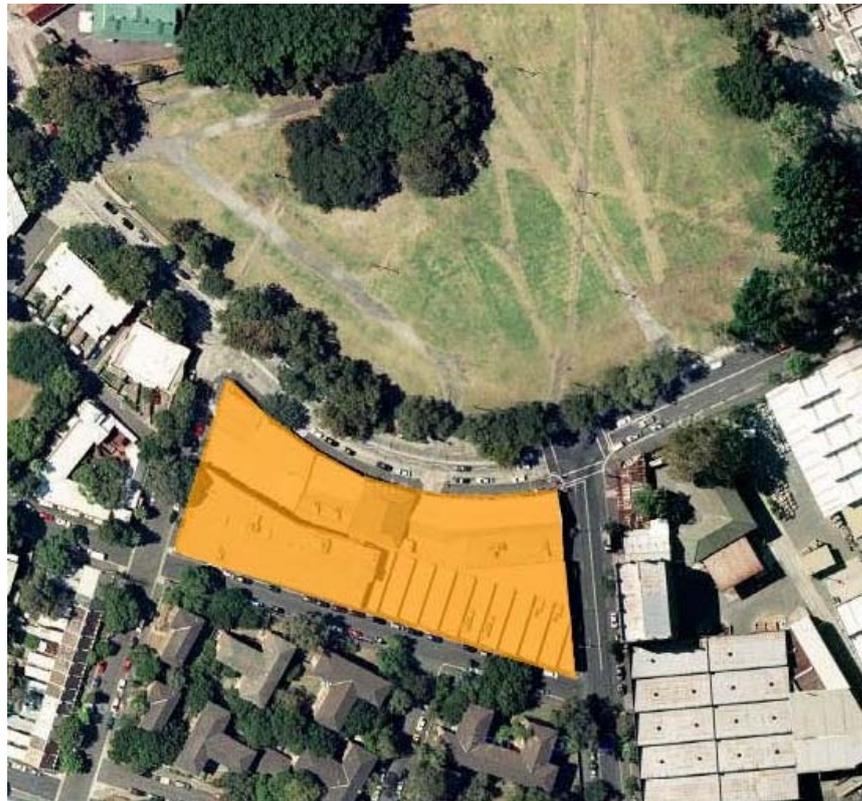


Figure 1: Proposed development location and site area

## 2.2 Ecological Sustainable Development

The Design team for the proposed Bay Street development is committed to minimise the impact on the environment through implementation of sustainable design initiatives for the proposed development. The objective of undertaking these initiatives is to build an environmentally friendly development which will integrate with the existing surroundings and community to promote best practices for sustainable living.

The approach is to identify site specific ESD opportunities in relation to the urban landscape of the proposed site and derived sustainable design initiatives for the proposed development during the design, construction and operation phase. This approach is aim at improving the overall environmental performance of the development throughout its lifecycle and promotes ecological sustainable living within the community.

The following initiatives have been considered and described in the later sections of the report.

- o Environmental Urban Planning framework
- o Sustainable Building design initiatives
- o Energy Initiatives
- o Water Initiatives
- o Waste minimisation
- o Material selection
- o Transport and accessibility
- o Greening Landscape

## 2.3 Reference Documents

This report and assessment has been undertaken in reference to following reference documents.

**Table 1: Reference Documents**

Description	Version	Reference
BASIX	2010	BASIX
Green Star Multi Unit Residential Tool	Version 1	GBCA
NABERS Office	Version 8	NABERS
NABERS Home	Version 1	
NSW Benchmark	2006	DEUS
AIRAH Technical Hand Book	Edition 4	AIRAH

### 3. Environmental Urban Planning Framework

#### 3.1 Commitment

An Environmental Urban Planning framework has been derived to include the following design considerations for the proposed development which looked into both the environmental and social aspect of integrating the proposed development into the existing community.

##### **Environmental Goals and Objectives**

The project is to adopt ecological sustainable design practices to minimise the carbon footprint of the development during the design, construction and operation phase. The design team is to incorporate 'good practice' design guidelines to minimise energy, water and material usage to improve the environmental performance of the development. This is also aim to create awareness within the community in relation to sustainable living.

##### **Integration and rejuvenation plan**

The project aims to rejuvenate existing site and value-add to the community through implementation of a holistic sustainable urban development plan for the proposed development. The plan also considers the environmental contributions of the proposed development to the community which includes the use of onsite renewable energy, water conservation measures, waste minimisation, effective transportation system and greening of the landscape.

### 3.2 Environmental Targets and Benchmarks

A review of the market planning environmental targets and benchmarks has been undertaken to derive appropriate planning commitment standards for Bay Street, these relate to BASIX, NABERS, Green Star and LEED (Leadership in Energy and Environmental Design).

The current environmental performance benchmarks for Residential and Office developments in NSW are as follows:

Market Tool	Applicable to	Environmental Measure	Project Target
BASIX Water	Residential	40% reduction against NSW Benchmark consumptions	<b>Target = 45% reduction</b>
BASIX Energy	Residential	30% reduction against NSW Benchmark consumption	<b>Target = 40% reduction</b>
NABERS Energy	Commercial, Retail and Residential	Benchmarks [2.5 stars NABERS ratings]  NABERS Office Energy: 313 kg CO <sub>2</sub> per m <sup>2</sup>  NABERS Homes Energy: 6,631 kg CO <sub>2</sub> per annum  NABERS Retail Energy: 70 kg CO <sub>2</sub> per m <sup>2</sup>	<b>Under review for the project</b>  <b>Possible target = 4 star NABERS Energy for Offices</b>
NABERS Water	Commercial, Retail and Residential	Benchmark [2.5 stars NABERS ratings]  NABERS Office Water: 0.7 kL per m <sup>2</sup>  NABERS Homes Water: 180 kL per annum  NABERS Retail Water: 0.86 kL per m <sup>2</sup>	<b>Under review for the project</b>
Green Star	Whole development	Green Star Office Design v3 tool  Green Star Communities Framework  NABERS Energy 4 stars for Commercial Offices	<b>Under review for the project</b>  <b>Planning objectives in Communities tool is being considered for integration</b>
LEED	Whole development	Leadership in Energy and Environmental Design (LEED) Neighbourhoods tool	<b>Under review for the project</b>  <b>Site planning initiatives for layouts are being considered for integration</b>

The below graph indicates the NSW water consumption benchmarks that have been derived for the project based on the proposed targets for improvement against the baseline consumption data for households. The NSW Water consumption household consumption has been taken as 75kL per capita as per Australian Bureau of Statistics 2008-2009 household water consumption.

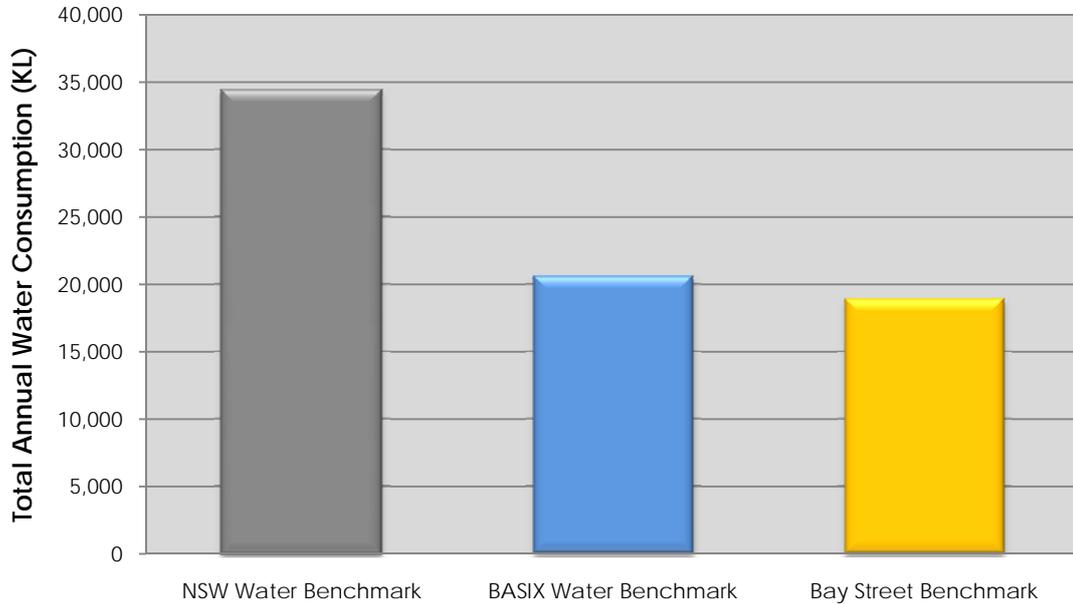


Figure 2: Water consumption benchmarks for households in NSW 2008-2009 with benchmark comparison to BASIX targets and the Bay Street development.

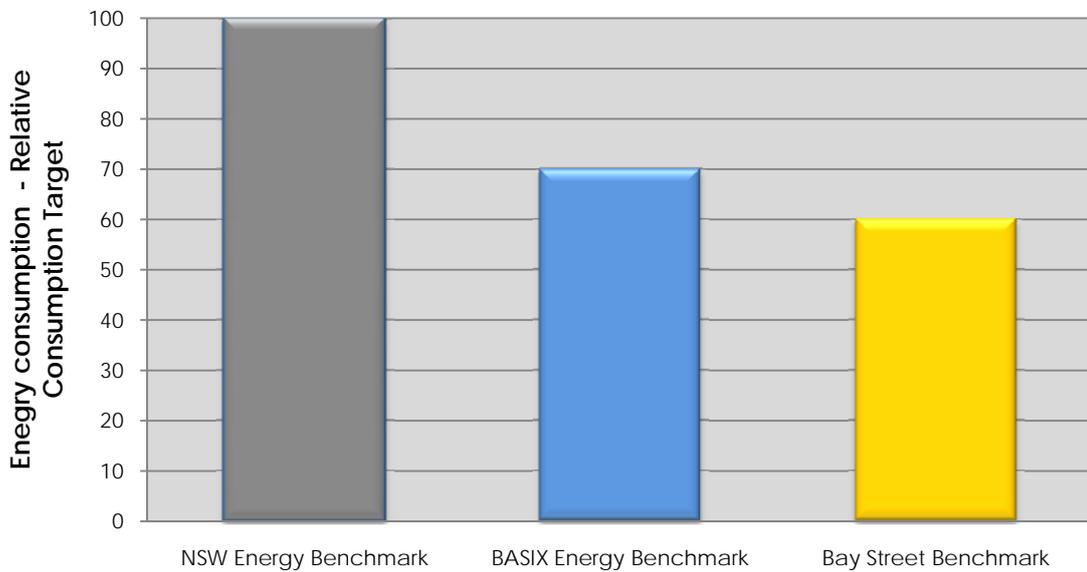


Figure 3: Energy consumption target improvements for Bay Street households relative to baseline benchmarks comparison NSW BASIX and average consumption levels.

## 4. Voluntary Planning Agreement

This Section of the report has been prepared to supplement the proposed Voluntary Planning Agreement that is to be established for the 87 Bay Street Multi-Residential development, Glebe NSW. This section defines the sustainability objectives to be implemented as part of the baseline planning instrument for the design of this multi-residential precinct development. The targets set relate to the proposed building and site-wide planning goals. Since the major component of the proposed development will be Residential the initiatives that form part of the minimum planning agreement focus primarily on residential design standards.

### 4.1 Current Planning Provisions

The current planning provisions that apply in NSW include 40% and 30% improvement in Water and Energy consumption respectively. The development is proposing to improve on these values which consider the elements of the site context and current best practice market tools.

### 4.2 Bay Street Objectives

#### Baseline

The Bay Street development has set the following Sustainable Design objectives to achieve as part of the minimum planning provisions:

- 5% improvement above BASIX Water benchmark for the overall site  
**BASIX Water target = 45%**
- 10% improvement above BASIX Energy benchmark for the overall site  
**BASIX Energy target = 40%**
- Thermal comfort heat and cooling demand within allowable limits for Sydney East climate for each dwelling type
- Site landscaping that provides social interactions and site thoroughfares
- Providing alternative transportation options for occupants
- 4 star NABERS Energy rating is achieved in design for the Commercial facilities

#### Aspirations

There is an aspiration that one (1 off) of the buildings achieves a third party certified building rating and this is to be defined during the design development stage of the project. Currently the tools that are being explored for adoption in Green Star Multi-Residential v1 tool administered by the Green Building Council of Australia, NABERS Homes and LEED (Leadership in Energy and Environmental Design) NC 2009.

### 4.3 Minimum Planning Initiatives

At the site and dwelling level the above targets are to be met with through the adoption of the following design initiatives which will form the basis of the environmental planning provisions to apply to the development:

**BASIX Water Target 45%**

#### Central Water Systems

Initiatives	Description
Rainwater tanks	Rainwater tanks and harvesting systems to be provided such that all site landscaping can be served by the tanks and are to be sized to serve proposed landscape types
Water Fixtures	Common fixtures types to meet the following provisions: Showers: 3 WELS rating, consumption $\leq 9$ L/ min Basins: 3 WELS rating Kitchens: 3 WELS rating Toilets: 3 WELS rating
Hot water	Solar hot water with gas booster and storage tanks to be provided. No hot water reticulation circuits.
Pools / Spas	No pools or spas are proposed, however if the planning provisions change to include these facilities then pool covers are to be provided to reduce water loss
Central Laundry Facilities	No central washing facilities to be provided. All washing facilities are to be provided within each dwelling

#### Dwelling Water Efficiency

Rainwater tanks	Rainwater tanks and harvesting systems to be provided to serve dwelling landscaping that may be provided at ground level
Water Fixtures	Dwelling fixtures types to meet the following provisions: Showers: 3 WELS rating, consumption $> 6$ L/ min but less than 7.5 L/min Basins: 4 WELS rating Kitchens: 3 WELS rating Toilets: 4 WELS rating
Hot water	All dwellings to be served by the central hot water systems
Equipment	All clothes washers to meet minimum 3 WELS rating or better where provided by the developer All dishwasher to meet minimum 3 WELS rating or better where provided by the developer
Pools / Spas	No pools or spas are proposed to the dwellings

**BASIX Energy Target 40%****Central Energy Systems**

Heating & Cooling Systems	No central heating or cooling systems are proposed to the residential development. Dwellings are to be provided with dedicated units
Lifts	Lift motors to achieve efficiency of geared traction V V A C motor or equivalent  Lighting to lift cars to be metal halide fittings or better. All lighting is to be linked to lift call buttons
Building Management System	A central building management system is to be provided to the development. This may be provided at a building or overall development level to monitor energy consumption of the relevant central services
Hot water	Central hot water systems to include Solar hot water with Gas booster systems.  A dedicated area on each building roof is to be included for the solar hot water systems with a minimum of 20m <sup>2</sup> provided per 50 dwellings.  All external and internal hot water pipes are to be lagged within insulation to minimum of R0.60 (25mm thk insulation) to reduce energy losses in operation
Pools / Spas	No pools or spas are proposed, however if the planning provisions change to include these facilities then pool covers are to be provided to improve energy efficiency and solar heating systems are to apply
Central Laundry Facilities	No central washing facilities are to be provided. Laundry facilities are to be provided within each dwelling
Facilities	No common are drying facilities are nominated
Car park	Underground car parks are to be provided. Provision for supply and exhaust with carbon monoxide controls and VSD fan controls is to be made  All lighting to car park areas to be florescent fittings linked to motion sensors
Plant rooms	Plant rooms to be exhausted only unless additional supply is required to meet Australian Standards. All exhaust systems for these rooms are to be linked to light controls.  All lighting fixtures to these rooms are to be fluorescents or equivalent efficiency. Fittings are to include manual on/off switching or motion sensors to commonly accessed rooms such as garbage rooms
Hallways	All hallways throughout the building are to be ventilated with supply air only or equivalent efficiency system, no conditioning is to be provided. All supply air systems to be linked to the BMS for the buildings.  All hallways are to be fitted with halogen or more efficient light fittings that operate from motion sensors
Ground Lobbies	All entry lobbies are to be conditioned which are linked to the BMS such that operate during peak periods only  All lobby areas are to be fitted with halogen or more efficient light fitting that operate from motion sensors

**Dwelling Energy Efficiency**

Kitchens	Kitchens to be fitted with exhaust fans that are manually operated and not ducted
Bathrooms	Bathrooms to be fitted with exhaust fans not ducted that are linked with the light switches
Laundry Facilities	Laundries are to be fitted either with exhaust fans that are manually operated and not ducted OR naturally ventilated
Facilities	All dwellings to be provided with a clothes line within an internal area for clothes drying or an equivalent system that provides alternative to using clothes dryers
Heating & Cooling Systems	All living / dining rooms spaces to be fitted with ceiling fans and 1 phase air conditioning system with minimum 2.5 star Energy star rating or equivalent All bedrooms to be fitted with ceiling fans and no air conditioning systems
Lighting	Fluorescent and Led lighting is to incorporated into dwelling living rooms
Equipment	All clothes washers to meet minimum 2.5 Energy star rating or better where provided by the developer All dishwasher to meet minimum 2.5 Energy star rating or better where provided by the developer All clothes dryers to meet minimum 2.5 Energy star rating or better where provided by the developer
Pools / Spas	No pools or spas are proposed to the dwellings
Natural / cross ventilation	The utilisation of natural ventilation via effective cross ventilation is to be met for minimum 20% of all dwellings

**Commercial Office Energy Efficiency**

Lighting	Maximum lighting density of 8W/m <sup>2</sup> is to be achieved on average generally for all office spaces All lighting is to be zoned at a maximum of 100m <sup>2</sup> Lighting design is to incorporate daylight sensors along perimeter zones that enable ballasts to operate between 10-100% output when natural daylight levels are sufficient
Building fabric	Facade design is to incorporate performance glazing to mitigate heat gains or losses through the facade. External building constructions are to exceed minimum R2.80 requirements as defined in the Building Code of Australia for external walls and R3.20 for roof structure.
Natural daylighting	Building form and the facade is to be designed to promote natural daylighting of internal spaces to reduce the reliance on artificial lighting. Window sizes are to balance heat gains and
Central Services	Proposed central services are to incorporate timers, sensors and logic controls that enable efficient operation of HVAC systems in operation. These controls are to be linked to the Building Management Systems to enable Facilities Management to identify any issues with the systems in operation.
Meters	Non-utility energy meters are to be fitted to all major equipment which include equipment that exceeds 100kVA. Meters are to be Class 1 or better meters and current Transformers.

**Commercial Office Water Efficiency**

Water Fixtures	Common fixtures types to meet the following provisions or better: Showers: 3 WELS rating, consumption $\leq 9$ L/ min Basins: 4 WELS rating Kitchens: 4 WELS rating Toilets: 4 WELS rating Urinals: 6 WELS rating or better
Meters	Water meters are to be installed for the following potable water uses as a minimum: Bathroom water consumption Recycled water systems Fire systems Irrigation systems Meters are to be linked to Building Management System
Building Management System	A building management system is to be installed to monitor water and energy usage within the building. System is to include alarms when system is not operating as intended and alert Facilities Management
Water Based Heat Rejection Systems	All Water Based Heat rejection systems are to be installed with a Legionella Risk Management plan has been prepared in accordance with AS/NZS3666.2:2002 or AS/NZS 3666.3:2000 and has been included in the O&M manual provided to the building owner

**Overall Environmental Site Initiatives**

Small Car Parking	Parking is to be provided on site for small vehicles such as scooters and motorcycles with a minimum of 1 space per 1000m <sup>2</sup> Commercial / Retail GFA
Cyclist Parking	Cyclist parking is to be provided either on grade or within basement car park to the following allowances: Commercial: 1 bike rack per 400m <sup>2</sup> GFA Residential: 1 bike rack per 500m <sup>2</sup> GFA Retail: 1 bike rack per 200m <sup>2</sup> GFA  Cyclist support facilities to be provided for visitors / staff commercial parking to the following allowances: Commercial: 1 shower per 10 bike racks Commercial: 1 locker per bike rack
Landscaping	Minimum 80% of landscaping species is to be indigenous

Low Volatile Organic Compound Finishes	<p>All paints and carpets to be used within the buildings are to be have a low Volatile Organic Compound limit as per the following limits</p> <p>Carpets:</p> <p>Total VOC limit: 0.5mg/m2 per hour  4-PC (4-Phenylcyclohexene): 0.05mg.m2 per hour</p> <p>Paints</p> <table border="1"> <thead> <tr> <th>Product Type</th> <th>VOC Limit (g/L of ready to use product)</th> </tr> </thead> <tbody> <tr> <td>Walls and ceilings - interior gloss</td> <td>75</td> </tr> <tr> <td>Walls and ceiling – interior semi gloss</td> <td>16</td> </tr> <tr> <td>Walls and ceiling – interior low sheen</td> <td>16</td> </tr> <tr> <td>Walls and ceiling – interior flat washable</td> <td>16</td> </tr> <tr> <td>Ceilings – interior flat</td> <td>14</td> </tr> <tr> <td>Trim – gloss, semi gloss, satin, varnishes and woodstains</td> <td>75</td> </tr> <tr> <td>Timber and binding primers</td> <td>30</td> </tr> <tr> <td>Latex primer for galvanized iron and zincalume</td> <td>60</td> </tr> <tr> <td>Interior latex undercoat</td> <td>65</td> </tr> <tr> <td>Interior sealer</td> <td>65</td> </tr> <tr> <td>One and two pack performance coatings for floors</td> <td>140</td> </tr> <tr> <td>Any solvent-based coatings whos purpose is not covered in table</td> <td>200</td> </tr> </tbody> </table>	Product Type	VOC Limit (g/L of ready to use product)	Walls and ceilings - interior gloss	75	Walls and ceiling – interior semi gloss	16	Walls and ceiling – interior low sheen	16	Walls and ceiling – interior flat washable	16	Ceilings – interior flat	14	Trim – gloss, semi gloss, satin, varnishes and woodstains	75	Timber and binding primers	30	Latex primer for galvanized iron and zincalume	60	Interior latex undercoat	65	Interior sealer	65	One and two pack performance coatings for floors	140	Any solvent-based coatings whos purpose is not covered in table	200
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Rooftop gardens	Vegetated roof top garden is to be provided for at least one building within the site for the community to enjoy.																										
Site links	At through site link and piazza is to be provided to create a liveable` environment for the community																										
Planning and Layouts	Site urban structures are to promote self shading from adjacent forms																										
External spaces	Individual external / balconies spaces are to be provided to a minimum of 40% of apartments																										

#### 4.4 Aspiration Planning Initiatives

The following lists some of the sustainable design initiatives that may become future minimum planning provisions during the design development stage of the project:

##### Energy Initiatives

Natural / cross ventilation	The utilisation of natural ventilation via effective cross ventilation is to be met for minimum 70% of all dwellings
Dwelling Energy meters	Energy smart metering can be provided to each dwelling to allow occupants to record and track all of their energy consumption in real time. By tracking energy consumption this will encourage occupants to reduce usage
Energy metering	All major plant and equipment installed to the buildings that exceed load of 25kVA is to be provided with sub-meters that relay energy consumption to the building management system. This will allow building manager to monitor usage and identify if excess usage has occurred
Dwelling Equipment	All clothes washers to have minimum 3.5 Energy star rating or better where provided by the developer All dishwasher to have minimum 3.5 Energy star rating or better where provided by the developer All clothes dryers to have minimum 3.5 Energy star rating or better where provided by the developer
Heating & Cooling Systems	All living / dining rooms spaces to be fitted with ceiling fans and 1 phase air conditioning system with minimum 3.5 star Energy star rating or equivalent All bedrooms to be fitted with ceiling fans and no air conditioning systems
Commercial Energy Efficiency	4.5 star NABERS Energy rating is achieved in design and operation for the commercial facilities

##### Water Efficiency

Water Fixtures	All water fixtures within the development to meet the following provisions: Showers: 3 WELS rating, consumption 6 L/ min but less than 7.5 L/min Basins: 5 WELS rating Kitchens: 4 WELS rating Toilets: 4 WELS rating
Blackwater treatment	On site greywater/blackwater treatment system is provided which captures all wastewater produced from the residential, retail and commercial facilities for reuse
Stormwater management	On site retention systems are provided which capture and treat stormwater to ANZECC guidelines

##### Overall Environmental Site Initiatives

External spaces	Individual external spaces are to be provided to a minimum of 60% of apartments
External areas	All public walkways and areas around the buildings are landscaped with mature trees that improve microclimate