ENERGY CONCEPTS GROUP

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ABSA
Association of Building Sustainability Assessors
Member # 21154

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PLANS AND DOCUMENTS
referred to in the PDA APPROVAL
-7 SEP 2015
MEDQ

4231 – 153 Campbell Street, Herston - Stage 1
SUSTAINABLE DESIGN INITIATIVES
SHORT FORM REPORT
24 April 2015, Revision E

1.0 Sustainable design values

1.1 Aim

The aim of this report is to provide a short non-technical review of some of the environmentally sustainable design initiatives that are currently proposed within the development.

1.2 Development

The development referred to within this report is the proposed 14 storey short-term residential accommodation building with 4 levels of parking at 153 Campbell Street, Bowen Hills, as shown on the Cottee Parker Architectural Statement document pages 1 through to 32 inclusive, dated April 2015.

1.3 Limitation

This report is limited to providing a short form non-technical review of some of the environmentally sustainable design initiatives that are currently proposed within the development. It does not provide the technical details of how these initiatives are achieved.

1.4 Summary

This report addresses the following categories:

- Defines sustainable design values
- Integrated collaborative process
- Design philosophy
- Natural ecosystem
- Appropriate use of land
- Integrated water management
- Energy use
- Appropriate Building Materials / Reuse
- Manage Waste
- Cost efficiency
- Healthy indoor environment
- Green transport
- Adaptable spaces
- Safe and diverse community
- Informed owners and managers

2.0 Sustainable design Values

The development aims to achieve an appropriate balance of sustainable principles and cost-effectiveness by adopting the following sustainable design values:

- Provide a framework for the design, construction and operation of the development to achieve appropriate sustainable outcomes.
- Ensure the natural ecosystem is not adversely affected by the construction or operation of the development.

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- Use appropriate building materials to reduce the impact of construction and operation of the development.
- Create healthy indoor environment for the developments users and occupants.
- Encourage the users and occupants of the development to capitalise on green transport options.
- Ensure the development contributes to a safe and diverse community by integrating the CPTED strategies and by providing adaptable spaces.

3.0 Integrated collaborative process

A professional Sustainable Development Consultant will be engaged to assist the project team with the integration of the Sustainable Development principles and processes.

The Sustainable Development Consultant (SDC) will be engaged to provide sustainability advice throughout every part of the design and construction phases. The Sustainable Development Professional scope of work will include:

- Ensuring the commitments given in this report is included in the design. This will involve the SDC attending the design meetings and approving the design documentation for construction. The design meeting minutes will include a record of the sustainability process and decisions.
- Form 16's will be required from the installation contractors indicating the commitments given in this report have been included in the installation.
- The SDC will assist the design team in exploring further sustainability options and integrating them into the design where appropriate.
- The SDC will assist the design team in undertaking the life cycle analysis.

4.0 Design philosophy

The design of the project implements the design values by:

- Minimising the negative impact of the development on the local environment.
- Minimising the negative impact of the development on the users.
- Minimising the developments negative impact on global warming

The balanced, contemporary design utilizes a variety of materials to capitalise on the lifestyle & climate of Brisbane. The design makes the most of Brisbane's sub-tropical climate, creating a relaxed lifestyle for the residents.

The project enhances the liveability through the design, community engagement and sustainability components.

5.0 Natural ecosystem

5.1 Ecological Impact

The development site is ideal for the proposed style of development as the site has limited ecological value to the natural ecosystem due to:

- It being located in a built up urban area.
- It does not have significant agricultural value.
- It is not near ecologically sensitive habitat.
- The site does not contain endangered or threatened species.

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5.2 Environmental Impact

The development site is ideal for the proposed style of development as the sites existing conditions facilitate the construction of a mixed use development with a lower environmental impact that a similar development constructed on a greenfield site.

By developing a multilevel facility, the development will be able to obtain the greatest environmental benefit and minimise the negative impact. This is achieved by optimising the design solutions and providing common facilities and amenities to be shared between users.

5.3 Refrigerant ODP

To reduce the potential long-term damage to the Earth's stratospheric ozone layer through the accidental release of refrigerants to the atmosphere the development will utilise refrigerants that have minimal ozone depletion potential.

5.4 Insulant ODP

To reduce the potential long-term damage to the Earth's stratospheric ozone layer through the release of ozone depleting substances to the atmosphere the development will utilise thermal insulation that does not use ozone depleting substances in either its manufacture or composition.

6.0 Appropriate use of land

The impact of the development on the natural ecosystem is minimised as the site has already been fully developed thus eliminating the need for further land clearing.

The site is ideally suited to a residential development as it is located with convenient pedestrian access to public transport, the Royal Brisbane Hospital and associated facilities.

7.0 Integrated water management

7.1 Occupant Amenity Potable Water Efficiency

The development will be provided with the following features to reduce the demand of the potable water consumption of building occupants.

- Leak detection facility.
- High efficiency fixtures and fittings.
- Minimal delay in the availability of hot water.

The development will be provided with a leak detection device fitted to the incoming town water service to ensure that leaks in the reticulation system do not go undetected.

Water efficiency will be achieved by the use of 4 star WELS rated fixtures and tap ware.

- Toilets will be dual flush 4.5 litre / 3 litre.
- Shower roses will be 9 litres per minute.
- Sink taps will be 6 litres per minute.
- Basin taps will be 6 litres per minute.

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The expected average delay for hot water delivery to each outlet will be less than 5 seconds which will reduce the water that is wasted by waiting for the hot water to arrive when compared to a typical multi use building central hot water system.

7.2 Water Meters

Metering of the water used by each tenant within the development will be provided to highlight differences in water use and allow the water consumption to be actively managed.

Details of how to read and interpret the meters will be included in the building manager's guide.

The building managers will be able to access details of the water usage including the following information:

- The total amount used during that period.
- The average daily amount used during that period.
- The total amount used over the previous three periods.
- The total amount used over the same period during the previous year.

7.3 Sewer

The use of 4 star WELS rated fixtures and tap ware will have a significant impact in reducing the volume of sewerage discharging from the site.

7.4 Hot Water

The development will incorporate a central hot water system consisting of solar heat pump technology with electric boost of the return.

Hot water will be reticulated to each apartment and metered at point of use.

8.0 Energy use

8.1 Electrical Metering

The development will purchase electricity as a single bulk supply allowing the operator to capitalise on bulk purchase savings and increase the likely hood of the development using certified green power.

The building users guide will include a focus on the operator purchasing certified green electricity to further reduce the greenhouse gas impact of the development.

Electrical consumption is the biggest contributor of greenhouse gas emissions arising from buildings (approximately 89% according to the Australian Greenhouse Office). To successfully manage energy consumption it is important that sufficient data is available to building managers to allow them to monitor consumption and compare historically. As such Sub-metering will be provided to allow the building managers to fine-tune the operation and to minimise consumption.

Details of how to read and interpret the meters will be included in the building users guide.

The building users will be able to access details of the electricity usage detailing the following information:

- The total amount of energy used during that period.
- The average daily amount of energy used during that period.
- The total amount of energy used over the previous three periods.
- The total amount of energy used over the same period during the previous year.

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- The total amount of greenhouse gas emissions generated during that period.
- The average daily amount of greenhouse gas emissions generated during that period.
- The total amount of greenhouse gas emissions generated over the previous three periods.
- The total amount of greenhouse gas emissions generated over the same period during the previous year.

All sub-meters will be smart meters to allow time of use demand charges to encourage shifting energy use to the non-peak times.

8.2 Lighting Efficiency

To reduce the environmental impact of the building, the average lighting will be provided with efficiency better than 5.0 W/m². To ensure the lighting is not over-designed consuming excess raw materials and excess energy the lighting will be designed to meet the minimum appropriate requirements without excess spill or over lighting.

A traditional 80m^2 unit with 20% fluorescent iron core lighting and 80% incandescent lighting will have an efficiency of 15.2w/m^2.

4 x 24w = 96w
12 x 60w = 720w
4 x 100w = 400w

Total 1,216w

1,216w / 80m^2 = 15.2w/m m^2

This is approximately 26,400Kwh over 15 years

The project will utilise 100% LED and electronic ballasted fluorescent lighting or better in the residences with an efficiency of 4.4w/m^2.

10 x 20w = 200w
10 x 15w = 150w

Total 350w

350w / 80m^2 = 4.4w/m m^2

This is approximately 7,700Kwh over 15 years for each apartment. With a difference of 18,700Kwh per apartment over 15 years the total energy saving across the 170 apartments will be in the order of 3,179,000Kwh over the 15 years.

All common area lighting will have an average efficiency better than 5 w/m m^2.

8.3 Lighting Control

To provide greater flexibility for light switching, making it easier to light only occupied areas and thus reduce the environmental impact, the building lighting it will be provided as follows:

- All non-public individual or enclosed spaces have individual switches;
- Switching function that is clear and easily accessible by building occupants and managers.
- The apartments will be provided with a room access control system that disables the apartment lighting when the room is not occupied.

8.4 Air-conditioning

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The development will incorporate a central chilled water system consisting of a high efficiency air cooled chiller with associated pumps and pipework.

The pipe work network will connect to a fan coil unit in each apartment for provision of cooled air. Heating will be provided via an electric element per fan coil unit.

Occupants will be able to adjust their own air-conditioning systems resulting in improved occupant satisfaction.

As the proposed air-conditioning system is air cooled, potential legionella concerns associated with water cooled systems will be avoided.

8.5 Air-conditioning Control

To minimise the impact of the air-conditioning on the energy consumption the following control features will be provided:

- Individual manual control of the air-conditioning in each apartment.
- Individual toilet exhaust to each apartment to minimise the amount of air-conditioned air lost through the toilet exhaust system. .
- The controls are clear and easily accessible by building occupants.

8.6 Cooking

Given the mandatory requirement to provide the development with electricity infrastructure and the cost effective option of using certified green electricity, all cooking on the development will be electric. By utilising the existing electricity network, creating additional pollution within the apartments by burning gas for cooking has been avoided.

8.7 Energy Efficient Appliances

All of the following appliances supplied as part of the base building will have the following minimum MEPS rating:

- Air-conditioning cooling 5 Star.
- Air-conditioning heating 4 Star.
- Clothes dryer 2 Star.
- Washing machine 4 Star.
- Dish washer 3 Star.
- Refrigerator / freezer 4 Star.

8.8 Thermal Performance

To allow the building occupants to capitalise on the Brisbane climate and reduce the need to use air-conditioning the class 2 apartments will all achieve an average weighted NatHERS energy rating equal to or better than 7 stars in accordance with the NCC BCA 2014 NatHERS protocols.

The high level thermal performance has been achieved by the development incorporating

- A high performance low E glazing system.
- The buildings orientation maximising the northern aspect, while treating west-facing units with deep balconies and operable screening.
- Deep balconies, sun-shading and overhangs providing protection from solar heat gain.
- High performance insulation in all external walls and ceiling spaces below an external roof.
- Ceiling fans in all living spaces and all bedrooms.

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- Operable windows.

8.9 Hot Water

The development will incorporate a central hot water system consisting of solar heat pump technology with electric boost of the return.

Hot water will be reticulated to each apartment and metered at point of use.

8.10 Carbon Reduction

To reduce the amount of carbon dioxide that is discharged into the atmosphere by the operation of the development the following measures will be adopted:

- Energy efficient lighting.
- Energy efficient appliances.
- Occupancy control of apartments lighting and air-conditioning.
- Ceiling fans in all bedrooms and living spaces.
- Individual toilets exhaust system per apartment.

The building users guide will include a focus on the operator purchasing certified green electricity to further reduce the greenhouse gas impact of the development.

8.11 Energy Sources

Given the mandatory requirement to provide the development with electricity infrastructure and the cost effective option of using certified green electricity the additional expense and materials required to provide alternative energy sources have been avoided. By utilising the existing electricity network, creating additional pollution on site by burning gas or diesel has been avoided.

The building users guide will include a focus on the operator purchasing green certified electricity to further reduce the greenhouse gas impact of the development.

Passive energy generation systems including PV and PVT have been considered, however they have been unable to justify the additional expense and materials in addition to the required electricity infrastructure.

8.12 Peak Demand Reduction

Given the approach to capitalise on the mandatory requirement to provide the development with electricity infrastructure and the cost effective option of using certified green electricity, the value in reducing the peak demand on the electricity network lowers. Irrespective of the reduce value in reducing the peak demand on the electricity network, it has been considered and incorporated into the development beyond a conventional residential development by:

- Utilising an energy efficient air-conditioning system.
- Capitalising on the diversity inherent to a central air-conditioning system.
- Utilising an energy efficient hot water generation system.
- Air conditioning control system.
- Lighting control system.
- All sub-meters will be smart meters to allow time of use demand charges to encourage shifting energy use to the non-peak times.

Reducing the peak demand by on site power generation has been considered, however the additional cost, additional materials and onsite generation of pollution prevents these options from becoming

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viable. Additionally the negative long term environmental impact from storing electricity has prevented onsite generation of electricity via solar as a mechanism to reduce the peak energy demand from becoming a viable option.

9.0 Appropriate Building Materials

9.1 Material Selection

Where practical low-maintenance materials from renewable and recycled sources will be used. The following major and common materials will be assessed using the following ESD Life Cycle Analysis:

- Structural materials.
- Cladding.
- Roofing.
- Glazing.
- Doors.
- Door hardware.
- Floor finishes.
- Internal frames.
- Internal linings.
- Paints.
- Insulation.
- Pipe work.
- Cabling.
- Luminaries.
- Fixings.
- Air conditioning.
- Flooring.

ESD Life Cycle Analysis

Qualitative ESD Lifte Cycle Analysis Matrix		CONSEQUANCE				
		INSIGNIFICANT 5	MINOR 4	MODERATE 3	MAJOR 2	CATASTROPHIC 1
LIKELIHOOD	ALMOST CERTAIN	Low	Medium	High	High	High
	LIKELY	Low	Medium	Medium	High	High
	MODERATE	Low	Low	Medium	Medium	High
	UNLIKELY	Low	Low	Low	Medium	Medium
	RARE	Low	Low	Low	Low	Low

DESCRIPTOR	EXAMPLE	PROBABILITY
ALMOST CERTAIN	It is almost certain that the Risk will occur in most circumstances	0.9
LIKELY	The Risk is likely to occur in most circumstances	0.5

DESCRIPTOR	EXAMPLE
CATASTROPHIC	Permanent environmental damage beyond the site
MAJOR	Permanent environmental damage limited to the site and environmental damage beyond the site that is reversible

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MODERATE	There is uncertainty that the Risk could occur	0.1	MODERATE	Environmental damage limited to the site that can be reversed with a high financial cost and a high level of impact on the occupants
UNLIKELY	This Risk could occur at some time but there is confidence that it will not	0.01	MINOR	Environmental damage limited to the site that can be reversed with a medium financial cost and medium level of impact on the occupants
RARE	This Impact/Risk may occur only in exceptional circumstances	<.01	INSIGNIFICANT	Environmental damage limited to the site that can be reversed with a minimal financial cost and minimal level of impact on the occupants

If the residual risk is

High	then An alternative solution must be implemented
Medium	then The solution may be implemented with modifications and procedures necessary to reduce the risk to a low status.
Low	then The solution may be implemented in a manner that risk is maintained at the low status.

The ESD risks that are to be assessed as part of the Life Cycle Analysis for each material / system include:

- The impact on the environment to obtain the energy and resources to manufacture the product.
- The impact on the environment to transport the product to site.
- The impact on the environment to install the product.
- The impact on the environment due to the normal use of the product.
- The impact on the environment due to the premature failure of the product.
- The impact on the environment due to the removal and disposal of the product at the products expected end of life.

9.2 Recycled Content of Concrete

To reduce the embodied energy within the concrete used within the development power station waste fly ash will be used to replace 10% of the Portland cement.

10.0 Manage Waste

10.1 Facility Management

A dedicated storage area will be provided for the occupants for the separation, collection and recycling of consumables with good access for all occupants for collection by recycling companies. The storage area will be adequately sized to allow for recycling of, paper, glass, plastics and metals.

In addition to management of conventional waste, a communal Materials Recovery Facility will be provided with good access for all occupants.

10.2 Construction

During construction the contractor will be required to develop and maintain a construction waste management plan to minimise the waste that is sent to landfill and relieve pressure on natural resources.

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11.0 Cost efficiency

11.1 Consumption

Where practical the design will aim to minimise the ongoing operational consumption costs for the life of the development such as energy, water and waste removal.

11.2 Maintenance

Where practical the design will aim to minimise the ongoing maintenance costs for the life of the development such as servicing costs, chemical requirements, replacement costs.

11.3 Design and Material Selection

The initial capital cost, product performance, product life, durability, embodied environmental impact and the operational cost will be considered when making design and material selections.

The initial capital cost, product performance, product life, durability, embodied environmental impact and the operational cost will be considered when making design and material selections.

To date a number of alternative solutions have been considered and rejected from the design after having been analysed by the selection criteria such as:

- Tri generation.
- Diesel generator peak demand reduction.
- Water cooled air-conditioning system.
- PV electricity generation.
- Gas cooking.
- Rain water harvesting.
- Grey and black water treatment systems.

A key component of the design process to date has been to capitalise on the mandatory requirement to provide the development with electricity infrastructure and the cost effective option of using certified green electricity the additional expense and materials required to provide alternative energy sources have been avoided.

12.0 Indoor environment

12.1 Design

It is anticipated the occupants may close the windows more than normal to avoid the road noise and to a lesser degree dust and pollution from the nearby major roads. Accordingly the quality of the indoor environment is been considered more important than in a traditional multi-level residential development. Within the indoor environment the development will provide enhanced occupant satisfaction and reduce the exposure to irritants and contaminates by:

- Eliminating lighting flicker.
- Appropriate noise levels.
- Natural ventilation options.
- Ceiling fans.
- Locally controlled mechanical ventilation.
- Low VOC paints, carpets, adhesives and sealants
- Appropriate artificial lighting levels and opportunity to capitalise on natural lighting.

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- Appropriate local control of the airconditioning.
- No internal pollution from onsite combustion of gas.

12.1 High Frequency Ballasts

To prevent eyestrain and headaches associated with the flicker of conventional fluorescent lights that operate at a frequency of 50Hz, high frequency electronic ballasts that operate at over 32,0000Hz (32 kHz) will be provided for all fluorescent lighting. At this frequency the flicker is totally undetectable either consciously or unconsciously.

12.2 Internal Noise Levels

As internal noise is a significant factor in terms of occupant satisfaction and wellbeing the building will be provided to meet the recommended design sound levels provided in Table 1 of AS/NZS 2107:2000.

12.3 Ventilation

All living spaces and external bedrooms will be provided with operable windows to allow the occupants to capitalise on natural ventilation when appropriate.

All of the living spaces and bedrooms will be provided with ceiling fans.

Each apartment will be provided with a dedicated mechanical ventilation system to exhaust the wet areas and the laundry which will:

- Provide the occupants with individual control allowing the ventilation system to be operated only as required providing an increased level of occupant satisfaction.
- By only operating the ventilation system as required the noise experienced in a conventional multi-level residential development with a central exhaust system will be avoided.
- By only operating the ventilation system as required the energy consumed by a central exhaust system in a conventional multi-level residential development will be significantly reduced.
- In addition to saving the fan operation energy, by only operating the ventilation system as required the energy consumed by the air-conditioning systems continuously cooling the replacement air exhausted by a central exhaust system in a conventional multi-level residential development will be significantly reduced.

12.4 Volatile Organic Compounds

To address the health effects of exposure to VOC associated with ‘sick building syndrome’ such as – eye, nose and skin irritation, headache, lethargy the level of VOC’s used in the building construction will be restricted to the following levels:

Paints

VOCs are to be in accordance with The Australian Environmental Labelling Association, Inc. Standard No: AELA 23-2005 ‘ Australian Voluntary Environmental Labelling Standard Architectural and Protective Coatings’. Conformance with VOC levels listed in this standard (refer to table below) shall be demonstrated by providing test reports from laboratories accredited to carry out the relevant tests and/or calculations and appropriate documentation of production methods and quality controls.

Product Type	Maximum VOC content (g/Litre)
Latex primer for galvanised iron and zincalume	60
Exterior latex undercoat	55
Interior latex undercoat	65

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Interior sealer	65
Exterior timber primer	50
Interior gloss	75
Interior semi-gloss	16
Interior low sheen	16
Interior flat-washable	16
Interior flat-ceilings	14
Exterior gloss	75
Exterior semi-gloss	70
Exterior flat and low sheen	50

VOC limits on architectural coatings covered. Allowable levels include water content in the formulation.

For solvent based coatings the paint shall not contain VOCs in excess of 200g/litre. For recycled paints the VOC level (averaged across batches) in the paint must not exceed 100g/litre.

The VOC content of the paint shall either be calculated from the VOC data for each of the raw materials or, experimentally by ATSM D3960, as qualified The Australian Environmental Labelling Association, Inc. Standard No: AELA 23-2005 'Australian Voluntary Environmental Labelling Standard Architectural and Protective Coatings'.

Where the raw material is a mixture of compounds, some of which contain VOCs, the VOC content of the mixture may in turn be calculated from the VOC content of the individual components. Where this is not known, it must be determined by the methodology detailed in AELA 23-2005.

Carpets

Reference: Carpet and Rug Institute Green Label (U.S)

- Total VOC limit 0.5 mg/m² per hour
- 4-PC (4-Phenylcyclohexene) 0.05mg/m² per hour

Compliance Testing: Carpet and Rug Institute Green Label (U.S) OR American Society for Testing and Materials (ASTM) D 5116 'Guide for Small-scale Environmental Chamber Determinations of Organic Emissions from Indoor Materials/Products'.

Adhesives and Sealants

Reference: South Coast Air Quality Management District (California, U.S.) – Rule 1168

- Indoor carpet adhesive 50 grams of VOC per litre
- Carpet pad adhesive 50
- Outdoor carpet adhesive 150
- Wood flooring adhesive 100
- Rubber flooring adhesive 60
- Sub-floor adhesive 50
- Ceramic tile adhesive 65
- Cove bas adhesive 50
- Dry Wall and Panel adhesive 50
- Multipurpose construction adhesive 70
- Structural glazing adhesive 100
- Architectural sealants 250

The VOC limits are less water and less exempt compounds.

Compliance Testing: Refer South Coast Air Quality Management District Rule 1168 for testing methods and exempt compounds.

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12.5 Lighting Levels

Adequate lighting for specific tasks and activities within the apartments will be provided with attention given to providing solutions that are not over-designed. Switching will be provided to allow the occupants to capitalise on natural lighting when available.

A large proportion of the living spaces and bedrooms will be provided with direct natural lighting by windows and balcony doors enhancing the occupant comfort level in addition to providing the opportunity to reduce reliance on the artificial lighting.

13.0 Green transport

The site has the inherent environmental advantage with its physical proximity to the Royal Brisbane Hospital and also has good access to the public transport network.

In line with the design approach to capitalise on the mandatory requirement to provide the development with electricity infrastructure and the cost effective option of using certified green electricity the following amenities will be incorporated into the development to encourage the use of green transport:

- A central fast charging station with at least a 40W output and both DC and AC charging facilities.
- A standard charging station with at least a 7kW output will be provided on each parking level that does not contain the fast charging station.

- Electrical infrastructure will be provided to allow additional charging stations to be added in future as the electric vehicle demand increases.
- Vehicle pooling will be encouraged in the building users guide.

14.0 Adaptable spaces

Careful thought has been given at the design stage to ensure the building has a long life and increased refurbishment cycle. The apartments can be retro fitted to accommodate people with different abilities.

Fixtures and fittings have been selected to allow ease of use for a wide range of people (eg, lever handles to doors, D handles to joinery etc.)

All public spaces have been designed to comply with disability discrimination legislation and will have level entries, making them easily accessible by people with different abilities.

15.0 Safe and diverse community

The crime prevention through environmental design (CPTED) features is integral to the planning of the development including the creation of spaces that have excellent visual security through social presence.

The key CPTED strategies include:

- Provide clear border definition of space
- Provide clearly marked transitions from public to private space
- Place gathering areas in locations with natural surveillance and access control
- Place safe activities in unsafe areas
- Place safe activities in safe areas

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- Provide natural barriers to conflicting activities
- Improve scheduling of space to allow for 'critical intensity'
- Increase the perception of natural surveillance
- Overcome distance and isolation through improved communications and design efficiencies

16.0 Informed owners and managers

To encourage and enable building managers to optimise the building's environmental performance a Simple Building Users Guide, including information relevant to the building managers, (Managers and Users) will be provided.

The Building User's Guide will include an Environmental Health and Mission Statement, for use by the facility's management to complement the facility's functional design program. This statement is to be retained by the facility with the other design data to ensure that future alterations, additions, and program changes are consistent with the intent of the environmental health and mission statement.

The Building Users Guide will include a reference section relevant to all users, staff and maintenance workers of the building outlining the basic design intent of the facility, including principles surrounding waste management, recycling, energy and water efficiency.

In addition to the building users guide being available electronically and as printed hard copy, relevant aspects from the guide will be displayed around the development in poster format.