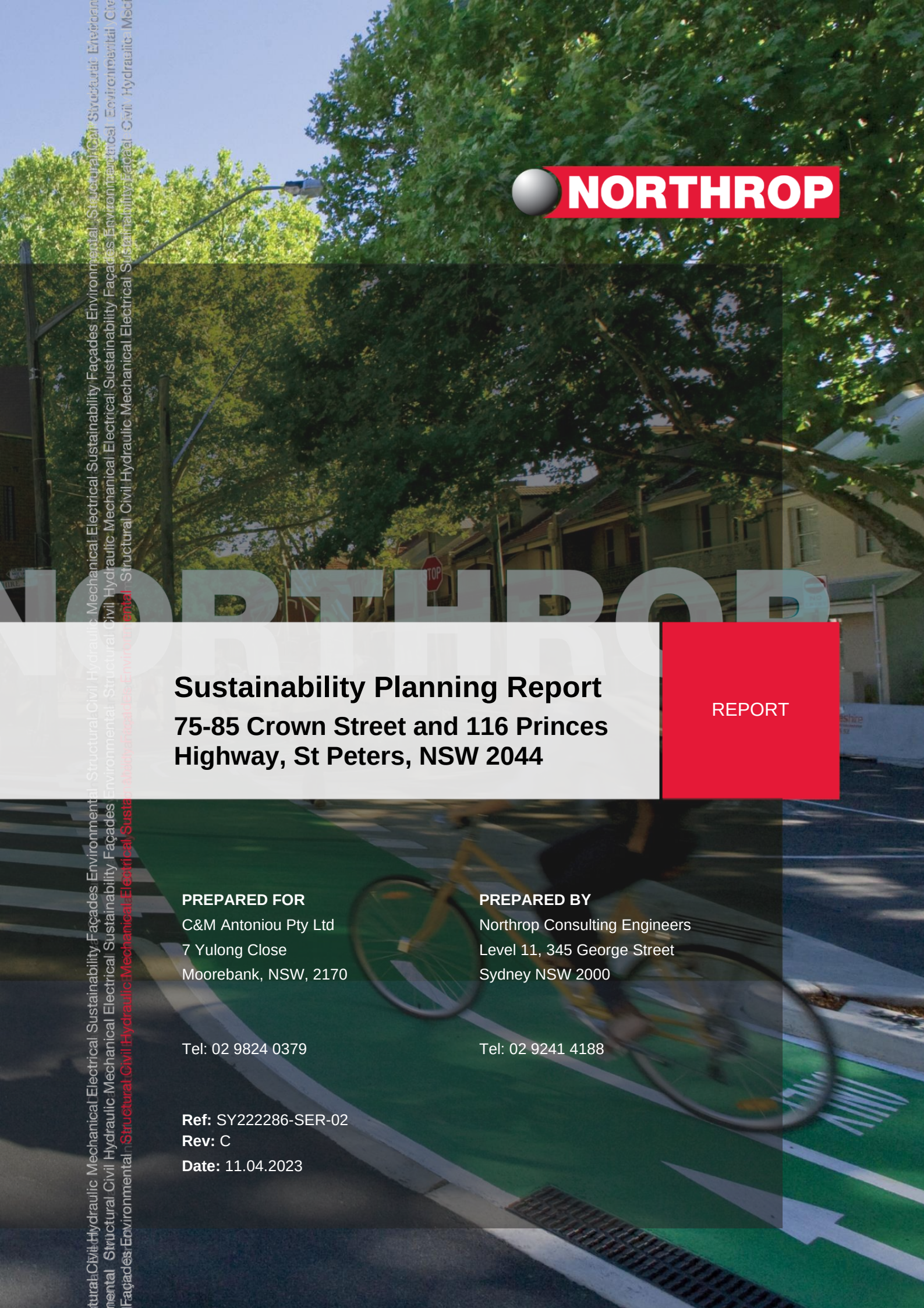

Sustainability Planning Report

75-85 Crown Street and 116 Princes Highway, St Peters, NSW 2044

REPORT

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Rev: C
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SUSTAINABILITY PLANNING REPORT

Activity Schedule

Date	Revision	Issue	Prepared By	Approved By
30.09.2022	A	Preliminary	I. Alcalde	A.Girgis
14.03.2023	B	Preliminary	I. Alcalde	A.Girgis
11.04.2023	C	Report	I. Alcalde	A.Girgis

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EXECUTIVE SUMMARY

Northrop has reviewed the current design documentation for the redevelopment of the site located 75-85 Crown Street and 116 Princes Highway, St Peters NSW 2044, in order to assess the project against current legislation and best practice in Ecologically Sustainable Design (ESD).

Key sustainability principles have been incorporated as part of the Urban Design concept for the site. As a minimum, the applicant intends to include the following objectives to contribute to the achievement of the sustainability targets set by Inner West LEP 2022 and Marrickville DCP 2011:

- At least 15% canopy coverage across the site within 10 years of the completion of the development to enhance amenity and mitigate urban heat
- Provision of vegetation, green roofs and materials with a high solar reflectance index, with particular focus on western and northern building facades.
- Recycling and Waste Management Plan in accordance with the Marrickville DCP 2011 Section 2.21 – Site Facilities and Waste Management.
- SEPP 65 – Compliance with the requirements of *SEPP 65 – Design Quality of Residential Apartment Development* and the related *Apartment Design Guide.*

This report outlines the sustainability initiatives associated with Australian Best Practice across eight key areas:

- Energy Efficiency
- Indoor Environment Quality
- Water Management
- Sustainable Transport
- Waste Management
- Materials Selection
- Land Use and Ecology
- Community and Liveability

A detailed Sustainability Report will be prepared and submitted with the Development Application (DA) to provide detailed information regarding the sustainability measures to be incorporated into the design.

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1. INTRODUCTION

Northrop Consulting Engineers (Northrop) have been engaged by C&M Antoniou Pty Ltd to undertake a sustainability assessment to accompany the Planning Proposal for the redevelopment of 75-85 Crown Street and 116 Princes Highway, St Peters NSW 2044.

Northrop have reviewed the Design Documentation prepared by Scott Carver Architects in preparation of the development of this report. Sustainability initiatives have been proposed for future consideration in developing the design of the precinct.

Eight key areas were explored to consider the potential social, economic and environmental impacts of the site:

- Energy Efficiency
- Indoor Environment Quality
- Water Management
- Sustainable Transport
- Waste Management
- Materials Selection
- Land Use and Ecology
- Community and Liveability

1.1 Site Description

The site is located on the eastern edge of St Peters, approximately 6km from Sydney's CBD, and bounded by Campbell St to the south and Princes Hwy to the North and West. C&M Antoniou Pty Ltd intends to repurpose the land to facilitate a mixed use development Building encompassing Retail, Commercial and Residential offering.

The proposal seeks to directly align with the recommendations of Inner West Council and would seek to amend the Inner West LEP 2022 as follows:

- Increase the maximum FSR control from 1:1.75 to 3.6
- Increase in the maximum height control of buildings to 36m.

The Planning Proposal is accompanied by an indicative design scheme by Scott Carver Architects which shows:

- Total Demolition of existing structures
- A mixed use development with:
- Two basement levels accessed from Crown Street incorporating 81 car parking spaces, end of trip facilities and plant
- A ten storey building composed of 8 residential levels above two commercial floor levels (retail, light industry and office)
- A three storey plus mezzanine building component facing Crown Street
- A four storey street wall to Princes Highway
- A maximum building height of RL 51 to the top of the lift overrun
- Gross floor area equal to 9,408 square metres
- A total of 87 apartments (16 x studio, 24 x 1 bedroom, 40 x 2 bedroom, 7 x 3 bedroom)

- Common open space areas at levels 1, 2 and 4 with provision for integrated landscaping and 15% canopy tree cover
- A residential lobby to Campbell Street
- A loading dock, additional car parking, EOT facilities and waste room at ground floor level
- Deep soil zones along Campbell and Crown Streets
- Integration of public art into the south façade and materiality that references the industrial heritage of the area.

Figure 1: Site Context

1.2 Sustainability Objectives

The project will be targeting the following sustainability objectives to enhance the environmental performance of the site set by Inner West LEP 2022 and Marrickville DCP 2011:

- At least 15% canopy coverage across the site within 10 years of the completion of the development to enhance amenity and mitigate urban heat
- Provision of vegetation, green roofs and materials with a high solar reflectance index, with particular focus on western and northern building facades.
- Recycling and Waste Management Plan in accordance with the Marrickville DCP 2011 Section 2.21 – Site Facilities and Waste Management.
- SEPP 65 – Compliance with the requirements of *SEPP 65 – Design Quality of Residential Apartment Development* and the related *Apartment Design Guide.*
- Additional sustainability initiatives to incorporate Australian Best Practice Sustainability principles within the project design, as follows;
    - Energy Efficiency
    - Indoor Environment Quality
    - Water Management
    - Sustainable Transport
    - Waste Management
    - Materials Selection
    - Land Use and Ecology
    - Community & Liveability

1.3 Referenced Documentation

The following documentation was referenced in the development of this report:

- PPP 2021 0009 – Council response to PPP Application (March 2022)
- PPP 2021 0009 – Summary of key matter (March 2022)
- 20200061 St Peters Drawing Set 220422 – Scott Carver Architects
- 20200061 St Peters Height and Yield Schedule 220422 – Scott Carver Architects
- Marrickville DCP 2011
- Inner West LEP 2022

1.4 Limitations

Due care and skill has been exercised in the preparation of this report.

No responsibility or liability to any third party is accepted for any loss or damage arising out of the use of this report by any third party. Any third party wishing to act upon any material contained in this report should first contact Northrop for detailed advice, which will take into account that party's particular requirements.

2. ENERGY EFFICIENCY

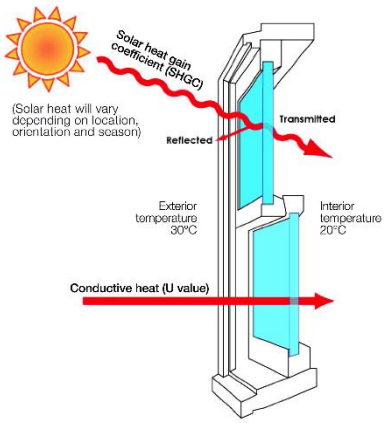
2.1 Passive Design

The site characteristics and orientations can have a large effect on the amount of energy that is required to heat, cool and ventilate a building.

Key considerations will include designing high performance facades including glazing selection and extent, external shading, daylight direction devices, insulation levels, surface properties and possible natural ventilation openings.

2.1.1 Improved building fabric and glazing performance

The building envelope comprises several different façade types, with the proposed scheme looking to implement a combination of metal finishes, prefabricated concrete and low-e glazing to lower heat gains throughout summer while maintaining good daylighting throughout of the building.



The use of well-designed glazing and building materials will also assist the projects targets for energy efficiency, acoustic performance, and thermal comfort.

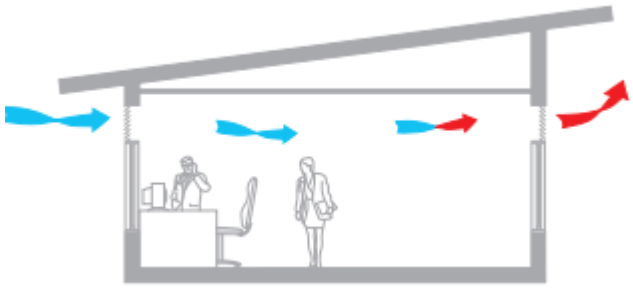
2.1.2 Winter Gardens

The inclusion of winter gardens in individual apartments will help to reduce energy consumption associated with heating and cooling throughout the year. During winter, these areas benefit from solar heat gain and provide a naturally warm space for occupants, reducing the need for space heating. During summer, appropriately shaded winter gardens will receive less direct sun and act as second façade layer to the building and reducing heat gain to the rest of the apartment.

In addition to reducing heating and cooling loads, winter gardens improve the provision of natural daylight to apartments and increase occupant control over ventilation through the provision of large external openings.

2.1.3 Natural Ventilation

The method of natural ventilation applicable to a development of this nature is single sided ventilation. Single sided ventilation, unlike fan-forced ventilation, uses the natural forces of wind and buoyancy to exchange air through appropriately sized openings (windows) on one side of an apartment. Naturally ventilating a building can significantly reduce energy consumption of HVAC systems, whilst providing 100% outdoor air into the spaces it serves, creates a very clean environment for occupants.



The project looks to comply with the minimum requirements of the SEPP 65, achieving a minimum of 70% of apartments with cross ventilation.

In St Peters, the predominant wind directions occur from the south and west; this would be the governing factor when considering building orientation on the site as seen in the wind rose diagram in Figure 2. Natural ventilation will be maximised by implementing a precinct wide consideration of wind direction and speeds in preparation of building orientation design to optimise passive cooling opportunities across the site.

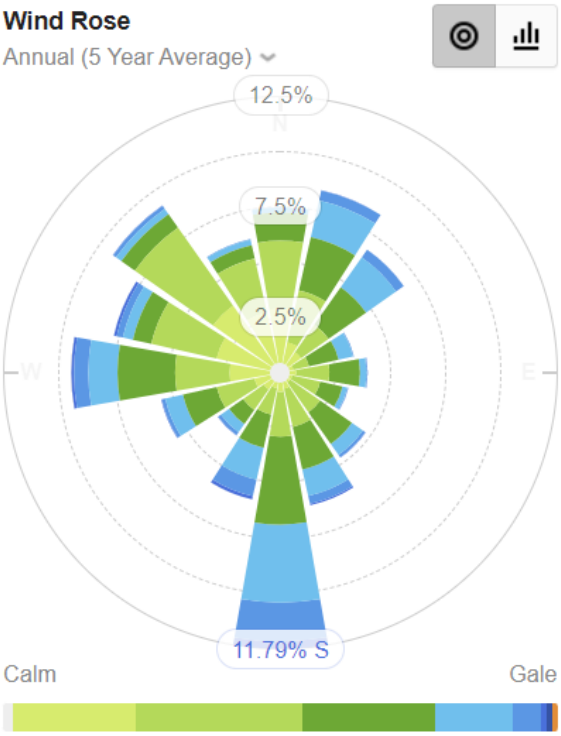


Figure 2: Prevailing Winds (5 year average) – St Peters NSW

2.1.4 Solar Access

Good solar amenity is essential for considering passive design principles for the site. A balance between natural daylight and solar access is required to optimise thermal performance of the buildings on the site to create comfortable living environments and minimise the carbon footprint of the development.

As part of the SEPP 65 requirements, the project will comply with the 70% of apartments receiving a minimum of 2 hours of direct solar access to living rooms and balconies on the 21st of June between 9:00am to 3:00pm

Opportunities will be explored as part of the detailed development stage to enhance the solar amenity across the site, including:

- Well performing glazing
- Selection of glazing with high Visual Light Transmittance (VLT)
- Optimised shading through window screening
- Optimized Window to Wall Ratio to maximize solar access while minimizing solar heat gains through summer.

2.2 HVAC Systems

Typically, apartment buildings in Sydney are served by individual reverse cycle split air conditioning systems for each dwelling. While split systems provide high flexibility for individual control and simplicity from a body corporate outgoings point of view, this is not always that best outcome from an energy, operational cost and aesthetic perspective. Other options could be Multi Split VRV (Variable Refrigerant Volume) or Central Condenser Water System, which could have better efficiency with improved COP when compared to a code compliant HVAC System.

Various options will be investigated to provide an improved energy efficient outcome system that provides a better level of control. This will include equipment selection (with priority for higher energy efficiency ratios), control strategies and day/night-time zoning.

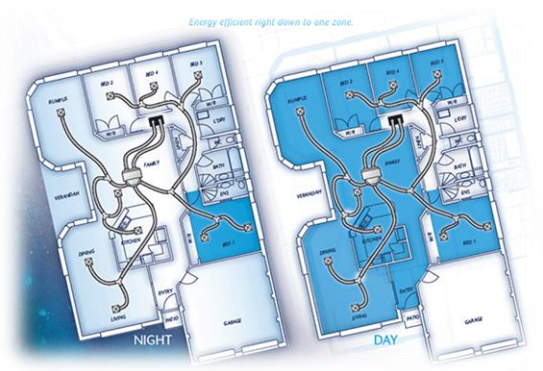


Figure 3 Day/night zoning configuration

2.3 Energy Efficient Appliances

Minimum Energy Performance Standards (MEPS) specify the minimum level of energy performance that appliances, lighting and electrical equipment must meet or exceed before they can be offered for sale or used for commercial purposes.

High MEPS rated appliances will be considered beyond mandatory product ranges in Australia and New Zealand. These products must be registered through an online database and meet a number of legal requirements before they can be sold in either of these countries.

Figure 4: Typical Energy rating labels

2.4 Energy Efficient Artificial Lighting

The provision of highly energy efficient lighting is to be incorporated into the building design to minimise the lighting density. In particular, LED lighting provides the maximum efficiency and has become a robust cost effective lighting technology.

Control strategies are also vital to reduce excess energy use, including:

- Daylight sensor and motion sensor control for hallways, lobbies and shared spaces.
- Lift lighting connected to lift call buttons.
- Motion sensor or time-based lighting for undercover car parking, switch rooms and service areas.
- Motion sensors in fire stairs to trigger between standby (dimmed) and full light outputs

2.5 Alternative Energy Sources

2.5.1 Solar Photovoltaic (PV)

Rooftop solar power within the development has the potential to be sized to the available roof area and provide a portion of the building energy use across the year. Using a system connected to the base building systems will offset energy used by the central services such as lifts and common area lighting.

If there was a desire to maximise the amount of solar PV to be installed, this could be incorporated with an embedded network to allow the use of the output electricity in the precinct.

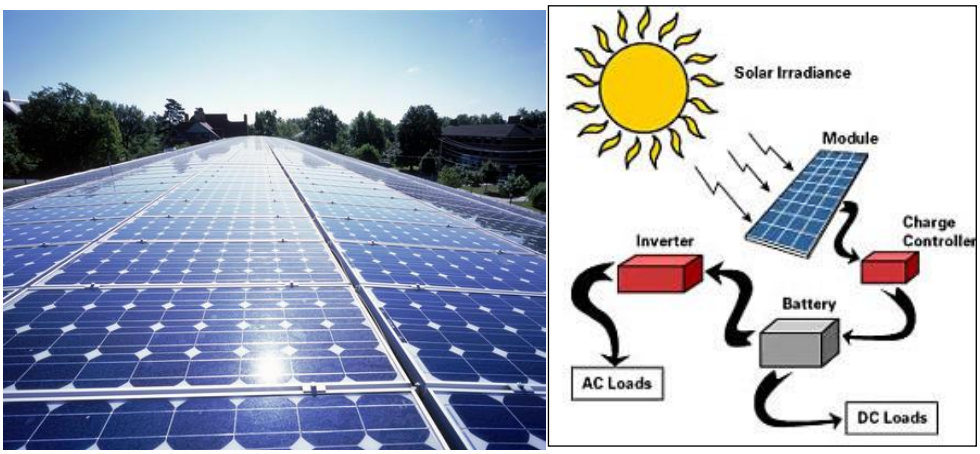


Figure 5: Solar PV components

2.6 Smart Energy Metering and Monitoring

Metering for each tenant will allow them to monitor their own energy use and result in behavioural or equipment changes. Real-time energy tracking will also raise occupant awareness of the potential excess energy in their everyday environment.

A user-friendly interface for monitoring will also increase interaction with the building and give the tenants a greater sense of control of their space. Display screens located in accessible common areas will be considered to display energy consumption in the building in effort to reduce the carbon footprint of the precinct.

2.7 Embedded Networks

A Micro grid is a private electricity network that uses local energy generation sources (e.g. rooftop solar) which can be connected to battery storage systems and supply loads within that network. An integrated micro grid would allow the precinct to manage the system within its borders and interact with the larger grid network as a single entity under an Embedded Network arrangement. .

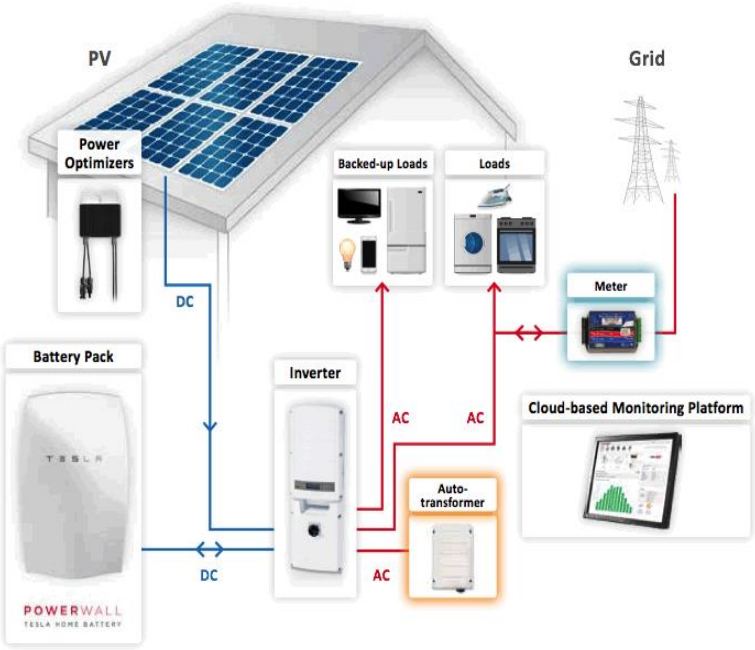


Figure 6: Example of connectivity of an embedded network

The embedded network would serve each of the dwellings within the building and connect these to a central connection point. Electricity can be purchased in bulk at a lower cost than is available to individual residents which could potentially provide revenue generation opportunities for C&M Antoniou Pty Ltd if managed privately. Billing is then provided by either the building or through a third party (Origin, OC Energy, WIN Energy etc).

These systems are attractive as they can often provide reduced energy costs for residents and can assist in the distribution of onsite energy generation and storage.

Overall the use of an embedded network would allow further exploration of PV generation and the installation of battery storage to provide lower electricity bills for residents.

3. INDOOR ENVIRONMENT QUALITY

Comfortable, healthy and enriching spaces are of high significance for their all building occupants. The promotion of indoor environment quality results in a greater liveability of the development.

3.1 Thermal Comfort

Thermal comfort is typically dictated by the building fabric selections, façade performance, air-conditioning system design & selection and individual controls.

The project will target designing systems with optimised air distribution and individual level of control to achieve a proper level of thermal comfort complying with NCC or any certification rating if required.

3.2 Trickle Ventilation

A trickle vent is a very small opening within a buildings fabric that allows a small amount of ventilation into spaces when major elements of the ventilation systems, such as windows and doors, are closed. Trickle ventilators can also provide a greater level of control over the provision of outside air to inside spaces. A number of products are available that control ventilation flow based on temperature and pressure, allowing outside air into spaces when it would be beneficial to the internal conditions and automatically shutting this off when it would result in increased heating or cooling costs.

A well-controlled trickle vent will also reduce condensation risk, avoid over ventilation (reducing air-conditioning energy and improve comfort through minimising drafts. The provision of trickle ventilators would not remove the requirements for openable windows but could assist with acoustic and ventilation controls while providing a continuous source of fresh outside air, minimising the impacts on noise and air pollution from Westconnex Tunnelling and Princes Hwy

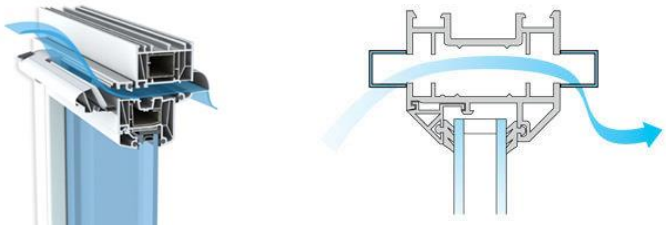


Figure 7: Example of trickle ventilation systems

3.3 Low Toxicity Finishes

Interior finishes such as paints, adhesives, sealants and flooring contain volatile organic compounds (VOC) that are inherent to the use of solvents during the manufacturing process. Consequently, these become sources of indoor pollutants which have health implications. The design team will consider and aim to minimise the VOC and formaldehyde content of all products specified in the design process of the development.

3.4 Acoustic Comfort

Acoustic considerations are important for creating comfortable indoor spaces and increasing the liability of the new development at 75-85 Crown Street and 116 Princes Highway, St Peters NSW 2044. Such considerations will be

made with particular attention to external noise sources including near-by Princess Hwy and Wetconnex Tunnelling as well as games fields.

Passive building design features will assist with noise reduction in induvial apartments. While winter gardens and window screening provide additional barriers for noise attenuation, single sided ventilation restricts opening to one side of the apartments, reducing intrusion of external noise.

Acoustic conditions of the site will be assessed in the future stages of the development to ensure that appropriate internal noise levels and reverberation levels are compliant with AS/NZ 2107:2016 standards.

4. WATER MANAGEMENT

4.1 Stormwater management

The site will comply with Marrickville DCP 2011 stormwater management requirements to:

- Protect the urban environment from the effects of otherwise uncontrolled surface stormwater flows
- Minimise or negate disruption and/or danger to both pedestrian and vehicular traffic that may be caused by otherwise uncontrolled surface stormwater flows
- Protect the quality of receiving waters, adjacent and downstream land-use and the rights of adjacent and downstream landowners.

4.2 Water Efficient Fixtures and Fittings

Water Efficient Fixtures and Fittings will reduce the water consumption of the site. As an indication, the following Water Efficiency Label (WELS) rated fittings and fixtures will be considered:

- General taps - 5 star WELS
- Toilets dual flush - 4 star WELS
- Urinals - 6 star WELS
- Shower heads – 4 Star WELS

4.3 Water Reuse

4.3.1 Rainwater Harvesting

At a minimum, inclusion of rainwater harvesting will be considered for non-potable uses. Possible rainwater reuse opportunities could be to supply irrigation systems, car washing, communal laundries and cooling tower make up supply, to reduce the potable water demand on site and lessen the impact to the local authority networks.

4.3.2 Fire Sprinkler System

During the design of the fire protection design in the consideration of sprinkler systems, the recirculation and storage of sprinkler testing water will be considered. This water can potentially be captured and stored in storage tanks for reuse during the next sprinkler test or connected to the rainwater tank for top up supply.

4.4 Water Sensitive Urban Design

Implementing Water Sensitive Urban Design (WSUD) practices reduces the reliance of stormwater infrastructure whilst enhancing the biodiversity of a site. Special attention to vegetation selection and water quality measures will need to be considered in order to appropriately address the proximity to the adjacent Hawthorne Canal.

WSUD options that will be considered as part of this design approach are:

- Rain Gardens or plantings around building entrances;

Figure 8: Bioswales could be located in streetscapes to improve the water quality in the precinct

- Sub-surface stormwater detention systems
- Tree Gardens/pits & Bio swales for storm water runoff treatment
- Native vegetation where applicable

4.5 Smart Water Metering & Monitoring

Water sub-metering with alarms for leak detection for common area facilities will provide a system for effective maintenance of the site. Smart metering which is connected to a monitoring system will allow for real-time consumption tracking and flag potential leaks at the moment they occur, minimising water wastage and protecting the building from water damage.

5. SUSTAINABLE TRANSPORT

5.1 Green travel Plan

A Green travel plan could be prepared as part of a future detailed DA to bring about better transport arrangements to manage travel demands, particularly promoting more sustainable modes of travel and modes that have a low environmental impact. This will capitalise on internal and external opportunities for Sustainable transport options.

5.2 Pedestrian and Cycle Links

Pedestrian pathways and cycle ways will be integral to the design of the precinct to encourage public transport use and high urban amenity areas. Cycle ways and pathways can provide ease of connection to near-by Sydney Metro Stations and surrounding suburbs as indicated in the precinct's Travel Plan.

5.3 Cyclist Facilities and Access

The practice of cycling assists human health and reduces environmental impact by mitigating pollutants that would otherwise have been released by other transport options. According to the ABS over one third of daily car trips are less than 3km in length. Most of these trips could be replaced with cycling. Providing secure bike storage facilities for residents will promote the use of bicycles as a form of transport.

Providing secure storage, either as a communal storage cage in the basement or a nook adjacent to dwelling entries, assists in encouraging cycling though the precinct. The provision of bike racks outside of the main building entries across the site will also be implemented where possible.

Figure 9: Hybrid bike rack and bench

5.4 Car share hubs

The provision of a building precinct specific share car network would allow building occupants to relinquish car ownership entirely and would greatly reduce the number of parking spaces required within the building. The provision of a cluster of vehicles could be coupled with a site mobile phone app, allowing for a centralised booking system.

A third party such Go-Get could also be provided with a dedicated space, as recommended in the Travel Plan, with residents given access to their booking system. This would reduce management requirements and move responsibility for the provision and maintenance of vehicles away from C&M Antoniou Pty Ltd or building management.

5.5 Electric Vehicle Charging stations

The future development could look to incorporate provision for all car spaces in the development to be connected to a level 1 or faster car-charger.

6. WASTE MANAGEMENT

6.1 Construction and demolition waste

Building materials account for approximately half of all materials and about half the solid waste generated worldwide incurring significant environmental impacts at each process interval. It is proposed that a significant portion of construction and demolition waste is to be diverted from landfill to reduce the carbon footprint of the site whilst reducing waste fees associated with landfill rates. This commitment could be incorporated in to the head contractors' Environmental Management Plan for the site. Reclamation of high value building materials should be considered first preference. Where reclamation is not viable, materials such as asphalt, bricks, timber, plastics (including PVC) and concrete should be recycled accordingly.

6.2 Waste Sortation

Waste-sorting bins will be considered for all internal and external spaces to enable users to sort their rubbish and recyclables. Back of house areas will require sufficiently sized and conveniently located waste storage and sorting areas for ease of removal by waste contractors.

An organic waste stream could be introduced with a communal worm farm or compost system to support community gardens and educational programs rolled out in the precinct.

Figure 10: Waste stream sortation

6.3 Unified bin design

Unified bin design throughout the development is proposed as part of a waste strategy to create a waste sortation culture in the building. Not only should each be a different colour e.g. Red for general waste, yellow for co-mingled recycling, blue for paper and green for organics but should be consistent throughout the site. This is to assist with clarity and develop effective waste sortation prior to disposal. The waste strategy should be as part of the Waste Management Plan and considered during the early stages of the development to ensure appropriate design integration across all building uses.

6.4 Waste education

Waste educational in terms of effective signage displays or programs would have a positive benefit to the community as part of a wider approach to enhance community participation, create social diversity and provide fun educational activities for residents and surrounding suburbs.

This inititive could be coupled with the digital signage in the common lobbies as a way of updating residents of different waste pick updates or other useful Inner West LGA initiatives.

Figure 11: Waste Education Programs

7. MATERIALS SELECTION

7.1 Sustainable Use of Resources

When choosing building materials for this project, particular attention will be paid to:

- **Low Embodied CO_2** – Many modern building materials such as aluminium or concrete are high in embodied energy (the energy required to produce, transport and install a material), and with that contribute substantially to the overall carbon footprint of the building.
- **Sustainability of Resource** – many building materials are derived from finite resources and should be avoided or limited. Major building elements should have recycled content where possible (recycled steel and/or aggregates in concrete, recycled timber, cellulose fibre insulation using recycled paper etc.).
- **Health Impact** – All materials should be considered in regard to their impact on occupants' health. For example, some types of fibreglass insulations have very fine fibres that, once airborne, can easily enter into the lungs and cause severe irritation.
- **Third Party Certifications** – materials which have been certified or approved by independent bodies such as Ecospecifier or Good Environmental Choice Australia should be preferred over non-certified products. These rating systems provide evaluation of various products across a range of environmental performance criteria.
- **Recycled Content** – Recycled content should be specified in:
    - Concrete – fly ash and recycled aggregates; and
    - Structural and reinforcement steel
    - Recycled building rubble

Figure 12: Examples of Third Party Certification Labels

7.2 Locally sourced products

Locally sourcing products for use in the construction of the precinct would help to keep transport and distribution impacts to a minimum. It will also help to support local employment and improve economic resilience of the Sydney manufacturing industry.

Utilising local manufacturing and suppliers should also help to minimise lead time for products, build positive relationships and make supply chain auditing easier. Overall the sourcing of locally sourced products should be explored and implemented where economically feasible.

8. LAND USE AND ECOLOGY

8.1 Increased Ecological Value

Being situated near community infrastructure, the development is considered to have a significant urban activation potential.

The development will significantly improve the ecological value of the site with the following being considered;

- Street landscaping;
- Vertical gardens;
- Roof gardens.

Native vegetation will also minimise the ongoing environmental impact of the project by minimising soil erosion and land degradation, improving water quality and provides habitat for native flora and fauna.

8.2 Native vegetation

Native vegetation plays a key part in the biodiversity and ecological stability of the site.

Endemic native vegetation plantings have the benefit of:

- Controls erosion through protecting soils and riverbanks
- Reduces land degradation and salinity
- Improves water quality and availability
- Provides habitat for a wealth of unique and threatened species.

In addition, native vegetation stores a significant amount of carbon, mitigating the effects of climate change. The planting of native vegetation throughout the precinct will reduce the water needed for irrigation systems, reduce vegetation maintenance requirements and promote biodiversity.

8.3 Heat Island Effect

Urban heat island effect is defined as hard surfaces within a development heating up due to lower Solar Reflectance Indexes (SRI), compared to a natural area. This results in additional heat retention in the surrounding area, as well as allowing more heat to penetrate individual buildings.

The following will be considered in the development to reduce heat island effect;

- Canopy Coverage for up to 15% of the site
- Roof Gardens;
- Artificial water bodies & water courses;
- Increased vegetation areas;
- Selection of paint finishes with high SRI properties such as light coloured exterior finishes.

8.4 Rooftop Gardens

Plants have the ability to reduce the overall heat absorption of the building which then reduces energy consumption. The primary cause of heat build-up in cities is solar radiation, the absorption of heat by roads and buildings in the city and the storage of this heat in the material. By installing roof gardens, the development is creating a passive solution to this build-up of heat with the plant surfaces cooling the space through the process of transpiration. This will help to minimize temperature rise in these spaces to no more than 4-5°C above ambient improving thermal conditions within the buildings across the site and minimising the precinct effect on urban heat islands.

Figure 13: roof gardens help to cool the space and reduce the urban heat island effect.

8.5 Non obtrusive outdoor lighting

Light pollution released into the night sky (sky glow) or spilling on to neighbouring properties can harm the environment in many ways including effects on:

- Migratory birds – nocturnal birds use the moon and stars for navigation and can become disoriented by lights shining upwards into the sky;
- The disruption of biological rhythms and other effects on the behaviour of nocturnal animals and insects;
- Greenhouse gas emissions are emitted to unnecessarily light the night sky.

Ensuring that no outdoor lights face up into the night sky would not attract any additional costs and would provide ongoing operational and maintenance savings and reduce the sites impact on the natural environment.

9. COMMUNITY AND LIVABILITY

9.1 Communal Gardens & Facilities

The provision of urban agriculture that promotes education and community through garden facilities, will promote community cohesion within the residents of the precinct and provide a valuable educational facility.

The community gardens should be incorporated in to the space design with the overall aim of creating a self-sustaining community initiative managed by the residents of the building. Initially there will need to be a commitment of time and financing for the construction of the physical gardens and for the education of residents regarding the effective management of these facilities.

Overall the benefits of providing the provision for urban agricultural facilities will include;

- Providing residents with access to fresh food,
- Reducing household waste going to landfill though the provision of composting facilities
- Reducing the need to provide private “backyard” space
- Promoting community engagement
- Educating residents about food production; and
- Providing biological diversity across the site.

Figure 14: Community gardens would promote social cohesion and a sense of community

9.2 Environmental Education

To assist the environmental education of building occupants and visitors, the following opportunities will be considered;

9.2.1 Community programs

Scheduled events and programs is a good way to encourage access to a diverse range of people in the community; celebrating culture and heritage that drives positive growth and joy in the neighbourhood.

Community events could include sustainable educational workshops with varying topics, for example, permaculture classes, composting and worm farming to complement the proposed communal gardens.

9.2.2 Environmental Displays

Creating interactive spaces is an effective way to encourage environmental education whilst providing a fun and vibrant atmosphere. Interactive digital display screens can be used as a tool to provide such a space which provides education to the occupants by making resource savings and consumption data readily accessible in the public space, such as the lobby areas or lifts. Information could for example detail live water and energy consumption data in the form of a touch screen display and relate back to the carbon footprint of the site in context of the individual, building or precinct.

9.3 Wayfinding

At its essence, wayfinding is the science of understanding how people perceive the environment and make decisions while navigating unfamiliar spaces and then responding with intuitive signage and information layouts.

Figure 15: Internal Wayfinding example

A high-functioning way finding system makes the environment “unique” and enhances the visitors’ experience as it increases their comfort, builds their confidence, and encourages them to discover unique events, attractions and destinations on their own.

Way Finding can also be utilised to direct occupants to key facilities and amenities in fun and creating ways. Like the interactive façade initiative above, public art incorporated into way finding signage in the building could open opportunities for local schools and community group competitions.

10. CONCLUSION

The concept design prepared in support of the Planning Proposal at 75-85 Crown Street and 116 Princes Highway, St Peters NSW 2044 demonstrates that a future development can incorporate a number of key initiatives to reduce the impact on the environment and enhance the liveability of the development.

As a result, a future development can achieve compliance with the sustainability targets set by Inner West LEP 2022 and Marrickville DCP 2011:

- At least 15% canopy coverage across the site within 10 years of the completion of the development to enhance amenity and mitigate urban heat
- Provision of vegetation, green roofs and materials with a high solar reflectance index, with particular focus on western and northern building facades.
- Recycling and Waste Management Plan in accordance with the Marrickville DCP 2011 Section 2.21 – Site Facilities and Waste Management.
- SEPP 65 – Compliance with the requirements of *SEPP 65 – Design Quality of Residential Apartment Development* and the related *Apartment Design Guide.*

Future detailed design stages of the development will explore integrating core sustainability principles and firming up a strategy for implementation.