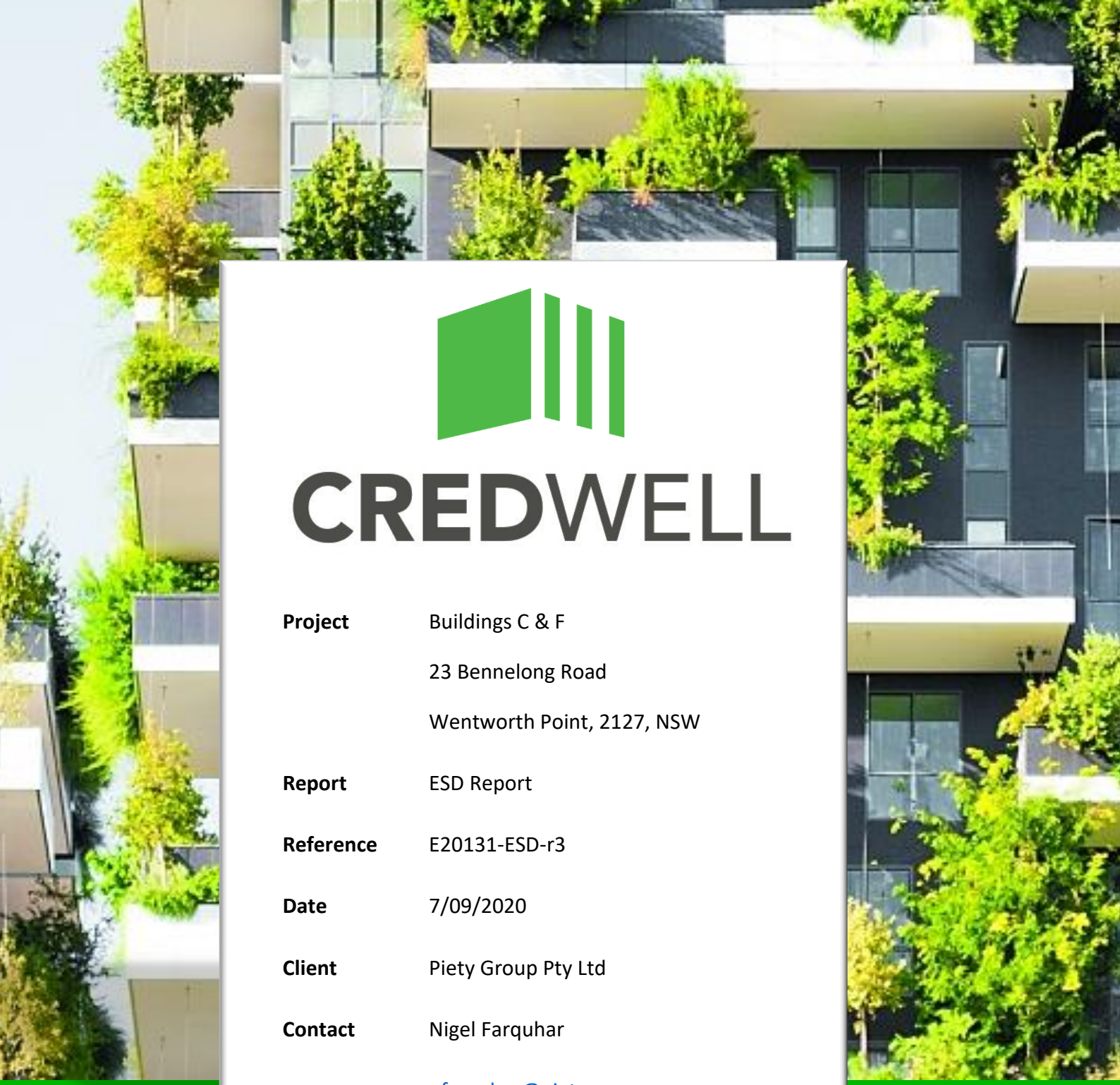

CREDWELL

Project	Buildings C & F 23 Bennelong Road Wentworth Point, 2127, NSW
Report	ESD Report
Reference	E20131-ESD-r3
Date	7/09/2020
Client	Piety Group Pty Ltd
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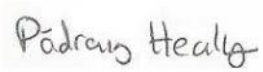
Contents

Document Control

Reference/Revision	Date	Description	ESD Report
E20031-ESD-r3	7/09/2020	**Prepared by**	**Padraig Healy**
			BE, MSc Sustainable Design
			

1 Executive Summary

This ESD report outlines the local sustainable governmental legislation and planning documents that governs the area of this development. Adhering to these planning controls and referring to best practice design for new builds this development will achieve significant sustainable criteria in line with Legislation.

ESD Initiatives encompassing eight different categories are indicated in this report. This shows a holistic approach to design for this development.

These ESD initiatives are a best practice approach for this development and are not binding.

2 Introduction

2.1 Building Location & Description

The building, the subject of this report, is located at 23 Bennelong Road, Wentworth Point, NSW, 2127.

The site consists of two new buildings C & F of between 9-15 stories in height.

2.2 Objectives

The purpose of this report is to provide cost effective environmentally sustainable development design guidance in accordance with local legislation and benchmark sustainable rating schemes.

2.3 Sustainable Design Legislation

This development is governed by:

1. Homebush Bay West DCP (2004) - HWDCP (2004)
2. Sydney Regional Environmental Plan 24 - Homebush Bay Area - SREP 24
3. 23 Bennelong Parkway, Wentworth Point: Schedule 3-Statement of Commitments

2.4 Best Practice Sustainable Design Benchmark

This development will be assessed against:

1. Appropriate and cost-effective industry standard ESD initiatives

3 Legislation

This report looks specifically at sustainable practices within legislation which will be directly applicable to this development.

3.1 Homebush Bay West (DCP 2004)

2.3.6 - Environmentally Sustainable Design

(i) Design blocks to deliver efficient subdivision and optimise north orientation for buildings, to minimise overshadowing and the negative impacts of wind on the public domain, to mitigate the visual impact of large scale development on Homebush Bay, and to define and appropriately frame parks and plazas.

(ii) Control the quality of water entering Homebush Bay through the use of integrated water management strategies.

(iii) Conserve water by minimising stormwater runoff, planting appropriate indigenous species with low irrigation needs, matching water quality with its intended use and using water saving devices.

(iv) Promote ecological outcomes including shade and habitat by dedicating a significant proportion of the waterfront setback to riparian planting with a mix of species.

(v) Control potential impacts on air quality by minimising car dependency, encouraging pedestrian and cycle movement and promoting the use of public transport

(vi) Minimise energy consumption by designing for daylight access and natural ventilation, passive heating and cooling and alternative energy sources

(vii) Retain the embodied energy in buildings by designing them as 'long life loose fit' that can be readily adapted for changing uses and are easily maintained.

(viii) Minimise resource depletion by selecting environmentally sustainable building materials in both the public and private domains, and by providing facilities for recycling.

4.7.1 - Energy Efficiency

The ability of buildings to optimise thermal performance, thermal comfort and daylighting will contribute to the energy efficiency of buildings, provide increased amenity to occupants, and reduce greenhouse emissions and, with them, the cost of supplying energy.

Objectives:

•To reduce the necessity for mechanical heating and cooling.
• To reduce reliance on fossil fuels.
• To minimise greenhouse gas emissions.
• To support and promote renewable energy initiatives.
• To use natural climatic advantages of the coastal location such as cooling summer breezes, and exposure to unobstructed winter sunlight.
• To provide a suitable environment for proposed uses, having regard to wind impacts and noise.
• To ensure that land is geotechnically suitable for development and can be feasibly remediated of any contaminants to a level adequate for the proposed use.

Performance Criteria:

(i) Incorporate passive solar design techniques to optimise heat storage in winter and heat transfer in summer by: – maximising thermal mass in floor and walls in northern rooms of dwelling/ building – polishing concrete floors and/or using tiles or timber floors rather than carpets – limiting the number of single aspect apartments with a southerly aspect (SW– SE) to a maximum of 10 percent of the total units proposed – insulating roof/ceiling to R2.0, external walls to R1.0 and the floor—including separation from basement car parking—to R1.0 – minimising the overshadowing of any solar collectors.

(ii) Improve the control of space heating and cooling by: – designing heating/cooling systems to target only those spaces which require heating or cooling, not the whole apartment – designing apartments so that entries open into lobbies or vestibules and are isolated from living areas by doorways – allowing for adjustable awnings and blinds to be attached to the outside of windows to keep the heat out in summer – providing gas bayonets to living areas, where gas is available – providing reversible ceiling fans for improving air movement in summer and for distributing heated air in winter.

(iii) Provide or plan for future installation of solar collectors and photovoltaic panels, for example by: – designing the roof so that solar collectors and photovoltaic panels can be mounted parallel to the roof plane – locating trees where they will not shade existing or planned solar and photovoltaic installations.

(iv) Improve the efficiency of hot water systems by – insulating a hot water system or systems with a Greenhouse Score of 3.5 or greater and which suits the needs of the development and/or individual dwellings – installing water-saving devices, such as flow regulators, AAA (or higher) rated shower heads and tap aerators.

(v) Reduce reliance on artificial lighting by: providing a mix of lighting fixtures, including dimmable lighting, to provide for a range of activities in different rooms – designing to allow for different possibilities for lighting the room, for example, low background lighting supplemented by task or effect lighting for use as required – using separate switches for special purpose lighting – using high efficiency lighting, such as compact fluorescent, for common areas – using motion detectors for common areas, lighting doorways and entrances, outdoor security lighting and car parks.

(vi) Maximise the efficiency of household appliances by: – selecting an energy source with minimum greenhouse emissions – installing high efficiency refrigerators/freezers, clothes washers, and dishwashers – providing areas for clothes to be dried through natural ventilation.

(vii) Provide an Energy Performance Report from a suitably qualified consultant to accompany any development application for a new building. NatHERS 4.5-star rating should be achieved to 80% of all residential apartments and commercial offices.

(viii) Use the NSW Government's sustainability assessment tool, BASIX, from such time as it is implemented for the residential housing types in the DCP precinct area, as an additional rating system, to be achieved to 80% of all residential apartments.

3.2 Sydney Regional Environmental Plan 24 - Homebush Bay Area

12 - Planning objectives

Quality and Nature of Urban Form

(g) to promote co-ordinated, sensitive, and high-quality development in the Homebush Bay Area through the adoption of overall guidelines for development relating to, for example, urban design, landscaping and signage,

(h) to promote ecologically sustainable development,

(i) to take advantage of the proximity of the Homebush Bay Area to the Parramatta River and Homebush Bay by encouraging development that preserves and improves views from and of the waterfront and to enhance public access to those waterways and waterfront areas, while protecting flora and fauna habitats.

3.3 23 Bennelong Parkway, Wentworth Point: Schedule 3 - Statement of Commitments

Issue 2 - ESD

Subsequent applications will incorporate the ESD principles and features as described in Section 6.12 of the EA.

6.12 Environmentally sustainable development

Whilst the details of environmentally sustainable development initiatives to be incorporated into the development will be contained in subsequent detailed staged applications, general ESD principles upon which the concept is based are outlined in the Architectural Statement at Appendix 3 and include:

- Use of multiple cores enabling 60% of apartments being cross ventilated with good natural daylight and solar access into primary living spaces and external living areas, energy efficient appliances and water efficient devices will be used.
- Water cycle management including the use of reclaimed water supply to meet all irrigation and toilet flushing needs as outlined in Section 6.11 above. Substantial deep soil areas for significant planting.
- BASIX certification.

3.4 ESD initiatives applicability to Controls

This report provides in the following chapter the ESD initiatives required to meet the Legislative ESD requirements required by council.

Best practice design benchmarks from Australia's premier sustainable design rating tool Design & As Built version 1.2 have been referenced to show adherence to these requirements.

These have been separated into Eight categories which target the main ESD fields referenced in the LEP/DCP.

The below tables provide the link between the initiatives proposed and legislation.

Legislation name	Clause	ESD Initiative
Homebush Bay West (DCP 2014) Sydney Regional Environmental Plan 24 - Homebush Bay Area	2.3.6 (ii), (iii)	Code 17 & 25
	2.3.6 (iv)	Code 22
	2.3.6 (v)	Code 16
	2.3.6 (vi)	Code 14
	2.3.6 (vii)	Code 18-20
	2.3.6 (viii)	Code 19-21
	4.7.1 (i)	Code 14
	4.7.1 (ii)	Code 1 & 14
	4.7.1 (iii)	Code 14
	4.7.1 (iv)	Code 14 & 17
	4.7.1 (v)	Code 10
	4.7.1 (vi)	Refer to BASIX Cert
	4.7.1 (vii)	Refer to BASIX Cert
	4.7.1 (viii)	Refer to BASIX Cert
Sydney Regional Environmental Plan 24 - Homebush Bay Area	12 (g-i)	Code 1-28
23 Bennelong Parkway, Wentworth Point: Schedule 3 - Statement of Commitments	Issue 2	Code 1-28 BASIX Cert

4 Benchmark Sustainable Design

All ESD rating schemes approach sustainable design by considering all the stakeholders in the development. This is the design approach we are proposing for this development.

4.1 ESD Categories

Best practice ESD initiatives can be achieved through the assessment against and application of the following categories:

- Management
- IEQ
- Energy
- Transport
- Water
- Materials
- Land Use and Ecology
- Emissions

Within these categories there are subcategories with their relevant initiatives.

The following table shows what categories are targeted.

Category	Targeted
Management	Yes
IEQ	Yes
Energy	Yes
Transport	Yes
Water	Yes
Materials	Yes
Land Use and Ecology	Yes
Emissions	Yes

The targeting of these eight categories shows a comprehensive commitment to sustainable design.

4.2 Category's & ESD Initiatives

The following is a summary of the list of potential categories and initiatives that can be followed to achieve Environmentally Sustainable Design for this development, and which also show adherence to HWDCP (2004), SREP 24 & Schedule 3-Statement of commitments.

4.2.1 - Management

Initiatives	Code	Targeted
Commissioning and Tuning	**1.0**	
Environmental Performance Targets	1.1	Yes
Services and Maintainability Review	1.2	Yes
Building Commissioning	1.3	Yes
Building Systems Tuning	1.4	Yes
Independent Commissioning Agent	1.5	No
Adaption and Resilience	**2.0**	
Implementation of a Climate Adaption Plan	2.1	No
Building Information	**3.0**	
Building Information	3.1	Yes
Commitment to Performance	**4.0**	
Environmental Building Performance	4.1	No
End of Life Waste Performance	4.2	No
Metering and Monitoring	**5.0**	
Metering	5.1	Yes
Monitoring Systems	5.2	No
Responsible Building Practices	**6.0**	
Environmental Management Plan	6.1	Yes
Formalised Environmental Management System	6.2	No
High Quality Staff Support	6.3	No
Operational Waste	**7.0**	
Facilities	7.1	Yes

4.2.2 - IEQ (Indoor Environment Quality)

Initiatives	Code	Targeted
Indoor Air Quality	**8.0**	
Ventilation System Attributes	8.1	Yes
Provision of Outdoor Air	8.2	No
Exhaust or Elimination of Pollutants	8.3	Yes
Acoustic Comfort	**9.0**	
Internal Noise Levels	9.1	Yes
Reverberation	9.2	Yes
Acoustic Separation	9.3	Yes
Lighting Comfort	**10.0**	
Minimum Lighting Comfort	10.1	Yes
General Illuminance & Glare Reduction	10.2	Yes
Surface Illuminance	10.3	No
Localised Lighting Control	10.4	No
Visual Comfort	**11.0**	
Glare Reduction	11.1	Yes
Daylight	11.2	No

Views	11.3	Yes
Indoor Pollutants	**12.0**	
Paints, Adhesives, Sealants and Carpets	12.1	Yes
Engineered Wood Products	12.2	No
Thermal Comfort	**13.0**	
Thermal Comfort	13.1	Yes

4.2.3 - Energy

Initiatives	Code	Targeted
Greenhouse Gas Emissions	**14.0**	
Building Envelope	14.1	No
Wall-Glazing Constriction & Retail Glazing	14.2	No
Lighting	14.3	Yes
HVAC	14.4	Yes
DHW	14.5	Yes
Transition Plan	14.6	No
Fuel Switching	14.7	No
On-Site Storage	14.8	No
Vertical Transportation	14.9	Yes
Off-Site Renewables	14.10	No
Electricity Efficiency	**15.0**	
Power Factor Correction	15.1	No

4.2.4 - Transport

Initiatives	Code	Targeted
Sustainable Transport	**16.0**	
Access by Public Transport	16.1	Yes
Reduced Car Parking Provision	16.2	No
Low Emission Vehicle Infrastructure	16.3	Yes
Active Transport Facilities	16.4	Yes
Walkable Neighbourhoods	16.5	Yes

4.2.5 - Water

Initiatives	Code	Targeted
Potable Water	**17.0**	
Sanitary Fixture Efficiency	17.1	Yes
Rainwater Reuse	17.2	Yes
Heat Rejection	17.3	Yes
Landscape Irrigation	17.4	No
Fire System Test Water	17.5	No

4.2.6 - Materials

Initiatives	Code	Targeted
Life Cycle Impacts	**18.0**	
Concrete	18.1	No
Steel	18.2	No
Responsible Building Materials	**19.0**	
Structural and Reinforcing Steel	19.1	No
Timber Products	19.2	No
Permanent Formwork, Pipes, Flooring, Blinds and Cables	19.3	Yes
Sustainable Products	**20.0**	
Product Transparency and Sustainability	20.1	No
Construction and Demolition Waste	**21.0**	
Fixed Benchmark	21.1	No

4.2.7 - Land Use & Ecology

Initiatives	Code	Targeted
Ecological Value	**22.0**	
Endangered, Threatened or Vulnerable Species	22.1	Yes
Ecological Value	22.2	Yes
Sustainable Sites	**23.0**	
Reuse of Land	23.1	No
Contamination of Hazardous Materials	23.2	Yes
Heat Island Effect	**24.0**	
Heat Island Effect Reduction	24.1	No

4.2.8 - Emissions

Initiatives	Code	Targeted
Stormwater	**25.0**	
Stormwater Peak Discharge	25.1	Yes
Stormwater Pollution Targets	25.2	Yes
Light Pollution	**26.0**	
Light Pollution to Neighbouring Bodies	26.1	Yes
Light pollution to Night Sky	26.2	Yes
Microbial Control	**27.0**	
Legionella Impacts from Cooling Systems	27.1	Yes
Refrigerant Impacts	**28.0**	
Refrigerant Impacts	28.1	Yes

4.3 ESD Initiatives Requirements

The following is a more detailed explanation of the ESD initiatives for each category.

A green tick shows if the initiative will be targeted.

Initiative 1.0 - Commissioning and Tuning	Category - Management	Targeted
1.1 - Environmental Performance Targets	The project team will set and document targets for the environmental performance of the project. The following is included in the design intent report or owner's project requirements (OPR) document where relevant. • Definition of nominated systems • Description of the basic functions, operations, and maintenance of the nominated systems. • Detail of the main components. • Target for energy consumption and budget for energy. • Target for water consumption and budget for water. • Indoor environment parameters. • Description of metering and monitoring systems.	✓
1.2 - Services and Maintainability Review	A comprehensive services and maintainability review of the project will be performed.	✓
1.3 - Building Commissioning	Comprehensive pre-commissioning and commissioning activities will be performed for all nominated building system where relevant. • Commissioning requirements for the project will be listed in the contractual tender or construction documentation for the project. • A commissioning plan will be developed for the project. • Air permeability tests will be carried out by a suitably qualified practitioner, in accordance with an approved standard, over a minimum area of the building.	✓
1.4 - Building Systems Tuning	A tuning process will be implemented that addresses nominated building systems. • Operating and Maintenance Manuals will be developed in accordance with approved standards and guidelines. • A building tuning manual or plan will be developed in accordance with the approved standards and guidelines. • A building tuning team will be created, including the facilities manager & the owner's representative. • The owner has engaged parties to tune the nominated systems where relevant.	✓
1.5 - Independent Commissioning Agent	An Independent Commissioning Agent (ICA) will advise, monitor, and verify the commissioning and tuning of the nominated building systems throughout the design, tender, construction, commissioning and tuning phases.	

Initiative 2.0 - Adaption and Resilience	Category - Management	Targeted
2.1 - Implementation of a Climate Adaptation Plan	A project specific climate adaptation plan will be developed in accordance with a recognised standard; and solutions will be included into the building design and construction that specifically address the risk assessment component of the adaptation plan where relevant. • The scenarios to be used in the climate adaptation plan are sourced from IPCC endorsed Global Circulation Models (GCMs). Proposed standards are CSIRO, State or Federal Climate Projections etc. • Relevant standards are; AS 5334:2013 Climate change adaptation for settlements and infrastructure; ISO31000-2009 - Risk Management - Principles and Guidance; and AGO, Climate Change Risks and Impacts: A Guide for Government and Business.	

Initiative 3.0 - Building Information	Category - Management	Targeted
3.1 - Building Information	Comprehensive operations and maintenance information will be developed and made available to the facilities management team; and relevant and current building user information will be developed and made available to all relevant stakeholders. • Operations and Maintenance Information, such as O&M Manuals or alternative equivalent documentation, will be produced and delivered to the building owner and/or facilities management team. • Appropriate content for all nominated building systems is readily available. • The appropriate user group has access to the information they require to deliver best practice environmental outcomes; and • Guidance on keeping information up to date is provided to facilities management in these documents. • A building logbook will be developed and delivered to the building owner and/or facilities management team. Will be developed in line with CIBSE TM31: Building Logbook Toolkit. • Covers all nominated building systems; and • Includes links or references to all relevant O&M information.	

Initiative 4.0 - Commitment to Performance	Category - Management	Targeted
4.1 - Environmental Building Performance	The project team has committed to set targets, measure and monitor environmental performance in the following ways: • A commitment to set targets and measure results for environmental performance. • A commitment to set targets and measure results that minimise construction waste from end of life of interior fitouts or other building attributes. • This can be achieved using Building Performance Metrics or Certified Operational Performance Rating.	
4.2 - End of Life Waste Performance	The project team has committed to set targets, measure and monitor environmental performance in the following ways: • Contractual Agreements • Certified Operational Performance Rating	

Initiative 5.0 - Metering & Monitoring	Category - Management	Targeted
5.1 - Metering	Metering that is easily accessible will be provided to monitor building energy and water consumption, including all energy and water common and major uses, and sources. • All energy and water major uses will be metered (by area or function). • All utility and non-utility meters will meet recognised metering guidelines. Meters are in an area that allows regular monitoring and maintenance by facilities managers and other facilities management personnel. • All meters and metering systems are commissioned and validated in accordance with the most current protocols and are capable of producing alerts if any inaccuracies in the meter network are found.	
5.2 - Monitoring	A monitoring strategy is addressed through a monitoring system, capable of capturing and processing the data produced by the installed energy and water meters, and accurately and clearly presenting data consumption trends. • A monitoring strategy will be developed in accordance with a recognised standard and provides appropriate information to the building manager. • Provide a description of the monitoring strategy developed and details of the metering schedule, location and type of meter and the estimated loads for water and energy.	

Initiative 6.0 - Responsible Building Practices	Category - Management	Targeted
6.1 - Environmental Management Plan	Comprehensive project-specific Environmental Management Plan (EMP) is in place for construction. The Principal Contractor will prepare a comprehensive, project-specific Environmental Management Plan (EMP) for the excavation, demolition and construction works. The EMP will be prepared in accordance with the latest version of the *NSW Environmental Management System Guidelines*.	✓
6.2 - Formalised Environmental Management System	The project's contractor has implemented a formalised environmental management system (EMS) for the project to identify, manage, audit and reduce environmental impacts, and report on environmental performance progress. The components of the EMS are in alignment with best practice guidelines. • The EMS will be certified by a third-party organisation against the noted standard. • Project teams will report any nonconformities recorded by the EMS during construction. • Where nonconformities with the EMS have been recorded, corrective and preventive actions will also be demonstrated to have been applied.	
6.3 - High Quality Staff Support	The project team will implement high quality staff support practices that will: • Promote positive mental and physical health outcomes of site activities and culture of site workers, through programs and solutions on site. • Enhance site workers' knowledge on sustainable practices through on-site, off-site, or online education programs.	

Initiative 7.0 - Operational Waste	Category - Management	Targeted
7.0 - Facilities	Bins or containers are provided for general public use that allow for separation of the applicable waste streams. A dedicated, sufficiently sized storage area for the separation and collection of various waste streams is provided. All the provisions in the waste management plan for the development should be adhered to.	✓

Initiative 8.0 - Indoor Air Quality	Category - IEQ	Targeted
8.1 - Ventilation System Attributes	The project has mitigated the entry of outdoor pollutants, the systems are designed for ease of maintenance and cleaning and the system will be cleaned prior to occupation and use. • The entry of outdoor pollutants is mitigated. • The system will be designed for ease of maintenance and cleaning. • The system will be cleaned prior to occupation and use. Provide a description of how air intakes are located away from specific potential outdoor contaminants and are designed to minimise the entry of pollutants to occupied spaces in accordance with a recognised standard. • Provide a description of how the system was designed for ease of maintenance and cleaning. • Provide confirmation that all new and existing ductwork were cleaned prior to use and occupation. If natural ventilation is proposed this target can be disregarded.	✓
8.2 - Provision of Outdoor Air	The nominated area is provided with enough outdoor air to ensure levels of indoor pollutants are maintained at acceptable levels. • Comparison to Australian Standard Outdoor air can be provided to the nominated area at a rate 50% greater than the minimum required by AS 1668.2:2012 or ASHRAE 62.1:2003. • Outdoor air can be provided to the nominated area at a rate 100% greater than the minimum required by AS 1668.2:2012 or ASHRAE 62.1:2003. • Provide a description of the system in place, occupancy rates, and how each space is provided with enough outdoor air.	
8.3 - Exhaust or Elimination of Pollutants	The project has limited the effects of indoor pollutants by either eliminating or exhausting the pollutants. • Sources of pollutants, such as printing or photocopy equipment, kitchen stoves or vehicles are compliant with minimum emissions standards. • Sources of pollutants are exhausted directly to the outside of the project in accordance with a recognised Standard; and/or physically separated from occupants. • Provide a description of the pollutant sources included in the project • Provide a description of how indoor pollutants are either exhausted, eliminated or physically separated from building occupants.	✓

Initiative 9.0 - Acoustic Comfort	Category - IEQ	Targeted
9.1 - Internal Noise Levels	Internal ambient noise levels are suitable and relevant to the activity type of the room. • In the nominated area, ambient sound levels are typically no more than 5dB(A) above lower figure in the range recommended in Table 1 of AS/NZ 2107:2016 (refer acoustic report). • Complete a table detailing noise levels as recorded by the Acoustic Consultant or Commissioning team (refer acoustic report).	✓
9.2- Reverberation	The nominated area will be built to reduce the persistence of sound to a level suitable to the activities of the space. • The reverberation time in the nominated area is below the maximum stated 'Recommended Reverberation Time' provided in table 1 of AS/NZ 2107:2016. • Table of reverberation times as recorded by acoustic consultant	✓
9.3 - Acoustic Separation	The nominated enclosed spaces have been built to minimise crosstalk between rooms and open areas. • Noise transmission between enclosed spaces will be addressed by the installation of partitions that achieve a weighted sound reduction index (Rw) as nominated in the Acoustic Report; • Noise transmission between enclosed spaces will be addressed by the installation of partitions that comply as nominated in the Acoustic Report; • The inter-tenancy apartment construction to habitable areas result in airborne noise isolation as nominated in the Acoustic Report; • All inter-tenancy walls should include Discontinuous Construction as defined by the Building Code of Australia; • Walls between apartments and public corridors results in airborne noise isolation standard as nominated in the Acoustic Report); • The floor construction above habitable rooms and wet areas of adjacent dwellings (i.e. floor cover) results in an impact isolation standard as nominated in the Acoustic Report); • Apartment entry doors include acoustic seals and achieve laboratory acoustic rating as nominated in the Acoustic Report).	✓

Initiative 10.0 - Lighting Comfort	Category - IEQ	Targeted
10.1 - Minimum Lighting Comfort	All lights are flicker free and have a minimum Colour Rendering Index (CRI) of 80.	✓
10.2 - General Illuminance and Glare Reduction	Lighting installed in the project achieves appropriate lighting levels that, on average, achieve 'best practice' illuminance as defined in AS 1680, and the maintained illuminance values achieve a uniformity of no less than the values given in Table 3.2 of AS 1680.1:2006, with an assumed standard maintenance factor of 0.8. Glare from lamps will be eliminated.	✓
10.3 - Surface Illuminance	A combination of lighting and surfaces improve the uniformity of lighting to give visual interest within the project's nominated area.	
10.4 - Localised Lighting Control	Occupants in the nominated area can control the lighting in their immediate environment.	

Initiative 11.0 - Visual Comfort	Category - IEQ	Targeted
11.1 - Glare Reduction	Glare in the nominated area, from sunlight through all viewing façades, is reduced through a combination of blinds, screens, fixed devices, or other means. • The project meets the requirements of the glare reduction by installation of fixed shading devices. • The project meets the requirements of the glare reduction criterion by installation of blinds or screens.	✓
11.2 - Daylight	The project demonstrates that it meets the requirements of the daylight criterion using a Daylight Factor calculation.	
11.3 - Views	60 % of the nominated area has a clear line of sight to a high quality internal or external view	✓

Initiative 12.0 - Indoor Pollutants	Category - IEQ	Targeted
12.1 - Paints, Adhesives, Sealants and Carpets	At least 95% of all internally applied paints, adhesives, sealants and carpets meet stipulated 'Total VOC Limits', or where no paints, adhesives, sealants or carpets are used in the building. • 95% (by volume) of all internally applied paints, adhesives, sealants and carpets meet the stipulated 'Total VOC Limits' of 12.1.1 as applicable; or products are certified under a Product Certification Scheme.	✓
12.2 - Engineered Wood Products	At least 95% of all engineered wood products meet stipulated formaldehyde limits or no new engineered wood products are used in the building. • No new engineered wood products are proposed to be used.	

Initiative 13.0 - Thermal Comfort	Category - IEQ	Targeted
13.1 - Thermal Comfort	The thermal comfort in the units are achieved through NatHERS thermal modelling and in accordance with BASIX.	✓

Initiative 14.0 - Greenhouse Gas Emissions	Category - Energy	Targeted
14.1 - Building Envelope	A minimum of 5% improvement on the Deemed-to-Satisfy (DTS) requirements of parts J1 for Roofs, Ceilings & Floors. Solar Absorption is below the maximum NCC allowable. Roof-lights total system U-value is below the max allowable and the SHGC has a 5% improvement.	
14.2 - Wall-Glazing & Retail Display	A minimum of 5% improvement on the Deemed-to-Satisfy (DTS) requirements of the total system U-value. A minimum of 5% improvement on the Deemed-to-Satisfy (DTS) requirements of the total system SHGC. All wall total R-values are 5% above the minimum allowable threshold/backstop. All display glazing has a 5% improvement on the (DTS) for the total system U-value & SHGC.	
14.3 - Lighting	The project provides compliance improvements for lighting power density compared with the minimum NCC Section J6 Requirements. The project provides an automated lighting control system(s), such as occupant detection and daylight adjustment are provided to nominated areas.	✓
14.4 - Ventilation & AC	The project provides compliance improvements for fans and pumps as compared with the minimum NCC Section J5 Requirements.	✓
14.5 - DHW	DHW types, heat source and efficiencies.	✓
14.6 - Transition Plan	Proponent will demonstrate how the transition plan will be integrated into the design and operation of the building, including considerations within to accommodate any replacements or changes required for delivery of new services during the operational phase	
14.7 - Fuel Switching	No fossil fuels are burned on site to generate electricity, heating or cooling.	
14.8 - On-Site Storage	Provide a description of the onsite storage systems, including plans, specifications, a description of sizing and design of the system.	

	Provide a description of how on-site or off-site renewable energy not instantaneously used is able to be stored for use at a later time.	
14.9 - Vertical Transportation	Lift Energy Performance levels for running time & idle to be as per ISO 25745-2 Lift & Escalator Energy Classification as per ISO 25745-2 & ISO 25745-3.	✓
14.10 - Off-site Renewables	The project has committed to off-site renewable procurement for a minimum period of ten years immediately following Practical Completion. 50% of the building's electricity consumption is to be met by off-site renewable electricity solutions	

Initiative 15.0 - Peak Electricity Demand Reduction	**Category - Energy**	**Targeted**
15.1 - On Site Energy Generation	The project uses on-site electricity generation to reduce peak electricity demand.	

Initiative 16.0 - Sustainable Transport	**Category - Transport**	**Targeted**
16.1 - Access by Public Transport	Public Transport Accessibility Index as calculated by the Public Transport Calculator.	✓
16.2 - Reduced car parking provision	Maximum car Parking to occupant ratio.	
16.3 - Low Emission Vehicle Infrastructure	One electric vehicle space will be provided.	✓
16.4 - Active Transport Facilities	Bicycle Parking and associated facilities (where required) have been provided to regular building occupants. Bicycle parking will be provided to building visitors. Provide a description of secure bicycle parking spaces and end of trip facilities.	✓
16.5 - Walkable Neighbourhoods	At least four amenities are within 400m of the development.	✓

Initiative 17.0 - Portable Water	Category – Water	Targeted
17.1 - Sanitary Fixture Efficiency	Highly efficient water star ratings (WELS) are specified throughout. 4-star toilets; 3-star showers; 6-star taps As per BASIX Certificate.	✓
17.2 - Rainwater Reuse	A rainwater tank is installed to collect and reuse rainwater within the project's site boundary in accordance with hydraulic engineer and landscape architect.	✓
17.3 - Heat Rejection	No water is used for heat rejection	✓
17.4 - Landscape Irrigation	Drip irrigation with moisture sensor override is installed or no water is used for irrigation.	
17.5 - Fire System Test Water	The fire protection system within the project does not expel water for testing.	

Initiative 18.0 - Life Cycle Impacts	Category - Materials	Targeted
18.1 - Concrete	Portland cement content will be reduced by up to 30%, measured by mass across all concrete used in the project compared to the reference case. Or Portland cement content will be reduced by up to 40%, measured by mass across all concrete used in the project compared to the reference case. At least 50% of the mix water for all concrete used is captured or reclaimed. At least 40% of coarse aggregate in the concrete is crushed slag aggregate or another alternative material Or At least 25% of fine aggregate (sand) inputs in the concrete are manufactured sand or other alternative materials	
18.2 - Steel	The mass of steel framing will be reduced when compared to standard practice. The mass of steel reinforcement will be reduced when compared to standard practice	

Initiative 19.0 - Responsible Building Materials	Category - Materials	Targeted
19.1 - Structural and Reinforcing Steel	95% of the buildings steel is sourced from a Responsible Steel Maker. *For steel framed buildings*: At least 60% of the fabricated structural steelwork is supplied by a steel fabricator/steel contractor accredited to the Environmental Sustainability Charter of the Australian Steel Institute (ASI);	
19.2 - Timber Products	At least 95% (by cost) of all timber used in the building and construction works is either: Certified by a forest certification scheme that meets the GBCA's 'Essential' criteria for forest certification; or is from a reused source.	
19.3 - Permanent Formwork, Pipes, Flooring, Blinds and Cables	At least 90% (by cost) of all cables, pipes, flooring and blinds in a project either: Do not contain PVC and have an Environmental Product Declaration (EPD); or Meet Best Practice Guidelines for PVC.	✓

Initiative 20.0 - Sustainable Products	Category - Materials	Targeted
20.1 - Product Transparency and Sustainability	Products specified in the project meet requirements for product sustainability and transparency.	

Initiative 21.0 - Construction and Demolition Waste	Category - Materials	Targeted
21.1 - Fixed Benchmark	The total amount of waste sent to landfill will be minimised when compared against a typical building.	

Initiative 22.0 - Ecological Value	Category - Land Use & Ecology	Targeted
22.1 - Endangered, threatened, or vulnerable species	A check for critically endangered, endangered or vulnerable species or ecological communities was carried out as part of the Development Approval process	✓
22.2 - Ecological Value	The ecological value of the site is improved by the project.	✓

Initiative 23.0 Sustainable Sites	Category - Land Use & Ecology	Targeted
23.1- Reuse of Land	75% of the site was Previously Developed Land at the date of site purchase.	
23.2 - Contamination and Hazardous Materials	Where a comprehensive hazardous materials survey will be carried out and identified asbestos, lead or PCBs in any existing buildings or structures and they have been stabilized, or removed and disposed of in accordance with best practice guidelines	✓

Initiative 24.0 Heat Island Effect	Category - Land Use & Ecology	Targeted
24.1 - Heat Island Effect Reduction	Building or landscaping elements that reduce the solar reflectance of the site are considered.	

Initiative 25.0 - Stormwater	Category - Emissions	Targeted
25.1 - Stormwater Peak Discharge	The post-development peak event discharge from the site does not exceed the pre-development peak event discharge.	✓
25.2 - Stormwater Pollution Targets	All stormwater discharged from site meets the specified Pollution Reduction Targets.	✓

Initiative 26.0 - Light Pollution	Category - Emissions	Targeted
26.1 - Light Pollution to Neighbouring Bodies	The project complies with AS 4282:1997 'Control of the Obtrusive Effects of Outdoor Lighting'.	✓
26.2 - Light Pollution to Night Sky	The project has demonstrated that a specified reduction in light pollution will be achieved by the project.	✓

Initiative 27.0 - Microbial Control	Category - Emissions	Targeted
27.1 - Legionella Impacts on the Cooling Systems	The building is either naturally ventilated; or has waterless heat-rejection systems; or has water-based heat rejection systems that include measures for Legionella control and Risk Management.	✓

Initiative 28.0 - Refrigerant Impacts	Category - Emissions	Targeted
28.1 - Refrigerant Impacts	Refrigerant systems within the proposed HVAC systems have been considered to reduce overall environmental impact. R-32 will be nominated which provides the best commercially viable refrigerant with the least amount of GWP.