

CREDWELL

Project Gosford Gateway

Report ESD Report

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Document Control

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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 the DCP design principles.

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

It must be noted that these ESD initiatives are for reference only and are not binding.

2 Introduction

2.1 Building Location & Description

The building, the subject of this report, is located at 8-16-Watt Street, Gosford.

The building consists of a State Significant Development (SSD) application. This will include three mixed use towers with retail podiums and a centre public plaza.

2.2 Objectives

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

2.3 Sustainable Design Legislation

This development is governed by:

1. SEPP - 2011
2. SEPP - Gosford City Centre - 2018
3. Gosford City Centre - DCP 2018

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.

This development site is specifically identified in the State Environmental Planning Policy 2011 Schedule 2 as a State Significant Development (SSD).

The State Environmental Planning Policy (Gosford City Centre) 2018 (SEPP GCC) is applicable to this development and is complimented by the Gosford City Centre - Development Control Plan (GCC DCP).

It should be noted that only the SEPP GCC is mandatory with the GCC DCP providing best practice design guidelines.

3.1 SEPP Gosford City Centre 2018

The aims of this Policy are as follows -

- a) to promote the economic and social revitalisation of Gosford City Centre,
- b) to strengthen the regional position of Gosford City Centre as a multi-functional and innovative centre for commerce, education, health care, culture and the arts, while creating a highly liveable urban space with design excellence in all elements of its built and natural environments,
- c) to protect and enhance the vitality, identity and diversity of Gosford City Centre,
- d) to promote employment, residential, recreational and tourism opportunities in Gosford City Centre,
- e) to encourage responsible management, development and conservation of natural and man-made resources and to ensure that Gosford City Centre achieves sustainable social, economic and environmental outcomes,
- f) to protect and enhance the environmentally sensitive areas and natural and cultural heritage of Gosford City Centre for the benefit of present and future generations,
- g) to help create a mixed-use place, with activity during the day and throughout the evening, so that Gosford City Centre is safe, attractive and efficient for, and inclusive of, its local population and visitors alike,
- h) to preserve and enhance solar access to key public open spaces,
- i) to provide direct, convenient and safe pedestrian links between Gosford City Centre and the Gosford waterfront,
- j) to ensure that development exhibits design excellence to deliver the highest standard of architectural and urban design in Gosford City Centre.

3.2 Gosford City Centre DCP 2018

The GCC DCP 2018 identifies the following specific sustainable design criteria for this development.

Places and character - Clause 3.2 - City North

Objectives

1. Promote health and education uses to support the creation of an innovation precinct.
2. Connect the hospital to the city with improved active transport connections.
3. Improve permeability and provide new pedestrian links across the rail corridor.
4. Increase public open space, to provide green relief, connect with the surrounding bushland, and provide a sense of identity for the north.
5. Provide a range of housing types to support a diverse and varied population, including key workers, students, young professionals and aged care.

Character

City North includes a range of important regional services, including education and health facilities, as well as significant open space and recreational assets.

The hospital is a major investment in the future of Gosford. Connecting the hospital back into the city, with new connections over the rail corridor, is critical to promote the co-location of uses, enhance activation and revitalise the area.

Future development should leverage off the existing health and education assets, delivering a diverse range of health and employment uses that will strengthen the role of Gosford as a regional city.

Future development should deliver a range of housing types including affordable housing, and support a diverse range of households, including families, students and workers, within walking distance of the city centre.

Future development should be supported by new pedestrian connections, improved walkability and an attractive public domain.

Key Sites - Clause 6.3 - Key Site 2 - Gateway Centre

1. This is a key site due to its size and proximity to Gosford Railway Station and as it offers significant urban renewal opportunities. Accordingly, this site must be subject to a master planning process to ensure holistic consideration of urban design issues.
2. A new through site link from Watt Street to Mann Street is desirable in order to connect pedestrians, east and west, across the city.
3. Taller buildings may be appropriate on this site, subject to design testing to determine the optimum location of towers and the new through site link being delivered.
4. The through site link should be:
 - a. designed as an internal arcade, at a minimum width of 4.5metres;
 - b. designed to be two storeys in height (having a minimum floor to ceiling height of 8 metres) to ensure that the space is inviting and encourages use by the public;
 - c. publicly accessible 24 hours a day; and
 - d. aligned with the existing sandstone archway in Burns Place.
5. The appropriate height for development of this site will be determined through the master planning process, which must include design testing and consideration of impacts on views and overshadowing. In particular, the master planning process should test options to achieve glimpses of Rumbalara Reserve from Burns Park. The master planning process will also need to consider the building's potential impacts to the heritage listed Burns Park, including the fountain, spaces and layout and the cultural plantings.
6. It is desirable to provide end of trip facilities in the City North place area, in close proximity to the railway station.
7. Where public domain improvements are provided on -site, consideration may be given to additional height.

Built form - Clause 5.2.8 - Building sustainability and environmental performance for key sites, medium sites and large sites

Objectives

- (a) To provide enhanced building sustainability and environmental performance controls.
- (b) To minimise energy use through passive building design and energy efficient systems.
- (c) To minimise potable water use.
- (d) To minimise waste and promote the reuse and recycling of materials.
- (e) To promote thermal comfort through natural ventilation in residential developments.
- (f) To promote passive cooling and air flow through innovative and renewable sources of heating and cooling

Controls

1. Measures to improve energy efficiency, water efficiency and waste minimisation should be investigated as part of the enhanced design excellence and design review process.
2. Buildings are to comply with or where possible exceed the Building Sustainability Index (BASIX) by 10% for residential development.
3. Buildings are to achieve a 4.5 star as built NABERS rating for commercial office buildings.
4. To minimise energy use, buildings are to be designed to: a. include high levels of insulation to reduce energy consumption and include energy efficient appliances; and b. incorporate green roof and green facade/green wall elements to reduce heat loads on internal spaces.
5. Development is to reduce the need for active heating and cooling by incorporating passive design measures including design, location and thermal properties of glazing, natural ventilation, appropriate use of thermal mass and external shading, including vegetation.
6. All new water fittings and fixtures in all non-residential development, the public domain, and public and private parks are to be the highest Water Efficiency Labelling Scheme (WELS) star rating available at the time of development.
7. Rainwater tanks are encouraged to be installed for all non-residential development.
8. Where possible, use building materials, fittings and finishes that: a. have been recycled; b. are made from or incorporate recycled materials; and c. have been certified as sustainable or 'environmentally friendly' by a recognised third-party

Environmental management - Clause 8.2 - Energy Efficiency and Conservation**Objectives**

- (a) To provide enhanced building sustainability and environmental performance controls.
- (b) To minimise greenhouse gas emissions.
- (c) To use natural climatic advantages of the coastal location such as cooling summer breezes, and exposure to unobstructed winter sun.

Controls - Residential

1. New dwellings, including multi-unit development within a mixed-use building and serviced apartments intended or capable of being strata titled, are to demonstrate compliance with State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004.

Controls - Non-Residential

1. Improve the control of mechanical space heating and cooling by designing heating/cooling systems to target only those spaces which require heating or cooling, not the whole building.
2. Improve the efficiency of hot water systems by: a. insulating hot water systems, and b. installing water saving devices, such as flow regulators, 3 stars rated shower heads, dual flush toilets and tap aerators.
3. Reduce reliance on artificial lighting and designing lighting systems to target only those spaces which require lighting at any particular 'off-peak' time, not the whole building.
4. Provide an Energy Efficiency Report from a suitably qualified consultant to accompany any development application for new commercial office development with a construction cost of \$5 million or more that demonstrates a commitment to achieve no less than 4 stars under NABERS.
5. All non-residential development Classes 5 to 9 need to comply with the Building Code of Australia energy efficiency provisions.

Environmental management - Water conservation - Clause 8.3**Objectives**

- (a) To reduce per-capita mains consumption of potable water.
- (b) To harvest rainwater for use and reduce urban storm water runoff.
- (c) To reduce wastewater discharge.
- (d) To reuse wastewater where appropriate.
- (e) To safeguard the environment by improving the quality of water run-off and to mimic pre-development flows where appropriate.
- (f) To ensure infrastructure design is complimentary to current and future water use.
- (g) To protect public health.

Controls - Residential

1. New dwellings, or developments which contain a residential component within a mixed-use building or serviced apartments intended or capable of being strata titled, are to demonstrate compliance with State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004.

Controls - Non-Residential

1. All new development shall demonstrate implementation of best practice water saving infrastructure including provision of rainwater storm water retention tanks.

N.B - GCC has water cycle management guidelines.

Environmental management - Clause 8.6 - Waste and Recycling

Objectives

- (a) To minimise waste generation and disposal to landfill with careful source separation, reuse and recycling.
- (b) To minimise the generation of waste through design, material selection, building and best waste management practices.
- (c) To plan for the types, amount and disposal of waste to be generated during demolition, excavation and construction of the development as well as the ongoing generation of waste.
- (d) To ensure efficient storage and collection of waste and quality design of facilities.

Controls - Residential

1. All development is to provide for storage of waste bins on-site in an area of sufficient size to accommodate waste generated by the development in accordance with the calculation tables listed in the DCP. Three types of waste are described which are general waste, recycling and garden organics.
2. The storage area must accommodate the number of individual mobile bins required or accommodate sufficient larger bulk bins using the calculation tables in the DCP.
3. The storage area must be located in a position which is:
 - visibly unobtrusive from the street and compatible with the design of the main building,
 - easily accessible to dwelling occupants,
 - accessible to waste collection vehicles and operators (or adequately managed by the body corporate to permit relocation of bins to an approved collection point),
 - has water and drainage facilities for cleaning and maintenance; and e. does not immediately adjoin private open space, windows or clothes drying areas.
4. Provision is to be made to allow collection of the waste either directly from the waste storage area, or by transfer to a waste collection point. The collection point will be:
 - where street frontage and WorkCover requirements permit, by placement of mobile bins in line at the kerbside, or
 - on-site, with access in accordance with the requirements of Council's Waste Control Guidelines.

Controls - Non-Residential

1. Development applications for all non-residential development must be accompanied by a waste management plan that addresses:
 - best practice recycling and reuse of construction and demolition materials,
 - use of sustainable building materials that can be reused or recycled at the end of their life,
 - handling methods and location of waste storage areas that have no negative impact on the streetscape, building presentation or amenity of occupants and pedestrians, and
 - procedures for the on-going sustainable management of green waste; garbage and recyclables including, glass, metals and paper; including access estimated volumes; required bin capacity and on-site storage requirements.

N.B - GCC has waste control guidelines.

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.

Category	Total Initiatives Percentage
Management	11/15
IEQ	13/17
Energy	8/11
Transport	5/5
Water	4/5
Materials	5/9
Land Use and Ecology	5/5
Emissions	4/6
Percentage targeted	75%

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 the Gosford City Council SEPP & DCP 2018.

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	Yes
Responsible Building Practices	6.0	
Environmental Management Plan	6.1	Yes
Formalised Environmental Management System	6.2	Yes
High Quality Staff Support	6.3	Yes
Operational Waste	7.0	
Facilities	7.1	Yes
Total Initiatives/targeted	15	11

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	Yes
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	Yes
Thermal Comfort	13.0	
Thermal Comfort	13.1	Yes
Advanced Thermal Comfort	13.2	No
Total Initiatives/targeted	17	13

4.2.3 - Energy

Initiatives	Code	Targeted
Greenhouse Gas Emissions	14.0	
Building Envelope	14.1	Yes
Wall-Glazing Constriction & Retail Glazing	14.2	Yes
Lighting	14.3	Yes
HVAC	14.4	Yes
DHW	14.5	Yes
Transition Plan	14.6	Yes
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	Yes
Total Initiatives/targeted	11	8

N.B- The GCC DCP highlights that an Energy Efficiency Report from a suitably qualified consultant to accompany any development application for new commercial office development with a construction cost of \$5 million or more that demonstrates a commitment to achieve no less than 4 stars under NABERS.

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
Total Initiatives/targeted	5	5

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	Yes
Fire System Test Water	17.5	No
Total Initiatives/targeted	5	4

4.2.6 - Materials

Initiatives	Code	Targeted
Life Cycle Impacts	18.0	
Concrete	18.1	Yes
Steel	18.2	Yes
Building Reuse	18.3	No
Structural Timber	18.4	No
Responsible Building Materials	19.0	
Structural and Reinforcing Steel	19.1	Yes
Timber Products	19.2	Yes
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
Total Initiatives/targeted	9	5

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	Yes
Contamination of Hazardous Materials	23.2	Yes
Heat Island Effect	24.0	
Heat Island Effect Reduction	24.1	Yes
Total Initiatives/targeted	5	5

4.2.8 - Emissions


Initiatives	Code	Targeted
Stormwater	25.0	
Stormwater Peak Discharge	25.1	No
Stormwater Pollution Targets	25.2	No
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
Total Initiatives/targeted	6	4

4.3 ESD Initiatives Requirements



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




Initiative 1.0 - Commissioning and Tuning	Category - Management	Targeted
1.1 - Environmental Performance Targets	<p>The project team has set and documented targets for the environmental performance of the project. The following is included in the design intent report or owner's project requirements (OPR) document:</p> <ul style="list-style-type: none"> • 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 has been performed.	
1.3 - Building Commissioning	<p>Comprehensive pre-commissioning and commissioning activities have been performed for all nominated building systems.</p> <ul style="list-style-type: none"> • Commissioning requirements for the project are listed in the contractual tender or construction documentation for the project. • A commissioning plan has been developed for the project. • Air permeability tests have been 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	<p>A tuning process is in place that addresses all nominated building systems.</p> <ul style="list-style-type: none"> • Operating and Maintenance Manuals have been developed in accordance with approved standards and guidelines. • A building tuning manual or plan has been developed in accordance with the approved standards and guidelines. • A building tuning team has been created, including the facilities manager, the owner's representative and the ICA (if applicable). • The owner has engaged parties to tune the nominated systems. 	
1.5 - Independent Commissioning Agent	An Independent Commissioning Agent (ICA) has advised, monitored, and verified 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	<p>A project specific climate adaptation plan has been developed in accordance with a recognised standard; and solutions have been included into the building design and construction that specifically address the risk assessment component of the adaptation plan.</p> <ul style="list-style-type: none"> 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	<p>Comprehensive operations and maintenance information is developed and made available to the facilities management team; and relevant and current building user information is developed and made available to all relevant stakeholders.</p> <ul style="list-style-type: none"> Operations and Maintenance Information, such as O&M Manuals or alternative equivalent documentation, has been 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 has been developed and delivered to the building owner and/or facilities management team. Has been 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	<p>The project team has committed to set targets, measure and monitor environmental performance in the following ways:</p> <ul style="list-style-type: none"> • 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	<p>The project team has committed to set targets, measure and monitor environmental performance in the following ways:</p> <ul style="list-style-type: none"> • Contractual Agreements • Certified Operational Performance Rating 	



Initiative 5.0 - Metering & Monitoring	Category - Management	Targeted
5.1 - Metering	<p>Accessible metering is provided to monitor building energy and water consumption, including all energy and water common and major uses, and sources.</p> <ul style="list-style-type: none"> • All energy and water major uses have been metered (by area or function). • All utility and non-utility meters 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	<p>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.</p> <ul style="list-style-type: none"> • A monitoring strategy has been 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. • The project includes an automated monitoring system which captures data from all energy and water meters within the project and provides accurate and easily read reports on consumption trends. • Provide a description of the automatic monitoring system capabilities. 	



Initiative 6.0 - Responsible Building Practices	Category - Management	Targeted
6.1 - Environmental Management Plan	<p>Comprehensive project-specific Environmental Management Plan (EMP) is in place for construction.</p> <p>The Principal Contractor has prepared a comprehensive, project-specific Environmental Management Plan (EMP) for the excavation, demolition and construction works. The EMP has been prepared in accordance with the latest version of the <i>NSW Environmental Management System Guidelines</i>.</p>	
6.2 - Formalised Environmental Management System	<p>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.</p> <ul style="list-style-type: none"> • The EMS has been certified by a third-party organisation against the noted standard. • Project teams must report any nonconformities recorded by the EMS during construction. • Where nonconformities with the EMS have been recorded, corrective and preventive actions must also be demonstrated to have been applied. 	
6.3 - High Quality Staff Support	<p>The project team has implemented high quality staff support practices that:</p> <ul style="list-style-type: none"> • 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	<p>Bins or containers are provided for general public use that allow for separation of the applicable waste streams.</p> <p>A dedicated, sufficiently sized storage area for the separation and collection of various waste streams is provided.</p> <p>Best practice access requirements for waste collection are met.</p>	


Initiative 8.0 - Indoor Air Quality	Category - IEQ	Targeted
8.1 - Ventilation System Attributes	<p>The project has mitigated the entry of outdoor pollutants, the systems are designed for ease of maintenance and cleaning and the system has been cleaned prior to occupation and use.</p> <ul style="list-style-type: none"> • The entry of outdoor pollutants is mitigated in accordance with credit requirements • The system is designed for ease of maintenance and cleaning in accordance with credit requirements; • The system has been cleaned prior to occupation and use in accordance with credit requirements. 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. 	
8.2 - Provision of Outdoor Air	<p>The nominated area is provided with enough outdoor air to ensure levels of indoor pollutants are maintained at acceptable levels.</p> <ul style="list-style-type: none"> • Comparison to Australian Standard Outdoor air is 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 is 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	<p>The project has limited the effects of indoor pollutants by either eliminating or exhausting the pollutants.</p> <ul style="list-style-type: none"> • Sources of pollutants, such as printing or photocopy equipment, kitchen stoves or vehicles are compliant with minimum emissions standards or are not present within the nominated area in the project • 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	<p>Internal ambient noise levels are suitable and relevant to the activity type of the room.</p> <ul style="list-style-type: none"> In the nominated area, ambient sound levels are no more than 5dB(A) above lower figure in the range recommended in Table 1 of AS/NZ 2107:2016. Complete a table detailing noise levels as recorded by the Acoustic Consultant or Commissioning team. 	
9.2- Reverberation	<p>The nominated area has been built to reduce the persistence of sound to a level suitable to the activities of the space.</p> <ul style="list-style-type: none"> 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	<p>The nominated enclosed spaces have been built to minimise crosstalk between rooms and open areas.</p> <ul style="list-style-type: none"> Noise transmission between enclosed spaces has been addressed by the installation of partitions that achieve a weighted sound reduction index (Rw) of 35/45. Noise transmission between enclosed spaces has been addressed by the installation of partitions that comply with $D_w + L_{AeqT} > 75$ The inter-tenancy apartment construction to habitable areas result in airborne noise isolation standard of $R_w + C_{tr} > 55$; and 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 of $R_w > 55$; and The floor construction above habitable rooms and wet areas of adjacent dwellings (i.e. floor cover) results in an impact isolation standard of $L_{n,w} + C_I < 55$. Apartment entry doors include acoustic seals and achieve laboratory acoustic rating of $R_w 30$. 	





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	<p>Non Resi - 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.</p> <p>Resi - The lighting design includes or permits general fixed lighting that provides good maintained illuminance values for the entire room and the installed fittings all have a rated colour variation not exceeding 3 MacAdam Ellipses (decorative fittings being exempt).</p> <p>Glare from lamps has been eliminated.</p>	
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	<p>Glare in the nominated area, from sunlight through all viewing façades, is reduced through a combination of blinds, screens, fixed devices, or other means.</p> <ul style="list-style-type: none"> 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. 	
11.3 - 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. <ul style="list-style-type: none"> 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. <ul style="list-style-type: none"> No new engineered wood products are used 	





Initiative 13.0 - Thermal Comfort	Category - IEQ	Targeted
13.1 - Thermal Comfort	A high degree of thermal comfort is provided to occupants in the space, equivalent to 80% of all occupants being satisfied in the space. <ul style="list-style-type: none"> Thermal comfort is demonstrated with a PMV model where PMV levels between ± 1.0 (inclusive) are achieved. 	



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	<p>The project provides compliance improvements for lighting power density compared with the minimum NCC Section J6 Requirements.</p> <p>The project provides an automated lighting control system(s), such as occupant detection and daylight adjustment are provided to [95%] of the nominated area.</p> <p>Office spaces to have individually switched lighting zones not exceeding 100m².</p>	
14.4 - Ventilation & AC	<p>The project provides compliance improvements for fans and pumps as compared with the minimum NCC Section J5 Requirements.</p> <p>Better Packaged Air Conditioner and Refrigerant Chiller Energy Efficiency Ratios.</p>	
14.5 - DHW	DHW types, heat source and efficiencies	
14.6 - Transition Plan	<p>Summarise how the building will transition away from the use of fossil fuels for energy, heating or cooling from on-site or near-site sources by 2030.</p> <p>Provide evidence that transition plan has been published publicly on a website or public reporting mechanism.</p> <p>Demonstrate how the transition plan has been 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</p>	
14.7 - Fuel Switching	No fossil fuels are burned on site to generate electricity, heating or cooling and at least 15% of the annual energy consumption required by the building is generated by on site renewables.	
14.8 - On-Site Storage	<p>Provide a description of the onsite storage systems, including plans, specifications, a description of sizing and design of the system.</p> <p>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.</p>	
14.9 - Vertical Transportation	<p>Lift Energy Performance levels for running time & idle to be as per ISO 25745-2</p> <p>Lift & Escalator Energy Classification as per ISO 25745-2 & ISO 25745-3.</p>	
14.10 - On-site Renewables	<p>The project has committed to off-site renewable procurement for a minimum period of ten years immediately following Practical Completion.</p> <p>50% of the building's electricity consumption is to be met by off-site renewable electricity solutions</p>	

Initiative 15.0 - Peak Electricity Demand Reduction	Category - Energy	Targeted
15.1 - On Site Energy Generation	The project uses on-site electricity generation systems to reduce the total peak demand by at least 15%	

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.	
16.3 - Low Emission Vehicle Infrastructure	Four electric vehicle spaces and charging infrastructure are provided This is with an allowance for Four future charging stations also.	
16.4 - Active Transport Facilities	Bicycle Parking and associated facilities (where required) have been provided to regular building occupants. Bicycle parking has been provided to building visitors. Provide a description of secure bicycle parking spaces and end of trip facilities.	
16.5 - Walkable Neighbourhoods	Project Walkscore. At least eight 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. 6-star urinals; 4-star toilets; 3-star showers; 5-star dishwashers. Tap aerators to be specified throughout.	
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.	




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


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. <i>For steel framed buildings:</i> 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 has been minimised when compared against a typical building.	


Initiative 22.0 - Ecological Value	Category - Land Use & Ecology	Targeted
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 - Land Use/type	At the date of site purchase or date of option contract, the project site did not include old growth forest or wetland of 'High National Importance', did not impact on 'Matters of National Significance', and is not prime agricultural land.	
23.2- Reuse of Land	75% of the site was Previously Developed Land at the date of site purchase.	
23.3 - Contamination and Hazardous Materials	Where a comprehensive hazardous materials survey has been 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. The L2 roof which represents >25% of the site is to be a dark colour.	

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 has been 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.	