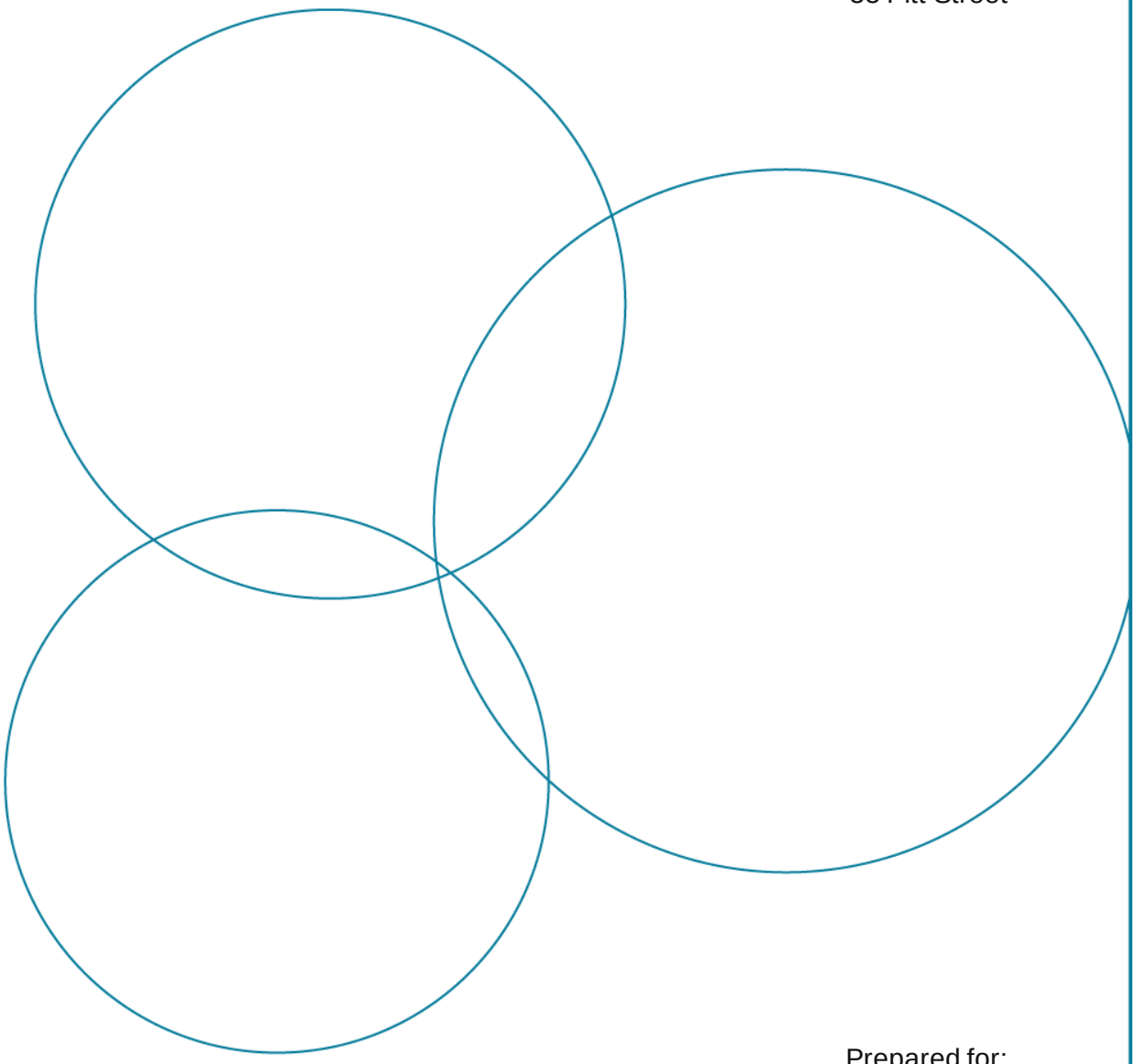
Attachment A14

Ecological Sustainable Development Strategy

3 February 2020

Ecologically Sustainable Development Strategy

55 Pitt Street



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Contents

Executive Summary

This report outlines how environmentally sustainable development (ESD) principles will be incorporated into the design, construction and ongoing operation of the proposed development at 37-57 Pitt Street, 6-8 Underwood Street and 8-14 Dalley Street amalgamating to become the proposed subject site of 55 Pitt Street.

The project will be designed according to best practice ESD principles across a wide range of environmental impact categories including energy, water, materials, ecology, emissions, transport, indoor environmental quality and innovation. Rigorous management and governance procedures will improve sustainability outcomes in operation, and the development will be certified in accordance with independent third-party rating systems in design, construction and operation.

The following environmental certifications will be targeted:

- Property Council of Australia (PCA) Guidelines for Premium office space
- A minimum 6-Star Green Star Design & As-Built v1.3 rating
- A minimum 5.5-Star National Built Environment Rating System (NABERS) Energy base building rating
- A minimum 4-Star NABERS Water whole building rating

The project will also comply with the City of Sydney Development Control Plan (DCP) 2012 General Provisions Section 3.6 Ecologically Sustainable Development.

Specific sustainability initiatives to be implemented include:

- Selection of non-toxic finishes to improve Indoor Environmental Quality (IEQ)
- Water-efficient fittings, fixtures and appliances to minimise water demand
- Rainwater harvesting and storage for reuse
- Load reduction, passive design, energy-efficient building services and smart controls to reduce energy consumption
- Rooftop photovoltaic system generating renewable electricity
- Promotion of active living through design and education strategies, including recreational and end-of-trip facilities
- Enhanced commissioning and tuning practices to translate design intent into actual performance
- Environmental and construction waste management to ISO14001 standard during demolition and construction
- Divert a minimum of 90% of construction and demolition waste from landfill
- Adequate space for recycling in operation
- Selective procurement to consider the supply chain impacts of materials used in construction in terms of environmental and social responsibility, and to reduce embodied carbon

Throughout the project, appropriate documentation will be collected to demonstrate that the chosen sustainability initiatives are incorporated into the design and delivery of the building.

Section 3 of this report outlines the requirements from the City of Sydney Council Planning Proposal along with ESD initiatives adopted to achieve each requirement.

1 Introduction

1.1 General

This document has been prepared to support the Planning Proposal prepared by Ethos Urban for the land at 37-57 Pitt Street, 6-8 Underwood Street and 8-14 Dalley Street amalgamating to become the proposed subject site of 55 Pitt Street.

The site is located at the northern end of Sydney's Central Business District within the City of Sydney's Local Government Area. Figure 1 below shows the context of the site while further detail is provided in Table 1.

The proposal relates to a commercial office tower with ground floor retail.

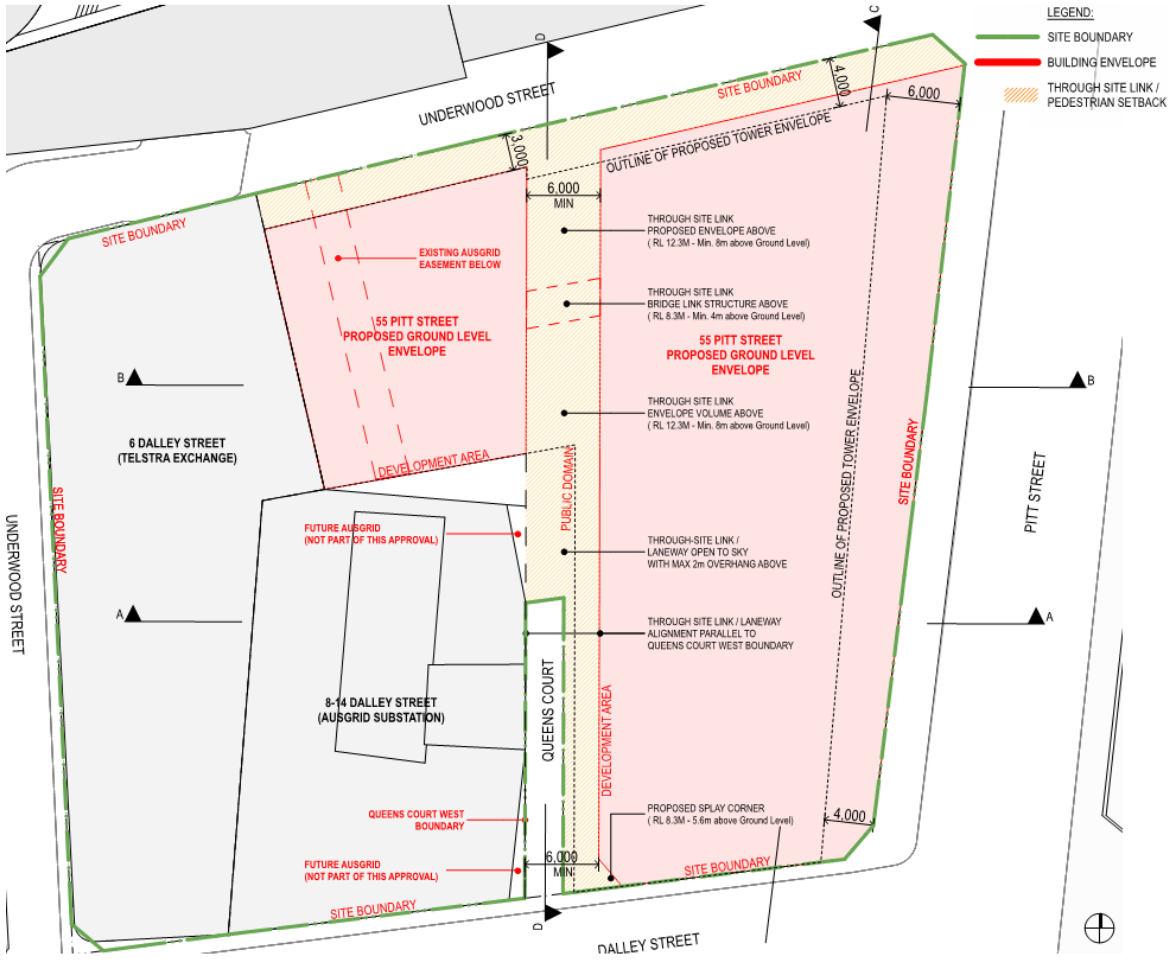


Figure 1 – Detailed location plan

Table 1. Site works details

Owner	Address	Works Being Done
Mirvac	37 Pitt Street	Major demolition and rebuild of 55 Pitt St commercial tower
	49-57 Pitt Street	
	6-8 Underwood Street	
Telstra	Telstra Exchange Site – 6 Dalley Street	Cosmetic works – hard and soft landscaping, façade upgrades, roof upgrades.
Ausgrid	Ausgrid Substation Site – 8-14 Dalley Street	

1.2 1.2 Sustainability requirements

Minimum requirements apply to the proposed development including the National Construction Code (NCC) Section J for Energy Efficiency and City of Sydney Council Development Control Plan (DCP) requirements.

Council's submission requirements include the following:

> *'Environmentally Sustainable Development Strategy: Identify strategies, measures and benchmarks for environmental performance'.*

The project will comply with the City of Sydney Development Control Plan (DCP) 2012 General Provisions Section 3.6 Ecologically Sustainable Development.

The project is also being designed to achieve the following environmental certifications and standards:

- Property Council of Australia (PCA) Guidelines for Premium office space
- A minimum 6-Star Green Star Design & As-Built v1.3 rating
- A minimum 5.5-Star National Built Environment Rating System (NABERS) Energy base building rating
- A minimum 4-Star NABERS Water whole building rating

Details on how ESD will be incorporated into the project are provided in Section 2.

2 Environmentally Sustainable Development Strategy

The project will be designed according to best practice principles of environmentally sustainable development (ESD).

2.1 Governance

The proposed development will establish and maintain strong governance practices, promoting engagement, transparency and resilience to a changing climate.

Good environmental management practices will be adopted, including enhanced commissioning, ongoing tuning processes, building user information and environmental performance targets. Best practice construction environmental management processes will be implemented, as well as waste diversion targets from landfill. Metering and monitoring strategies will ensure operational performance can be tracked and optimised.

The environmental credentials of the building will be verified by independent review. The following environmental certifications will be targeted for the project:

- A minimum 6-Star Green Star Design & As Built v1.3
- A minimum 5.5-Star NABERS Energy base building
- A minimum 4-Star NABERS Water whole building

Governance and management strategies are outlined in further detail in this section.

2.1.1 Green Star Accredited Professional

A Green Star Accredited Professional will be appointed to provide sustainability advice from schematic design through to practical completion of the project.

2.1.2 Commissioning and Tuning

The project team and all relevant contractors will undertake commissioning process activities for all nominated building systems that serve the project, including the following:

- Environmental performance targets will be set and documented
- A comprehensive services and maintainability review will be conducted to address commissionability, controllability, maintainability, operability and safety
- Best practice commissioning will be undertaken in accordance with CIBSE or ASHRAE standards
- Tuning will be completed for all building systems, and at a minimum, quarterly adjustments and measurement must be undertaken for the first 12 months after occupation

2.1.3 Building Information

Comprehensive building operation and maintenance information will be provided for all building systems, as well as building user information to educate building occupants and visitors on the sustainability features of the buildings and how to use these to reduce environmental impact.

2.1.4 Metering and Monitoring

A best practice metering and monitoring strategy will be implemented to track energy and water use, monitor progress against performance targets and assist with the identification of leaks, faults or excessive consumption. Sub-metering will be provided for all major energy and water uses, supplying data to the Building Management System (BMS).

Energy sub-metering will be provided to each tenant as well as any significant end uses expected to consume more than 10,000kWh/annum.

Water sub-metering will be provided for major water uses such as cooling towers and landscape irrigation.

2.1.5 Construction Environmental Management

An Environmental Management Plan (EMP) will be developed and implemented by the Head Contractor, to assist in managing environmental performance, conditions, and impacts arising from excavation, demolition and construction.

2.1.6 Operational Waste

A Waste Management Plan (WMP) will be provided for building operations. This will provide building management and occupants with guidance on how to manage waste to divert it from landfill.

Facilities will be provided for collection and separation of major waste streams for collection by the relevant waste contractor in operation. Provision will be made for the separation and collection of organic waste.

Dedicated storage space will be clearly labelled for recycling and easily accessible by waste collection services.

2.2 Climate Resilience

A detailed, project specific climate risk assessment will be undertaken during design development in order to determine climate risks appropriate to the site and develop the most appropriate adaptation and resilience measures to ensure that the building can mitigate possible risks, cope with extreme climate events and respond to stresses, with the intention of minimising risk and disruption to the occupants, the building and the community.
The analysis and response will be summarised in a report, which could include the following impacts and responses:

2.2.1 Increased Maximum Temperatures

Increase in average temperatures to be considered when sizing the capacity of air conditioning systems, and the potential to reduce urban heat island effect.

2.2.2 Increased Likelihood of Drought

Effects of prolonged periods of no rain to be assessed in relation to water supply and the adverse effect of soil dryness on structural foundations.

2.2.3 Increased Extreme Rainfall

Assess the rainwater collection systems (roof, guttering, pipework) and the potential for increase in sizing of pipework to prevent inundation, and incorporation of hail guards to reduce the risk of blockages.

2.2.4 Increased Storm Activity

Determine the effects of an increase in the severity of storm events and assess the resilience of the building façade and landscaping to damage caused by hail and wind.

2.2.5 Flooding

Assess the development site's current proneness to flood risk and the potential impact of extreme rainfall causing flood waters to enter ground and basement levels.

2.2.6 Increased Number of Severe Fire Danger Days

Examine the increased likelihood of bushfires causing excessive smoke and deterioration of air quality and consider the repercussions to ventilation design.

2.2.7 Sea Level Rise

Assess projections for sea level rise and whether the development site is at risk of inundation during its lifetime.

2.3 Indoor Environmental Quality

Indoor Environmental Quality (IEQ) will be improved through consideration of indoor air quality, acoustic, thermal and visual comfort, as well as daylight and views. IEQ strategies are outlined in further detail below.

2.3.1 Indoor Air Quality

The ventilation systems will be designed with consideration of maintenance access and minimum separation distances between pollution sources and outdoor air intakes.

Ductwork will be protected during construction to minimise contamination with debris and moisture prior to occupation.

In order to minimise indoor air contamination and promote occupant health, preference will be given to paints, adhesives, sealants and floor coverings which have low Volatile Organic Compound (VOC) emissions, and engineered wood products with low formaldehyde emissions.

2.3.2 Acoustic Comfort

Design will consider acoustic comfort in terms of general noise levels, reverberation and noise separation.

2.3.3 Visual Comfort

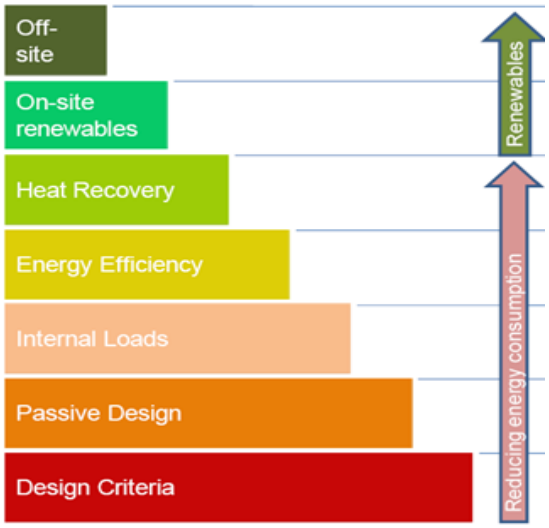
Glare control mechanisms such as internal blinds will help maximise visual comfort. Design will consider availability of daylight and maintain connections to external views.

Artificial lighting will consider appropriate colour perception and lighting levels, reduced glare from lamps and uniformity.

2.3.4 Thermal Comfort

Occupant thermal comfort will be improved through solar control glass, shading and careful design of air-conditioning systems.

2.4 Energy



The design will seek to reduce energy consumption, and thereby greenhouse gas (GHG) emissions, by combining a well-designed facade with high-efficiency systems and services as well as smart controls to ensure key services are only operating when required. Design criteria will be challenged and passive design principles will be applied to reduce the demand on active systems such as HVAC and lighting.

2.4.1 National Construction Code Section J for Energy Efficiency

The National Construction Code (NCC) Section J sets minimum energy performance requirements for all new developments, which cover air-conditioning, ventilation, lighting, power and hot water, as well as building fabric considerations including thermal construction and insulation, building sealing, glazing and shading. The proposed design will meet the NCC Section J energy efficiency requirements.

2.4.2 NABERS Certification

The project will be designed to achieve a 5.5-Star NABERS Office Energy rating for the base building.

2.4.3 Energy strategies

The following strategies are proposed in order to achieve the project's energy and GHG emissions targets. These are subject to change as the design develops.

- Well-performing façade incorporating insulation and low-e solar control glazing
- Efficient heating, ventilation and cooling (HVAC) systems including:
  - High efficiency chillers
  - Variable speed pump
  - Variable speed ventilation fans (including EC motors)
  - Car park with Variable Speed Drive (VSD) ventilation and Carbon Monoxide (CO) controls
  - Common area ventilation to include efficiency controls such as zoning, motion sensors, and time clock control
  - Comprehensive BMS systems to monitor and control building systems
  - Select best in class efficient equipment
- Efficient lighting systems including LED lighting with efficiency controls. This includes internal as well as external and public domain lighting.
- Low carbon domestic hot water (DHW) systems
- Efficient lift design and controls

The above-mentioned strategies could also contribute to reducing peak electrical demand from the development.

2.4.4 Photovoltaics

A photovoltaic (PV) system will be incorporated in the design to generate electricity for the common areas. The system will be designed to maximise energy generation by using all appropriate roof area.

2.5 Transport

Low-impact transport will be addressed by the design as well as the site. Bicycle facilities will be provided for staff and retail visitors, while access to existing public transport networks, cycling paths and pedestrian walkways is facilitated and encouraged. The following alternative transport initiatives are being proposed to improve amenity, promote health and reduce transport related GHG emissions:

2.5.1 Active Transport Facilities

Bicycle parking and associated facilities will be provided to staff and visitors, including end of trip facilities for staff (showers, changing amenities with appropriate drying space, and lockers).

2.5.2 Walkable Neighbourhood & Public Transport

The site is located close to numerous amenities, with a 'walk score' of 99% and a 'transit score' of 100%, according to www.walkscore.com. A score above 90% is considered a 'walker's/rider's paradise'.

The project is being designed to optimise pedestrian links for enhanced walkability and access to abundant public transport.

2.5.3 Electric car charging

Car parks will be designed and constructed so that electric vehicle charging points can be installed at a later time.

2.6 Water

Mains water use will be minimised for the project by selecting efficient fittings, fixtures and appliances to reduce demand, and by utilising recycled water for non-potable uses.

2.6.1 Water strategies

The following strategies are proposed to achieve the project's water saving targets. These are subject to change as the design develops.

- Water efficient fittings, fixtures and appliances
- Specify low water-use or indigenous plant species
- Drip irrigation with moisture sensor override will be used for all landscaping
- Cooling tower cycles of concentration will be increased to reduce cooling tower make-up water

- Install a rainwater collection tank for storage and reuse of rainwater in non-potable demands

The most appropriate size for the rainwater tank will be determined during detailed design, based on water quality, availability and reliability of water supply, and the minimisation of energy required for treatment and pumping.

2.6.2 NABERS Certification

The project will be designed to achieve a 4-Star NABERS Office Water rating.

2.7 Materials

2.7.1 Material Selection

Materials used in construction are responsible for waste generation, resource depletion, GHG emissions and water consumption. To minimise these impacts compared to a standard development, the following principles will be used to guide material selection on the site:

- Portland cement reduction in concrete mixes by using industrial waste product such as fly ash
- Use of reclaimed water in cement mixes
- Use of manufactured sand in cement mixes
- Selection of certified timbers, and Best Practice Certified PVC products
- Specification of sustainable products where appropriate, such as those containing recycled content, third-party environmentally certified products, and those with product stewardship agreements in place
- Design building components, including the structural framing, roofing and facade cladding for longevity, adaptation, disassembly, re-use and recycling.
- Local procurement to support the local economy and reduce transport emissions
- Procure a minimum of three materials which have a recycled or reused content of >30%.

2.7.2 Waste minimisation

A Waste Minimisation Plan will be prepared outlining best practice waste management during the design, construction and operation of the project. The proposed waste strategy is:

- Establish waste targets (including a minimum of 90% construction and demolition waste diversion from landfill).
- 'Design out' waste: Reduce the amount of materials used in the construction of a building wherever practical
- Implement best practice construction waste management plans and engage with the supply chain.
- Provide infrastructure and guidance to maximise waste recycling during operation.
- Set up an operational waste agreement to recycle waste in operation.

The Contractor will forecast waste quantities and reused / recycled content and set targets for waste reduction. Before starting on site, the Contractor will submit a copy of the plan identifying the actions to be taken to reduce waste in construction, increase the level of recovery, increase reused and recycled content, and quantify the resulting changes. The Construction Waste Management Plan will:

- Define responsibilities and actions to prevent, reduce and recover waste
- Identify waste arising, reuse and recycling routes
- Record waste movements and benchmark against best practice.

2.8 Land Use & Ecology

The project will enhance existing ecological value by reusing a previously developed site with the addition of landscaping. The site is not currently ecologically valuable and does not contain any threatened species.

Heat island effect will be reduced through the selection of less absorbent roofing materials.

2.9 Emissions

Emissions to water, soil and the sky will be minimised during construction and operation.

2.9.1 Reduced Peak Discharge to Stormwater

Stormwater discharged from the site will meet pollution reduction targets for total suspended solids, gross pollutants, total nitrogen, total phosphorus, petroleum hydrocarbons and free oils.

2.9.2 Light Pollution

Outdoor lighting on the project will generally be designed in accordance with AS 4282:1997 and external light pollution will be minimised.

2.9.3 Refrigerant impacts

Refrigerants will be selected with an Ozone Depletion Potential (ODP) of zero.

2.10 Community & connectivity

The project will be designed to maximise community benefit, encourage active, healthy lifestyles, maintain good pedestrian and cyclist linkages and facilitate safe social interaction.

The following strategies will be considered:

- Promotion of healthy and active living through design and education strategies such as end-of-trip facilities
- Incorporation of crime prevention through environmental design (CPTED).
- Marketing and education strategies to convey sustainability practices to wider audiences.

2.11 Innovation

A range of innovations will be investigated by the project team during detailed design to determine whether they can be adopted for the project, including:

- Contributing to industry benchmarking.
- Financial transparency: Declaration of the cost of environmentally sustainable design initiatives for the project, to promote transparency and the update of such initiatives on other projects
- Occupant engagement & marketing excellence
- Green cleaning & groundskeeping practices
- Sustainable procurement framework
- Design for Robustness: Reviewing the design and materials to ensure durability for high-traffic surfaces and high-use fittings

3 City of Sydney Council Planning Proposal Guidelines

The project must exceed Sydney LEP's minimum ESD controls. The following table outlines the initiatives which will be implemented in order to contribute to net zero carbon, zero waste and water efficient outcomes.

Target	ESD Response	Strategies & initiatives adopted
Net-zero carbon	Incorporate passive design principles to minimise heating and cooling loads for the building.	Install high performance glazing and insulation Incorporate appropriate shading and moderate glazing extent
	Energy efficient systems & services	Select best in class efficient equipment Design efficient systems and services including HVAC, lighting, lifts and domestic hot water heating.
	On-site renewable energy generation	Maximise the extent of rooftop photovoltaic system.
	Independent verification	Achieve a minimum 5.5-star NABERS Energy base building rating
Zero Waste	Minimise waste to landfill during construction	Divert a minimum of 90% construction waste from landfill.
	Minimise waste to landfill in operation	Provide adequately sized waste storage room allowing separation of different operational waste streams. Provide for separation and collection of organic waste.
	Materials selection	Procure a minimum of three materials which have a recycled or reused content of >30%.
Water Efficient outcomes	Minimise potable water demand on-site	Specify water efficient fittings and fixtures in amenities and end-of-trip facilities. Specify low water-use or indigenous plant species.
	Water-efficient systems & services	Install water efficient irrigation systems (sub-soil with moisture-sensors) Design water efficient cooling systems.
	Alternative water supply	Install a rainwater collection tank for storage and reuse of rainwater in non-potable demands.
	Independent verification	Achieve a minimum 4-star NABERS Water rating.

4 Conclusion

The initiatives outlined in this report demonstrate how the proposed development can incorporate best practice ESD initiatives into its design, construction and ongoing operation. Through a combination of energy, water, waste and other strategies, the project will exceed minimum requirements for sustainable development and adopt the principles of net-zero carbon, zero waste and water efficient outcomes.

Rigorous management and governance procedures will improve sustainability outcomes in operation, and the development will be certified in accordance with independent third-party rating systems in design, construction and operation.