Project	93-107 Cecil Avenue & 9-10 Roger Avenue, Castle Hill, 2154
Report	ESD Report
Reference	240703E-ESD-r2
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Client	Alton Property Group Pty Ltd
Contact	Brittney Schrader brittneys@aplusdg.com.au

Credwell Consulting Pty Ltd
Level 6, 131 York Street, Sydney NSW 2000
P. (02) 9281 8555 **E. Info@credwell.com.au** **W. www.credwell.com.au**

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Document Control

Reference/Revision	Date	Description	ESD Report
240703E-ESD-r1	07/11/2024	**Prepared by**	**Reshma Punjabi** ESD/ Sustainability Engineer
		Approved by	**Padraig Healy** Director
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		Approved by	 Termeh Hezareh Associate 2024.11.13 14:46:34+11'00'

1 Executive Summary

This ESD report outlines the local sustainable governmental legislation, policy and planning documents that governs the area of this development. By adhering to these planning controls and referring to best practice design for new builds, this development can achieve significant sustainable outcome in line with legislations and policies.

Best practice ESD initiatives can be achieved by aiming for a Green Star Buildings equivalent sustainable design standard, as demonstrated in this report.

2 Introduction

2.1 Building Location & Description

The building, the subject of this report, is located at 93-107 Cecil Avenue & 9-10 Roger Avenue, Castle Hill, 2154.

The site comprises four mixed-use buildings, with five levels of shared parking. Ground level to level 2 includes retail spaces totalling 814m^2 and commercial facilities covering 7211 m^2. Residential floor space is located from the lower ground floor up to Level 26.

2.2 Objectives

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

2.3 Sustainable Design Legislation

This development is governed by:

a. Sustainable Building SEPP 2022
b. The Hills Local Environmental Plan 2019 (THLEP2019)
c. The Hills Development Control Plan 2012 (THDCP2012)

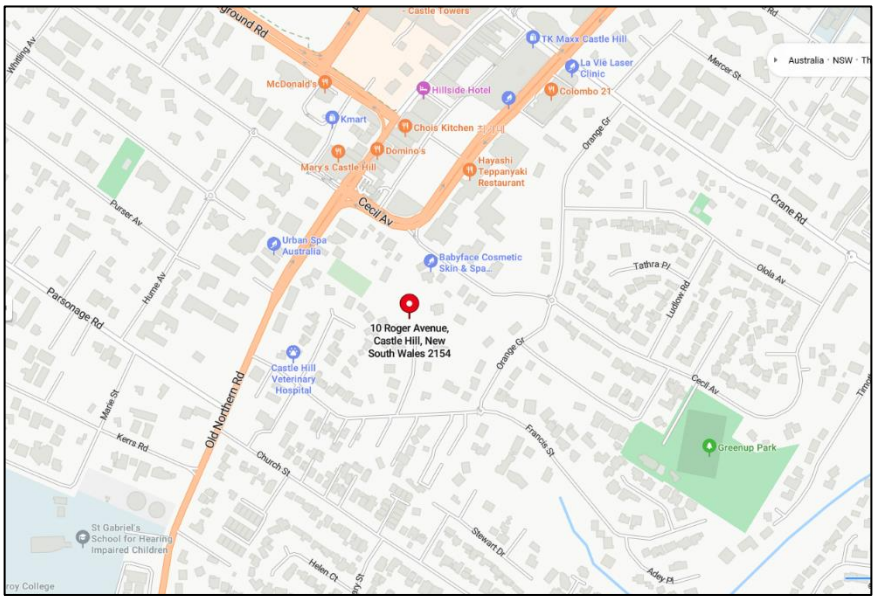
2.4 Best Practice Sustainable Design Benchmark

This development will be assessed against Green Star Buildings v1 Rating.

This supersedes the old Green Star Design & As Built rating v1.3 which was replaced in December 2021.

2.5 Site Location

The site location is within The Hills City Council boundary.



3 Legislation and Policies

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

3.1 State Environmental Planning Policy (Sustainable Buildings) 2022

The aims of this Policy are:

(a) to encourage the design and delivery of sustainable buildings,
(b) to ensure consistent assessment of the sustainability of buildings,
(c) to record accurate data about the sustainability of buildings, to enable improvements to be monitored,
(d) to monitor the embodied emissions of materials used in construction of buildings,
(e) to minimise the consumption of energy,
(f) to reduce greenhouse gas emissions,
(g) to minimise the consumption of mains-supplied potable water,
(h) to ensure good thermal performance of buildings.

3.2 Standards for-non-residential development

(1) This Chapter applies to development, other than development for the purposes of residential accommodation, that involves—
  (a) the erection of a new building, if the development has an estimated development cost of $5 million or more, or
  (b) alterations, enlargement or extension of an existing building, if the development has an estimated development cost of $10 million or more.

(2) This Chapter does not apply to the following development—
  (a) development that is permitted with or without consent or that is exempt or complying development under—
    (i) State Environmental Planning Policy (Exempt and Complying Development Codes) 2008, or
    (ii) State Environmental Planning Policy (Resources and Energy) 2021, Chapter 2, or
    (iii) State Environmental Planning Policy (Transport and Infrastructure) 2021, Chapter 5,
  (b) development on land wholly in any of the following zones—
    (i) Zones RU1, RU2 or RU3,
    (ii) Zone E5,
    (iii) Zone IN3,
    (iv) Zones C1, C2 or C3,
    (v) Zones W1, W2, W3 or W4,
  (c) development for the purposes of residential care facilities.

3.3 Development consent for non-residential development

(1) In deciding whether to grant development consent to non-residential development, the consent authority must consider whether the development is designed to enable the following—

(a) The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials,

(b) a reduction in peak demand for electricity, including through the use of energy efficient technology,

(c) a reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design,

(d) the generation and storage of renewable energy,

(e) the metering and monitoring of energy consumption,

(f) the minimisation of the consumption of potable water.

(2) Development consent must not be granted to non-residential development unless the consent authority is satisfied the embodied emissions attributable to the development have been quantified.

3.4 The Hills Local Environmental Plan 2019 (THLEP2019)

The subject site is identified under Zone MU1 – Mixed Use.

3.4.1 Zone MU1 Mixed Use

Objectives of zone:

(a) To encourage a diversity of business, retail, office and light industrial land uses that generate employment opportunities.

(b) To ensure that new development provides diverse and active street frontages to attract pedestrian traffic and to contribute to vibrant, diverse and functional streets and public spaces.

(c) To minimise conflict between land uses within this zone and land uses within adjoining zones.

(d) To encourage business, retail, community and other non-residential land uses on the ground floor of buildings.

(e) To encourage leisure and entertainment facilities in the major centres that generate activity throughout the day and evening.

(f) To provide for high density housing that is integrated with civic spaces.

3.5 The Hills Development Control Plan 2012 (THDCP2012)

Ecologically sustainable development is defined in The Hills Local Environmental Plan 2012. To fulfill the statutory responsibilities outlined in Schedule 2 of the EP&A Regulation and the Local Government Act 1993, developments are required to meet Council's ESD objectives.

3.5.1 Council's ESD Objectives:

(a) ESD 1: To apply the precautionary principle where development is likely to cause short or long-term irreversible or serious threats to the environment.

(b) ESD 2: To allow for broad community involvement in respect to issues of concern throughout the development process.

(c) ESD 3: To ensure during the design, construction and operation of the development, that water is utilised efficiently and that water leaving the site is of a quality and quantity comparable to that which is received.
(d) ESD 4: To ensure that biodiversity and the integrity of ecological processes are not compromised by the development.
(e) ESD 5: To promote the following during the design, construction and operation of development:
- the use of energy efficient materials and designs
- utilisation of renewable energy & materials; and
- energy efficient technology.

(f) ESD 6: To follow the principles of the 'Waste Hierarchy' (reduce, reuse, recycle) in the use of materials and the design of waste recovery and disposal systems throughout the development process.
(g) ESD 7: To protect neighbourhood amenity and safety in the design and construction and operation of the development.
(h) ESD 8: To encourage the long-term economic viability and health of the community in the development process.
(i) ESD 9: To encourage the use of public transport, bicycles and pedestrian trips in the development and design process.

3.6 ESD initiatives applicable to NSW legislation and policy

This section demonstrates how the project's ESD initiatives can be achieved through alignment with Green Star credits.

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

Legislation/Policy name	Clause	Green Star Code
SEPP (Sustainable Buildings) 2022	3.1 (a)	All nominated credits
	3.1 (b)	3
	3.1 (c)	2, 3
	3.1 (d)	21
	3.1 (e)	3, 22
	3.1 (f)	21, 22,23, 25
	3.1 (g)	25
	3.1 (h)	22
	3.3 (1a)	2
	3.3 (1b)	20
	3.3 (1c)	22
	3.3 (1d)	22, 23
	3.3 (1e)	3
	3.3 (1f)	25
	3.3 (2)	21

Legislation/Policy name	Clause	Green Star Code
THLEP2019	3.4.1 (a)	29, 33
	3.4.1 (b)	27, 28, 29
	3.4.1 (c)	NA
	3.4.1 (d)	28, 29
	3.4.1 (e)	28, 29
	3.4.1 (f)	NA

Legislation/Policy name	Clause	Green Star Code
THDCP2012	3.5.1 (a)	2, 16, 35, 39
	3.5.1 (b)	30
	3.5.1 (c)	25, 39
	3.5.1 (d)	35, 36
	3.5.1 (e)	9, 22, 23
	3.5.1 (f)	2, 4
	3.5.1 (g)	2, 28
	3.5.1 (h)	18, 29,
	3.5.1 (i)	27

4 Benchmark Sustainable Design

All ESD rating schemes approach sustainable design by considering all the stakeholders in the development. The design approach proposed for the development is demonstrated below.

4.1 ESD Categories

Best practice ESD initiatives can be achieved through the Green Star Buildings v1 assessment and application of the following categories:

- Responsible
- Healthy
- Resilient
- Positive
- Places
- People
- Nature
- Leadership

Within these categories there are subcategories with their relevant initiatives.

The following table shows what categories are targeted.

Category	Targeted
Responsible	Yes
Healthy	No
Resilient	Yes
Positive	Yes
Places	Yes
People	Yes
Nature	Yes
Leadership	No

The targeting above categories shows a comprehensive commitment to sustainable design.

5 Green Star Categories

The following is a summary of potential categories and initiatives that can be pursued to achieve a Green Star Buildings v1 rating.

5.1 Responsible

Category	Code	Credit Criteria	Targeted
Industry Development	1	**Accredited Professional** A Green Star Accredited Professional (GSAP) shall be engaged from schematic design phase to post construction phase and remain part of the core project team for the entire duration of the project. **Financial Transparency** The project shall provide a cost breakdown of design, construction and documentation to the GBCA as per the Green Star Financial Transparency disclosure template. **Market Sustainability Achievements** Provide professional photos of the completed project, case study information, marketing samples highlighting sustainability benefits.	
Responsible Construction	2	**Environmental Management System** Based on the contract value, the builder/head contractor shall have either ISO 14001 certificate or an EMS that complies with NSW EMS Guidelines. **Environmental Management Plan** The builder/head contractor shall develop a site specific EMP that covers the scope of construction activities and to be implemented from the start of construction and includes all works within the project scope. **Construction & Demolition Waste** A portion of construction and demolition waste shall be diverted from landfill. **Sustainability Training** The head contractor shall provide training to majority of all contractors and subcontractors on site for at least three days on the sustainability targets of the development.	✓
		Construction & Demolition Waste Diversion Most of the construction and demolition waste shall be diverted from landfill.	
Verification & Handover	3	**Metering & Monitoring** The building shall have accessible energy and water metering for all common uses, major uses and major sources, and must be connected to a monitoring system capable of capturing and processing the data. **Commissioning and Tuning** Preconstruction: Set environmental performance targets, services and maintainability review, airtightness design. During construction: Commissioning, engage building tuning contractor, test for airtightness. Post construction: Tune the building over the next 12 months. **Building information** Operations and maintenance information shall be provided for all nominated building systems to the building owner/facilities management team. A building logbook and user information shall be developed and presented to the building owner/facilities management team at the time of practical completion.	✓

		Independent Commissioning Agent An ICA shall be engaged to advise, monitor and verify the commissioning and tuning of the nominated building systems during the design, planning, tender, construction, commissioning and tuning stages. OR **Soft Landings Approach** A soft landings approach shall be used that involves the future facilities management team.	
Responsible Resource Management	4	**Operational Waste** The building shall provide bins for separation of waste streams within dedicated waste storage areas. The design of the areas shall be signed off by a waste specialist/contractor.	✓
Responsible Procurement	5	**Risk and Opportunity Assessment** The project shall undertake a risk and opportunities assessment following ISO 20400 Sustainable Procurement – Guidance. **Responsible Procurement Plan** A responsible procurement plan shall be developed following ISO 20400 Sustainable Procurement – Guidance to mitigate risk and implement opportunities identified in the assessment.	
Responsible Structure	6	**Good practice products**: 50% of all structural (load bearing and stability) components (by cost) shall meet a Responsible Products Value of at least 10, using the Responsible Products Value calculator.	
		Best practice OR good practice products: 10% of all products in the structural (by cost) shall meet a Responsible Products Value of at least 15, using the Responsible Products Value calculator. OR 80% of all products in the structural (by cost) shall meet a Responsible Products Value of at least 10, using the Responsible Products Value calculator.	
Responsible Envelope	7	**Good practice products**: 30% of all building envelop such as façade, external shading and insulation, suspended slabs, roofing systems etc. (by cost) shall meet a Responsible Products Value or at least 10, using the Responsible Products calculator.	
		Best practice OR good practice products: 10% of all products in the building envelop (by cost) shall meet a Responsible Products Value or at least 15. OR 60% of all products in the building envelop (by cost) shall meet a Responsible Products Value or at least 10.	
Responsible Systems	8	**Good practice products:** 20% of all active building systems including all mechanical, hydraulic, transportation and electrical systems, lighting, security, fire systems and all associated pipes, cables, ducts etc (by cost) shall meet a Responsible Products Value of at least 6, using the Responsible Products calculator.	
		Best practice OR good practice products: 5% of all active building systems (by cost) shall meet a Responsible Products Value of at least 11. OR 35% of all active building systems shall meet a Responsible Products Value of at least 6.	

Responsible Finishes	9	**Good practice products:** A portion of internal building finishes such as flooring, plasterboard, paints, ceilings, partitions, doors, internal windows, associated joinery, wall panelling, fixed shelving/cupboards thar make up a partition, sealants and adhesives used for the finishes etc. (by cost) shall meet a Responsible Products Value of at least 7, using the Responsible Products calculator.	✓
		Best practice OR good practice products: 10% of all internal building finishes (by cost) shall meet a Responsible Products Value of at least 12. OR 60% of all internal building finishes (by cost) shall meet a Responsible Products Value of at least 7.	

5.2 Healthy

Category	Code	Credit Criteria	Targeted
Clean Air	10	**Ventilation System Attributes** Building ventilation shall be designed in accordance with recognised Standards regarding minimum separation distances between pollution sources and outdoor air intakes. All new and existing ductwork in the building shall be cleaned prior to occupation in accordance with a recognised Standard. **Provision of Outside Air** High level of outdoor air shall be provided based on the selected pathway. For example, the building shall provide 50% improvement of outside air in regularly occupied areas in accordance with AS 1668.2:2012. **Exhaust or Elimination of Pollutants** The source of pollutant shall be removed from the regularly occupied areas OR The pollutants shall be exhausted to the outside.	
		Ventilation System Attributes Any mechanical ventilation system in the building shall allow for easy maintenance by providing adequate access to both sides of all moisture and debris-catching components for maintenance within the air distribution system. **Provision of Outdoor Air** High level of outdoor air shall be provided based on the selected pathway. For example, the building shall provide 100% improvement of outside air in regularly occupied areas in accordance with AS 1668.2:2012.	
Light Quality	11	**Lighting Comfort** All building lighting shall meet minimum comfort requirements as per recognized Standards. **Glare from light sources** Good lighting levels shall be provided according to typical tasks in each space. **Daylight** The building shall provide adequate levels of daylight (at least 160 lux due to daylight during 80% of the nominated hours).	

		Artificial lighting Artificial lighting design must achieve requirements for an effective artificial lighting solution in a space, focusing on quality of light, provide highlights and contrasts, and specific illuminance levels in accordance with AS/NZS 1680. OR **Daylight** In non-residential buildings, at least 40% of the regularly occupied areas shall receive ample daylight, with no less than 20% on every floor or tenancy (whichever is smaller). For Class 3 buildings, 60% of the combined living and bedroom area in each unit shall meet daylight standards, excluding kitchens. At least 20% of each bedroom and living area should also receive adequate daylight. Glare from sunlight through all viewing facades and skylights shall be reduced through a combination of blinds, screens, fixed devices or other means.	
		Artificial lighting Artificial lighting design must achieve requirements for an effective artificial lighting solution in a space, focusing on quality of light, provide highlights and contrasts, and specific illuminance levels in accordance with AS/NZS 1680. AND **Daylight** In non-residential buildings, at least 40% of the regularly occupied areas shall receive ample daylight, with no less than 20% on every floor or tenancy (whichever is smaller). For Class 3 buildings, 60% of the combined living and bedroom area in each unit shall meet daylight standards, excluding kitchens. At least 20% of each bedroom and living area should also receive adequate daylight. Glare from sunlight through all viewing facades and skylights shall be reduced through a combination of blinds, screens, fixed devices or other means.	
Acoustic Comfort	12	**Acoustic comfort strategy** An acoustic comfort strategy shall be developed demonstrating how the design aims to deliver acoustic comfort to the occupants.	
		Maximum and minimum internal noise levels Internal noise levels for various activities are achieved within acceptable limits in accordance with AS/NZS 2107:2016. **Acoustic separation** Ensuring that the layout and construction of walls and floors minimize sound transmission, thereby enhancing occupant privacy and using materials and construction techniques designed to reduce the transmission of sound between spaces. **Impact noise transfer** Impact noise transfer shall be minimised in accordance with ISO 16283-2. **Reverberation control** Reverberation time shall be within acceptable limits in accordance with AS/NZS 2107:2016. Class 2 and 3 projects are excluded.	

Exposure to Toxins	13	**Paints, adhesives, sealants and carpets** Internal application of paints, adhesives, sealants, and carpets shall be low in Total Volatile Organic Compounds (TVOC). Products must be certified under a Recognised Product Scheme or been tested in a laboratory. **Engineered wood products** Engineered wood products shall be low in TVOC. Products must be certified under a Recognised Product Scheme or been tested in a laboratory. **Banned/ highly toxic materials** A comprehensive hazardous materials survey shall be conducted on existing structure/buildings on site in accordance with relevant WHS legislation. Materials shall be stabilised, removed or disposed of in accordance with best practice guidelines.	
		TVOC and formaldehyde levels On-site tests shall be conducted that indicates TVOC and formaldehyde levels are within the specified limits.	
Amenity & Comfort	14	**Amenity rooms** Dedicated amenity rooms (parent room, relaxation, exercise room) shall be included in the building with appropriate size and accessibility.	
Connection to Nature	15	**Views** High quality internal or external view shall be provided. **Indoor plants & Nature-inspired design** The building shall include indoor plants with an ongoing maintenance plan. And incorporate five additional nature-inspired design interventions. OR **Interaction with nature** 5% of building's floor area/site area (the larger area) shall be planted area either internally or externally through green wall or garden.	
		Compliance with all 3 criteria below. **Views** High quality internal or external view shall be provided. **Indoor plants & Nature-inspired design** The building shall include indoor plants with an ongoing maintenance plan. And incorporate five additional nature-inspired design interventions. **Interaction with nature** 5% of building's floor area/site area (the larger area) shall be planted area either internally or externally through green wall or garden.	

5.3 Resilient

Category	Code	Credit Criteria	Targeted
Climate Change Resilience	16	**Climate change pre-screening checklist** Assessment of potential impacts from climate change shall be considered in the pre-screening checklist.	✓
		Climate change risk and adaptation assessment A suitably qualified professional shall conduct the Climate change risk assessment from the beginning of the concept or schematic design phase. **Managing risks** The project team shall prioritise higher level risks and effectively manages these by addressing the most critical ones with specific design solutions or operational measures.	

Operations Resilience	17	**Comprehensive risk assessment** Review of acute shocks and chronic stresses likely to influence future building operations. **Managing risks** Operational plans for addressing high or extreme system-level interdependency risks. **Addressing power loss** Assessment of building's survivability in an event of a blackout. The design shall account for its design purpose and provide a measure of survivability for occupants.	
Community Resilience	18	**Community resilience plan** A suitably qualified professional shall conduct a needs analysis of the community, identify shocks and stresses that impact the buildings' ability to service the community and develop responses.	
Heat Resilience	19	**Heat island reduction** 75% of the whole site uses strategies such as vegetation, green roof, roofing materials with specific solar reflectance index (SRI) etc. that reduce heat island effect.	
Grid Resilience	20	**Active generation and storage systems** The building shall provide active generation and storage systems. OR Demand response The building shall have the infrastructure to deliver a demand response strategy. OR Passive design solutions The building shall reduce its electricity consumption via passive design.	✓

5.4 Positive

Category	Code	Credit Criteria	Targeted
Upfront Carbon Emissions	21	**Reducing upfront carbon emissions** Building's upfront carbon emissions shall be less than a reference building.	✓
		Reducing upfront carbon emissions Building's upfront carbon emissions shall be 20% less than a reference building. **AND** **Offsetting demolition works** Assess and document the embodied carbon emissions related to materials and processes from extraction to construction by following specific guidelines that address the emissions based on building's age at the time of demolition.	
		Reducing upfront carbon emissions Building's upfront carbon emissions shall be 40% less than a reference building.	
Energy Use	22	**Reducing energy use** The building shall use less energy than a reference building.	✓
		Reducing energy use The building shall use 20% less energy than a reference building.	
		Reducing energy use The building shall use 30% less energy than a reference building.	
Energy Source	23	**Zero carbon action plan** The building shall provide a Zero Carbon Action Plan	✓
		Renewable electricity Most of the building's electricity shall be sourced from renewables.	✓
		Renewable energy 100% of the building energy shall be sourced from renewables.	
Other Carbon Emissions	24	**Eliminating refrigerants** The building shall eliminate the use of high-GWP refrigerants. OR **Offsetting refrigerants** The building owner shall offset 100% of carbon emissions from refrigerants.	
		Other emissions All other emissions not captured above (Positive category) are eliminated or offset.	
Water Use	25	**Sanitary fixtures and appliance efficiency** Efficient water fixtures shall be installed. OR **Reducing water use** The building shall use less potable water compared to a reference building.	✓
		Reducing water use The building shall use 45% less potable water compared to a reference building. AND **Recycled water infrastructure** Infrastructure for recycled water connection.	
		Reducing water use The building shall use 75% less potable water compared to a reference building.	
Life Cycle Impacts	26	**Life cycle assessment** Life cycle Impacts - 30% reduction compared to a standard practice.	

5.5 Places

Category	Code	Credit Criteria	Targeted
Movement & Place	27	**Changing facilities** The building shall include showers and changing facilities for building occupants. (Class 2 and 4 are exempt, while Class 3 is to comply for staff only). **Accessible, inclusive and located in a safe and protected place** The facilities shall be accessible, protected from elements and other vehicles, safe and well lit. Clear signage shall be provided throughout the building.	✓
		Bicycle parking facilities The buildings access shall prioritise cycling and includes bicycle parking facilities. **Sustainable transport** A sustainable transport plan shall be prepared and implemented with requirements/recommendations to be reflected in the design and operational processes. The building shall have EV charging capabilities. **Reducing private vehicle use** Building's design and location shall reduce emissions from private fossil fuel powered vehicles and encourage use of public transport. **Encourage walkability** Designing roads within the site boundary for pedestrians and being within proximity to amenities.	✓
Enjoyable Places	28	**Publicly accessible places** The building shall deliver new publicly accessible spaces where people can gather and participate in the community activity. AND **Activation strategy** An activation strategy shall be provided to secure placemaking after practical completion.	✓
Contribution to Place	29	**Urban context report** The building design shall contribute to the livability of the wider urban context and enhances the public realm. OR **Independent design review** Independent reviews shall be held during the project's design and design development phase.	✓
Culture, Heritage and Identity	30	**Community led design responses** Through local analysis, the building's design shall reflect and celebrate local demographics and identities, the history of the place, and any hidden or minority entities. OR **Independent design review** Independent reviews shall be held during the project's design and design development phase.	✓

5.6 People

Category	Code	Credit Criteria	Targeted
Inclusive Construction Practices	31	**On-site facilities, policies and training** During construction, the head contractor shall provide gender inclusive facilities and protective equipment. The head contractor shall install policies on-site to increase awareness and reduce instances of discrimination, racism, and bullying. On-site training shall be provided to all contractors and subcontractors on these policies.	
		Needs analysis A needs analysis shall be carried out at tender/early stage. Policies and programs implemented shall be relevant to all construction workers on site. **Physical and mental health programs** The head contractor shall provide high quality staff support on-site to reduce at least five physical and mental health impacts. **Evaluating the program's effectiveness** An evaluation report shall be developed to provide information on the effectiveness of the interventions.	
Indigenous Inclusion	32	**Reconciliation action plan** The project team plays an active role in the organisational Reconciliation Action Plan (RAP). It shall be demonstrated that 90% of the targets have been met and shall be reported to the public. OR **Inclusion of indigenous design** The building's design and construction shall incorporate the Australian Indigenous Design Charter guiding principles.	
Procurement & Workforce Inclusion	33	**Social procurement strategy** Implementation of a social procurement plan that directs 2% of building's contract value to generate employment opportunities for disadvantaged and under-represented groups. **Employment opportunities** Employment opportunities shall be either directly (through workforce targets) or indirectly (through social procurement).	✓
		Social procurement strategy Implementation of a social procurement plan that directs 4% of building's contract value to generate employment opportunities for disadvantaged and under-represented groups. **Employment opportunities** Employment opportunities shall be either directly (through workforce targets) or indirectly (through social procurement).	
Design for Inclusion	34	**Inclusive design** The building shall be designed and constructed to be inclusive to a diverse range of people with different needs.	✓
		Needs analysis Consultation with target groups early in the design process to develop a report that can be used to influence the design of the project. The building shall align with best practice guidelines such as the Design for Dignity Guidelines.	

5.1 Nature

Category	Code	Credit Criteria	Targeted
Impacts to Nature	35	**Site ecological value** The building shall not be built on, or significantly impact a site with a high ecological value. **Managing light pollution impacts** All outdoor lighting shall comply with AS/NZS 4282:2019 Control of the obstructive effects of outdoor lighting. The upward light output of external luminaires should be controlled to minimize light spill, ensuring that direct illumination does not exceed minimal levels at the site boundary and beyond, thus reducing light pollution into the night sky. **Wetland management plan** A qualified ecologist shall prepare a site-specific wetland management plan that requires an ongoing quarterly monitoring, annual reporting and management of the wetland ecosystem for at least five years.	✓
		Protecting ecological values The building's design and construction shall conserve existing natural soil, hydrological flows and vegetation elements.	✓
		Retaining high biodiversity values If deemed necessary by an Ecologist, at least 50% of the existing site with high biodiversity value shall be retained.	
Biodiversity Enhancement	36	**Landscape area** The building's site shall include appropriate landscape area whether horizontal or vertical. **Diversity of Species** The majority of plants used in landscaping should be indigenous species, and habitat provisions, such as nesting trees or equivalent structures, should be included throughout the landscaped area to support local biodiversity. **Biodiversity Management Plan** A qualified ecologist or landscape architect shall develop a site-specific Biodiversity Management Plan and deliver to the building owner/ building owner representative.	✓
		Landscape area The building's site shall include appropriate landscape area whether horizontal or vertical. A ratio of either 30% of the site or 1:300 of the GFA, whichever is greater. **Diversity of Species** Over 80% of plants shall be indigenous and at least one significant (nesting) tree or equivalent habitat provision per 250m^2 of landscaped area.	
Nature Connectivity	37	**Species connectivity** The site shall encourage species connectivity through the site, and to adjacent sites. If the project sits within a blue or green grid strategy it shall contribute to the goals of the strategy.	
Nature Stewardship	38	**Area of restoration or protection** Area of restoration shall be equivalent to the total GFA or site area, whichever is larger. **Location of restoration of protection activities** Land of restoration shall be in Australia and beyond the development's boundary.	

		Activities to protect or restore Either the building owner themselves shall protect or restore an area offsite OR by supporting an organisation that restores an area on their behalf. **Legislated requirements** These actions occur beyond legislated requirements.	
Waterway Protection	39	**Stormwater volume** The average annual stormwater discharge across the entire site should be reduced to achieve a significant decrease in runoff volume. **Pollution reduction targets** Specific pollution reduction targets shall be met.	✓
		Stormwater volume The average annual stormwater discharge (ML/yr) shall be reduced by 80% across the whole site. **Pollution reduction targets** Specific pollution reduction targets shall be met.	

5.2 Leadership

Category	Code	Credit Criteria	Targeted
Market Formation	40	The project implements a building solution or process that is considered leading in their targeted sector, nationally or globally.	
Leadership Challenges	41	The project meets the requirements of a Leadership Challenge developed by the GBCA.	