SUMMATION

882 Canning Highway

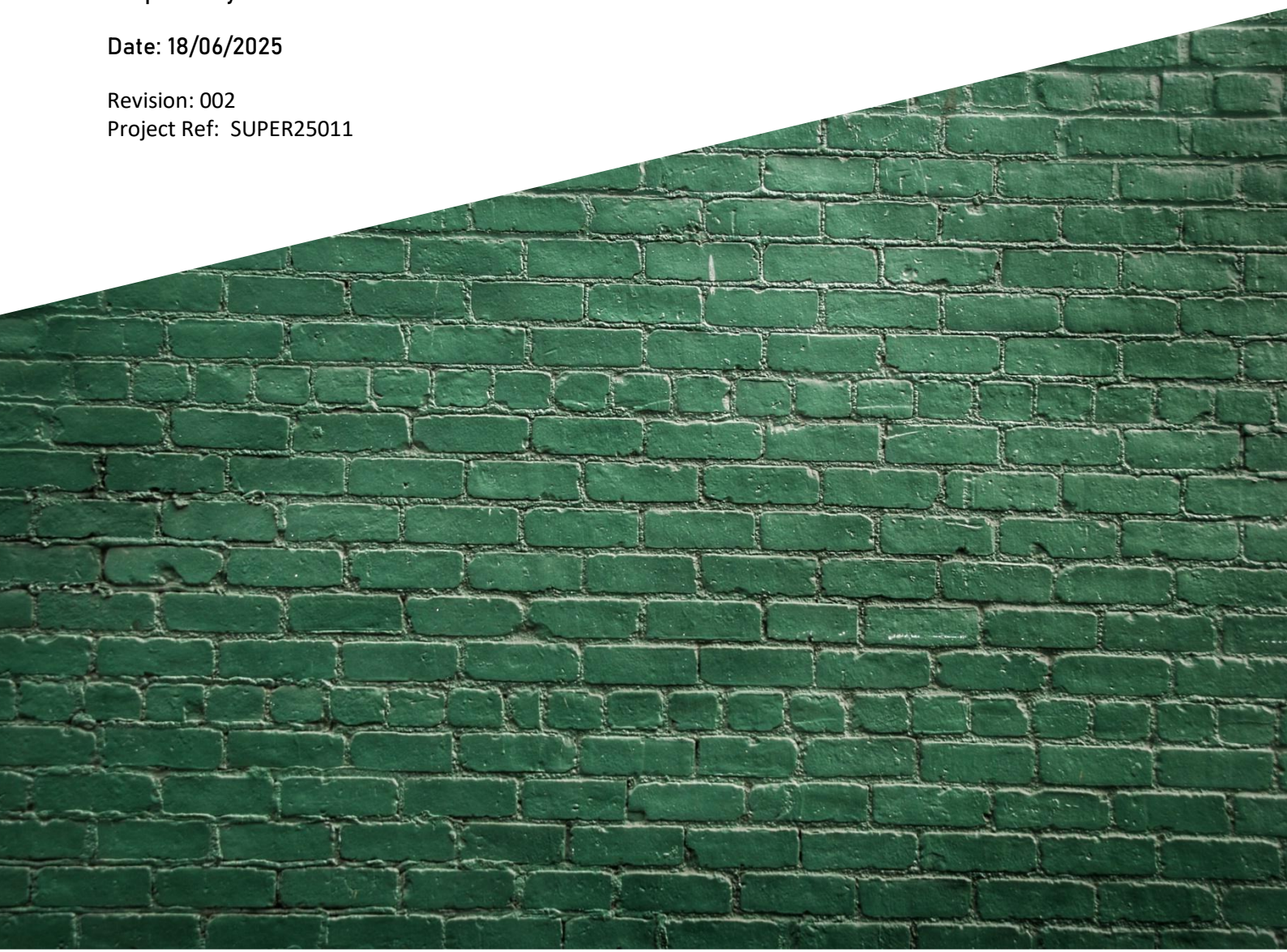
Environmentally Sustainable Design Strategy

Prepared for: Carcione Group of Companies

Prepared by: Prasanna Suraweera

Date: 18/06/2025

Revision: 002
Project Ref: SUPER25011



Executive Summary

This document has been prepared for to outline the sustainability initiatives that are being considered for inclusion in the 882 Canning Highway Redevelopment located 882 Canning Highway, Applecross WA.

The proposed sustainability commitment for the project is to target:

- 5-Star Green Star Certified outcome against the new Green Star Buildings Version 1 tool. This level of performance is recognized as "*Australian Excellence*" Standard of performance.
- Exceed NCC 2022 Section J requirements.

The following guideline is acknowledged as applicable to the site and this strategy incorporates the sustainability requirements outlined therein:

- *Canning Bridge Activity Centre Plan – Part One: Statutory Section (Section 7 Design Guidelines)*, requiring a 4-Star Green Star Certification for the Kintail Quarter.

Summation Pty Ltd has been engaged as the sustainability consultants for the project and will be responsible for the delivery of the sustainability objectives. The sustainability team for this project will be led by Prasanna Suraweera, who is a Director with Summation and a Green Star Accredited Professional with over 19 years of experience in delivery of sustainable developments. It is confirmed that Summation has been engaged prior to concept planning stage and will be involved in and contribute until project completion.

A preliminary assessment of the project's potential to achieve a 5-star Green Star rating has been undertaken. Preliminary findings indicate that ~35 points are achievable for the project, with an additional 12 high risk points being explored to form a points buffer. This includes satisfaction of all mandatory compliance requirements within Green Star.

Summary of the key sustainability initiatives are targeted for the project are outlined below:

- ESD Professional engaged to lead delivery – Prasanna Suraweera (GSAP) from Summation.
- Minimum 20% reduction of upfront carbon emissions through good design (design efficiency) and material selections such as lower carbon concrete.
- Minimum 30% reduction in Life Cycle Impacts through energy efficiency and material selections.
- Electrification of building services including space heating, domestic hot water. Electric Induction cooktops, with no gas cooking for residential.
- 100% Renewable Electricity Supply with an embedded network.
- High efficiency façade including double glazing.
- Centralised Heat Pump for Hot Water.
- Design and testing for Building air tightness.
- Targeting large scale ~150 Solar PV.
- At least 90% of construction and demolition waste is diverted from landfill.
- Inclusion of Climate Resilience and Heat Resilience design responses to future proof the site.

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Abbreviations/Glossary

Abbreviation	Description
ESD	Environmentally Sustainable Design
GBCA	Green Building Council of Australia
GSAP	Green Star Accredited Professional
NABERS	National Australian Built Environment Rating System

Revision History

Revision	Date	Notes	Prepared By	Approved By
001	03/04/2025	Issue for DA	TS	PDS
002	18/06/2025	Issue for DA - Updated	PDS	PDS

Checked and approved by:

Name: **Prasanna Suraweera**

Signature: 

1 Introduction

1.1 Project Background

The proposed redevelopment is located on Canning Highway, Applecross WA.

Figure 1 - Site Location and Context

It consists of a mixed-use development with commercial office space and retail / F&B tenancies. Summary of the expected project yields are as follows:

- Net lettable area ~14,000sqm
- Car parking bays ~170
- Motorcycle bays ~47
- Bicycle parking
    - 140 secure
    - 4 unsecure

1.2 Disclaimer

This report provides high level guidance regarding the sustainability commitments targeted for this project and the preliminary strategies and initiatives to be adopted therein.

The purpose of this assessment is to provide confidence that the sustainability commitments targeted are achievable. Due care has been taken to ensure the initiatives are coordinated and achievable for the project, however, note that the specific strategies mentioned in this report are indicative and may evolve throughout the futures stages of design. It is noted that the commitment to the overall project target shall be maintained.

1.3 Deliverables

The specific deliverables/commitments for each milestone are confirmed below:

- **Performance Requirement:**
  - Target a Certified 5-star Green Star Buildings V1 rating performance (i.e. minimum 35 points).
- **Development Application Deliverables:**
  - Preliminary 'Statement of Intent' to be provided by a practicing Green Star Accredited Professional (GSAP).
  - Green Star Scorecard. Refer Appendix A.
- **Design Phase Deliverables:**
  - Green Star Design Report to be provided by a practicing Green Star Accredited Professional (GSAP) confirming compliance with above performance requirement.
- **Post Practical Completion Phase Deliverables:**
  - Confirmation by the builder of final performance achieved as at practical completion.
  - Green Star As-Built Report to be provided by a practicing Green Star Accredited Professional (GSAP) confirming compliance with above performance requirement.
  - Green Star As-Built certification to be achieved within 2 years of Practical Completion.

2 Green Star Strategy

This project is a standalone development and will target formal certification against 5-Star Green Star performance utilising the Green Star Buildings Version 1 tool.

2.1 Green Star Overview

Green Star is a holistic tool that extends beyond the environment to address the issues that will define the next decade of the built environment. The tool's 8 categories enable owners and developers to act on the areas of sustainability that matter most, future proofing a building for the long-term.

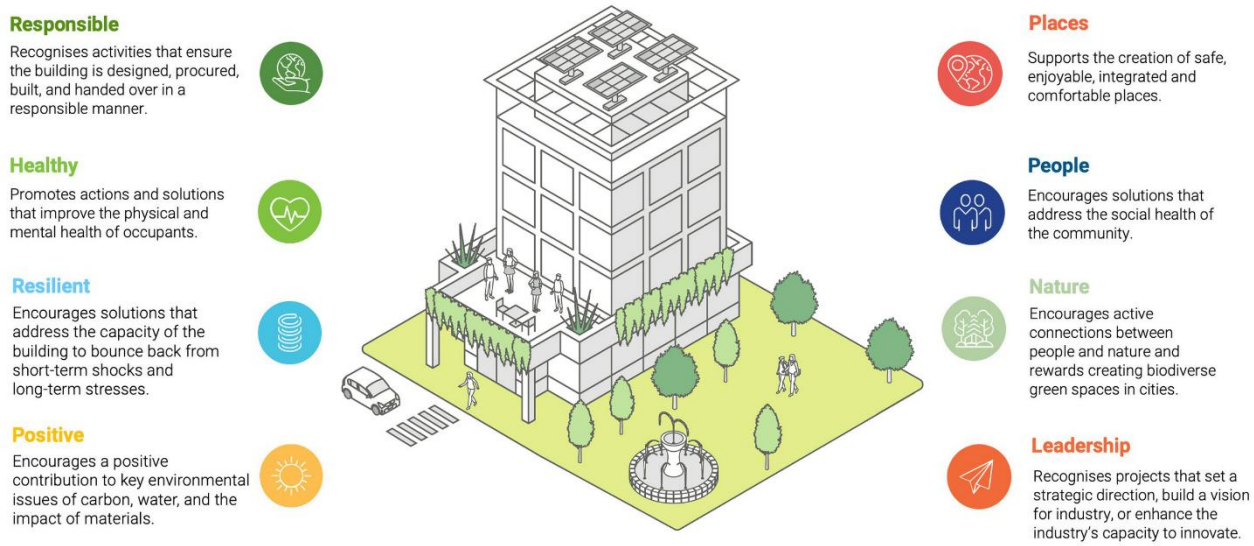

Figure 2 – Overview of Green Star Categories[1]

Administered by the Green Building Council of Australia (GBCA) to assess the level of environmentally sustainable design that may be incorporated into a building.

Under the tool, the following ratings can be achieved:

- 15-34 points = 4 Star rating ("Australian Best Practice")
- **35-69 points = 5 Star rating ("Australian Excellence")**
- Above 70 points = 6 Star rating ("World Leader")

[1] https://new.gbca.org.au/green-star/rating-system/buildings/

2.2 Green Star Summary

A Green Star feasibility study was undertaken for the project. This is an indicative pathway and pending further design detail and evolution.

The expected performance against each category in the Green Star tool is outlined below:

Table 1 - Green Star Category Points and Summary

Category	Total Points Available	Total points targeted
Responsible	17	10
Healthy	14	6
Resilient	8	2
Positive	30	16
Places	8	5
People	9	3
Nature	14	0
Leadership	10	1
Sector Specific	5	5
Total	100 plus 10 innovations	48

Refer to Appendix A - Green Star Score Card for further details.

2.3 Summary of Initiatives

A summary of the key strategies to target this level of performance is illustrated below. These align with a compliant 5-Star Green Star pathway, however the initiatives selected are preliminary in nature and subject to change.

All targets are as outlined and calculated within the Green Star tool methodology.

2.3.1 Passive Design & Efficiency

Energy efficiency requires combination of high-performance building envelope together with efficient servicing strategy. The following fundamental concepts will be considered in the design:

- Passive design elements to be considered including window to wall ratio, shading and massing.
- High performance envelope including high-performance double-glazed systems.
- Electric heat pump hot water systems.
- LED lighting throughout for light quality and efficiency.

2.3.2 Water Efficiency

Water efficiency will be targeted through the selection of suitable fittings and fixtures. The following initiatives will be targeted:

- 6 Star WELS - Taps
- 5 Star WELS - Urinals & Dishwashers
- 4 Star WELS - Toilets & Washing Machines (if applicable)
- 3 Star WELS - Showers (Flowrate < 7.5 L/min)

Other water efficiency measures to be explored include:

- A minimum of 90% recycling of Fire Test Water to be returned to the Fire tanks.
- Drought tolerant native plant selections with dripper irrigation.

2.3.3 Large Scale Solar PV

Provision of renewables is critical to the sustainability performance of buildings. It is a key initiative for reducing carbon emissions and will also provide operating cost benefits.

This project has nominated an approximately 1100m^2 of roof area which has been allocated for solar PV. The commitment is to install a grid integrated solar PV array with a capacity of 150kW, with an expected yield of ~225,000kWh/annum. The expected scope 2 carbon savings are ~120,000 kgCO_2-e/annum.

2.3.4 Electrification – Hot Water, Space Heating and F&B Cooking

Electrification is a key strategy for ongoing emissions improvement as the electricity grid continues to improve its carbon intensity. This is due to the ongoing 'greening' of the grid as the additional renewable's capacity is realised. As an example, over the past 15 years, the grid emissions have improved by approximately 40% to 50% on the South-West Interconnected System (SWIS). This trend is expected to continue with further investment into renewable projects planned for the SWIS.

All F&B cooking will be through electric appliances such as Induction Cooktops.

By having all services and energy demands electrified, this project is well placed to achieve ongoing savings in carbon emissions alongside the grid.

2.3.5 Upfront Carbon and Lifecycle Impacts

Upfront carbon emissions are defined as the embodied carbon for the material creating and construction of the building falling under modules A1 to A5 as outlined by EN15978. This project will target a minimum 20% reduction of upfront carbon emissions through good design (design efficiency) and responsible material selection. Key design inclusions are:

- Low carbon concrete products will play an important role in this target and will be considered for all concrete mixes on the project.

- Lower carbon reinforcing steel and aluminium will be explored.
- Green star approved Climate Active Certified Carbon Neutral Products.

Additionally, the project will target a 30% reduction in life cycle impacts when compared to standard practice. This will be demonstrated through a whole-of-building, whole-of-life (cradle to grave) comparative Life Cycle Assessment (LCA), as defined by EN 15978 – see modules A to D below.

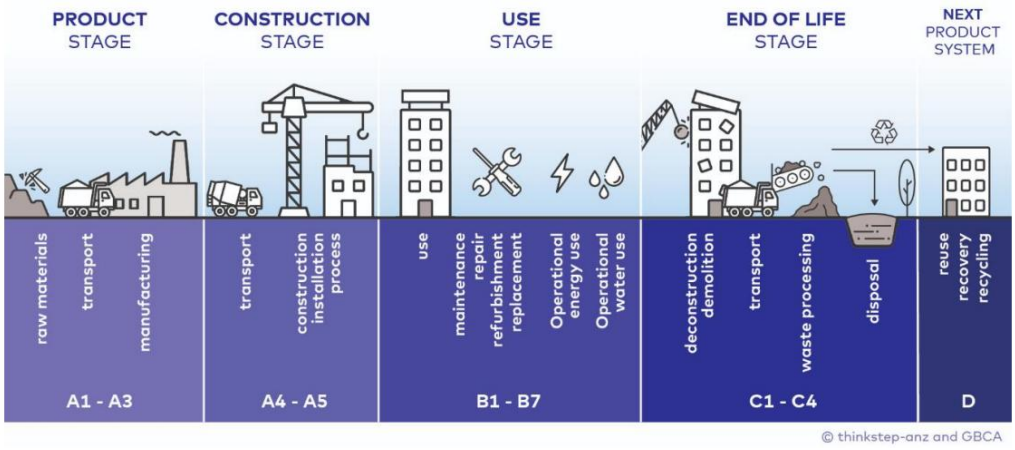

Figure 3 – Life Cycle Impact Categories – EN15978

2.3.6 Indoor Environmental Quality

The following initiatives have been targeted to improve the indoor environment quality for the occupants:

- Increased levels of filtered outside air via the HVAC systems;
- Lighting selections with consideration for visual comfort;
- High levels of access to daylight through a glazing visual light transmittance (VLT) > 0.5;
- Acoustic comfort strategy
- Material selections with credible sustainability certifications and limits on toxins; and
- On-site testing for volatile organic compounds and formaldehyde.

2.3.7 Heat Island Mitigation

The external colour of roof and landscape elements can have significant impact on the local microclimate, specifically temperature. Dark surfaces will absorb heat and can increase ambient temperatures by 5+ degrees. To reduce heat island impact:

- Light coloured roofs (Initial SRI > 82).
- Explore Hardscaping surface options with Initial SRI > 39.

2.3.8 Climate Resilient

A Climate Change Assessment will be undertaken over two timelines to identify risks and work through design responses with the design team. All High and Very High risk items will have specific responses in alignment with the Green Star requirements.

2.3.9 Construction Waste Recycling

A minimum 90% of all construction waste will be diverted from landfill including ongoing monthly reporting. This will be specified in the Head Contractor obligations and in line with current industry best practice.

2.3.10 Waste Management Plan

A Waste Management Plan will be developed with intention to maximise operational waste recycling. Appropriate waste sorting area will be determined based on the expected throughput of each waste streams. Specific waste streams targeted include the following:

- General
- Comingled Recycling
- Food Organics and Garden Organics (FOGO)

Appendices

Appendix A Green Star Score Card

greenstar Buildings

Submission planner - 882 Canning Highway

SUMMATION

Summary

Registering from / certified	2023 onwards		
Climate Positive Pathway targeted	Yes	**Targeted Green Star rating**	5 Star
Minimum expectations met	Yes	**Core points targeted**	42
Credit Achievement points targeted	36	**Leadership points targeted**	5
Exceptional Performance points targeted	6	**Total points targeted**	47

Total Points Targeted 47 | 6 | 30 | 12

Total of 36 low and medium risk points, with a further 12 high risk points to be investigated

	Credit	Minimum Expectation	Credit Achievement	Exceptional Performance	Total points available	Targeted performance level	5 Star Pathway - min 35 req'd.	Low	Medium	High	Comments
Responsible					**17**						
1	Industry Development		1		**1**	Credit Achievement	**1**	**1**	**0**	**0**	Summation will meet this scope from Design to Practical Completion, led by GSAP Prasanna Suraweera.
2	Responsible Construction	•	1		**1**	Credit Achievement	**1**	**0**	**1**	**0**	The Green Star Specification will ensure the Head Contractor meets the Minimum Expectation & Credit Achievement criteria: - Inclusion of an EMS and EMP. - Sustainability Training will be provided for all trades on site. - 90% Construction and Demolition Waste diversion from landfill, with all Waste Contractors & Processing Facilities to meet the Green Star waste auditing requirements. Summation to include in GS Specification.
3	Verification and Handover	•	1		**1**	Credit Achievement	**1**	**1**	**0**	**0**	- Extensive metering and monitoring with building performance targets, and effective commissioning and tunning. - Airtightness barrier to be incorporated by Architecture in DD. Air tightness testing to be conducted to ensure build quality. Airtightness consultant to be engaged to complete review at DD stage. - Independent commissioning agent to ensure building operates efficiently. ICA engagement to occur at DD Stage.
4	Operational Waste	•			**0**	Minimum Expectation	•	•	•	•	Waste Management Plan. Capturing General, Comingled and FOGO waste streams. Waste rooms located on Ground Floor.
5	Responsible Procurement		1		**1**		**0**	**0**	**0**	**0**	
6	Responsible Structure		3	2	**5**	Exceptional Performance	**5**	**0**	**5**	**0**	Procuring concrete and/or reinforcing steel from suppliers with Green certifications. To be included in the Green Star Specification.
7	Responsible Envelope		2	2	**4**		**0**	**0**	**0**	**0**	
8	Responsible Systems		1	1	**2**		**0**	**0**	**0**	**0**	
9	Responsible Finishes		1	1	**2**	Exceptional Performance	**2**	**0**	**2**	**0**	Selecting sustainable internal materials which have EPD's and Green certifications. To be reviewed with DMG in DD.
						Total	**10**	**2**	**8**	**0**	
Healthy					**14**						
10	Clean Air	•	2		**2**	Minimum Expectation	•				Focus on clean air quality and increased fresh air for occupants. - Min 50% increase in outside air requirements for mech vent spaces with CO2 control. Natural Ventilation for the Residential spaces. - Meet Minimum seperation distances for Exhaust and intakes. Mechanical Consultant to incorporate into design.
11	Light Quality	•	2	2	**4**	Credit Achievement	**2**			**2**	Electrical Consultant to incorporate in DD. Inclusion of lighting comfort for the occupants including: - CRI > 85 - SDCM of 3 or less. - Maintained illuminance uniformity - Reduce lighting glare by fittings with Diffusers. Explore the improved lighting comfort criteria of the Credit Achievement with Electrical.
12	Acoustic Comfort	•	2		**2**	Credit Achievement	**2**			**2**	Provision of an acoustic comfort startegy. Explore improved Acoustic Treatments with the Acoustic Consultant.
13	Exposure to Toxins	•	2		**2**	Credit Achievement	**2**	**2**			- Low toxicity material selections to reduce VOC's and Formaldehydes. DMG to confirm in DD. - Green Star Specification to include Air quality testing to be engaged by Head Contractor for test at practical completion.
14	Amenity and Comfort		2		**2**		**0**				
15	Connection to Nature		1	1	**2**		**0**				
						Total	**6**	**2**	**0**	**4**	
Resilient					**8**						
16	Climate Change Resilience	•	1		**1**	Credit Achievement	**1**	**1**			Climate Resilience and adaptations for the effects of climate change to be completed by Summation.
17	Operations Resilience		2		**2**		**0**				
18	Community Resilience		1		**1**		**0**				
19	Heat Resilience		1		**1**	Credit Achievement	**1**		**1**		- Minimise heat island effects through light coloured roof (Initial SRI > 82) and landscaping hardscapes (Initial SRI > 39). - Maximise Vegetation where possible. To be reviewed with Landscape and DMG in DD.
20	Grid Resilience		3		**3**		**0**				
						Total	**2**	**1**	**1**	**0**	
Positive					**30**						
21	Upfront Carbon Emissions	•	3	3	**6**	Credit Achievement	**3**		**3**		- Reduce upfront carbon by 10% (embodied emissions). Captures building re-use and will require some lower carbon concrete across all concrete mixes. Linked to Credit 26. - Summation to complete Preliminary LCA in DD once a BOQ is available.
22	Energy Use	•	3	3	**6**	Credit Achievement	**3**		**3**		Minimum 20% saving in energy efficiency compared to Green Star reference building. To be achieved through: - High efficiency façade design, including double glazing. - High efficiency HVAC systems - VRV type systems - High efficiency HWS systems, central heat pumps (COP > 4). - Target 30% reduction in Lighting Power Density - VT - Lifts with standby mode & regnerative braking. - Solar PV - Targeting 150KW with an area of ~1100sqm. Summation to complete Energy Modelling.
23	Energy Source	•	3	3	**6**	Exceptional Performance	**6**		**6**		Site to be All-Electric for: - Space heating - Domestic hot Water - Induction Cooking for F&B Zero Carbon Action Plan criteria satisfied, given 100% electric building. Basebuild will procure 100% Renewable Electricity for first 3 years of operation.
24	Other Carbon Emissions		2	2	**4**	Credit Achievement	**2**		**2**		- Selecting lower GWP refrigerants, where commercially feasible. - Offset of emissions from refrigerants from Airconditioning, DHW Heat Pumps and Residential refrigerators (if installed upfront).
25	Water Use	•	3	3	**6**	Minimum Expectation	•	•			- Target WELS rated fittings and fixtures. - Target 90% recycling of Fire Pump Test water is recycled into tanks. - Landscaping to be drought tolerant natives with dripper irrigation.

26	Life Cycle Impacts		2		**2**	Credit Achievement	**2**		**2**		**Minimum 30% saving in life cycle impacts from development. Linked to Credits 21 and 22. - Summation to complete Preliminary LCA in DD once a BOQ is available.**
						Total	**16**	**0**	**16**	**0**	
Places					**8**						
27	Movement and Place	•	3		**3**	Credit Achievement	**3**			**3**	**- Provision of EOT Showers and Lockers. - Safe access for cyclists entering the development (Provided through Plaza forecourt access). Explore Credit Achievement criteria with Transport Consultant.**
28	Enjoyable Places		2		**2**		**0**				
29	Contribution to Place		2		**2**	Credit Achievement	**2**		**2**		**DRP minutes to be provided by DMG for 3 rounds of review including one at Building Permit stage.**
30	Culture, Heritage and Identity		1		**1**		**0**				
						Total	**5**	**0**	**2**	**3**	
People					**9**						
31	Inclusive Construction Practices	•	1		**1**	Credit Achievement	**1**		**1**		**Ensure construction practices are inclusive and responsible. All Minimum Expectation requirements to be included in Summation Green Star Specification.**
32	Indigenous Inclusion		2		**2**		**0**				
33	Procurement and Workforce Inclusion		2	1	**3**		**0**				
34	Design for Inclusion		2	1	**3**	Credit Achievement	**2**		**2**		**DDA Consultant completing a review of the 'Design for Inclusion' Strategy.**
						Total	**3**	**0**	**3**	**0**	
Nature					**14**						
35	Impacts to Nature	•	2		**2**	Minimum Expectation	•	•			**Minimise negative impacts to nature from the development from Light Pollution. Electrical & Landscape to confirm in DD.**
36	Biodiversity Enhancement		2	2	**4**		**0**				
37	Nature Connectivity		2		**2**		**0**				
38	Nature Stewardship		2		**2**		**0**				
39	Waterway Protection		2	2	**4**		**0**				
						Total	**0**	**0**	**0**	**0**	
Leadership					**3**						
40	Market Transformation				**0**		**0**				
41	Leadership Challenges		3		**3**	Exceptional Performance	**5**	**1**		**5**	**5 star projects awarded 1 point for achieving Climate Positive Pathway. Explore procurement of 100% Renewable Electricity for the site (ie. All tenants) through an embedded network.**
						Total	**5**	**1**	**0**	**5**	

SUMMATION