Appendix E Green Star Design Report



EMERGEN

GREEN STAR DESIGN REPORT

3 BRAGOR PLACE and 17 & 19 ALMONDBURY ROAD

PREPARED BY

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DISCLAIMER

The intent of the Green Star design report is to provide a high-level overview on the project attributes and documentation provided to CADDS Group. It is not the intent of the gap analysis to provide certainty of credits instead identify the risk and cost of achieving credits required to achieve a 6 Star Green Star Rating.





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EXECUTIVE SUMMARY 1

An initial evaluation has been carried out for the residential project proposed at 3 Bragor Place And 17 & 19 Almondbury Road, aiming to ascertain its capacity to meet the following criteria:

- Compliance to NCC 2019 Section J,
- _ Attainment of a 5-Star "Aspirational" Green Star Buildings v1 rating.

The project is anticipated to successfully fulfill the outlined sustainability goals.

INTRODUCTION 2

This document has been prepared for Scentre Group, outlining the sustainability initiatives under consideration for inclusion in the upcoming development. An initial evaluation has been conducted to gauge the project's feasibility in meeting the compliance standards of NCC 2019 Section J and obtaining an aspirational 5-star Green Star rating. The selection of Green Star credits is based on past experiences with similar projects. These points will be harmonised with inputs from other members of the design team, and the strategy will be refined as the design advances, incorporating additional feedback and details.

2.1 OVERVIEW OF TARGET

Given our current engagement in the project, it is evident that the client's sustainability objectives for the site encompass:

- -Compliance to NCC 2019 Section J,
- Attainment of a 5-Star "Aspirational" Green Star Buildings v1 rating.

PROJECT	3 BRAGOR PLACE, ARDROSS
TOOL	GREEN STAR BUILDING v1

5 STAR – AUSTRALIAN EXCELLENCE	MIN. POINTS	35

POINT ALLOCATION			
COMMITMENT	LOW RISK	MEDIUM RISK/HIGH RISK	
1	16	25	





3 THE BENCHMARK

Green Star Buildings is the rating tool for the design and construction of new building and major refurbishments. Green Star Buildings aim to meet current and future demands of the built environment with aspirational benchmarks for design, construction, and operational performance. It also provides a pathway for building owners to address carbon emissions over time.

Green Star Building features eight categories representing the issues that will define the next decade of the built environment.



Responsible

Recognises activities that ensure the building is designed, procured, built and handed over in a responsible manner.



Healthy

Promotes actions and solutions that improve the physical and mental health of occupants.

\bigcirc	2	
	2	
	5	

Resilient

Encourages solutions that address the capacity of the building to bounce back from short-term shocks and long-term stresses



Positive

Encourages a positive contribution to key environmental issues of carbon, water and the impact of materials.



Places Supports the creation of safe, enjoyable, integrated and comfortable places.



People Encourages solutions that address the social



Nature Encourages active connections between people and nature and rewards creating biodiverse



Leadership

health of the community.

Recognises projects that set a strategic direction, build a vision for industry or enhance the industry's capacity to innovate.

Figure 1 Green Star Categories

Each category groups a number of issues related to a certain impact. These are known as Credits. A Credit addresses an initiative that improves or has the potential to improve a project's performance.

Credits are weighted in relation with each other by varying the number of points available. Each credit defines a clear outcome that a project must meet. Where the outcome is verified to have been met, a project will be rewarded with the relevant available points.

Once all credits are assessed, the total number of points achieved is compared against the available points in the rating tool, and a certified rating is awarded.

A building seeking certification can achieve a Green Star 'Certified' rating. This rating is awarded at the end of construction and does not expire. There is an option to achieve a 'Designed' assessment, an interim step towards the full certification. In addition, leadership badges are being introduced to showcase leadership on a number of issues.

Green Star Buildings certification identifies projects that have demonstrated the achievement of a specific level of sustainability. The rating describes to the industry the sustainability attributes of the project in terms that are widely understood and accepted.





3.1 CATEGORIES, CREDITS, CRITERIA AND POINTS

There are eight categories in Green Star Buildings. Each category contains multiple credits. A Credit addresses an initiative that improves or has the potential to improve a project's sustainability performance.

Credits are weighted in relation with each other by varying the number of points available. Each credit defines a clear outcome that a project must meet. Where the outcome is verified to have been met, a project will be rewarded with the relevant available points.

Once all credits are assessed, the total number of points achieved is compared against the available points in the rating tool, and a certified rating is awarded.

Each credit can contain one of three distinct levels of achievement, or Criteria:

- Minimum Expectations.
- Credit Achievement; and
- Exceptional Performance

Minimum Expectations are not worth points. Each *Credit Achievement* and *Exceptional Performance* are awarded with one to three points.

3.2 MINIMUM EXPECTATIONS

There is a set of *Minimum Expectations* that must be targeted by all projects looking to achieve a Green Star rating.

The *Minimum Expectations* aim to ensure all Green Star rated buildings meet a basic definition of a green building (energy efficient, water efficient, good healthy spaces, built responsibly, and on sites that are not highly sensitive areas). In summary, buildings must be designed and built to:

- Protect environmentally significant areas.
- Emit less carbon in construction and during
- operations.
- Be water efficient.
- Have improved air, light, acoustics, and product.
- finishes.
- Promote physical activity.
- Be built with climate change in mind.
- Manage environmental impacts during construction.
- Embrace the diversity of our population.
- Enable practices that reduce operational waste; and
- Be verified to work.





There is at least one *Minimum Expectation* per category in the rating tool. Below is a detailed description of each one:

Table 1 Minimum Expectations

Category	Credit	Outcome
Responsible	Responsible Construction	The site must have an environmental management plan. The builder must have an environmental management system (large builders will need to be ISO14001 accredited). 80% of Construction and demolition waste must be recycled. Sustainability training is provided to construction workers.
	Verification and Handover	The building must be commissioned and tuned. Appropriate metering must be present
	Operational Waste	The building must have appropriate spaces for waste management and an appropriately sized loading dock.
	Clean Air	The ventilation system must have appropriate filtration. Point source pollutants must be exhausted directly outside (printers, kitchens). The building must be provided with at least 50% outside air.
Healthy	Light Quality	Glare must be managed. Light fittings must be of good quality. Lighting levels must be appropriate. A daylight strategy must be developed.
	Acoustic Comfort	Internal noise levels from services and the outside is limited through an acoustic comfort strategy.
	Exposure to Toxins	All the paints, adhesives, sealants, and carpets must have low levels of Volatile Organic Compounds. Engineered wood must be low formaldehyde. There must be no lead, asbestos and PCBs in the building.
	Climate Change Resilience	The project has done a pre-screening assessment to identify climate-related risks facing the building.
Desitive	Upfront Carbon Emissions	The building has 10% less upfront carbon emissions compared to a standard building from materials.
Positive	Energy Use	The building provides a Carbon Zero Action Plan.
	Energy Source	The building has at least a 10% lower energy consumption than one built to the National Construction Code 2019.
	Water Use	The building has at least a 15% reduction in potable water usage when compared to a reference building or has installed water efficient fixtures and appliances.
Places	Movement and Place	There are showers, lockers and change rooms in the building (not applicable to residential buildings).
People	Inclusive Construction Practices	There are provisions for providing gender appropriate facilities and personal protective equipment.
Nature	Impact to Nature	Ecologically sensitive sites are protected.





3.3 SUSTAINABLE DESIGN TARGETS

The design team will utilise a structured approach to a sustainable outcome for the design and construction of the development including the following Sustainable Targets.

Table 1 – Sustainability C	Commitments
----------------------------	-------------

DESCRIPTION	GOAL	SUSTAINABILITY COMMITMENTS	CREDITS
INDUSTRY DEVELOPMENT	Engaging a GSAP	Project team to engage a GSA, provide financial transparency and detail out sustainability targets for all stakeholders.	1
CONSTRUCTION AND DEMOLITION WASTE DIVERSION	Construction and demolition waste diversion	Ensure 90% diversion of construction and demolition (C&D) waste from landfills.	1
INDEPENDENT COMMISSIONING AGENT (ICA)	Engage ICA	An ICA is required to oversee, confirm, and validate the commissioning and tuning of designated building systems from design through construction phases.	1
CLEAR AIR	Ventilation system attributes	Design teams must ensure access to the upstream side of fan coil units with MERV 8+ filters and demonstrate safe access for cleaning and maintenance for units in ceiling voids.	
	Provision of outdoor air	Option 1: Outdoor air must exceed AS 1668.2:2012 minimum by 100% for each space in the nominated area. OR Option 2: Maintain CO2 levels below 700ppm in each space at all times during occupancy by continuously measuring and adjusting outdoor air intake as needed.	2
LIGHT QUALITY	Artificial Lighting	Achieve compliance in artificial lighting for over 95% of the designated area by ensuring walls in occupants' view meet specific reflectance and illuminance requirements, while also maintaining appropriate task illuminance levels and adhering to color and contrast standards outlined in AS 1680.	2
	Daylight	Achieve compliance with CA11.2 Daylight criteria by ensuring that in non-residential buildings, a minimum of 40% of the principal averaged area receives high daylight levels (160 lux for 80% of nominated hours).	2





ACOUSTIC COMFORT	Internal noise	Internal noise levels from services and the outside are limited through an acoustic comfort strategy.	2
EXPOSURE TO TOXINS	Internal noise	Test must be undertaken to verify all sample measurements are TVOC <0.27ppm and formaldehyde <0.02ppm. Nominated area: primary secondary & tertiary.	2
CONNECTION TO NATURE	Views, plants and nature-inspired design	Building requires 60% clear views in primary spaces, indoor plants (500cm2 per 15m2) with maintenance, five nature-inspired design interventions, or 5% floor/site area for direct occupant nature engagement.	1
CLIMATE CHANGE RESILIENCE	Climate change risk and adaptation assessment	Suitably qualified professional must undertake a climate change risk and adaptation assessment as early in design phase as possible in accordance with AS 5334:2013 and AS/NZS ISO 31000:2009, and author a report.	3
OPERATIONS RESILIENCE	Engage a Service consultant	Must perform an assessment of the building's survivability in blackout event.	
HEAT RESILIENCE	Heat Island Effect reduction	For compliance, utilize heat island reduction strategies on 75% of the site, including vegetation, green roofs, specified roof materials, shaded hardscaping elements, and water bodies; shaded areas by permanent structures during summer solstice are compliant.	1
GRID RESILIENCE	Active generation and storage systems	Building can reduce peak electricity demand by 10% for at least an hour via on-site storage or renewables, with grid outage capability and utility approval; BMS needs a demand management dashboard for external control signals in demand response.	3
UPFRONT CARBON EMISSIONS	Conduction upfront carbon study and LCA	Achievable based on previous LCA's.	
ENERGY SOURCE	100% Renewable Electricity/renewa ble energy	Building owner/operator must ensure 100% renewable electricity, on-site or off-site with a signed contract, meeting specific criteria.	9
WATER USE	45% Potable water reduction compared to a reference building	High WELS Ratings (these equal to above 30% reduction in potable water).	





LIFE CYCLE IMPACTS	30% reduction in life cycle impacts compared to standard practice	30% reduction in life cycle impacts cradle-to- grave (per m2 GFA) incl. all EN 15978 modules (A to D).	2
MOVEMENT AND PLACE	Low carbon options.	Cyclist facilities, encouraging walkability and EV charging bays	3
INCLUSIVE CONSTRUCTION PRACTICES	Gender-Specific	Provision of gender inclusive bathrooms and changing facilities	2
IMPACTS TO NATURE	Protecting Ecological Values	The project team must assess and protect ecological values by documenting current, future, and past values, retaining vegetated areas, addressing threats, implementing management strategies, engaging the community, and consulting stakeholders.	2
BIODIVERSITY ENHANCEMENT	Biodiversity management plan	External landscape must meet a minimum ratio of 15% site area or 1:500 GFA, with diverse, indigenous, and non-invasive plants. Two pathways (prescriptive, performance) ensure biodiversity integrity; a qualified professional outlines maintenance actions.	2
DESIGNED TO			35
INCLUDING MEDIUM RISK TOTAL (INCLUDING SMALL BUFFER)			42

3.4 GREEN STAR PLAN

The total number of points available for each of the categories in the Green Star Buildings tool is:

Category	Available Points	Targeted points 5 stars
Responsible	17	4
Healthy	14	11
Resilient	8	7
Positive	30	11
Places	8	3
People	9	2
Nature	14	4
Total	100	42





3.5 NOMINATED AREAS

The nominated area refers to the area of a building(s) which are nominated as relevant to a credit criterion. Within Green Star Buildings, several credits in the Healthy category refer to a nominated area. The nominated area can include primary, secondary, and tertiary area types.

Refer to Appendix 1 for a breakdown of nominated areas.

3.6 RATING SCALE

The Green Star rating is determined by comparing the percentage of available points achieved out of the total available points. The rating scale shown below details the percentage thresholds for the Star ratings awarded.



Figure 2 Rating Scale

Table 2 Green Star Ratings

POINTS REQUIRED	RATING	OUTCOME
15	Four Star	Australian Best Practice
35	Five Star	Australian Excellence
70	Six Star	World Leadership

3.7 CERTIFICATION

Green Star certification is a formal process during which a building, is awarded a rating by an independent, third-party assessment panel of sustainable development experts through a documentation-based assessment.







The certification process



Figure 3 Certification process

Information on the certification process is outlined in detail on the GBCA website: https://new.gbca.org.au/rate/certificationprocess/assessment-process/

To obtain a Green Star rating, the project must be registered with the GBCA.

Information regarding the Registration process, including fees, can be found online here https://new.gbca.org.au/rate/certificationprocess/registration/.





4 **RESPONSIBLE**

Table 3 Responsible Credits

CREDIT	MINIMUM EXPECTATION	CREDIT ACHIEVEMENT	EXCEPTIONAL PERFORMANCE
INDUSTRY DEVELOPMENT		•	
RESPONSIBLE CONSTRUCTION	٠	٠	
VERIFICATION AND HANDOVER	•	٠	
OPERATIONAL WASTE	٠		
RESPONSIBLE PROCUREMENT		٠	
RESPONSIBLE STRUCTURE		٠	٠
RESPONSIBLE ENVELOPE		٠	•
RESPONSIBLE SYSTEMS		•	٠
RESPONSIBLE FINISHES		٠	•

4.1 INDUSTRY DEVELOPMENT

4.1.1 GREEN STAR ACCREDITED PROFESSIONAL

Nyonika Oberai has been appointed the project ESD consultant and has been a GSAP (Green Star Accredited Professional) since 2020.

The GSAP's will need to host a design team workshop, including reviewing potential credits and explaining the Green Star certification process.

An ESD Specification will be provided regarding all services identifying the requirements of the Green Star Buildings tool for the initiatives included by the design team.

4.1.2 FINANCIAL TRANSPARENCY

The project team must complete, and include in the submission, the *Green Star Financial Transparency Disclosure Template.* The template assists the project team to submit the cost of sustainable building practices of the project including design, construction, and documentation to the GBCA.





The project team must provide the project's financial data in Excel format with the project's Green Star submission, not as a PDF. The *Disclosure Template* is available on the GBCA website. Project teams must use the latest available version.

All information will be anonymised by the GBCA and included as an aggregate as part of a regular report to inform industry on the cost of Green Star. No project, owner or consultant will be identifiable.

4.1.3 MARKETING SUSTAINABILITY ACHIEVEMENTS

To achieve this criterion:

- The project's marketing team must complete the Green Star Case Study Template. The template seeks information on the sustainability initiatives that the building targeted to enable it being featured on the GBCA's website.
- The project team must detail how the building will detail its sustainability achievements to its stakeholders. The stakeholders are defined as the typical building occupants and visitors; and
- The Green Star Certification achieved for the project must be prominently displayed in a location that is visible to the public or visitors.

4.2 RESPONSIBLE CONSTRUCTION

4.2.1 ENVIRONMENTAL MANAGEMENT SYSTEM

The builder or head contractor (responsible party) must have a formalised systematic and methodical approach to planning, implementing, and auditing in place during construction. the responsible party must have an Environmental Management System (EMS) certified to a recognised standard such as AS/NZS ISO 14001, BS 7750 or the European Community's EMAS.

The EMS can be stand-alone or part of an integrated management system and must be valid for the duration of construction activities.

4.2.2 ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) must be project specific and cover the scope of construction activities. It must be implemented from the start of construction and include all works within the project scope.

4.2.3 CONSTRUCTION AND DEMOLITION WASTE

Projects must divert at least 90% of construction and demolition waste from landfill.

A Disclosure Statement is required from waste contractors and processing facilities outlining how the company and their reporting aligns with the *Green Star Construction and Demolition Waste Reporting Criteria*.

4.2.4 SUSTAINABILITY TRAINING

The head contractor must provide the following training to **95%** of all contractors and subcontractors present on site for at least three days:

- Information on the sustainable building certification(s) sought, including:
 - the sustainability attributes of the building and their benefits.
 - the value of certification; and
 - the role site worker(s) play in delivering a sustainable building





EMERGEN to provide workshop material to include in Induction packages.

4.3 VERIFICATION AND HANDOVER

4.3.1 METERING AND MONITORING

The building must have accessible energy and water metering for all common uses, major uses, and major sources.

The meters must be connected to a monitoring system capable of capturing and processing the data produced by the meters.

The meters and monitoring systems must:

- Provide continual information (up to 1-hour interval readings).
- Be commissioned and validated per the most current 'Validating Non-Utility Meters for NABERS Ratings' protocol, or National Measurement Institute (NMI) standards.
- Be capable of identifying inaccuracies in the meter network and producing alerts. Inaccuracies are defined as those over meter tolerances based on their metering accuracy class (e.g., 'Class 1' meters shall not have inaccuracies of more than
- 1% due to metering accuracy class); and
- Be sufficient to support future achievement of a NABERS rating.

4.3.2 COMMISSIONING AND TUNING

The project team must perform the following prior to construction:

- Set environmental performance targets (EMERGEN can provide); and
- Perform a services and maintainability review (EMERGEN can provide template, consultant required input)
- During construction and practical completion:
 - Commission the building; and
 - Engage building tuning service provider After practical completion:
 - Tune the building over the next 12 months

4.3.3 BUILDING COMMISSIONING

During construction and before practical completion, all building systems must be commissioned per a recognised commissioning standard (CIBSE or ASHRAE commissioning guides). A commissioning specification must be included in the construction documentation listing requirements for each system.

A commissioning plan must be developed prior to practical completion.

The contractual tender or construction documentation must list the commissioning requirements for each system. It is not enough to state that systems must be commissioned to the relevant standard. The person responsible for the commissioning of the nominated

services must have specific and demonstrable knowledge of the types of systems to be commissioned.

Airtightness must be considered as part of the commissioning process during the following stages:

- Schematic design: review of design including an air barrier system schematic.
- Design Development: review for tightness including air barrier continuity on building plans, sections and details. Scope of
- work and necessary coordination between trades and responsibilities must be considered.





- Construction: A plan for stages of commissioning for air tightness must be defined and included in the project timeline; and
- The building must undertake an airtightness test in accordance with AS/NZS ISO 997

4.3.4 BUILDING SYSTEMS TUNING

The owner or developer must contractually commit to a tuning process that includes quarterly adjustments and measurements for at least the first 12 months after occupation.

The commitment must include:

- A building tuning manual or plan.
- A description of the building tuning team; and
- Confirmation the owner has engaged parties to tune the nominated systems
- The building tuning team must include:
 - The facilities manager.
 - The owner's representative and the independent commissioning agent (ICA, if applicable).
 - The head contractor; and
 - The services design professionals

4.3.5 INDEPENDENT COMMISSIONING AGENT

An ICA must be appointed to advise, monitor, and verify the commissioning and tuning of the nominated building systems throughout the design, tender, construction, commissioning, and tuning phases.

The specified commissioning requirements must be overseen by a qualified independent commissioning professional(s).

The ICA is defined as a person who is:

- An advocate for, and reports directly to, the project owner.
- Independent of any consultant, contractor or sub-contractor organisation that has been involved in the design or installation of the nominated systems; and
- A registered professional engineer or qualified technician with demonstrated knowledge on nominated systems commissioning and has previous experience with the commissioning process of at least 2 projects similar in scope.

4.4 OPERATIONAL WASTE

4.4.1 SEPARATION OF WASTE STREAMS

The building must provide bins or storage containers to building occupants to enable them to separate their waste. These bins must be labelled and easy to access, and evenly distributed throughout the building. They must also allow for separating the following as a minimum:

- General waste going to landfill.
- Recycling streams to be collected by the building's waste collection service, including:
 - paper and cardboard
 - glass, and
 - plastic; and
- One other waste stream representing at least 1% of the total annual operational waste (by volume) of the building. This may include collecting any of the following waste types: organics, e-waste, batteries etc.





Any other single waste stream (except food waste) that represents more than 5% of total annual operational waste (by volume) must also be accounted for.

4.4.2 DEDICATED WASTE STORAGE AREA

A dedicated area, or areas, for the storage and collection of the applicable waste streams must be provided. The storage area must be sized to accommodate all bins or containers, for all applicable waste streams, for at least one collection cycle. The calculations used to demonstrate that the area provided is adequately sized to handle the recyclable waste streams specified must be based on:

- · Forecasted waste generated by occupants; and
- Collection frequency for each waste stream.

The calculations for waste generation rates must be based on figures outlined within third-party best practice guidelines.

The storage area(s) must have easy and safe access by collection vehicles. This includes driveway access to the building, any onsite roads and loading docks, and the storage areas themselves providing safe and easy access for bins to be emptied into collection vehicles.



Figure 4: Bin Storage on Ground floor

4.4.3 SIGNOFF BY WASTE SPECIALIST AND/OR CONTRACTOR

A waste specialist and/or contractor must sign-off on the designs to confirm they are adequately sized and located for the safe and convenient storage and collection of the waste streams identified.





4.5 RESPONSIBLE PROCUREMENT

4.5.1 RISK AND OPPORTUNITY ASSESSMENT

The project team must undertake a risk and opportunities assessment of its supply chain to identify environmental and social risks and opportunities. The risk assessment must consider risks and opportunities further down the supply chain, such as in the extraction, manufacture or transport of key materials. The risk and opportunity assessment must address at least the following issues:

- Human rights;
- Labour practices;
- The environment;
- Fair operating practices;
- Consumer issues; and
- Community involvement and development.

The project must provide a narrative on how it has actively addressed one risk and one opportunity.

5 HEALTHY

Table 4 Healthy Credits

CREDIT	MINIMUM EXPECTATION	CREDIT ACHIEVEMENT	EXCEPTIONAL PERFORMANCE
CLEAN AIR		•	
LIGHT QUALITY	•	•	
EXPOSURE TO TOXINS	•	•	
ACOUSTIC COMFORT	٠		
AMENITY AND COMFORT		•	
CONNECTION TO NATURE		٠	٠

5.1 CLEAN AIR

5.1.1 VENTILATION SYSTEM ATTRIBUTES

Ventilation systems must be provided with the following attributes:

 Minimum entry of outdoor air pollutants to the space: the building ventilation systems must be designed to comply with ASHRAE Standard 62.1:2013, in regard to minimum separation distances between pollution sources and outdoor air intakes; Windows, doors, openings, vents, grilles, and skylights are all considered outdoor air intakes for purposes of this credit and must be modelled taking into account their free area.





- All mechanical ventilation systems within the building must be designed to provide adequate access for maintenance to both sides of all moisture-producing and debris-catching components within the air distribution system.
- All new and existing ductwork that serves the building must have been cleaned in accordance with the recognised Standards; and
- Where construction management processes (see 'Responsible Construction Practices', Credit
 7) are in place to ensure that all new ductwork, or ductwork that has been recently cleaned,
 remains free of moisture and debris until occupation, this ductwork can be considered to be
 clean. All other ductwork including plenums, filters and fan chambers must be cleaned in
 accordance with the recognised Standards.

5.1.2 PROVISION OF OUTDOOR AIR

Outdoor air must be provided to each space in the nominated area at a rate greater than the minimum required by AS 1668.2:2012 by 50%.

The HVAC system must be clearly sized to accommodate the increased outdoor air rates. The project must use the design occupancy, where known, rather than the default occupancy when calculating the required rates.

5.1.3 EXHAUST OR ELIMINATION OF POLLUTANTS

It must be demonstrated that pollutants from printing and photocopying equipment, cooking processes and equipment are limited from the nominated area by either:

- Removing the source of pollutants; or
- Exhausting the pollutants directly to the outside.

For the first option, sources of pollutants, such as printing or photocopy equipment, kitchen stoves or vehicles, must be compliant with minimum emissions standards or not be present within the nominated area.

For the second option, specified sources of pollutants shall be exhausted directly to the outside of the project in accordance with a recognised Standard, and/or physically separated from occupants.

5.2 LIGHT QUALITY

5.2.1 LIGHTING COMFORT

Lighting within the building must meet the following criteria:

- All lighting must be flicker-free.
- Light sources must have a minimum Colour Rendering Index (CRI) average R1 to R8 of 85 or higher and have a CRI R9 of 50 or higher.
- Light sources must meet best practice illuminance levels for each task within each space type with
 a maintained illuminance that meets the levels recommended in AS/NZS 1680.1:2006 series
 applicable to the project type and including maintenance.
- The maintained Illuminance values must achieve a uniformity of no less than that specified in Table 3.2 of AS/NZS 1680.1:2006, with a maintenance factor method as defined in AS/NZS 1680.4.; and
- All light sources must have a minimum of 3 MacAdam Ellipses.





5.2.2 DAYLIGHT

The purpose of this credit is to ensure the building is providing daylight access above typical federal, state, or local regulations by showing how the building's design and glazing specification maximises natural lighting to regularly occupied spaces.

Emergen have completed preliminary daylight modelling. The analysis has been undertaken using IES software at finished floor level based on CIE standard overcast sky. The study boundary includes Primary Spaces only.

Table 5 Calculations Conditions - Daylight

CALCULATION CONDITIONS			
TEST FACTOR	Daylight Factor		
SKY FACTOR	CIE Overcast Sky		
DATE	September 21 st 12:00pm		

BUILDING	PROPOSE USAGE	NOMINATED AREA (M²)	COMPLIANT AREA (M²)	COMPLIANT AREA (%)
TYPICAL FLOOR	Primary	4534.64	3252.69	71.7%



Figure 5: Daylighting for Townhouses







Figure 6: Daylighting for Ground floor



Figure 7: Daylighting for level 1







Figure 8: Daylighting for level 2



Figure 9: Daylighting for Level 3







Figure 10: Daylighting for Level 4



Figure 11: Daylighting for Level 5







Figure 12: Daylighting for Level 6

PLEASE NOTE - Green Star buildings will necessitate simulation using the daylight autonomy method. However, due to longer simulation times, the daylighting simulations for the DA report were conducted using the older daylight lux method. Should the project seek Green Star certification, EMERGEN will model all spaces using the new GBCA Buildings method to ensure compliance. The difference in results between the two methods is considered minor. A picture of the L31 floor plan of this project showing daylight autonomy is shown below as an example.



Figure 9: 3D view of Daylight Autonomy for typical floor







Figure 13: Daylight Autonomy for typical floor

5.3 SOLAR ANALYSIS

Figure 14: Solar analysis









The shading elements have been strategically designed to minimize extended solar exposure. Each window, as a result, receives approximately 1 to 5 hours of daylight over the course of the day, striking a balance between harnessing natural light and mitigating excessive sunlight exposure.

5.3.1 GLARE

Bare light sources must be fitted with baffles, louvers, translucent diffusers, ceiling design, or other means that obscures the direct light source from all viewing angles of occupants, including occupants looking directly upwards.

Alternatively, for LED luminaires the Unified Glare Rating (UGR), as estimated from the manufacturers data sheets for a standard room, must not exceed the maximum values listed in Table 8.2 of AS/NZS 1680.1:2006.

5.4 ACOUSTIC COMFORT

5.4.1 INTERNAL NOISE

Internal ambient noise levels in the nominated areas must be no less than 5 dB below the lower range value and no greater than the upper range value relevant to the activity type in each space as recommended in AS/NZS 2107.

5.4.2 ACOUSTIC SEPARATION

Acoustic testing and measurements are taken by an acoustic consultant.

Noise transmission must be controlled in enclosed spaces (in particular meeting rooms, private offices, warehouse-to office, and warehouse-to-office acoustic transmission) where it is expected that noise should not carry over from one space to the next. This can be done by partitioning the spaces to achieve a weighted sound reduction index (Rw) to either:

Sound insulation must also be demonstrated between enclosed spaces to comply with Dw + LAeqT > 75, where:

Dw = weighted sound level difference measured between two spaces: and

LAeqT = Indoor ambient noise level in the space adjacent to the enclosed space.

5.4.3 SOUND INSULATION

The partition between the spaces should be constructed to achieve a weighted sound reduction index $(dB R_w)$ of:





- At least 45; for all partitions separating enclosed spaces which are:
 - Fixed without a door; and/or
 - Glazed partitions without a door*
- At least 40, for all partitions fronting a room (from an open plan area).
- At least 35 (in composite with door and partition) for all partition types that contain a door; and
- At least 50 through floors between occupied spaces

5.5 EXPOSURE TO TOXINS

5.5.1 PAINTS, ADHESIVES, SEALANTS AND CARPETS

At least 95% of internally applied paints, adhesives, sealants (by volume) and carpets (by area) must meet TVOC Limits (handbook pg. 91-92). Compliance can be achieved via a recognised and current at time of purchase Product Certification Scheme; laboratory product testing; or there are none of these materials present at PC.

5.5.2 ENGINEERED WOOD PRODUCTS

Either no new engineered wood products are used in the building, or at least 95% (by area) of all engineered wood products meet specified formaldehyde emission limits (handbook pg.92-93). Compliance can be achieved via a recognised and current at time of purchase Product Certification Scheme, or laboratory product testing. Excl. formwork, car parking applications and non-engineered wood products.

5.5.3 LEAD, ASBESTOS AND PCBS

Comprehensive hazardous materials survey must be performed on existing structures on site in accordance with relevant Environmental and OH&S legislation (pg. 86). Where these materials identified, materials must be stabilised/removed and disposed of in accordance with best practice guidelines; or simply conclude none found on site.

5.5.4 TVOC AND FORMALDEHYDE TESTING

Test must be undertaken to verify all sample measurements are TVOC <0.27ppm and formaldehyde <0.02ppm. Sample measurements and testing must obey the rules as stated in handbook pg.94-95 and be conducted after PC and prior to occupancy.

5.6 AMENITY AND COMFORT

5.6.1 DEDICATED AMENITY ROOMS

Building includes one or several rooms designed to promote either inclusivity, mindfulness or exercise for staff/occupants. For room qualification, classification must be: parent room; relaxation, meditation or prayer room; exercise room or combination (pg. 100). Room must be sized at a ratio of 1m2 per every 10 occupants and >=10m2. Rooms must meet: CA11 Light Quality; CA12 Acoustic Comfort; and the 'Equal access to the building' criterion of the Design for Inclusion Credit. See handbook pg. 99 for occupancy, accessibility, separation, infrastructure and exclusions.





5.7 CONNECTION TO NATURE

5.7.1 PLANTS

Indoor plants must be provided in the nominated spaces. One or more plants in pots with a soil surface area totalling at least 500cm² for every 15m² of the primary spaces is required.

An ongoing maintenance plan must be established to ensure plant health is maintained. The contract must include:

- A 2-year contract with a plant maintenance contractor to enact the plan.
- A schedule of plants within the nominated space.
- Service intervals.
- Policy regarding the maintenance of soil moisture, pH and nutrients.
- Diseased plant replacement policy; and
- Cleaning requirements and commitments.

5.7.2 NATURE-INSPIRED DESIGN

Five additional nature-inspired design interventions must be provided in alignment with the following principles:

- Elements that provide differing natural sensory experiences.
- Elements that reflect natural and cultural patterns and forms.
- Using natural materials; and
- Natural motifs and art.

6 **RESILIENT**

Table 6: Resilient Credits

CREDIT	MINIMUM EXPECTATION	CREDIT ACHIEVEMENT	EXCEPTIONAL PERFORMANCE
CLIMATE CHANGE RESILIENCE	•	•	
OPERATIONS RESILIENCE		٠	
COMMUNITY RESILIENCE		•	
HEAT RESILIENCE		٠	
GRID RESILIENCE		•	

6.1 CLIMATE CHANGE RESILIENCE

6.1.1 CLIMATE CHANGE RISK AND ADAPTATION ASSESSMENT

Client is to undertake a climate change risk and adaptation assessment and author a report.







- Perform the assessment using the information from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report₁ Representative Concentration Pathway 8.5 (RCP 8.5).
- Perform the assessment using two timescales that are relevant to the project's anticipated lifespan: one medium-term timescale between 2040 to 2050; and one long-term timescale between 2070 to 2090.
- Identify the primary and secondary climate change variables relevant to the project and each risk.
- Define and include the consequence and likelihood tables and risk matrix used to assess climate risks.
- Assess risks in consultation with multidisciplinary representatives from within the project team and a selection of relevant external stakeholders.
- Develop a risk register of 'extreme' or 'high' risks to the building and surrounding infrastructure, and the treatment options.
- Communicate the results of the assessment to the leads of all design disciplines.

6.1.2 COMPREHENSIVE RISK ASSESSMENT

As early in design phase as possible, must undertake comprehensive risk assessment (as per req.s handbook pg.113) of the acute shocks and chronic stresses likely to influence future building operations. As minimum, considering:

- Shocks: failure of critical infrastructure (power, water, digital); health pandemic; water security; geological hazards (landslides, earthquakes, tsunamis); and direct attack (cyber and physical).

- Stresses: ageing infrastructure; rising cyber dependency; increasing energy costs; and lack of transport accessibility and availability.

This may occur in parallel with Climate Change Resilience credits CA16.1 & CA16.2.

6.1.3 MANAGING RISKS

Project team must ensure the building's design and future operational plan addresses system-level interdependency risks as follows: 'extreme' risks must be addressed through specific design responses; 'high' risks must be addressed through design or future operational responses; and regardless of risk rating, at least two identified risks must be addressed by specific design responses.

6.1.4 ADDRESSING POWER LOSS

Must perform an assessment of the building's survivability in blackout event. Building must then be designed to account for its design purpose, the issues stated in handbook pg.114, and provide a measure of survivability for the likely occupants - the range of corrective/mitigative measures can be passive or active.

6.2 OPERATION RESILIENCE

6.2.1 COMPREHENSIVE RISK ASSESSMENT

The suitably qualified professional authoring the operations resilience assessment must:

• Identify a set of clear resilience objectives and performance goals for the building;





- Collaborate with key internal and external project stakeholders, including community representatives, to identify and confirm the relevant acute shocks and chronic stresses likely to impact the functionality of the building and its ability to meet performance goals;
- Identify and confirm the interdependent infrastructure systems, networks, services and assets the building relies on;
- Identify key areas of system vulnerability, specifically how these may be affected by the identified shocks and stresses that may impact the building through reduced capacity and/or functionality;
- Outline response procedures in the event of an identified shock event impacting the building and the local community; and
- Consult with relevant authorities with regards to evacuation procedures and emergency actions.

6.2.2 SHOCKS

- Failure of critical infrastructure (power, water and digital);
- Health pandemic;
- Water security;
- Geological hazards (landslides, earthquakes, tsunamis); and
- Direct attack (cyber and physical)

6.2.3 STRESSES

- Ageing infrastructure;
- Rising cyber dependency;
- Increasing energy costs; and
- Lack of transport accessibility and availability

6.2.4 MANAGING RISKS

The project team must ensure risks are addressed as follows:

- All risks rated as 'Extreme' must be addressed through specific design responses.
- All risks rated as 'High' must be addressed through design or future operational responses.
- Regardless of risk rating, at least two risks identified in the assessment must be addressed by specific design responses.

6.2.5 ADDRESSING POWER LOSS

The project team must perform an assessment of the building's survivability in the case of a blackout. The building must then be designed to account for its design purpose and provide a measure of survivability for the likely occupants.

The project team must identify:

- The design purpose of the building, and the potential for the building to be occupied in the case of a blackout.
- The needs of occupants in such a situation. This may include the building being used by the community as refuge in the case of a blackout.
- The servicing needs of that building to ensure the occupants are safe during the blackout.





- The appropriate duration that the building can maintain its design purpose during the blackout.
- How the building can remain safely habitable after a blackout (specifically fire systems, ventilation, temperature, water pumping and vertical transportation).
- How the building will be able to operate in island mode, with consideration to loss of internet services for the Building Management System or for situations where the building is being powered on-site.

The building's design must account for these issues. The range of measures that can be used to address these problems can be active (through on-site generation) or passive (such as increased thermal mass to manage temperature).

6.3 HEAT RESILIENCE

The strategies that can be used to reduce the heat island are:

- Vegetation;
- Green roofs;
- Roofing materials, including shading structures, having the following:
 - For roof pitched <15°- a three-year SRI of minimum 64; or
 - For roof pitched >15°- a three-year SRI of minimum 34.
- Unshaded hard-scaping elements with a three-year SRI of minimum 34 or an initial SRI of minimum 39;
- Hardscaping elements shaded by overhanging vegetation; and
- Water bodies and/or water courses.

The area of the site that is shaded by permanent structures (e.g. part of a car park to the south of a tall building) during the summer solstice are also deemed compliant.

6.4 GRID RESILIENCE

6.4.1 ACTIVE GENERATION AND STORAGE SYSTEMS

The building has the potential to reduce its electricity peak demand by 10% of the building's annual peak electricity demand for at least a one-hour period.

This will be verified upon PV modelling.





7 POSITIVE

Table 7: Positive Credit

CREDIT	MINIMUM EXPECTATION	CREDIT ACHIEVEMENT	EXCEPTIONAL PERFORMANCE
UPFRONT CARBON EMISSIONS	•	•	•
ENERGY USE	•	•	•
ENERGY SOURCE	•	•	•
OTHER CARBON EMISSIONS		•	•
WATER USE	•	•	•
LIFE CYCLE IMPACTS		•	

7.1 UPFRONT CARBON EMISSIONS

The building aims to achieve upfront carbon emissions that are at least **10%** lower than those of a reference building. Additionally, the upfront carbon emissions are projected to be at least **10%** lower than those of a reference building, and any remaining emissions from Modules A1 - A3 will be offset.

The design team has focused on material selection that reduces embodied energy by a minimum of **10%.** This approach includes the use of sustainably sourced steel for the building roof and the implementation of construction processes that prioritize high durability and waste reduction.

8 Energy Use

8.1 BUILDING FABRIC FOR RESIDENTIAL

The modelling demonstrated ability to achieve minimum of **6.5** and an average of **7.5** Star NatHERS Rating.

Table	8. Assumed	construction	tvne
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CONSTRUCTION		MATERIALS		
	External Walls	Fibre Cement Stud-Frame Wall + Internal Plasterboard Lining		
EXTERNAL		Insulated with sommer 2.3HD insulation Batts		
& PARTY		Double Stud-Frame Wall + Internal Plasterboard Lining on each		
VVALLS	Party Walls:	side		
		Insulated with 90mm R2.5HD Insulation Batts on each side		





	Stairs/ Lift Walls:	300mm Concrete Structural Wall + Internal Plasterboard Lining			
INTERNAL WALLS	Internal Apartment Walls Type 1:	Internal Stud-Frame Walls			
	Construction Type 1:	250mm Suspended Concrete Slab			
FLOORS	Construction Type 2:	250mm Suspended Concrete Slab 30mm R1.3 K10 Soffit Insulation to exposed slab areas			
	Coverings	Tiles to Wet areas and timber to living/dining and carpet to remaining.			
	Construction Type 1:	300mm Suspended Concrete Slab			
CEILINGS/ ROOF	Construction Type 2:	300mm Suspended Concrete Slab R4.0 Insulation Batt to exposed roof areas			
	COLORBOND Roof	COLORBOND Roof R4.0 Insulation Batts + 60mm Anticon R1.3			

GLAZING	SPECIFICATION FOR APARTMENTS	U-Value	SHGC (+/- 5%)
	OPTION 1		
AWNING WINDOW	Double-Glazed Clear, in Aluminium Frame	3.53	0.55
SLIDING DOOR	DoubleGlazed Clear, in Aluminium Frame	3.65	0.63
FIXED GLAZING	DoubleGlazed Clear, in Aluminium Frame	3.12	0.69

8.1.1 NATHERS RESULTS

Table 9: NatHERS Outcome

APARTMENT TYPE	APT NO.	BASE	FLOOR INSULATI ON (R1.3)	ROOF INSULATION	DOUBLE GLAZING	COMPLIANCE (Y/N)
TOWNHOUSE	1	2.7	Х	Х	4.8	NO
TYPE B2	101	3.2	Х		6.9	YES
TYPE B5	103	4.1	Х		8.0	YES





TYPE C1	104	2.7	Х		5.1	YES
TYPE B3	208	5.6			7.6	YES
TYPE B7	509	4.0			6	YES
TYPE C6	603	3.8			5.9	YES
TYPE D1	702	2.9		Х	6.3	YES
TYPE C4	704	2.3		Х	4.4	NO

8.2 BUILDING FABRIC FOR COMMERCIAL

The construction for the proposed building is as per plans provided and outlined below.

Table 10: Preliminary Building Fabric

CONSTRUCTION		DESCRIPTION	REQUIREMENT
EXTERNAL	External Stud Wall	Fibre Cement Stud-Frame Wall with Internal Plasterboard Lining. External finishes as per elevations.	R2.5HD Insulation Batts.
WALLS	External Concrete Wall	Structural concrete wall with Internal Plasterboard Lining. External finishes as per elevations.	No Insulation Required.
Internal Concrete Wall		Structural concrete wall with 13mm plasterboard lining on both sides.	No Insulation Required.
INTERNAL WALLS	Internal Concrete Wall (Lift & Stairs)	Structural concrete wall with 13mm plasterboard lining.	No Insulation Required.
	Slab on Ground	Concrete slab with ground contact. Floor coverings as per plans.	No Insulation Required.
FLOORS	Suspended Concrete Slab	Suspended concrete slab. Floor coverings as per plans.	No Insulation Required.
ROOFS	Roof Type 1	Concrete Deck Roof with waterproofing membrane.	Suspended plasterboard ceiling, no insulation required . (unconditioned zone).

PECIFICATION	U-VALUE	SHGC
DGU Comfort Plus Clear glazing in aluminium frame.	3 77	0.66
(i.e., 6.38mm Viridian Comfort Plus Clear, or equal)	5.11	0.00





Note: Glazing values provided are for Whole System (Frame + Glass)

Use of solar control glass such as Low-E grey can cause thermal stress in glass. Thermal stress breakage is not covered by the manufacturer's warranty. The risk of thermal stress breakage can be eliminated by heat treating the glass ie. heat strengthening or toughening. It is recommended that a thermal assessment is undertaken prior to tender.

8.2.1 RESULTS FOR COMMERCIAL

The figures shown below demonstrate the difference in performance between the proposed building and the reference building, allowing for a quantifiable comparison on the performance of each building.

MODEL	HEATING	COOLING	FANS	LIGHTS	EQUIP	PV	TOTAL
REFERENCE (KWH/M2)	1.8	9.0	4.4	18.0	0.0	-	33.2
PROPOSED (KWH/M2)	0.0	0.3	3.8	18.0	1.7	-	23.8
ENERGY REDUCTION						28.3	33%

Table 11: Estimated Energy Use

8.2.2 PV GENERATION

PV generation will reduce the operational energy loads and peak demand of the building due to the expected load profile correlating to the available solar resource. Further discussions are required to confirm system size and will be considered following achievement of the 68.7% energy use minimum expectation. A **10kW** solar PV system has been modelled with the proposed building to help offset total energy consumption. The aim is to allocate the maximum available area in the roof space for solar panels.

MODEL	HEATING	COOLING	FANS	LIGHTS	EQUIP	PV	TOTAL
REFERENCE (KWH/M2)	1.8	9.0	4.4	18.0	0.0	-	33.2
PROPOSED (KWH/M2)	0.0	0.3	3.8	18.0	1.7	-13.2	10.6
ENERGY REDUCTION						68.	7%

8.3 ENERGY SOURCE

This credit addresses the following:

- Energy under the control of the building owner or operator; and
- Non-electricity energy uses that are not under the building owners' control, such as cooking or heating that uses liquid or gaseous fuels burned on site, with some minor exceptions (see *Guidance*).

Energy use for tenant loads is excluded from this credit.





Both on-site and off-site renewables are acceptable.

Where the project team claims the credit through off-site renewables, the building owner must sign a renewable energy contract. The shortest contract length is:

- Five years; or
- Where the building is owned and managed by an entity that has signed to the Global Commitment for Net Zero Carbon Buildings managed by WorldGBC, the shortest contract length is three years. Other commitments may be acceptable through a Technical Question.

The contract can be part of a corporate power purchasing agreement for a building portfolio.

Should infrastructure in the building that can use fossil fuels to power typical building systems exist, the applicant must show how it will not use fossil fuels during the building's operation.

Refer to the *Renewables and Offsets in Green Star Guide* for more information on suitable options recognised by Green Star.

8.4 OTHER CARBON EMISSIONS

8.4.1 OFFSETTING REFRIGERANTS EMISSIONS

Emissions are calculated by multiplying the total refrigerant charge by its Global Warming Potential (GWP) for each type of refrigerant and adding these together.

Where refrigerants are used in the building, adequate access for maintenance and/or replacement must be provided.

8.4.2 REMAINING EMISSIONS ARE ELIMINATED OR OFFSET

All other emissions not claimed by other credits in Positive category are eliminated or offset - if claimed, emissions to be offset are lower. Emissions to be included must be those listed in handbook pg.146 (alternative path items 4-6 available) and other carbon emissions over 1% of total emissions.

8.5 WATER USE

8.5.1 SANITARY FIXTURE AND APPLIANCE EFFICIENCY

FIXTURE / EQUIPMENT TYPE	WELS RATING
TAPS	5 Star
TOILETS	5 Star
SHOWERS	3 Star (5.0/L's min)
WASHING MACHINE	5 Star
DISHWASHERS	5 Star





UNITS	PROPOSED BUILDING	STANDARD PRACTICE BUILDING			
	(kL/Year)				
TAPS	1,665.1	2,497.6			
TOILETS	6,127.5	8,170.0			
SHOWERS	13,777.3	27,554.6			
DISHWASHERS	305.2	448.5			
TOTAL	22,208.2	38,670.7			
% REDUCTION	45.	0%			



8.6 LIFE CYCLE IMPACTS

8.6.1 30% REDUCTION IN LIFE CYCLE IMPACTS COMPARED TO STANDARD PRACTICE

30% reduction in life cycle impacts cradle-to-grave (per m2 GFA) incl. all EN 15978 modules (A to D). Standard practice reference building as per EN 15978 must be used and entered into GBCA's Life Cycle Assessment Calculator for comparative analysis against the specified impact categories handbook pg.154. Credit cannot be claimed if the impact in any one category increases total normalised and weighted score for project by >10%. LCA must comply with relevant defined methodology, data and quality assurance req's (see pg. 154-155).

9 PLACES

Table 12: Places Credit

CREDIT	MINIMUM EXPECTATION	CREDIT ACHIEVEMENT	EXCEPTIONAL PERFORMANCE
MOVEMENT AND PLACE	•	•	
ENJOYABLE PLACES		•	







CONTRIBUTION TO PLACE	•	
CULTURE, HERITAGE, AND IDENTITY	•	

9.1 MOVEMENT AND PLACE

9.1.1 CHANGING FACILITIES

The design of the shower facilities must be appropriate to encourage their use. The project team is expected to justify how their location, locker sizes, privacy requirements, and size meet this aim.

9.1.2 SHOWERS

OCCUPANTS	SHOWERS
0 – 49	1 Unisex
49 – 50	2 Unisex
100 – 200	4 Unisex
200 +	Additional 1 per 200 occupants above 200

9.1.3 LOCKERS

One locker must be provided for every eight staff occupants. The lockers must be secure and located in the changing rooms.

9.1.4 ACCESSIBLE, INCLUSIVE, AND LOCATED IN A SAFE AND PROTECTED PLACE

Upon accessing, pedestrians and cyclists must be protected from the elements and other vehicles. Access must be safe, with consideration given to avoiding steep gradients, surface grip levels and visibility around tight corners.

Access to the facilities must be well lit between entryway to bike parking, all amenities and lift lobbies and main access points to the building.

All regular building occupants must have easy access to lockers, showers, and building entry. Occupants must be able to find the facilities thanks to clear signage throughout the building and access points.

9.1.5 CYCLIST FACILITIES

The building's access must prioritise walking and cycling options. This means the building's access must be well lit, weather protected, and separated from vehicles. The building must also include access to cyclist facilities that are separated from the primary vehicle entrance to ensure safety.

Cyclist facilities must have signposted access to the changing rooms amenities as per the *Minimum Expectation*. The cyclist facilities must ensure the cycling equipment is safely secured. The amount of cyclist facilities is to be informed by the Sustainable Transport Plan.





In a residential building, the access points must connect to the relevant cycling storage facilities. If these are at a unit level, the project team must show how the access won't be blocked by strata at a later date.



Figure 15: Bike storage

9.1.6 SUSTAINABLE TRANSPORT

The project team must prepare and implement a Sustainable Transport Plan. The requirements or recommendations made in the Sustainable Transport Plan must then be reflected in the design of the building's facilities and ongoing operational processes.

As a minimum, the Sustainable Transport Plan must include the following:

A definition of the typical mode share of the development location and development type;

- A target mode share for the development that prioritises active and mass transport modes, and recommendations on how to achieve them;
- Outline of how other modes of transport (carpooling, electric vehicles, and drop-off points) will be encouraged over private vehicle use;
- Identification of future projects which may change or influence mode share (such as planned, or under construction infrastructure) and the year of completion for the new infrastructure; and
- Roles and responsibilities for implementing, monitoring, and auditing the Sustainable Transport Plan in the building's operational phase.

The transport plan must be prepared by a suitably qualified Transport Planner.





The building must include the following:

Car sharing parking spaces must include an electric vehicle connection, regardless whether the vehicles are electric at the time of practical completion;

- Infrastructure to allow for future of electric charging to each parking spot in the parking area. This means ensuring the building has EV distribution boards to allow for allow for future connection for EV's. These distribution boards must be located so that no connection requires a cable of more than 50m from the parking bay to the connection.
- The building must be fitted with an EV load management system. The EV load management system must be capable of determining how and when the electric vehicles should be charged to minimise building peak power demand whilst ensuring the vehicles are charged.

9.1.7 REDUCING PRIVATE VEHICLE USE

Using the inputs from the Sustainable Transport Plan to complete the GBCA's *Movement and Place Calculator*, the building's design and location must be shown to reduce emissions from transport, encourage mass transport use, and reduce vehicle kilometres travelled compared to a reference building. The changes must be as follows:

- Emission reduction (40%);
- Active mode encouragement (90%); and
- Vehicle Kilometres Travelled (VKT) reduction (>20%)

9.1.8 ENCOURAGING WALKABILITY

The building's design and location encourages walking to and from a number of amenities. This means designing roads within the building boundary to prioritise pedestrians, and either providing within, or being located close to, a number of amenities.

This location has a high walkability score. It is located at a 5 mins walk from the Joondalup Line and the Mandurah Line at the Perth Underground Station Platform 1 stop.

19 Almondbury Road



Figure 16: Walkability score of the site





9.1.9 ROADS

If there are roads within the building boundary, the design must prioritise pedestrians over vehicles. Roads should be designed to be low speed (10km/hr). Pedestrians must have the right of way, and road design must encourage this.

9.1.10 AMENITY DIVERSITY

Occupants should have access to a diversity of amenities across the below eight categories. There must be at least 10 amenities across five categories within 400m radius of the building, as determined by Google Maps or other mapping services.

- Grocery: e.g. Convenience stores, supermarkets;
- Health and wellbeing e.g. dentist, doctor, psychologist;
- Food and Beverage: e.g. cafes, restaurants, bars;
- Retail: e.g clothing, homeware, hardware, book, gift stores;
- Bank Services: e.g. banks, credit unions;
- Education and Childcare: e.g. Primary, secondary, tertiary or childcare facilities;
- Recreation: e.g. movie theatres, fitness centres, swimming pools;
- Public facilities: e.g. Libraries, local or state government service centres; and
- Outdoor facilities: e.g. Playgrounds, parks

10 PEOPLE

Table 13:People Credit

CREDIT	MINIMUM EXPECTATION	CREDIT ACHIEVEMENT	EXCEPTIONAL PERFORMANCE
INCLUSIVE CONSTRUCTION PRACTICES	•	•	
INDIGENOUS INCLUSION		٠	
PROCUREMENT AND WORKFORCE INCLUSION		•	•
DESIGN FOR INCLUSION		٠	٠

10.1 INCLUSIVE CONSTRUCTION PRACTICES

10.1.1 NEEDS ANALYSIS

The programs or solutions can be implemented directly by the head contractor or through partnerships with mental and physical health organisations.

The responsible party should carry a needs analysis of site workers and contractors to determine appropriate actions. The policies and programs should be relevant to all construction workers on site





for the full duration of construction. A mix of programs is acceptable throughout the duration of construction period.

• The programs must cover at least 80% of the workforce that have attended the site for more than three days from commencement on site to practical completion.

10.1.2 PHYSICAL AND MENTAL HEALTH IMPACTS

The head contractor must show that they have introduced programs and solutions to address at least five of the following:

- Suicide prevention;
- Healthy eating and active living;
- Reduce harmful alcohol and tobacco consumption and avoid drug use;
- Increased social cohesion, community and cultural participation; Understanding depression;
- Preventing violence and injury;
- Decreased psychological stress; and
- Finding fulfilment at work or mindful meditation.

10.1.3 EVALUATING THE PROGRAM'S EFFECTIVENESS

The project must provide an evaluation report to the client and sub-contractors with the following information:

- Information on the programs or initiatives that were delivered, including information on dates, attendance, and available languages; and
- A review on whether the programs delivered the intended outcomes including recommendations for improving future delivery of these programs.

10.2 DESIGN FOR INCLUSION

10.2.1 INCLUSIVE DESIGN AND CONSTRUCTION

To be compliant, the building's design and construction must be able to be navigated and enjoyed by stakeholders of diverse ages, genders, and abilities (for example physical, sight, sound, mind, spectrum). This applies to common spaces, bathroom facilities and amenities provided within the building. This must include:

- Equal access to the building: Provide equitable, appealing, safe, and secure access in a manner that does not segregate or stigmatise users through all principal entrance points and main thoroughfares inside and outside the building;
- Diverse wayfinding: Introduce visual, physical, olfactory, and auditory solutions to help individuals navigate the site in a safe and enjoyable manner; and
- Inclusive spaces: Introduce internal and external spaces for a diverse range of users, including parents, family restrooms, emergency rooms, quiet rooms and social interaction rooms. These rooms must be accessible to all users.





11 NATURE

Table 14: Nature Credit

CREDIT	MINIMUM EXPECTATION	CREDIT ACHIEVEMENT	EXCEPTIONAL PERFORMANCE
IMPACTS TO NATURE	•	•	
BIODIVERSITY ENHANCEMENT		٠	٠
NATURE CONNECTIVITY		•	
NATURE STEWARDSHIP		•	
WATERWAY PROTECTION		•	•

11.1 IMPACTS TO NATURE

11.1.1 NOT BUILT ON, OR IMPACTED, A SITE WITH HIGH ECOLOGICAL VALUE

The Minimum Expectation is met where:

- At the date of purchase or option contract, the building, infrastructure, or construction works do not clear:
 - o Old-growth forest,
 - Prime agricultural land,
 - o Any wetland listed as being of 'High National Importance',
 - Aspects considered 'Matters of National Significance' listed under the Environmental Protection and Biodiversity Conservation Act (1999) regardless of whether they have been referred to the Federal Environmental Minister for consideration and assessed as a 'controlled action' or not.
- If the project site is adjacent to the above, or within 100 meters, or the site contains the above and these are being protected, the construction and future operations of the site takes measures to reduce their impact to the above as follows:
 - Both the Waterways Protection Credit Achievement and the Credit Achievement for this credit is met, and
 - The light pollution impacts are managed, and
 - Where the site is next to a wetland (as above), by also putting in place Wetland Protection Measures.

The *Minimum Expectation* applies to the condition of the site that existed at the date of site purchase or option contract (previous condition of the site).

In cases where the site has been owned by the current owner for more than five years (from the project's Green Star registration date), the requirements are applied to the state of the site that existed at least five (but not more than ten years) prior to the project's Green Star registration date.

Where the previous condition of the site is unclear, a qualified Ecologist shall assess the site and decide of its ecological value at the approximate time of purchase.





11.2 BIODIVERSITY ENHANCEMENT

11.2.1 LANDSCAPE AREA

At a minimum, external landscape in the building, whether horizontal or vertical must be provided at a ratio of either 15% of the site area or at a ratio of 1:500 of the GFA, whichever is larger. Vertical or horizontal landscapes are acceptable.

11.2.2 DIVERSITY OF SPECIES

Landscape must be shown to be diverse and include multiple species/genus/etc.

Greater than 60% of plants must be indigenous and the site must include at least one significant (nesting) tree or equivalent habitat provision per 500m² of landscaped area.

No invasive species are allowed, as per the Australian Weeds Strategy 2017 to 2027.

There are two pathways to demonstrate diversity in plant selection and climate resilience.

11.2.3 PRESCRIPTIVE PATHWAY

The landscaping must meet the following plant diversity targets:

- 10% plant species;
- 20% plant genus; and
- 30% plant family.

11.2.4 PERFORMANCE PATHWAY

An ecologist must assess and verify that the choice of landscaping and biodiversity is diverse and resilient to climate change impacts, thereby increasing the longevity of the landscape. An Ecologist must provide this narrative.

11.2.5 BIODIVERSITY MANAGEMENT PLAN

A suitably qualified professional, such as a qualified ecologist or landscape architect, must prepare the Plan. The plan must outline key actions that need to be undertaken in order to maintain the ecological integrity of biodiversity on the site, whether this is existing or that created as part of the development.

The following key requirements must be outlined in the biodiversity management plan:

- The vision and objectives for the site's biodiversity values;
- Roles and responsibilities in the implementation of the Plan;
- A description of the biodiversity baseline on-site;
- How success and implementation will be measured;
- How impacts or threats to biodiversity on site post practical completion will be mitigated; and
- Provision for update of the Biodiversity Management Plan where necessary;

The Plan must be included as part of the project's handover.





APPENDIX 1 - NOMINATED SPACES

The following are the definition of each nominated spaces as per Green Star Buildings v1.0 Guideline.

Primary space: all areas where a person is expected to work, or remain for an extended period of time, including, but not limited to: offices, either open plan or private; kitchen and preparation areas where food is being sold; retail/sales floor; exhibition halls, galleries (unless exclusion is justified), multi-purpose rooms (as a general setting);

Secondary space: all areas used to support the principal activity of the primary space. These spaces will be regularly occupied; however, a single person is unlikely to remain within for more than 2 hours. Examples of secondary spaces include meeting rooms, boardrooms; cafeterias, restaurants, seating areas, office breakout areas, food courts;

Tertiary Space - All areas which are either transient spaces or accessed intermittently. Examples of these areas include back of house areas, toilets, corridors, hallways, plant rooms, storage facilities, enclosed carparks, or similar.

The following is a guide to common spaces within Community Centre assets as per Green Star Industrial Guide:

Storage: Where long storage exists in spaces which are accessed less than once a day. Typically considered tertiary space, though is subject to some credit requirements as outlined in the Indoor Environment Quality Credit Guidance Table below.

Office: Class 5 sections of an Industrial building. Although the office spaces are used in a more transitory way than offices in a typical Class 5 building, these are still generally considered Primary spaces. Breakout areas such as kitchens and bathrooms are considered Secondary. Storage, corridors or plant room within office spaces are considered Tertiary.





APPENDIX 2 – GREEN STAR STRATEGY





		GREEN STAR BUILDINGS STRATEGY															
CREDIT	CREDIT CRITERIA	CREDIT DESCRIPTION	RESPONSBILE	STAGE	POINTS AVAILABLE	CONFIRMED	LOW RISK	MEDIUM RISK	HIGH RISK	EMERGEN COMMENTS							
			RESPONS	SIBLE													
1. Industry	Green Star Accredited Professional	At least one GSAP engaged as part of project team at time of registration or within one month following for duration of project. GSAP must act as project contact for purposes of communicating with GBCA; provide advice, guidance and support to project team through to certification; and ensures project team has access to info covering GS principles, structure, timing and processing including eligibility, GS strategy, technical Q's, the submission, certification process and GS branding/marketing rules.	EMERGEN	DESIGN												EMERGEN will satisfy credit	
Development	Financial transparency	Project team must complete and include in submission the GS Financial Transparency disclosure Template and project's financial data in Excel format.	QS	COMPLETION		1											
	Marketing sustainability achievements	Project's marketing team must complete GS Case Study Template; project team must specify how building will detail its sustainability achievements to its stakeholders (i.e. typical occupants & visitors); and GS Certification achieved must be prominently displayed in location visible to public.	EMERGEN / CLIENT	COMPLETION													
	Environmental Management System	t Builder/ head contractor must have formalised systematic and methodical approach to planning, implementing and auditing in place during construction: for projects <pre><\$10m, must have EMS that complies with either NSW Environmental Management System Guidelines or another recognised standard</pre>	CONTRACTOR	TENDER						Contractor specific requirements. Should be achievable							
	Environmental Management Plan	t EMP must be project specific, cover scope of construction activities, be implemented from start of construction and include all works within project scope.	CONTRACTOR	TENDER	-		QUIREMENT -	HAS TO BE DON	E TO OBTAIN	contractor specific requirements. Should be achievable							
2. Responsible Construction	Construction and demolition waste	Must divert at least 80% C&D waste from landfill. Disclosure Statement required from waste contractors and processing facilities outlining how company and their reporting aligns with GS C&D Waste Reporting Criteria.	WASTE CONTRACTOR	TENDER	Nil		RATING			Specific was constactior							
	Sustainability training	Head contractor must provide following training to 95% of all contractors/SCs present on site for at least 3 days: info on sustainable building certifications sought incl. sustainability attributes of building and their benefits; the value of certification; and the role site workers play in deliver of a sustainable building.	CONTRACTOR	CONSTRUCTION						EMERGEN to develop Sustainable Workshop for inclusion in Contractor Inductions							
	Construction and demolition waste diversion	Divert at least 90% C&D waste from landfill. Waste contractors and facilities must comply with GS C&D Waste Reporting Criteria and must be measured in kg - report total amount of waste generated and diverted from landfill, and % diverted.	WASTE CONTRACTOR	CONSTRUCTION	1		1			Achievable in Metro area - Look to utilise Instant or similar							
	Metering Monitoring strategy	 The building must have accessible energy and water metering for all common uses, major uses, and major sources. The meters must be connected to a monitoring system capable of capturing and processing the data produced by the meters. The meters and monitoring systems must: Provide continual information (up to 1-hour interval readings); Be commissioned and validated per the most current 'Validating Non-Utility Meters for NABERS Ratings' protocol to support future achievement of a NABERS rating, irrespective of the current viability of a NABERS rating for the building or building type; Ensure all meters including utility meters and sub-meters to have accuracy declarations and/or certificates (for an example Utility Meters will have certificates issued by the National Measurement Institute) Be capable of identifying inaccuracies in the meter network and producing alerts. Inaccuracies are defined as those over meter tolerances based on their metering accuracy class (e.g., 'Class 1' meters shall not have inaccuracies of more than 1% due to metering accuracy class); and Sub-meters that are not to be used as utility (billing) meters should either have Certificates for accuracy issued by NMI or a test certificate from the European Measuring Instruments Directive - 2004/22/CE Where the building's Gross Floor Area (excluding car parking areas) is smaller than 1000m2, unless specialist equipment with an annual power consumption of 100kwh/annum, is present in the building, a single meter for energy and a single meter for water will comply with this minimum requirement. If accessible to the building manager, the utility meter is acceptable provided it meets accuracy and data collection requirements above. The monitoring system must accurately and clearly present the metered data and include reports on consumption trends for the automatic monitoring system. The monitoring system must accurately and clearly present the metered	ELECTRICAL	DESIGN						Requires review of metering and monitoring strategy							
		manager. The process to assess, correct and validate alerts or faults must be detailed and contained in an accessible location. The project team must demonstrate the reporting and alarm functionality has been designed, installed, commissioned, and tested at practical completion to be awarded this credit. System capability for future implementation is not sufficient.															
	Commissioning and Tuning	 Prior to construction: Set environmental performance targets Perform a services and maintainability review Design for airtightness During construction and practical completion: Commission the building Engage building tuning service provider Test for airtightness After practical completion: Tune the building over the pext 12 months 	EMERGEN / SERVICES	DESIGN													
3. Verification and	Environmental performance targets and information	At design, the project team must set and document environmental performance targets for the project outlining: • The targets for the project energy and water consumption for each individual nominated building system • Metering diagrams for energy and water • Operational monitoring expectations of energy, water, and indoor environment quality • Descriptions of the functions, intended operation, and maintenance requirements of individual nominated building systems • Airtightness targets	ICA / SERVICES	DESIGN	Nil	MINIMUM RE	QUIREMENT -	HAS TO BE DON	E TO OBTAIN	EMERGEN to provide targets in Design Intent Report							
Handover	Services and maintainability review	During design, the project team must conduct a services and maintainability review of the building. The review must include all project team roles involved within the design process i.e. Owner's Representative, Design consultants, Architect, ESD Consultant, Facilities Manager, Head Contractor and the Independent Commissioning Agent (where nominated). The review must address the following: • Commissionability • Controllability • Maintainability • Operability • Safety of all systems.	ICA / SERVICES	DESIGN			RATING			ICA to provide Service & Maintainability Report							

HIGH RISK	EMERGEN COMMENTS	CONSULTANTS COMMENTS
	EMERGEN will satisfy credit	
E TO OBTAIN	Contractor specific requirements. Should be achievable	
	Specific was constactior	
	EMERGEN to develop Sustainable Workshop for inclusion in Contractor Inductions	
	Achievable in Metro area - Look to utilise Instant or similar	
	Requires review of metering and monitoring strategy	
E TO OBTAIN	EMERGEN to provide targets in Design Intent Report	
	ICA to provide Service & Maintainability Report	

		GREEN S	TAR BUILD	INGS STRA	TEGY							
CREDIT	CREDIT CRITERIA	CREDIT DESCRIPTION	RESPONSBILE	STAGE	POINTS AVAILABLE	CONFIRMED	LOW RISK	MEDIUM RISK	HIGH RISK	EMERGEN COMMENTS		
	Building commissioning	During construction and before practical completion, all building systems must be commissioned per a recognised commissioning standard (CIBSE or ASHRAE commissioning guides). A commissioning specification must be included in the construction documentation listing requirements for each system. A commissioning plan must be developed prior to practical completion. The contractual tender or construction documentation must list the commissioning requirements for each system. It is not enough to state that systems must be commissioned to the relevant standard. The person responsible for the commissioning of the nominated services must have specific and demonstrable knowledge of the types of systems to be commissioned.	ICA / CONTRACTOR	CONSTRUCTION			•	•	•	ICA to provide Service & Maintainability Repor		
	Airtightness	 Airtightness must be considered as part of the commissioning process during the following stages: Schematic design: review of design including an air barrier system schematic; Design Development: review for tightness including air barrier continuity on building plans, sections and details. Scope of work and necessary coordination between trades and responsibilities must be considered; Construction: A plan for stages of commissioning for air tightness must be defined and included in the project timeline; and The building must undertake an airtightness test in accordance with AS/NZS ISO 9972:2015 Thermal performance of buildings determination of air permeability of buildings - Fan pressurisation method. 	ICA / CONTRACTOR	CONSTRUCTION						EMERGEN to undertake Air tightness testing and pr design review		
	Building systems tuning	The owner must contractually commit to a tuning process that includes quarterly adjustments and measurements for at least the first 12 months after occupation. The commitment must include: A building tuning manual or plan; A description of the building tuning team; and Confirmation the owner has engaged parties to tune the nominated systems The building tuning team must include: The facilities manager; The owner's representative and the independent commissioning agent (ICA, if applicable); The head contractor; and The services design professionals	ICA	OPERATION								
	Building information	Supply the following - provide O&M info for all nominated building systems to building owner including: appropriate content developed and provided; user group access to required info to deliver best practice environmental outcomes; guidance on keeping info up-to-date provided to FM team. - develop log book in line with <i>CIBSE TM31: Building Log Book Toolkit</i> covering all nominated building systems and incl. links/references to relevant O&M info to present to building owner before project PC. - building user info must be able to be updated and edited by FM team, or other stakeholders, to ensure it remains current and relevant to users throughout life of building. Must be available at PC.	CONTRACTOR	CONSTRUCTION					Contractor to pro EMERGEN can su			
4 Deepersikle	Collection of Waste Streams	Building must provide labelled, easy to access and evenly distributed bins to allow occupants to separate waste, as a minimum into: general landfill waste, recycling streams to be collected by waste collection service (paper & cardboard, glass, plastic), and one other waste stream representing at least 1% of total annual operational waste (by volume) e.g. organics, e-waste, batteries. Any other waste stream (excl. food) >5% of total annual operational waste (by volume) must be accounted for.	WASTE CONSULTANT	DESIGN								
4. Responsible Resource Management	Dedicated waste storage area	Must provide dedicated area(s) for storage and collection of waste streams that is sized to accommodate at least one collection cycle. Calculations must be based on forecasted occupant waste generation and collection frequencies using figures outlined in third-party best practice guidelines. Area(s) must have easy and safe access by collection vehicles.	ARCHITECT	DESIGN	Nil	MINIMUM RE	Equirement - Ra	HAS TO BE DO FING	NE TO OBTAIN	Waste Management Report to be reviewed.		
	Signoff by waste specialist and/or contractor	A waste specialist and/or contractor must sign-off on the designs to confirm they are adequately sized and located for the safe and convenient storage and collection of the waste streams identified.	WASTE CONSULTANT	DESIGN								
5. Responsible Procurement	Risk and opportunity assessment	The project team must undertake a risk and opportunities assessment of its supply chain in line with ISO 20400: Sustainable Procurement - Guidance to identify environmental and social risks and opportunities such those in extraction, manufacture and/or transport. It must address at least the following issues: human rights; labour practices; the environment; fair operating practices; consumer issues; and community involvement and development. Project must provide narrative on how it has addressed one risk and one opportunity.	THIRD PARTY	DESIGN	1	1		This would require Contractor to demonstrate procurement is in line with ISO 20400 : Sustaina				
	Responsible Procurement Plan	Project must develop and implement a plan to mitigate and manage identified risks in line with ISO 20400: Sustainable Procurement - Guidance and drive implementation of identified opportunities - can be part of organisational or stand-alone plan.	THIRD PARTY	DESIGN				Procurement - Guidance				
9. Responsible Finishes	Responsible Products Value (RPV) Compliance	The project must have 40% of all internal building finishes (by cost) meet a Responsible Products Value of at least 7. Internal finishes include flooring, plasterboard, paints, ceilings, partitions, doors, internal windows or similar. Joinery used as part of a wall finish may be counted, e.g., wall panelling or fixed shelving/cupboards that make up a partition. Sealants and adhesives used for finishes are also included. Loose furniture is not included.	ARCHITECT	DESIGN	1			1		Like achievable at minimum cost		
Total						1	1	<u>2</u> 4	0			

EMERGEN COMMENTS	CONSULTANTS COMMENTS
ICA to provide Service & Maintainability Report.	
EMERGEN to undertake Air tightness testing and provide design review	
ICA to provide Tuning	
Contractor to provide O&M information EMERGEN can supply Building Log book	
Waste Management Report to be reviewed.	
This would require Contractor to demonstrate its procurement is in line with ISO 20400 : Sustainable Procurement - Guidance	
Like achievable at minimum cost	

		GREEN STAR BUILDINGS STRATEGY								
CREDIT	CREDIT CRITERIA	CREDIT DESCRIPTION	RESPONSBILE	STAGE	POINTS AVAILABLE	CONFIRMED	LOW RISK	MEDIUM RISK	HIGH RISK	EMEI
			HEALT	НҮ						
	Ventilation system attributes	Non-residential building ventilation systems must be designed to comply with ASHRAE Standard 62.1:2013 or AS 1668:2012 (whichever is greater) regarding minimum separation distances between pollution sources and outdoor air intakes. If using ASHRAE Standard 62.1:2013, compliance is to be demonstrated in accordance with the distances specified in Table 5.5.1 of the Standard. Analytical solutions are also acceptable by following the example provided within Appendix F of ASHRAE Standard 62.1: 2013. Class 2 and Class 3 building ventilation systems must be designed to comply with the separation distances as outlined in the table below. The table below is based on the Australian Standards 1668.2:2012 (table 3.4) and applied in the same way.	MECHANICAL	DESIGN	Nil	MINIMUM RE	QUIREMENT - RA	HAS TO BE DO	NE TO OBTAIN	
		All new and existing ductwork that serves the building must be cleaned prior to occupation in accordance with a recognised Standard. This includes all ductwork in the base building that serves the building from the air handling unit(s) to the supply vents.								Standard Pract
	Provision of outdoor air	Option 1 Comparison to Industry Standards Non-Residential - The building must provide a 50% improvement of outdoor air required by AS 1668.2:2012 to each space in the regularly occupied areas. Class 2 and 3 - The regularly occupied areas must be provided with good access to outdoor air, appropriate for the activities and conditions by using one of the following options: Where ventilation is by natural means, the building must meet natural ventilation requirements as per AS1668.4:2012. Option 2 Performance based approach: The system must be capable of providing enough outdoor air to maintain carbon dioxide (CO2) levels at, or less than 800ppm within each space in the nominated area, at all times during the design occupancy period. The system must continuously measure the concentration of CO2 within the breathing zone of each space during occupancy hours. The system must then adjust the amount of outdoor air to each space (up to the maximum design outdoor air quantity) to ensure that CO2 levels are maintained below the stipulated ppm threshold.	MECHANICAL	DESIGN	Nil	MINIMUM RE	Contractor specific pro			
		It must be demonstrated that pollutants from printing and photocopying equipment, cooking processes and equipment are limited from the regularly occupied areas by								
10. Clean Air	Exhaust or elimination of pollutants	 either: Removing the source of pollutants Exhausting the pollutants directly to the outside. For the first option, sources of pollutants, such as printing or photocopy equipment, kitchen stoves or vehicles, must be compliant with minimum emissions standards or not be present within the regularly occupied areas. For the second option, specified sources of pollutants shall be exhausted directly to the outside of the project in accordance with a recognised Standard, and/or physically separated from occupants. 	MECHANICAL	DESIGN	Nil	MINIMUM RE	QUIREMENT - RA	HAS TO BE DO	NE TO OBTAIN	
	Ventilation system attributes	Ducted split system fan coil units (DX split/VRF/VRV)], the following conditions are applicable: - Design teams may provide access to the upstream side of fan coil units where the coils are protected by a filter rated at MERV 8 or higher - For fan coil units or air handling units located within a ceiling void, in addition to the above criteria, the project team must fully demonstrate safe access for cleaning and maintenance.	MECHANICAL	DESIGN						MERV 8 Limitation of FCU to be
	Provision of outdoor air	Option 1 Comparison to Industry Standards: Non-Residential - Outdoor air must be provided to each space in nominated are at a rate greater than the minimum required by AS 1668.2:2012 by 100% Class 2 and 3 - Where ventilation is by natural means, an engineered natural ventilation system is to be used. Option 2 Performance based approach: The system must be capable of providing enough outdoor air to maintain carbon dioxide (CO2) levels at, or less than 700ppm within each space in the nominated area, at all times during the design occupancy period.	MECHANICAL	DESIGN	2			2		Mechanical Consultant me
		The system must continuously measure the concentration of CO2 within the breathing zone of each space during occupancy hours. The system must then adjust the amount of outdoor air to each space (up to the maximum design outdoor air quantity) to ensure that CO2 levels are maintained below the stipulated ppm threshold.								
	Lighting comfort	Lighting within the building must meet the following criteria: -All lighting must be flicker-free; -Light sources must have a minimum Colour Rendering Index (CRI) average R1 to R8 of 85 or higher, and have a CRI R9 of 50 or higher; -Light sources must meet best practice illuminance levels for each task within each space type with a maintained illuminance that meets the levels recommended in AS/NZS 1680.1:2006 series applicable to the project type and including maintenance; -The maintained Illuminance values must achieve a uniformity of no less than that specified in Table 3.2 of AS/NZS 1680.1:2006, with a maintenance factor method as defined in AS/NZS 1680.4.; and -All light sources must have a minimum of 3 MacAdam Ellipses.	ELECTRICAL	DESIGN						Should I
		Glare must be limited in nominated area via either prescriptive, performance or a combination of methods:								
		Prescriptive method 1 Bare light sources must be fitted with baffles, louvers, translucent diffusers, ceiling design, or other means that obscures the direct light source from all viewing angles of occupants, including occupants looking directly upwards. Alternatively, for LED luminaires the Unified Glare Rating (UGR), as estimated from the manufacturers data sheets for a standard room, must not exceed the maximum values listed in Table 8.2 of AS (NTS 1680.1:2006			Nil	Nil MINIMUM REQUIREMENT		IREMENT - HAS TO BE DONE TO OBTAIN RATING		Achiovophia through cou
	Glare	Prescriptive method 2 Where the nature of the tasks, layout and surface reflectance in a space are not known (e.g. shell and core) the lighting system must comply with the Luminaire selection system as detailed in Clause 8.3.4 of AS/NZS 1680.1:2006.	ELECTRICAL	DESIGN						this type of facility and
11. Light Quality		Performance method The Unified Glare Rating (UGR) calculated for the lighting on a representative floor must not exceed the maximum values listed in Table 8.2 of AS/NZS 1680.1:2006.								
		The UGR rating must be calculated in accordance with the procedure outlined in Clause 8.3.3 of AS/NZS 1680.1:2006.			-					
	Daylight	Ensure building is providing daylight access above typical federal, state or local regulations by showing how building's design: maximises no. of occupants in or near daylit area during daily activities; ensure regularly occupied spaces are in reasonable proximity to glazed facades, windows or skylights; controls/mitigates glare in daylit spaces; maximises daylight to spaces that prioritise learning, healing and living; and provides occupants with unrestricted access to daylit indoor common spaces.	EMERGEN	DESIGN						Emergen to co
		Artificial Lighting The artificial lighting solution must address the quality of light in the space, provide highlights and contrasts, and seek to avoid excessive lighting or overly uniform solutions.								
	Artificial Lighting	 Horizontal illuminance levels must meet or exceed the recommended levels in AS/NZS 1680 for the relevant task for at least 90% of the GFA At least one wall in the field of view of a regularly occupied area is to be illuminated to create demonstrable contrast and visual interest. The total area of illuminated wall must represent at least 20% of the area of walls in the field of view Vertical illuminance in all regularly occupied workplaces (e.g., offices, retail counters, etc), ensure that 50% of the horizontal task illuminance reaches the average eye 	ARCHITECT / EMERGEN	DESIGN	2		2			in some areas to achieve luminaires fitted with lo generally have a light
		height for 90% of primary spaces using vertical illuminance calculation grid.Illuminance values must be calculated as per AS/NZS 1680 for relevant task.								
	Daylight	Demonstrate compliance with following: - Non-residential buildings: >=40% of the principle averaged across building must receive high levels of daylight (160 lux during 80% nominated hours) with no less than 20% on any floor or tenancy.	ELECTRICAL / ARCHITECT / EMERGEN	DESIGN	2		2			Daylight modeling and above wi Would require a detaile
		Glare Control Glare from sunlight through all viewing façades and skylights must be reduced through a combination of blinds, screens, fixed devices, or other means.								

GEN COMMENTS	CONSULTANTS COMMENTS
ce for separation distance ess on site for inclusion in TENDER hing to be implemented	
ilter to be specified. advised by Mechanical consultant	
to advise if system can be sized to t requirement.	
e Standard Practice	
rect luminaire selection. Luminaires n to what would normally be used in vill have a resulting incease in cost.	
nfirm through modelling.	
will increase numbers of luminaires llumination of walls where low glare w bightness louvers are used which cut off to achieve glare reduction.	
artificial lighitng results from item I need to be assesed. d review of Lighting placement and paint colours	

	GREEN STAR BUILDINGS STRATEGY									
CREDIT	CREDIT CRITERIA	CREDIT DESCRIPTION	RESPONSBILE	STAGE	POINTS AVAILABLE	CONFIRMED	LOW RISK	MEDIUM RISK	HIGH RISK	EMERG
	Acoustic Comfort Strategy	An Acoustic Comfort Strategy must be prepared describing how building design will deliver this to occupants addressing criteria: quiet enjoyment of space; functional use of space; control of intrusive or high levels of noise; privacy; noise transfer; and speech intelligibility. Must be prepared by qualified acoustic consultant during design stage and design solutions in strategy must be incorporated into Contract Documents.	ACOUSTIC	DESIGN	Nil	MINIMUM RE	QUIREMENT - RAT	HAS TO BE DON 'ING	IE TO OBTAIN	
	Maximum Internal Noise Levels	Internal ambient noise levels in the regularly occupied areas must be no greater than the upper range value relevant to the activity type in each space as recommended in the current AS/NZS 2107:2016. For Class 2 and Class 3 buildings In Class 2 and Class 3 dwellings the internal ambient noise levels can exclude those services under the direct control of the occupant such as split system air-conditioning units and switchable exhaust fans (e.g., toilet, kitchen hoods and laundries). For buildings with sleeping areas In buildings with sleeping areas In buildings with sleeping areas (e.g., Class 2, Class 3, Class 9a) noise levels must not exceed recommended Sleep Disturbance criteria as defined in the NSW EPA Road Noise Policy 2011: • Up to two noise events per night: maximum internal noise levels below 70 dB LAmax • All other events: maximum internal noise levels below 55 dB LAmax	ACOUSTIC	DESIGN						Confirm with
12. Acoustic Comfort	Acoustic Separation	Privacy For Class 2 and Class 3: All walls and floors (excluding riser walls) separating enclosed spaces must exceed the minimum NCC requirements by 5 points (excluding impact noise – refer impact noise transfer credit) Party walls separating open plan kitchens (where joinery units are fixed) from another open plan kitchen/living room shall be discontinuous in construction (discontinuous in accordance with the National Construction Code) For all other spaces: For all other spaces: The sound insulation between internal spaces complies with: Dw + LAeqT > X. Where: Dw = Weighted sound level difference measured between two spaces LAeqT = Indoor ambient noise level in the space adjacent to the enclosed space X = 75 except for: X = 60 for any partition with a door, X = 80 for any partitions separating areas with elevated privacy requirements (e.g., meeting rooms, classrooms, wards, etc.) The sound insulation The partition between the space should be constructed to achieve a weighted sound reduction index (dB Rw) of: At least 45 for all partitions separating enclosed spaces which are: Fixed without a door* (refer to Guidance section) At least 40 for all partitions fronting a room (from an open plan area) At least 45 (in composite with door and partition types that contain a door At least 45 (in composite with door and partition) for all partition types that contain a door	ACOUSTIC	DESIGN	2		2			Confirm with
	Impact Noise Transfer	 At least 50 through hours between occupied spaces Impact noise transfer measured in accordance with ISO 16283-2 through a floor where: Floors are located above regularly occupied areas Adjacent spaces belonging to different tenancies which share a floor must not exceed dB L'nT,w: - 55 for floors above Class 2 and Class 3 buildings accommodation spaces - 60 for all other spaces 	ACOUSTIC	DESIGN						Confirm with
	Paints, adhesives, sealants and carpets	At least 95% of internally applied paints, adhesives, sealants (by volume) and carpets (by area) must meet TVOC Limits. Compliance can be achieved via a recognised and current at time of purchase Product Certification Scheme; laboratory product testing; or there are none of these materials present at PC.	ARCHITECT	TENDER						
13. Exposure to	Engineered wood products	Either no new engineered wood products are used in the building, or at least 95% (by area) of all engineered wood products meet specified formaldehyde emission limits. Compliance can be achieved via a recognised and current at time of purchase Product Certification Scheme; or laboratory product testing. Excl. formwork, car parking applications and non-engineered wood products.	ARCHITECT	TENDER	Nil		QUIREMENT - RAT	HAS TO BE DON 'ING	IE TO OBTAIN	Standard Practice, EMERG sen
Toxins	Banned or Highly Toxic Materials	Comprehensive hazardous materials survey must be performed on existing structures on site in accordance with relevant Environmental and OH&S legislation Where these materials identified, materials must be stabilised/removed and disposed of in accordance with best practice guidelines; or simply conclude none found on site.	CLIENT	DESIGN						
	TVOC and formaldehyde testing	Test must be undertaken to verify all sample measurements are TVOC <0.27ppm and formaldehyde <0.02ppm. Nominated area: primary secondary & tertiary.	CONTRACTOR	CONSTRUCTION	2				2	Would require a third pa level
15. Connection to Nature	Views, plants and nature- inspired design	Building provides: - Views: at least 60% of primary spaces occupied for more than two hours must have a clear line of sight to a high quality internal or external view. Floor areas within 8m from a compliant view meet this credit criterion: AND - Plants: one or more indoor plants in pots with a soil surface area totalling at least 500cm2 for every 15m2 of the primary spaces is required. An ongoing maintenance plan to ensure plant health is required Nature-inspired design: five additional nature-inspired design interventions must be provided in alignment with principles: elements that provide differing natural sensory experiences; elements that reflect natural and cultural patterns and forms; using natural materials; and natural motifs and art. Use LBI's "Biophilic Design Guidebook' as a guide for strategies/responses: OR - Interaction with Nature: 5% of the building's floor or site area (whichever is greater) is allocated to nature in which occupants can directly engage with either internally, or externally through a green wall or roof garden. The allocated area must be accessible and have the necessary infrastructure to allow the activity to occur (e.g. irrigation).	ARCHITECT	DESIGN	1				1	Need to check calcua Very unlikely, landscapr
Total						0	6	2	3	

MERGEN COMMENTS	CONSULTANTS COMMENTS
with Acoustic Consultant.	
with Acoustic Consultant.	
with Acoustic Consultant.	
1ERGEN will require specifications to be sent for review	
rd part to test VOC and Formaldehyde evel once installed	
alcualtion to see if this is possible. scapr Architect to confirm if possible.	

		GREEN ST		INGS STRA	TEGV					
CREDIT	CREDIT CRITERIA	CREDIT DESCRIPTION	RESPONSBILE	STAGE	POINTS AVAILABLE	CONFIRMED	LOW RISK	MEDIUM RISK	HIGH RISK	EMERGE
			RESILIEN	Т						
	Climate Change Checklist	EMERGEN to complete the climate change pre-screening checklist using historic and future data considering, but not limited to, the following potential impacts: direct damage or failure of components; accelerated deterioration of project components/reduced design life; reduced operating capacity; climate hazard impacts to surrounding areas (e.g. access & egress); occupant & stakeholder health and wellbeing impacts; indirect impacts to other interdependent systems and services (e.g. transport, utilities). The project team must communicate the building's exposure to climate change risks to owner.	EMERGEN	DESIGN	Nil	MINIMUM RE	equirement - Rat	HAS TO BE DON 'ING	IE TO OBTAIN	
16. Climate Change Resilience	Climate change risk and adaptation assessment	Suitably qualified professional must undertake a climate change risk and adaptation assessment as early in design phase as possible in accordance with AS 5334:2013 and AS/NZS ISO 31000:2009, and author a report.	EMERGEN	DESIGN	1					EMERGEN to undertake Cl
	Managing risks	Project team must ensure risks are addressed as follows: 'extreme' risks must be addressed through specific design responses; 'high' risks must be addressed through design or future operational responses; and regardless of risk rating, at least two identified risks must be addressed by specific design responses.	EMERGEN	DESIGN				-		
17 Operations	Comprehensive Risk Assessment	As early in design phase as possible, must undertake comprehensive risk assessment of the acute shocks and chronic stresses likely to influence future building operations. As minimum, considering: - Shocks: failure of critical infrastructure(power, water, digital); health pandemic; water security; geological hazards (landslides, earthquakes, tsunamis); and direct attack (cyber and physical). - Stresses: ageing infrastructure; rising cyber dependency; increasing energy costs; and lack of transport accessibility and availability. This may occur in parallel with Climate Change Resilience credits CA16.1 & CA16.2.	SERVICES	DESIGN						Internal reporting o Service cons
Resilience	Managing risks	Project team must ensure the building's design and future operational plan addresses system-level interdependency risks as follows: 'extreme' risks must be addressed through specific design responses; 'high' risks must be addressed through design or future operational responses; and regardless of risk rating, at least two identified risks must be addressed by specific design responses.	SERVICES	DESIGN	2			2		EMERGEN to undertake a Climate Chan
	Addressing power loss	Must perform an assessment of the building's survivability in blackout event. Building must then be designed to account for its design purpose, and provide a measure of survivability for the likely occupants - the range of corrective/mitigative measures can be passive or active.	SERVICES	DESIGN						
19. Heat Resilience	Heat Island Effect reduction	At least 75% of the whole site area (excl. PV, SHW, skylights, translucent sheeting) comprises one or combination of strategies that reduce heat island effect. Such strategies may include: vegetation; green roofs; roof materials/shading structures pitched <15° - a 3 year SRI >=64, and >15° - a 3 year SRI >=34; unshaded hardscaping elements with a 3 year SRI >=34 or initial SRI >=39; hardscaping elements shaded by overhanging vegetation; and/or water bodies/courses. Site area shaded by permanent structures during summer solstice are deemed compliant.	ARCHITECT	DESIGN	1				1	Emergen / Landscape consi
20. Grid Resilience	Active generation and storage systems	The building has the capacity to reduce its electricity peak demand by 10% of the building's annual peak electricity demand for at least a one-hour period. The peak demand reduction can occur through electricity storage solutions (batteries), or through renewable on-site generation. Where the electricity demand reduction is achieved by using on-site generation or electricity storage: • The system (generation or storage) must incorporate switch gear and transfer switches to enable it to operate in the event of grid outage or grid demand response event. This means that the system should be able to work in either: • A long-term paralleling with the grid mode, such that the generator can export back to the grid; or; • Island mode to power the building, or to power critical building systems. • The building must have approvals in place with the electricity utility company to operate as a peak reduction system and to have the capacity to become part of a network load demand system or to operate in island mode should it be required. The building management system (BMS) must include a demand management dashboard that shows the peak demand target, current, historical demand, alongside the critical performance characteristics. The BMS must also have the capacity to accept external control signals to enable signing up to current or future demand response programs.	ELECTRICAL	DESIGN	3				3	Electrical Co
Total						0	0	3	4	

EMERGEN COMMENTS	CONSULTANTS COMMENTS
N to undertake Climate Adaptation and Resilience plan.	
ernal reporting or risk assessment required. Service consultant involvement EN to undertake at same time as completing the Climate Change Resilience Credit	
/ Landscape consultant to work out based on Plans.	
Electrical Consulatnt to confirm	

		GREEN S	TAR BUILD	DINGS STRA	TEGY						
CREDIT	CREDIT CRITERIA	CREDIT DESCRIPTION	RESPONSBILE	STAGE	POINTS AVAILABLE	CONFIRMED	LOW RISK	MEDIUM RISK	HIGH RISK	EMERC	
			POSITI	IVE							
21. Upfront Carbon Emissions	Reducing upfront carbon emissions	The building's upfront carbon emissions (i.e. from modules A1-A5 as in EN 15978) are >=10% less than those of a reference building excl. demolition works.	EMERGEN	DESIGN	Nil	MINIMUM RE	MINIMUM REQUIREMENT - HAS TO BE DONE TO OBTAIN RATING				
22. Energy Use	Modelling Pathway: >=10% less than reference building	This credit defines the reference building as a building modelled to Section J requirements of the National Construction Code 2019 or later. If the building's approval is subject to a later code, that building must use the latest version. The results from the energy model must include all energy consumed by base building systems. Consumption from tenant systems such as plug loads, domestic appliances, and manufacturing or process loads are excluded from the calculation.	EMERGEN	DESIGN	Nil	MINIMUM RE	QUIREMENT - RAT	HAS TO BE DON TING	IE TO OBTAIN	Prelim m	
	Zero Carbon Action Plan	Must develop a Zero Carbon Action Plan prior to tender phase which: must be signed off by building owner; incl. in operational documents; incl. a target date; cover all energy consumption, procurement and generation and cannot rely solely on the latter; must incl. infrastructure provided for tenants/future occupants. Outcomes should be integrated with other credits during certification.	EMERGEN	TENDER	Nil	MINIMUM RE	QUIREMENT - RAT	HAS TO BE DON FING	IE TO OBTAIN	EMER	
23. Energy Source	100% Renewable Electricity	100% <i>electricity</i> under building owner/operator's control (excl. tenant loads) must be accounted for and sourced from renewables either: onsite; or off-site where there is a signed RE contract with min. length five years or three years when the building is owned and managed by entity who has signed to Global Commitment for Net Zero Carbon Buildings by WorldGBC. Contract can be apart of a PPA.		OPERATION	3		3			Sola	
	100% Renewable Energy	Net Zero Path - 100% <i>energy</i> both: under building owner/operator's control; and non-electric energy not under building owner's control (excl. tenant loads) must be accounted for and sourced from renewables either: onsite; or off-site where there is a signed RE contract with min. length five years or three years when the building is owned and managed by entity who has signed to Global Commitment for Net Zero Carbon Buildings by WorldGBC. Contract can be apart of a PPA. If fossil fuel infrastructure exists, must show how fossil fuels won't be used.		OPERATION	3		3			Embedded Netv	
	Sanitary fixture and appliance efficiency	All fixtures and water-using appliances installed within the project's scope must, at a minimum, meet the following WELS ratings : Taps -5 Star, Urinals, 5 Star, Toilets, 4 Star, Showers - 3 Star, Clothes Washing Machine - 4 Star, Dishwashers - 5 Star: OR The building uses 15% (10% for Class 2 and Class 3 buildings) less potable water compared to a reference building.	ARCHITECT	DESIGN	Nil	MINIMUM RE	EQUIREMENT - RAT	HAS TO BE DON FING	IE TO OBTAIN		
25. Water Use	45% Potable water reduction compared to a reference building	GBCA's Potable Water Calculator and Potable Water Calculator Guide must be used to show either: The building uses 45% (40% for Class 2 and Class 3 buildings) less potable water compared to a reference building; AND The building must have infrastructure for recycled water in a location where authorities have planned for installation of these services.	HYDRAULIC	DESIGN	3		3			Maximum WELLS ratings Efficient night irrigation or	
26. Life Cycle Impacts	30% reduction in life cycle impacts compared to standard practice	30% reduction in life cycle impacts cradle-to-grave (per m2 GFA) incl. all EN 15978 modules (A to D).	EMERGEN	DESIGN	2				2	Target setting exercis	
Total						0	9	0	2		

IERGEN COMMENTS	CONSULTANTS COMMENTS
TS LCA to check	
n modelling required.	
IERGEN to develop	
Solar PV System. Network Provider to provide.	
ngs for all fittings, including waterless urinals. n on landscaped area, adapting to local climate.	
rcise to demonstrates if points are achievable	

	GREEN STAR BUILDINGS STRATEGY														
CREDIT	CREDIT CRITERIA	CREDIT DESCRIPTION	RESPONSBILE	STAGE	POINTS AVAILABLE	CONFIRMED	LOW RISK	MEDIUM RISK	HIGH RISK	EMERGEN COMMENTS	CONSULTANTS COMMENTS				
			PLACE	S											
	Changing facilities	Showers must be at least 900mm x 900mm and installed based on occupancy.	ARCHITECT	DESIGN	Nil	MINIMUM RE	EQUIREMENT R/	- HAS TO BE D TING	DNE TO OBTAIN						
	Accessible, inclusive, and located in a safe and protected place	Upon accessing, pedestrians and cyclists must be protected from the elements and other vehicles. Facilities' access must be: safe (i.e. avoid steep gradients, slippery surfaces, lack of visibility e.g. corners etc.); and well lit between entryway and bike parking, all amenities, lift lobbies and main access points. All regular occupants must have easy access to lockers, showers and building entry and be able to find facilities due to clear signage and access points. Applies to all buildings excl. residential.	ARCHITECT	DESIGN		MINIMUM RE	EQUIREMENT R/	- HAS TO BE D TING	DNE TO OBTAIN						
27. Movement and	Cyclist facilities	Building's access must prioritise walking and cycling options meaning being well lit, weather protected and separated from vehicles. Cyclist facilities access must be separated from primary vehicle entrance for safety. Cyclist facilities must have signposted access to changerooms and ensure cycling equipment safely secured. In residential buildings, access points must connect to relevant storage facilities. If at unit level, show how won't be blocked by strata.	ARCHITECT	DESIGN						Bike Racks (confimred on plans). EOT facility not required as no Commercial.					
Place	Sustainable transport	Must prepare (by a qualified transport planner) and implement a Sustainable Transport Plan where the consequent requirements and recommendations must then be reflected in design of building facilities and ongoing operations.	TRANSPORT CONSULTANT	DESIGN						Require Sustainable Transport plan.					
	Reducing private vehicle use	Use inputs from Sustainable Transport Plan to complete GBCA's <i>Movement and Place Calculator</i> , to show compared to a reference building: 40% emissions reduction from transport, 90% active mode encouragement, >20% Vehicle Kilometres Travelled reduction.	EMERGEN	DESIGN	3			3		Infrastructure of EV Charging station.					
	Encouraging walkability	The building's design and location must encourage walking to and from amenities: - if there are roads within building boundary, must prioritise pedestrians over vehicles via designing roads to be low speed (10km/hr) and provide pedestrian right of way; - occupants should have access to diversity of amenities incl.: groceries; health and wellbeing; food and beverage; retail; bank services; education and child care; recreation; public facilities; and outdoor facilities. There must be at least 10 amenities across five of these categories within 400m radius excl. double-counting and those beyond an obstruction (e.g. highway - see Guidance pg. 163)	EMERGEN	DESIGN						Walkscore of 87 (Very Walkable). Transit Score of 52 (Good Transit).					
Total						0	0	3	0						

		GREEN S	TAR BUILD	INGS STRA	TEGY							
CREDIT	CREDIT CRITERIA	CREDIT DESCRIPTION	RESPONSBILE	STAGE	POINTS AVAILABLE	CONFIRMED	LOW RISK	MEDIUM RISK	HIGH RISK	EMERGEN COMMENTS	CONSULTANTS COMMENTS	
			PEOP	.E			1	<u> </u>				
	Onsite gender inclusivity and discrimination, racism and bullying policies	Head contractor must: ensure availability of separate gender inclusive bathroom facilities and changing amenities with a high degree of privacy; provide gender-specific fit-for-purpose PPE for diverse body sizes and types; implement policies to address discrimination, racism & bullying onsite; introduce onsite redress procedures and corrective measures for any relevant breaches and/or incidents; empower a diverse lead team to manage onsite policies; provide training to 95% contractors and subcontractors present on site for >= 3 days on: relevant aforementioned onsite policies; and drug and alcohol awareness and mental health.	CONTRACTOR	TENDER	Nil	MINIMUM RE	QUIREMENT - RAT	HAS TO BE DON 'ING	IE TO OBTAIN			
24 Jackseine	Needs analysis	The responsible party should carry out a needs analysis of potential site workers and sub-contractors at tender (or similar early stage) to determine appropriate actions. The policies and programs should be relevant to all construction workers on site for the full duration of construction.	CONTRACTOR	TENDER								
Construction Practices	Physical and mental health impacts	Head contractor must show the introduction of programs and solutions to address at least five of the following: suicide prevention; healthy eating and active living; reduce harmful alcohol and tobacco consumption and avoid drug use; increased social cohesion, community and cultural participation; understanding depression; preventing violence and injury; decreased psychological stress; and finding fulfilment at work or mindful meditation.	CONTRACTOR	TOR TENDER	TENDER	1			1		Contractor Specific Requirement Could include in Tender requirements	
	Evaluating the program's effectiveness	Must provide an evaluation report to client and subcontractors with the following: info on programs or initiatives that were delivered incl. dates, attendance and available languages; and a review on whether these delivered intended outcomes and recommendations on improving future delivery.	CONTRACTOR	TENDER								
	Additional gender-specific facilities and PPE	Provision of gender inclusive bathrooms and changing facilities are a minimum expectation and where a building's construction identifies opportunities to provide additional facilities and gender-specific PPE to celebrate diversity, the building may seek additional <i>Leadership</i> point(s) under <i>Market Transformation</i> .	CONTRACTOR	TENDER	1+			1				
Total						0	0	2	0			

	GREEN STAR BUILDINGS STRATEGY													
CREDIT	CREDIT CRITERIA	CREDIT DESCRIPTION	RESPONSBILE	STAGE	POINTS AVAILABLE	CONFIRMED	LC	LOW RISK	IEDIUM RISK	HIGH RISK	EMERGEN COMMENTS	CONSULTANTS COMMENTS		
			NATUR	E										
35. Impacts to Nature	Not built on, or impacted, a site with high ecological value	At date of site purchase/option contract, must not clear: old-growth forest, prime agricultural land, any wetland listed as 'High National Importance', aspects considered 'Matters of National Significance' under EPBC Act 1999 regardless if 'controlled action' or not. If site adjacent, within 100m, or contains above and protecting, must minimise impact as follows: both <i>Waterways Protection</i> CA and this credit's CA is met; light pollution impacts are managed; and where next to a wetland, implement Wetland Protection Measures	CLIENT	SCHEMATIC	Nil	MINIMUM R	REQUIR	REMENT - HA RATING	TO BE DON	IE TO OBTAIN	Based on Google Maps compliant site			
	Protecting Ecological Values	 The project team must show how ecological values will be protected including: Documenting the current, future and past ecological values on the site by type and biomass. This includes terrestrial and aquatic ecological values, geologic features and soils (including interaction with living things). When determining biodiversity value, the project must reference local, regional, state and national priorities and strategies; The proportion of existing vegetated area being retained and the biodiversity value of this area; Identifying local and regional threats and mitigation requirements; Listing active management strategies to be employed to protect the integrity of ecological values throughout the project planning, construction and occupancy; Documenting the community engagement process, and outline risks and opportunities to enhance the site; and Detailing consultation outcomes with local stakeholders including Aboriginal or Torres Strait Islander groups and environmental groups. 	LANDSCAPE ARCHITECT	DESIGN	2					2	Landscape Architect to confirm			
	Landscape area	At a minimum, external landscape in the building, whether horizontal or vertical must be provided at a ratio of either 15% of the site area or at a ratio of 1:500 of the GFA, whichever is larger.	LANDSCAPE ARCHITECT	DESIGN										
Biodiversity Enhancement	Diversity of species	Landscape must: be diverse and incl. multiple species/genus/etc., >60% of plants must be indigenous, site must incl. >=1 significant tree or equivalent habitat provision per 500m2 landscaped area, and no invasive species allowed as per <i>Australian Weeds Strategy 2017 to 2027</i> . Two pathways: - prescriptive - landscaping must meet plant diversity targets: 10% plant species; 20% plant genus; and 30% plant family. - performance - ecologist must assess, verify and provide narrative that the choice of landscaping and biodiversity is diverse and resilient to climate change impacts increasing longevity of landscape.	LANDSCAPE ARCHITECT	DESIGN	2					2	Landscape Architect to confirm			
	Biodiversity management plan	A suitably qualified professional must prepare plan outlining key actions to be undertaken to maintain ecological integrity of biodiversity on site. Key req.s incl.: vision and objectives for site's biodiversity values; roles and responsibilities in plan implementation; description of the biodiversity baseline on site; how success and implementation will be measured; how impacts/threats to biodiversity onsite post PC will be mitigated; provision for update of BMP where necessary; and must be part of project handover.	undertaken to maintain ecological integrity of biodiversity on site. Key req.s incl.: vision and mentation; description of the biodiversity baseline on site; how success and LANDSCAPE post PC will be mitigated; provision for update of BMP where necessary; and must be part ARCHITECT DESIGN		DESIGN									
Total						0		0 4	0	4				

	GREEN STAR BUILDINGS STRATEGY												
CREDIT	CREDIT CRITERIA CREDIT DESCRIPTION	RESPONSBILE	STAGE POIN	NTS AVAILABLE	CONFIRMED	LOW RISK	MEDIUM RISK	HIGH RISK	EMERGEN COMMENTS	CONSULTANTS COMMENTS			
	LEADERSHIP												
Total					0	0	0	0					
					CONFIRMED	LOW RISK	MEDIUM RISK	HIGH RISK					
					1	16	12	13					