

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2023/1374

Date: 06-Nov-2023



101 Albert St

Sustainability Strategy Report DA Submission

Prepared for: QIC

Project No: BNE0776

Date: 8 December 2022

Revision: 05



Project: 101 Albert St
Location: 101 Albert St.
Brisbane CBD, QLD 4000
Prepared by: ADP Consulting Pty Ltd
Level 16, 15 Adelaide St
Brisbane City QLD 4000
Project No: BNE0776
Revision: 05
Date: 8 December 2022

Rev	Date	Comment	Author	Technical Review	Authorisation & QA
01	13/05/2022	Preliminary	HAS	HAS, AP, SS	CVH, LD
02	27/05/2022	Concept Issue	HAS	HAS, AP, SS	CVH, LD
03	31/10/2022	DA Submission (Draft)	MC	HAS, AP, SS	AH, LD
04	11/11/2022	DA Submission (Draft)	MC	HAS, AP, SS	AH, LD
05	08/12/2022	DA Submission	MC	HAS, AP, SS	AH, LD

Project Team

Client / Principal	QIC
Architect	Architectus/Henning Larsen
Project Manager	RCP
Structural/Civil	Robert Bird Group
Building Services Consultant	ADP Consulting
Sustainability Consultant	ADP Consulting
Fire Safety Consultant	ADP Consulting

Contents

1. Introduction	5
1.1 Project Overview	5
1.2 Development Rating Targets	6
1.3 Standards, Regulations & Guides	6
1.4 Sustainability Strategy Framework	6
2. Sustainability Rating Tools	8
2.1 Green Star Buildings Tools	8
2.2 NABERS	9
3. Climate Zone & Design Consideration	10
3.1 Climate Study	11
3.2 Site Climate Analysis	11
3.3 Current Climate	11
3.4 Future Climate	11
3.5 Summer Conditions	12
3.6 Winter Conditions	13
3.7 Design Consideration	13
3.8 Expected Site Wind Conditions	14
4. Façade & Building Fabrics	16
5. Embodied Carbon & Upfront Carbon Emission	17
5.1 Embodied and Upfront Carbon Emission	17
5.2 High level Analysis	18
5.3 Results	19
6. Net Zero Carbon	20
6.1 Climate Active Carbon Neutral Standard	21
6.2 NABERS Pathway	22
7. Green Star Pathway	24
8. NABERS Energy Strategy	25
8.1 Building Form	25
8.2 Assessed Area	26
8.3 Base Case Model	26
8.4 Additional Items for Further Investigation	26
8.5 Results	26
9. End of Trip Facilities	28

9.1	Showers.....	28
9.2	Lockers.....	28
10.	Water	29
11.	Climate Positive	30
12.	Climate Resilience	31
13.	Environmental, Social and Governance (ESG)	32
14.	Indigenous Design Principles.....	33
15.	Market Transformation and Leadership	37
16.	Conclusion	38

Figures

Figure 1	Site Location shown in red.....	5
Figure 2	Sustainability Strategy Framework	7
Figure 3	Climate zone map for QLD	10
Figure 4	Current Site Climate Data.....	11
Figure 5	Summer Conditions.....	12
Figure 6	Winter Conditions.....	13
Figure 7	Albert Street Wind Conditions	15
Figure 8	Upfront, Embodied and Whole life cycle of Carbon	17
Figure 9	Net Zero Concept and Certification (ILFI & Climate Active) *	20
Figure 10	Climate Active program and process	21
Figure 11	Modelled building geometry.....	25

Tables

Table 1	Green Star Buildings Categories.....	8
Table 2	NABERS Sector and Benchmark	9
Table 3	Facade Performance Details.....	16
Table 4	Emission Intensity (kg CO ₂ e/kg) for structural floor building materials	18
Table 5	Percentage reductions from reference case/base case.....	19
Table 6	Net Zero Design Strategies	23
Table 7	5-star points summary	24
Table 8	Base case model parameters	26
Table 9	NABERS Base Building energy inputs.....	26
Table 10	Queensland emissions factors	27
Table 11	Summary of energy consumption, greenhouse gas emissions and NABERS rating.....	27

Table 12 EOT Facility Requirements.....	28
Table 13 Fixture Type and WELS rating	29
Table 14 Pollution reduction targets	29
Table 15 Minimum targets.....	30
Table 16 Indigenous Design Principle and its alignment with country centred design.....	33

Appendices

Appendix A – Minimum Expectations and Green Star Pathway	39
Appendix B – NABERS Pathway	40
Appendix C – Climate Positive Pathway	41
Appendix D – Climate Resilience.....	42

1. Introduction

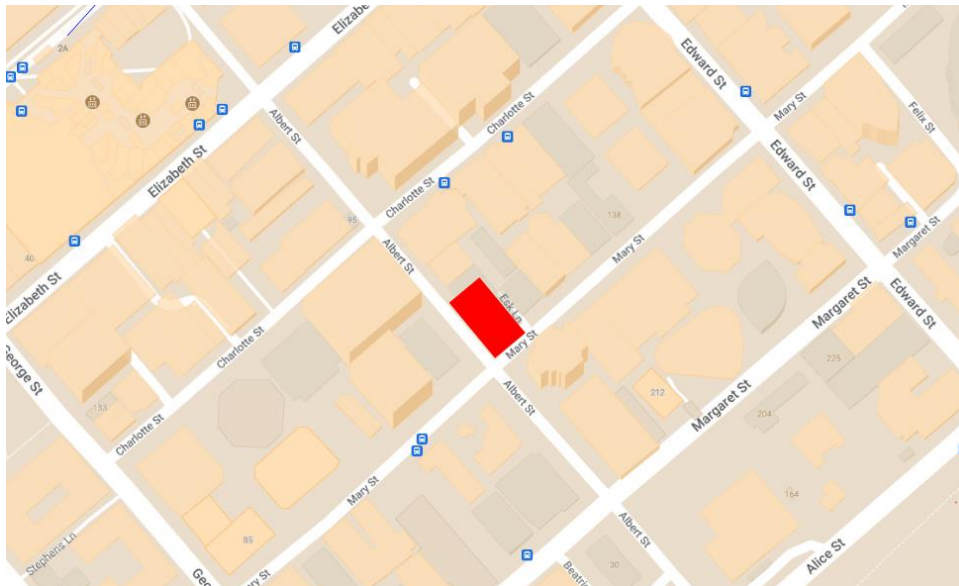
ADP Consulting has been engaged by QIC to undertake design and documentation of the exciting new development proposed on the corner of Albert St and Mary St, in the Brisbane central business district. This project is part of the Cross River Rail (CRR) and is an Over Station Development (OSD).

This report outlines the environmentally sustainable development (ESD) strategy for the proposed development located at corner of Albert St and Mary St.

1.1 Project Overview

The project is a new commercial building located on the corner of Albert St and Mary St, in the Brisbane central business district. See Figure 1.

Figure 1 Site Location shown in red



The proposed development includes:

- > The current development has areas approximating the following
 - 43,030m² (36,555 m² Office + 6,475 m² Office Support & Amenities) of NLA over approximately 40 Levels, split into low-rise, mid-rise and high-rise zones
 - 1,815m² of designated retail space (class 6)
 - 2,280 m² of Wellness Centre (class 9b) assembly areas
 - final areas are a work in progress and will change throughout project life
- > End of Trip (EoT) facilities and wellness space
- > Basement car park
- > Plant zones on roof, and at low and high-rise areas

1.2 Development Rating Targets

The Albert St tower is potentially targeting the following sustainability related initiatives (exact targets and pathway TBC):

- > 5 Star Green Star under the current Green Star Buildings tool
- > 5.5 Star NABERS Energy base building rating,
- > 4.5 Star NABERS Water – as per Client brief
- > PCA Grade Premium building but possibly contain some Grade A elements,
- > Gas free development

1.3 Standards, Regulations & Guides

The development is required to comply with the relevant rules and requirements of the following:

- > Green Star Buildings v1 (Rev B, Dec 2021)
- > National Construction Code 2019 Amendment 1
- > PCA Office Buildings Guide 2019
- > NABERS Energy and Water
- > Minimum Energy Performance Standards (MEPS) as outlined by the appropriate Australian Standards
- > Local Council Statutory Planning Requirement
- > Any other Authority having jurisdiction over this installation
- > Relevant Australian standard specifications or codes, except where such specifications or codes shall be varied by any governing authority. Such compliance shall in all cases be with the current edition or issue of the specification or code concerned

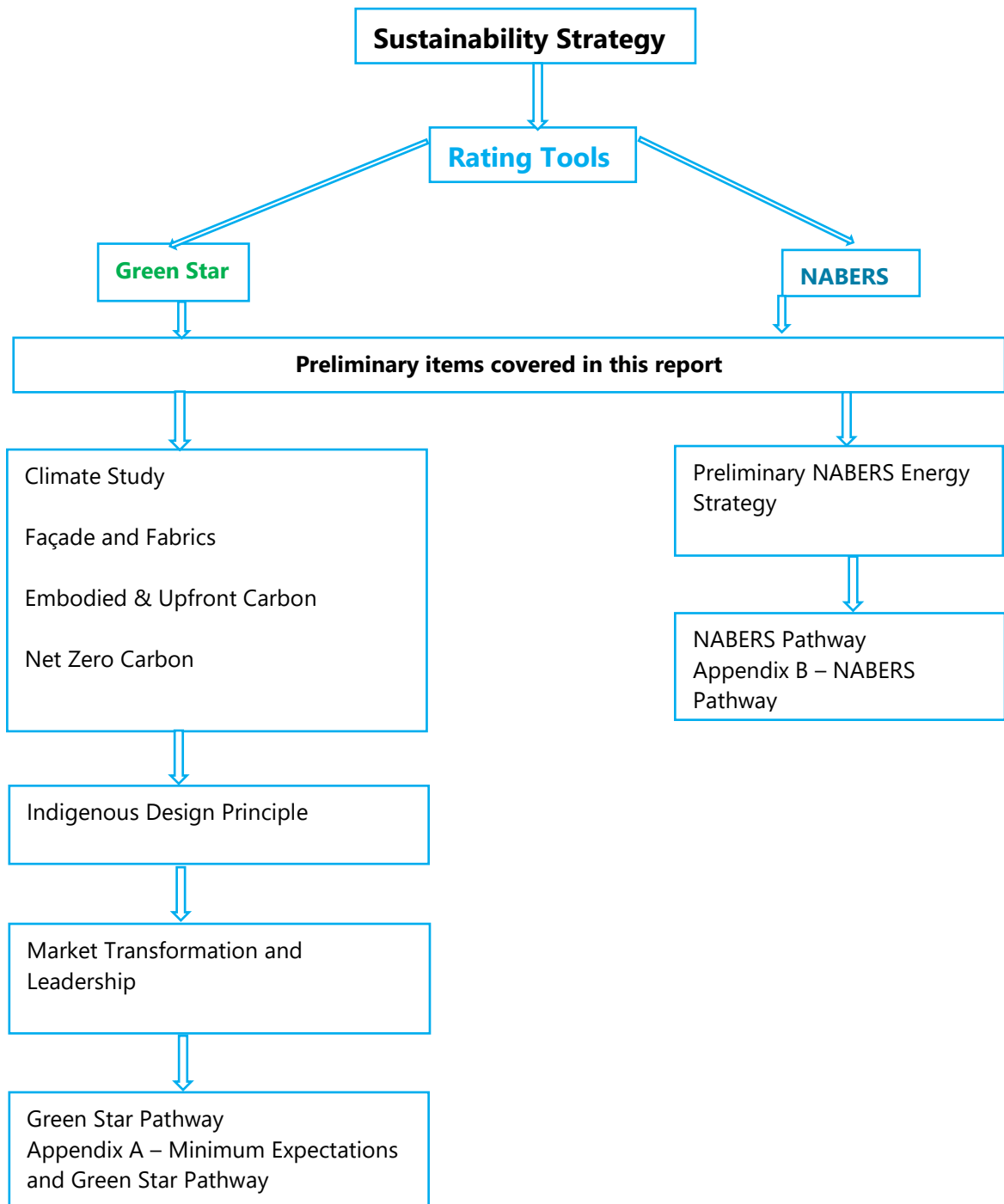
Where requirements of any governing authority or any applicable Australian standard specification or code differ from the requirements specified herein, the more stringent requirements will prevail unless expressly stated otherwise or agreed.

1.4 Sustainability Strategy Framework

A Sustainability Strategy Framework is shown in Figure 2. Some of the items are included in this report. The report will be reviewed along with the following documents:

- > Green Star matrix
- > Any future specification document (TBC)
- > Consultant Advise Notices (CAN's) by ADP
- > External Consultant Documents if referenced throughout document

Figure 2 Sustainability Strategy Framework



2. Sustainability Rating Tools

2.1 Green Star Buildings Tools

Green Star Buildings aims to meet current and future demands on 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 Buildings is a rating tool developed to rate the design and construction of any building.

Green Star Buildings aims to:

- > Assist clients and project teams to achieve and rate their sustainability goals for their project;
- > Encourage a new approach by rewarding healthy, resilient, and positive best practice outcomes and excellence; and
- > Provide consistent and clear advice in an easy-to-use manner.

Green Star Buildings features eight categories as per Table 1 representing the issues that will define the next decade of the built environment.





Note





- > For pathway, please refer to Appendix A – Minimum Expectations and Green Star Pathway

Green Building Council of Australia

Green Star Buildings tools were developed by Green Building Council of Australia (GBCA). The third-party certification is approved by GBCA’s certified assessor and GBCA administration in design review and as built phase. A Green Star Accredited Professional (GSAP) assists in this co-ordination process from schematic phase to final post construction phase.

Table 1 Green Star Buildings Categories

Category	Description
 Responsible	Recognise 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.
 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.





Category	Description
 Places	Supports the creation of safe, enjoyable, and comfortable places.
 People	Encourages solutions that address the social health of the community.
 Nature	Encourages active connections between people and nature and rewards creating biodiverse green spaces in cities.
 Leadership	Recognises projects that set a strategic direction, build a vision for industry or enhance the industry's capacity to innovate.

2.2 NABERS

The National Australian Built Environment Rating System (NABERS) can be used to measure a building's energy efficiency, carbon emissions, as well as the water consumed, the waste produced and compare it to similar buildings.

NABERS compares the performance of buildings or tenancies to benchmarks that represent the performance of other similar buildings in the same location. NABERS uses 12 months of real, measurable information about a building or tenancy, such as energy and water bills or waste consumption data as the basis of a rating. Table 2 demonstrates the sectors and typical NABERS targets or benchmarks and 101 Albert Street falls under the office sector.

Table 2 NABERS Sector and Benchmark

Category	Description	Targets / Benchmarks
 Offices	NABERS ratings for Office Buildings include energy, water, waste and indoor environment. You can use NABERS to rate a tenancy, base building or whole building.	5.5 Star Base Building Energy Rating
 Hotels	NABERS Hotel ratings provide a simple indication of how well the environmental impacts of a hotel are being managed, compared to other Australian hotels.	4.5 Star NABERS Energy Benchmark
 Shopping Centres	You can use NABERS for Shopping Centres to rate the central services and common areas of retail shopping centres in Australia.	4.5 Star NABERS Shopping Centre Benchmark
 Apartments	NABERS can now help owners to understand the energy and water efficiency of their building's common property areas, and in turn find opportunities to improve.	4.5 Star NABERS Energy Base Building Benchmark

Note

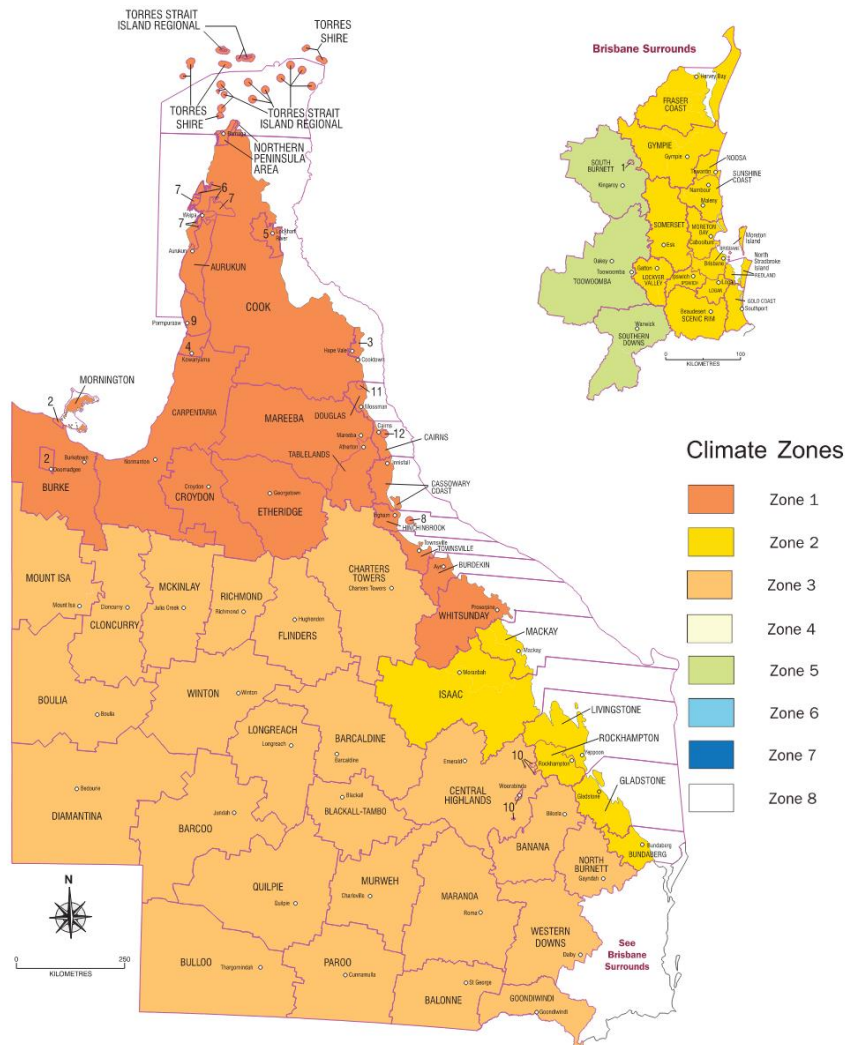
> For NABERS Energy pathway, please refer to Appendix B – NABERS Pathway

3. Climate Zone & Design Consideration

The development is located in climate zone 2 as per Figure 3. The climate is sub-tropical where distinct summer and winter seasons prevail (hot to very hot summers and mild winters). The climate has moderate to low day-night (diurnal) temperature range, which can vary significantly between regions for example inland to coastal. High humidity with a definite dry season during winter prevails.

The building design should consider to eliminate the need for heating in winter and reduce the need for cooling in summer, in a humid climate.

Figure 3 Climate zone map for QLD



3.1 Climate Study

A climate study was conducted using Rhino to investigate the summer and winter conditions for the project as shown in Figure 4.

3.2 Site Climate Analysis

Brisbane’s climate is classified as “Sub-Tropical Climate”.

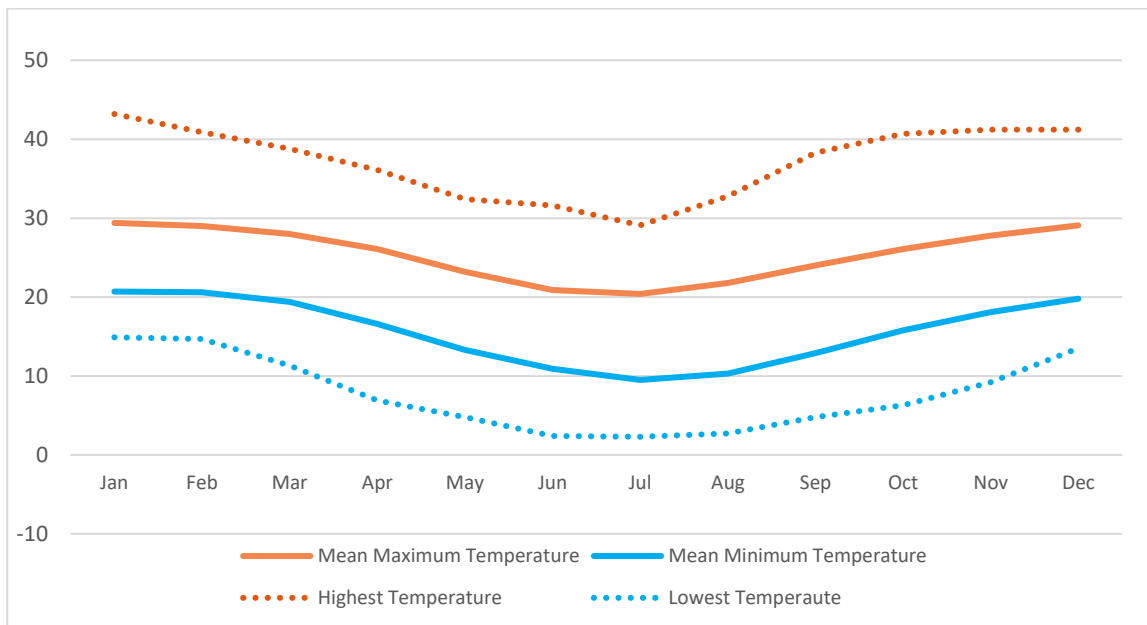
- > Mean Maximum temperature in summer is 29°C,
- > Mean Maximum temperature in winter is 21°C,
- > Autumn and spring average temperature is 24°C, and
- > Winter average temperature is 14°C.
- > Annual mean temperature varies 26-27°C in recent years

However, the climate is changing across Queensland.

3.3 Current Climate

Average temperatures across the state are currently 1°C higher than they were 100 years ago. Recent decades have shown a clear warming trend. Our climate is already highly variable, but climate change is leading to shifts beyond this natural variability.

Figure 4 Current Site Climate Data



3.4 Future Climate

Maximum, minimum and average temperatures are projected to continue to rise. For the near future (2030), the annually averaged warming is projected to be between 0.6 and 1.3°C above the climate of 1986–2005. By the year 2070, the projected range of warming is 1.1 to 3.3°C, depending on future emissions.

The region’s current summer average temperature is 27-29°C. This could rise to over 30°C by 2030 and to over 33°C by 2070.

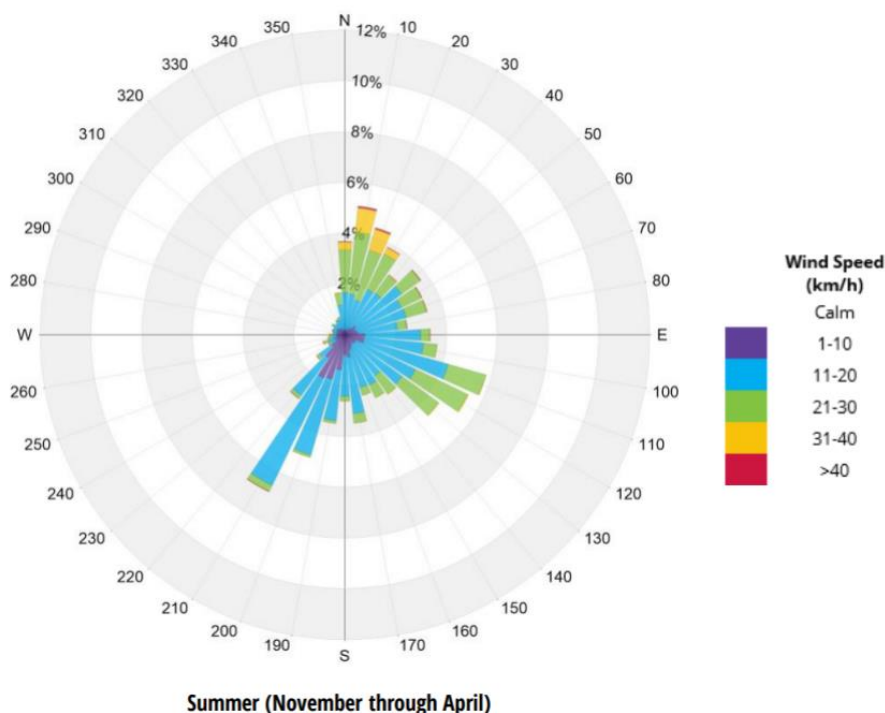
3.5 Summer Conditions

During the summer months, Brisbane’s climate is generally warm and comfortable. However, Brisbane is also prone to extreme heat waves, exacerbated by the urban heat island effect and climate change.

Analysis

- > The summer solstice sees the solar noon sun reach an angle that allows the sun to penetrate through the depth of the floor plate ensuring optimum amount of daylight for all occupants.
- > However, due to shading from adjacent buildings, a detailed daylight assessment has been conducted to confirm this.
- > Design eaves, balconies and overhangs, if architecturally possible to provide protection from the hot summer sun. Otherwise, a detailed façade analysis must be conducted to ensure that the building fabric is optimised to reduced cooling loads on the building.
- > Winds from the north-northeast, south-eastern, and south-westerly directions are predominant in both the Summer and Winter as indicated by the wind roses.
- > Strong winds are observed from the north-northeast during the summer season

Figure 5 Summer Conditions



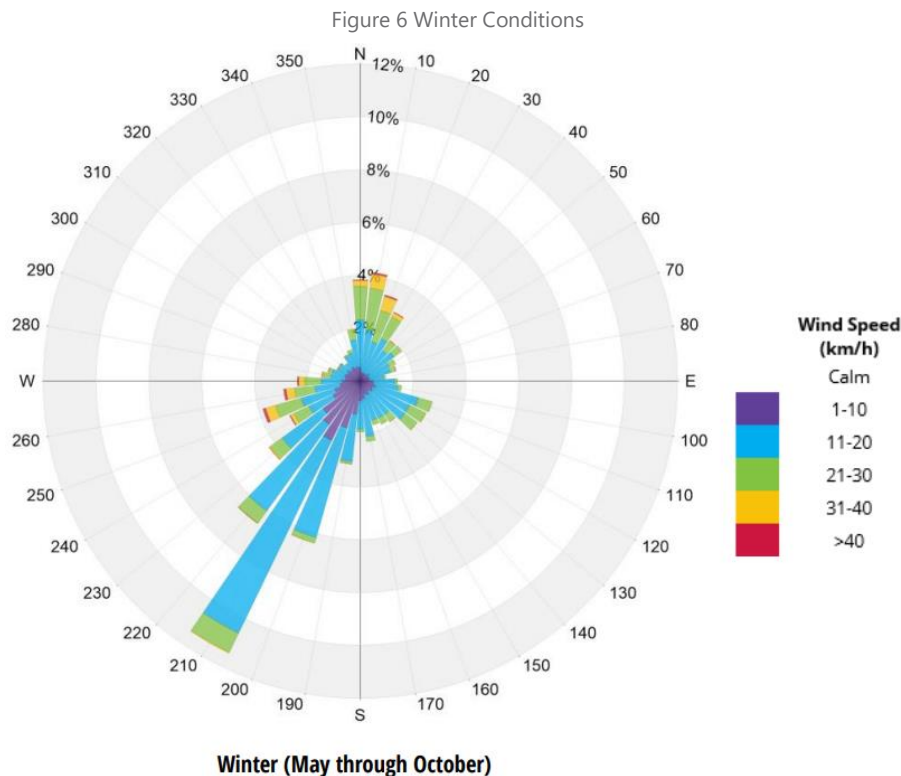
Source: Albert Street Tower Pedestrian Wind Study RWDI # 2205902 November 1, 2022

3.6 Winter Conditions

During the winter months, Brisbane's climate is typically dry and mild, similar to its Spring and Autumn months.

Analysis

- > During winter, most of the internal building facades will be shaded or self-shaded from direct sun penetration. Design strategies should be employed to maximise the winter sun penetration into the buildings.
- > Prioritise enhanced building fabric techniques such as sealing, insulation and glazing performance to keep heat inside spaces
- > Winds from the north-northeast, south-eastern, and south-westerly directions are predominant in both the Summer and Winter as indicated by the wind roses.
- > Strong winds are observed from the north-northeast and west-southwest during the winter season.



Source: Source: Albert Street Tower Pedestrian Wind Study RWDI # 2205902 November 1, 2022

3.7 Design Consideration

3.7.1 Orientation

- > Orientate the building for exposure to cooling breezes and design for cross-ventilation.
- > Use narrow floor plans and design openings to encourage movement throughout and with the building.
- > North-South façade will have larger areas than east-west

- > Glazing areas to be minimised in east-west façade than north and south

3.7.2 Window and Shading

- > Avoid overuse of glazing.
- > Use low SHGC glazing in all cases and low U value glazing with thermally broken frames in regions with cooler winters or hotter summers
- > Shade all east- and west-facing walls and glass year round

3.7.3 Insulation

- > Meet or exceed recommended minimum insulation levels for the climate region
- > Insulate internal wall surfaces from any external thermal mass
- > Use highly breathable reflective vapour barriers in walls and add insulation to rooms that are air-conditioned

3.7.4 Heating and Cooling

- > Avoid electric duct heater as this is not energy efficient and significantly impacts on Green Star and NABERS rating
- > Use energy efficient cooling and heating system with higher EER/COP
- > For lower energy target, water cooled, or air-cooled system can be chosen

3.7.5 Typical Construction Systems

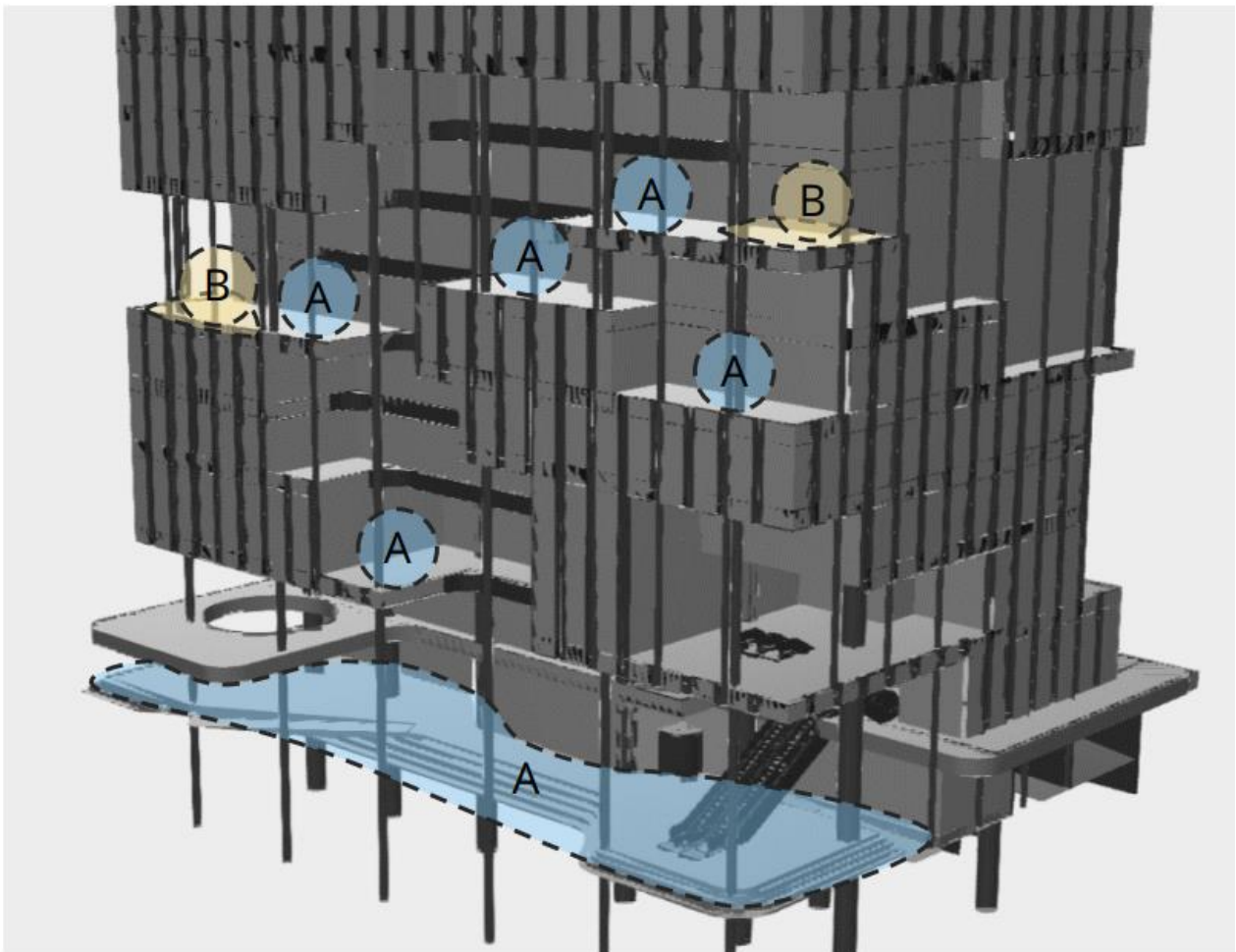
- > Light coloured roof and wall materials reduce the cooling load, so always recommended
- > Thermal break in external walls and roof
- > Thermal mass (e.g., concrete) is recommended where temperature variations exceed more than 6 deg C

3.8 Expected Site Wind Conditions

- > Site is generally shielded from high wind impacts due to neighbouring buildings. See Figure 7.
- > Ground Level areas sheltered due to the staggered building form and likely suitable for passive use throughout the year. Awnings along Albert Street most likely not necessary as a wind control measure. See Figure 7.
- > Some channelling expected along Albert Street and Mary Street. However, these are existing conditions that will not likely be influenced by the proposed development. Effect likely to be reduced due to the street trees.
- > Downwash unlikely due to upstream shielding. However, complex wind interactions with neighbouring buildings can pose this risk (to be assessed in future CFD studies). Some downwash off the tower façade can lead to wind movement around upper-level terraces during winters. The articulated form of the terraces will assist in breaking up winds as these approach ground level with the overall risk generally low.

Figure 7 Albert Street Wind Conditions

- A** Generally calm. Well-sheltered areas suitable for any use. Be aware of potential for overheating (in absence of shading) or accumulation of pollutants (in absence of ventilation).
- B** Light wind. Likely to be suitable for passive use during the summers but might be perceived cold during winters.



4. Façade & Building Fabrics

The current façade strategy is primarily being driven by energy performance requirements of NABERS and internal amenity requirements around natural daylighting.

The façade currently targeting the following the requirements:

Table 3 Façade Performance Details

Item	Parameter
Wall / spandrel thermal performance	R _T 2.0
Roof thermal performance	R _T 4.9
Floor thermal performance	R _T 3.0
Translucent building fabric	U _w 1.8 SHGC0.25
Window-to-wall ratio	50 %
Visible Light Transmittance (VLT)	50%

The façade also incorporates extensive vertical shading elements that increase in depth as the building transitions from low-, mid- and high-rise sections. The design strategy for the shading is a work-in-progress and may evolve as the overall building design matures.

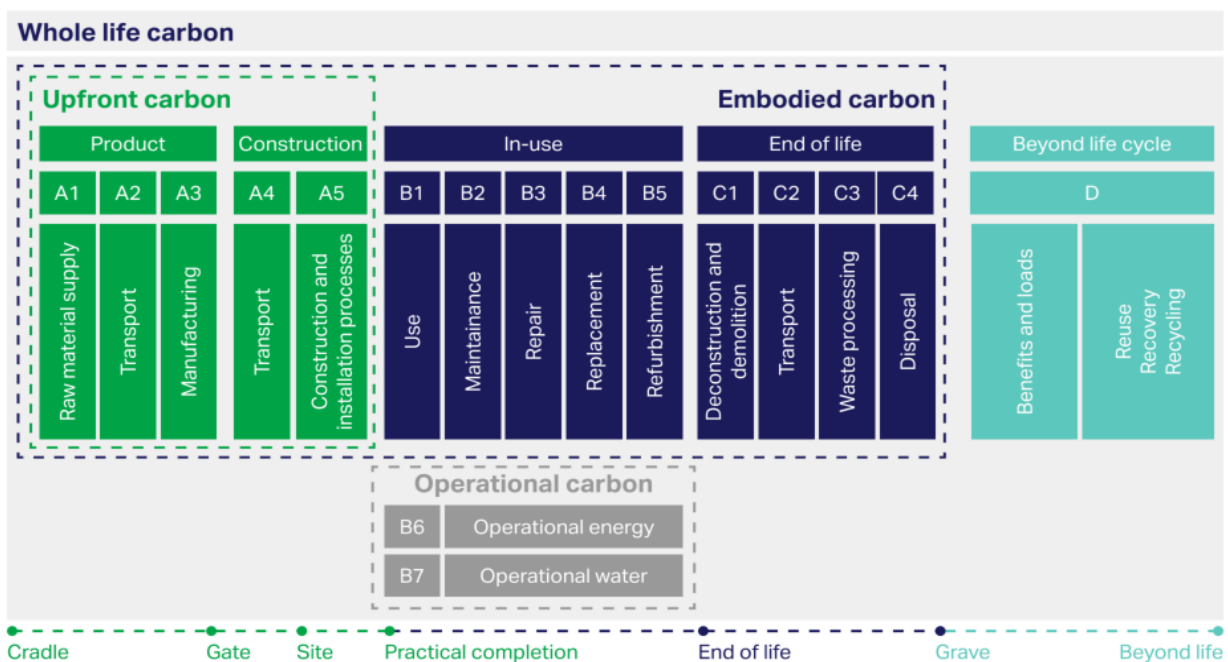
5. Embodied Carbon & Upfront Carbon Emission

5.1 Embodied and Upfront Carbon Emission

Embodied carbon is the carbon footprint of a building or infrastructure project before it becomes operational. It also refers to the CO₂ produced maintaining the building and eventually demolishing it, transporting the waste, and recycling it.

Embodied carbon includes counting of upfront carbon by product use (A1, A2, A3) and construction (A4, A5) of the building, the building's carbon emission in in-use stage and end of life as well as shown in Figure 8.

Figure 8 Upfront, Embodied and Whole life cycle of Carbon



The development has ambitious goals of designing the building with considered materials that lead to a reduction in overall embodied carbon. The development is targeting a reduction in building's upfront carbon emissions by at least 20% less than those of a standard reference building.

Significant opportunities to reduce embodied carbon include;

- > Using cement substitution materials (e.g. Green concrete, concrete with 30% flyash)
- > Reducing façade glazing areas
- > Consideration of not installing suspended ceilings
- > Local and recycled materials sourcing as per availability
- > Potential dematerialisation of fitout (reduce or remove finishes in fitout)

Albert Street is currently targeting the following Green Star requirements

- > The project must achieve the reduction of upfront carbon emissions and offset the demolition works.
- > The building's upfront carbon emissions are at least 20% less than those of a reference building. The building's upfront carbon emissions reductions must occur through good design and material selection.
- > The reduction targets do not include demolition works (i.e., demolition works are not included in the reference or proposed building). A separate demolition offset calculation to be added in calculator.
- > Carbon offsets purchased against the building's upfront carbon emissions from construction cannot be used to show compliance against the 20% reduction.

Design work and in-depth discussions have occurred around the strategy to reduce upfront carbon emissions.

- > For credit achievement under Credit 21, the structural floor system: SP2C, SP2B, SP2D, SP1D, SP1E are the options to achieve minimum 20% reduction (3 points).
- > SP1E can be an option if the exceptional performance is targeted for more credit points (6 points for 40% reduction).
- > Demolition offset (existing building – demolished) needs to be considered.
- > The supplier's emission intensity data and the products data must have appropriate certification as per GBCA guidelines or GBCA approved
- > The required data for upfront carbon emission needs to be aligned with EPiC database and GBCA calculator
- > Input will be required from the entire design team to complete the Upfront Carbon Calculation

5.2 High level Analysis

A high-level analysis has been conducted in relation to the flooring system to understand its contribution in achieving a 20% reduction in Upfront carbon. Different materials that will comprise the floor were analysed (see Table 4).

Table 4 Emission Intensity (kg CO₂e/kg) for structural floor building materials

Structural Floor System Materials/Product	Emission Intensity (kg CO ₂ e/kg)
Envisia 40 MPa	0.108
Green Boral 40 MPa	0.148
REO	1.67
BlueScope Steel (WB)	2.84
InfraBuild (UB)	3.72
Global (Sections)	1.55

- > The Emission Intensity used in the Upfront Carbon Emissions Calculator was from supplier data. The intensity is for kg of CO₂e per kg of materials used. This is different from EPiC database (kg/m³) which is acceptable as per GBCA calculator

- > The reference building (base case) is a worst performing concrete structure in terms of emission intensity and it's a typical concrete construction type used in the industry.
- > Then the percentage reduction was calculated from reference building scenario.
- > The analysis was conducted based on cradle to gate emission scenario (A1-A3), not counting A4 & A5 emission since GBCA upfront carbon emission calculator counts A1-A3.
- > Demolition offset was not counted in this analysis.

5.3 Results

- > The individual floor system demonstrated the following percentage reduction from base case

Table 5 Percentage reductions from reference case/base case

Structural Floor System	Emission Intensity/NLA of each floor (kg CO2e/m ²)	Percentage Reduction of Upfront Carbon Emission (%) from reference case
Reference/Base Case	204	-
SP2A (Low Carbon Content, PT Green Boral 40MPa – Green Mix – 11 m grid)	164	19%
SP2C – (Low Carbon Content Concrete, PT Green Boral 40MPa – Green mix – 9 m grid)	157	23%
SP2B- (Envisia 40MPa – 11 m grid)	134	34%
SP2D- (Envisia 40MPa- 9 m grid)	127	38%
SP1D- (Envisia 40MPa + Global)	77	62%

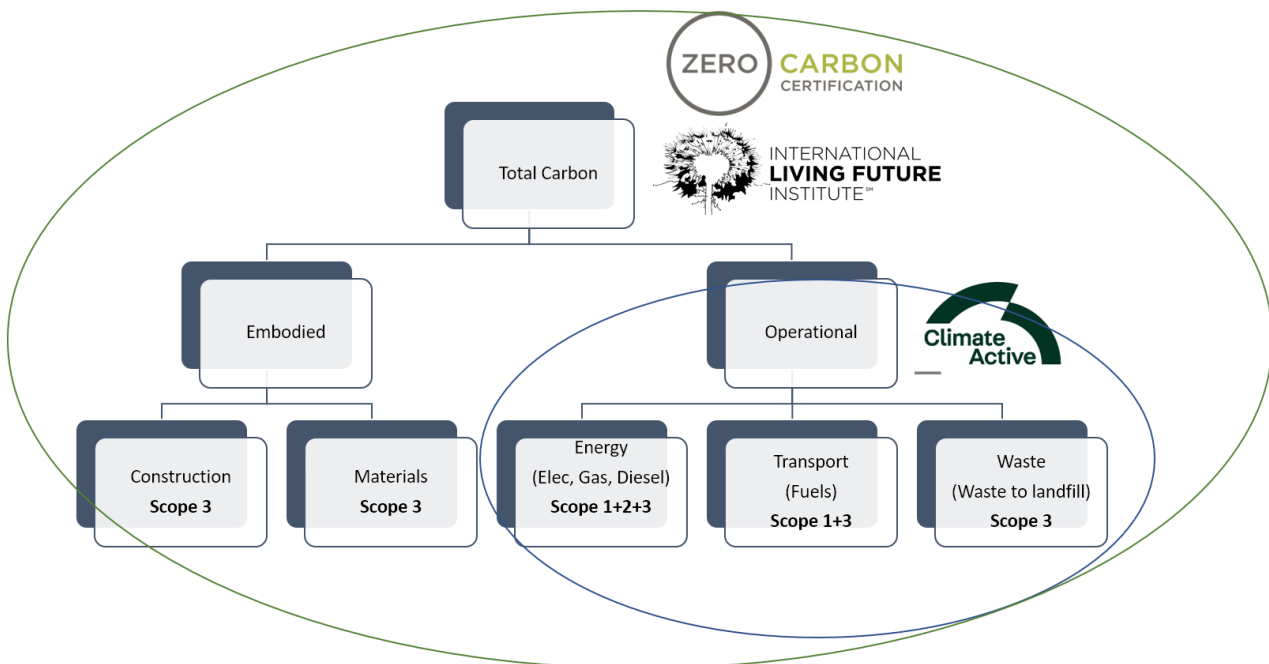
6. Net Zero Carbon

The standards mentioned below provide a potential strategy and guideline for the project should it move forward in pursuing a net zero carbon certification in the future. This currently has not been committed to.

To achieve a complete net zero carbon building, both the embodied and operational carbon need to be counted under International Living Future Institute (ILFI) standards regulations, and the remaining carbon to be offset onsite or offsite to make it net zero (Figure 9).

To achieve an operational net zero carbon building, climate active programs in Australia are to be followed. For a commercial building, a NABERS pathway is an option to reduce the emissions or to limit it within certain energy intensity targets. Further remaining emissions can be offset by investing green energy projects (Figure 9).

Figure 9 Net Zero Concept and Certification (ILFI & Climate Active) *



Net Zero certification under ILFI involves following:

- > Omitting natural gas and on-site combustion
- > Operational energy < 88kWh/m² annum
- > Embodied carbon < 500 kG CO₂/m²
- > Renewables provide additionality to the local grid

Net Zero Certification under Climate Active involves following

- > No minimum benchmark, however, NABERS Energy (base or whole building) must be followed
- > Minimum NABERS 4 stars or more are highly recommended (without Green Power).

6.1 Climate Active Carbon Neutral Standard

Climate Active is an ongoing partnership between the Australian Government and Australian businesses to drive voluntary climate action. The brand represents Australia’s collective effort to measure, reduce, and offset carbon emissions to lessen our negative impact on the environment.

The certification is a new iteration of the Australian Government’s current carbon neutral certification (National Carbon Offset Standard, NCOS) that better reflects the role that government, business and community have to play in working together to address climate change.

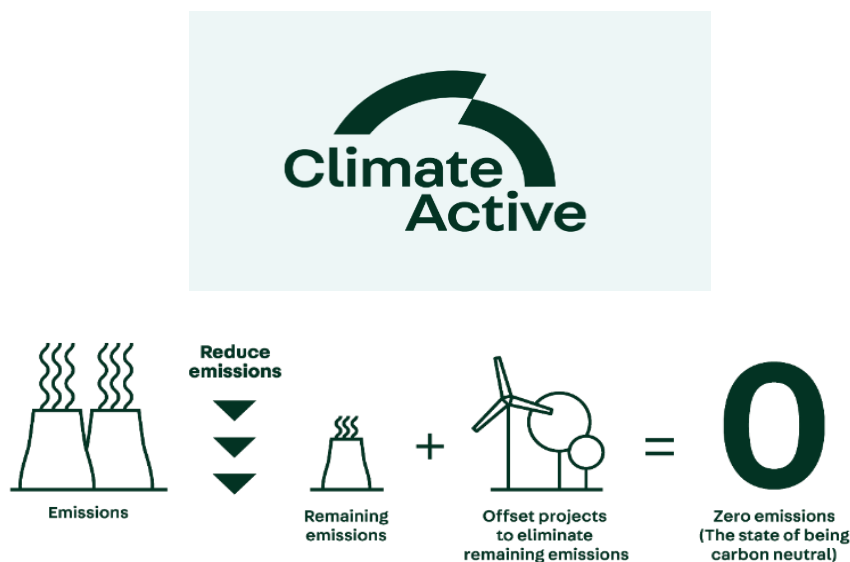
The Climate Active program and Climate Active Carbon Neutral Standard supports and guides businesses as they account for and reduce carbon emissions. The Climate Active stamp helps the community act by making it easier to identify and choose brands that are making a real difference. It’s about making good decisions today, for a more sustainable tomorrow.

The Climate Active carbon neutral certification is one of the most rigorous in the world and has been recognised by the European Union Commission and the World Bank as a mature and effective model to help businesses and incentivise emission reductions.

To become carbon neutral, businesses and organisations calculate the greenhouse gas emissions generated by their activity, such as fuel or electricity use and travel. They reduce these emissions as much as possible by investing in new technology or changing the way they operate. Any remaining emissions can be 'cancelled out' by purchasing carbon offsets.

Carbon offset units are generated from activities that prevent, reduce or remove greenhouse gas emissions from being released into the atmosphere. When the offsets purchased by an organisation equal the emissions produced, they are carbon neutral. The climate active process is shown in Figure 10

Figure 10 Climate Active program and process



6.2 NABERS Pathway

As an extension of a NABERS Energy rating (whole or base building): almost all the data required for a complete carbon account in a building is calculated as part of a NABERS Energy rating. If the building collects the additional data required under the Building Standard (Emission scope) and cancels eligible offset units to reach net zero emissions, then carbon neutral certification (operational net zero) can be sought directly from the NABERS Administrator.

Emission scope

- > **Scope 1 emissions:** refrigerants: NABERS does not capture refrigerant emissions or other fugitive emissions of gases.
- > **Scope 2 emissions:** accounting for renewable energy: NABERS considers onsite renewable energy (e.g., electricity from a solar system) to be zero emission electricity, regardless of the disposal of any Large Generation Certificates (LGCs) created from the generated electricity. In accordance with the Building Standard, any LGCs created during the rating period* or performance period^ that were not voluntarily retired must be added back into the carbon account.
- > **Scope 3 emissions:** NABERS only captures scope 3 emissions from transmission and distribution losses from electricity and gas. In accordance with the Building Standard, scope 3 emissions from water supply, wastewater treatment and waste must be included in the carbon account of a building.

Note

- > Rating period: 12-month period for which data is collected under NABERS
- > The development is positioned well to embrace a net zero carbon status and set a benchmark for large-scale sustainable development in Brisbane. A carbon neutral development would mean buildings designed to operate on only electricity.
- > In order to transition to net-zero carbon buildings in operations, it is necessary to move buildings away from fossil fuels.
- > With a building being supplied by an all-electric energy source, building owners can eliminate energy related emissions through the supply of 100% renewable energy. Traditionally buildings use natural gas for heating hot water, domestic hot water and cooking, due to its availability and low cost. A transition away from natural gas means providing building heating from electric sources such as electric boilers and reverse cycle heat pumps in place of more traditional condensing hot water boilers.

Table 6 outlines possible Net Zero design strategies

Table 6 Net Zero Design Strategies

Initiative	Strategy	Design Requirements
Zero Fossil Fuels	Design out natural gas from the development	<ul style="list-style-type: none"> > Heat pump or electric hot water systems > All-electric HVAC systems > Onsite energy generation by solar PV & BIPV
5.5 Stars NABERS Rating	Target minimum 5.5 Stars NABERS Rating Passive and active design strategies to achieve energy efficiency	<ul style="list-style-type: none"> > Low temperature VAV System: Highly Efficient HVAC system (e.g. EER/COP: 6/7; IPLV> 11/12) > Building fabric and insulation suitable for targeted energy requirement > Thermally broken double-glazed window systems > Best practice energy efficiency equipment, lighting and appliances
Carbon Offsets	Offset residual operational carbon	<ul style="list-style-type: none"> > Refrigerant > Waste to Landfill > Water Supply
Upfront Carbon Emissions	Selection of low carbon materials in design and construction	<ul style="list-style-type: none"> > Low carbon concrete (e.g. fly ash, green concrete); reduce window to wall ratio/optimize glazing









Note: The NABERS pathway links with Climate Active Carbon Neutral Certification process (Net Zero in operation)

7. Green Star Pathway

Albert Street is currently targeting a 5-star rating under the GBCA’s Buildings Tool. See Table 7 for points summary.

5-Star buildings demonstrate Australian Excellence by being a high environmental performer that addresses social issues relevant to the building owner **(35 points)**

Table 7 5-star points summary

	Category	Points Available	5 Star Points Targeted
	Responsible	17	4
	Healthy	14	10
	Resilient	8	5
	Positive	30	9
	Places	8	8
	People	9	5
	Nature	12	4
	Leadership	10	TBC

Please find the Appendix A – Minimum Expectations and Green Star Pathway for pathway summary

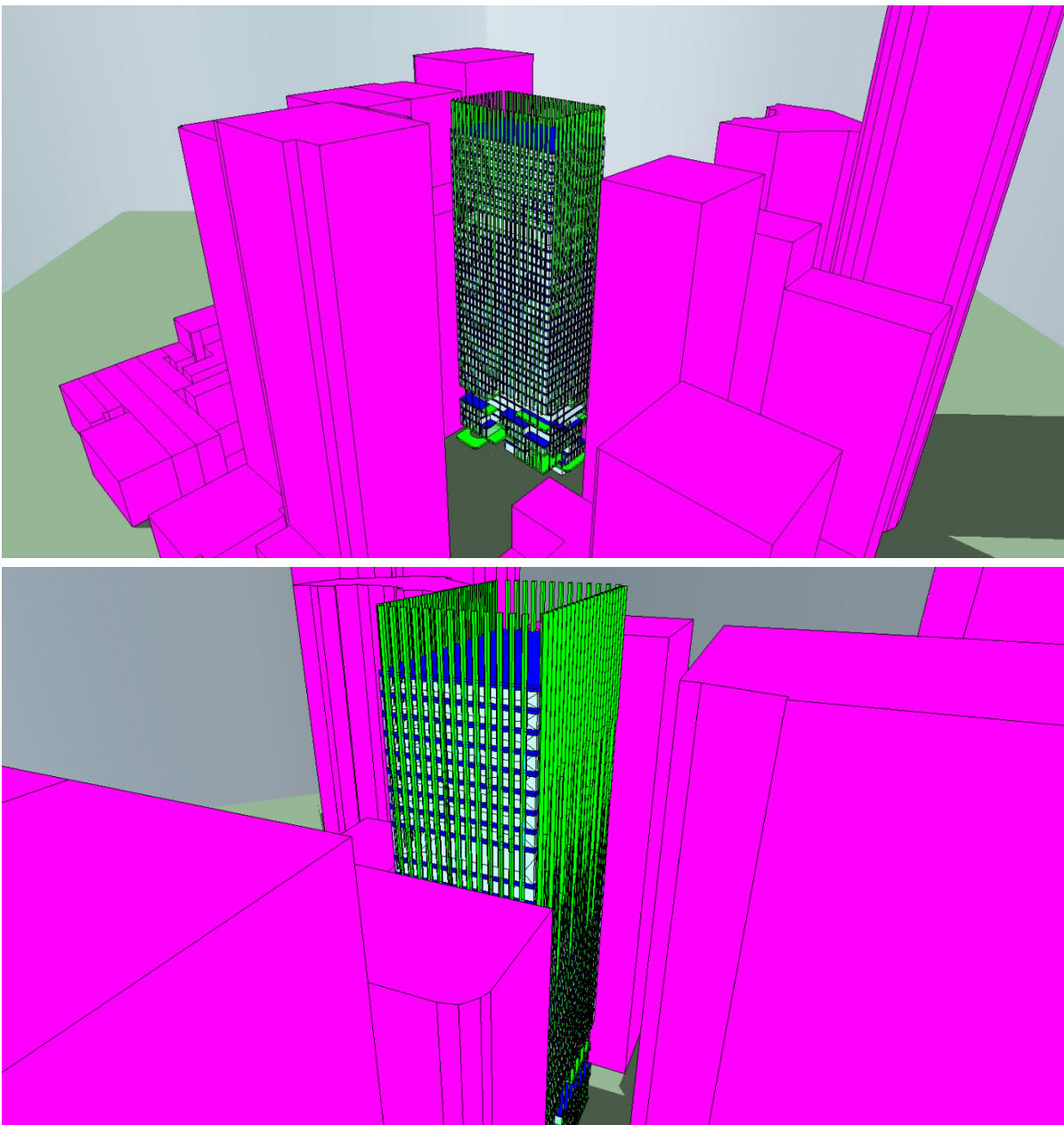
8. NABERS Energy Strategy

An initial NABERS energy model and subsequent energy strategy have been assessed and is as follows.

8.1 Building Form

The images in Figure 11 represent the 3D building model created in the VE software package for the purposes of analysis.

Figure 11 Modelled building geometry



8.2 Assessed Area

The analysis has been based on typical floors. Detail modelling has been conducted for L2 to L8 (representing the low-rise amenities and mixed-use zones) and L36 to represent the office levels. Manual calculations and/or extrapolations from similar projects have been completed for areas such as the basement carpark as well as for systems such as DHW, hydraulic pumps and ancillary ventilation fans. The retail areas have been excluded from calculations.

8.3 Base Case Model

Table 8 Base case model parameters outlines the parameters used as part of the Base Case model which represent the current proposal.

Table 8 Base case model parameters

Item	Parameter
Wall / spandrel thermal performance	R _T 2.0
Roof thermal performance	R _T 4.9
Floor thermal performance	R _T 3.0
Translucent building fabric	U _w 1.8 SHGC0.25
Window-to-wall ratio	50 %
HVAC strategy	Low-temp VAV to internal zones and FCU to perimeter zones served by water-cooled chillers and heat pumps
Air infiltration	0.35ACH _{nat} when HVAC is on 0.70ACH _{nat} when HVAC is off

8.4 Additional Items for Further Investigation

The following are additional initiatives that may be explored as the design progresses to further improve the energy efficiency of the building.

- > **CO2 heat pumps** – this type of heat pumps can be used for domestic hot water production delivering higher COPs.
- > **Night-time purging** – this operational strategy may be beneficial to help the building cool overnight thus reducing the load on the chillers in the morning.

8.5 Results

The NABERS Base Building energy rating was estimate based on the inputs listed in Table 9.

Table 9 NABERS Base Building energy inputs

Input	Value
NLA (m ²)	36,555*

Input	Value
Location	Brisbane
Postcode	4000
Hours/week	50

*NLA has increased since initial NABERS modelling. Updated NLA will be incorporated in future NABERS modelling.

For Queensland, the emissions factors are summarised in Table 10 (source National Greenhouse Accounts Factors, August 2021).

Table 10 Queensland emissions factors

Fuel	Emissions Factor
Gas (kgCO ₂ -e/GJ)	60.33
Diesel (kgCO ₂ -e/L)	2.85
Electricity (kgCO ₂ -e/kWh)	0.80

Based on the inputs the NABERS calculated outcomes are summarised in Table 11 for the 5.5-star target.

Table 11 Summary of energy consumption, greenhouse gas emissions and NABERS rating

Fuel	5.5-star scenario
Electrical consumption (MJ/year)	8,145,454.73
Electrical consumption (MJ/m ² /year)	224.49
Diesel consumption (L/year)	1,600
Total GHG emissions (kgCO ₂ -e/year)	1,810,101.05
Total GHG emissions (kgCO ₂ -e/m ² /year)	49.63
NABERS Base Building energy rating	5.72

9. End of Trip Facilities

The building’s design and location encourage occupants and visitors to use active, low carbon, and public transport options instead of private vehicles

Credit 27 – Places - under the Green Star Buildings Tool requires that certain End of Trip (EOT) facilities be provided to regular building occupants. The following requirements are considered a *Minimum Expectation* and thus must be achieved for the building to be certified.

9.1 Showers

The EOT Facility requirements for Albert Street is as follows:

Table 12 EOT Facility Requirements

Occupants	Showers
0 - 49	1 Unisex
50 - 99	2
100 – 200	4
200+	Additional 1 per 200 Occupants above 200

The current NLA assumption of 43,030 m² indicates that there will be 4,303 occupants with an assumption of 10m² per person. As a result, a minimum of **26** showers will be required when calculated against requirements.

Furthermore:

- > All showers must be at least 900 mm x 900 mm to enhance usability. Showers and bathrooms provided to meet statutory accessibility requirements do not count towards the minimum showers required to meet this Minimum Expectation.
- > Facilities should be located within easy access of the building and close to cycle parking (where provided).

9.2 Lockers

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

Lockers provided within tenancies, not in changing rooms, do not count toward this credit.

With 4,303 regular occupants, a minimum of **538** lockers will need to be provided

It is important to note that the building will also need to comply with Queensland Development code MP 4.1 – Sustainable Buildings, NCC 2019 Volume 1 requirements and Building Certifier comments for EoT requirements.

10. Water

Water usage onsite will be reduced via:

- > Specifying fixtures with a high WELS rating (Table 13) **OR**
- > A 15% reduction in potable water when compared to a reference building. The potable water consumption on site will be the use of sanitary fixtures, appliances, HVAC, irrigation systems and the like.

Table 13 Fixture Type and WELS rating

Fixture Type	WELS Rating
Taps	5 star
Urinals	5 star
Toilets	4 star
Showers	3 star
Clothes washing machine	4 star
Dishwashers	5 star

The project is also targeting an average annual stormwater discharge (ML/yr) of 40% across the whole site and a reduction in pollutants.

Table 14 Pollution reduction targets

Pollutant	Reduction Target (% of the post development annual average load)
Total Suspended Solids (TSS)	85%
Gross Pollutants	90%
Total Nitrogen (TN)	45%
Total Phosphorus (TP)	65%

This is to be attained through appropriate filter and treatment equipment.

11. Climate Positive

Green Star Buildings aims to drive all buildings to be net zero carbon in operations by considering both operational and embodied carbon emissions. The approach to net zero carbon buildings in Green Star Buildings is known as the Climate Positive Pathway. This path aims to deliver buildings that are fossil fuel free, powered by renewables, highly efficient, built with lower carbon materials and offset with nature.

The Climate Positive Pathway ensures that buildings registered under this tool have ever increasing stringent targets regarding carbon.

As this project is targeting a 5 Star Green Star rating, it must meet the following minimum targets,

Table 15 Minimum targets

Category	Credit	Minimum Requirement
Positive	Upfront Carbon Emissions	> The building has 10% less upfront carbon emissions compared to a standard building from materials
	Energy Use	> The building has at least a 10% lower energy consumption than one built to the National Construction Code 2019.
	Energy Source	> The building provides a Zero Carbon Action Plan
	Water Use	> The building has at least 15% reduction in potable water usage when compared to a reference building (depending on building class in this case Office) or has installed water efficient fixtures and appliances

Albert Street is intending to exceed the minimum targets set out above. They are as follows:

- > Upfront Carbon: Demolition Offset and 20% reduction in upfront carbon emissions over a typical building (3 points)
- > Energy Use: Commitment Agreement and NABERS 5.5 Stars with 25% modelling margin (3 points) OR Reference building pathway where the building uses at least 20% less energy than a reference building
- > Energy Source: Zero Carbon Action Plan & Renewable electricity (base building) – minimum 5 years contract (3 points)

Please see Appendix C – Climate Positive Pathway for information.

12. Climate Resilience

Albert Street is being designed to respond to the direct and indirect impacts of climate change. This is being addressed through the Green Star Building Tool Credit 16 Climate Change Resilience.

It is a requirement that the project team develop a project-specific climate change risk and adaptation assessment for the building. The risk assessment requires the following to be completed:

- > Perform the assessment using the information from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report Representative Concentration Pathway 8.5 (RCP 8.5) or most recently published version
- > Perform the assessment using two timescales that are relevant to the project's anticipated lifespan: one medium-term timescale between 2040 to 2050 one long-term timescale between 2070 to 2090
- > Identify the primary and secondary climate change variables from Table 2 in AS5334:2013 Climate change adaptation for settlements and infrastructure 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 register of risks to the building and surrounding infrastructure, and provide treatment options for risks identified as 'extreme' or 'high'
- > Alignment with the Australian Standard AS 5334:2013 Climate change adaptation for settlements and infrastructure
- > Follows the principles of risk management outlined in the Australian and New Zealand Standard AS/NZ ISO 31000:2009 Risk Management.

The key outcome when completing the risk analysis is to:

- > Eliminate risks rated as 'Extreme' through specific design responses
- > Eliminate all risks rated as 'High' 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.

A high-level climate change risk screening and project team information dissemination session has been completed. See Appendix D – Climate Resilience. A future in-depth climate change risk assessment will be conducted with the full design team.

13. Environmental, Social and Governance (ESG)

QIC recognises the environmental, social, and economic benefits of embedding sustainability in the design and operation of its properties. QIC have subsequently developed an Environmental Social Governance (ESG) Brief that is helping to inform the design approach to new and existing buildings. This determines quantifiable carbon reduction results that is assisting QIC to meet its own Net Zero trajectory but also acts as an exemplar to the broader market on what Environmentally Sustainable Design (ESD) Governance looks like.

For this specific project the overarching ESG framework relates to four guiding Pillars:

- > Resource Efficiency & Circularity
- > Climate Change
- > Sustainability Value Chain
- > Community Investment

These Pillars have influenced the ESD design through the Green Star Strategy currently being developed. This creates a more holistic response overall that not only speaks to the design elements, which are critical, but also speaks to those broader sustainability agendas around social impact and awareness to do with modern slavery, generating and potentially influencing a sustainable value chain as well as accelerating the demand in the market on materiality as it translates to a circular economy.

The building design seeks to capture a carbon reduction by accounting for the embodied carbon elements through material choices as well as good sustainable design and thermal efficiency within the façade and overall building envelope.



Overwhelmingly, however, this project seeks to speak to community investment. Producing a building that sits within the inner-city urban environment that has been led with the influence of Traditional Custodians and is responsive to building in relation to Land, Sky and Water.

Local procurement seeks to empower and promote the health and wellbeing of the local community and specifically the occupants of this building. It is a considered approach that aligns with designing for inclusion and wellbeing that connects and interacts with nature, lowering heat island effect and encouraging behaviour change through sustainable transport options which are part of the overall precinct plans relating to Cross River Rail.

14. Indigenous Design Principles

Indigenous design principles aligned with Country Centred Design is shown in Table 6.

Table 16 Indigenous Design Principle and its alignment with country centred design

Indigenous Design Principle	Binbilla Rainforest Story
<p>Grounding people in country</p> 	<p>Building with Land, Sky and Water</p> <ul style="list-style-type: none"> > Connection to Water: Landscaping brief reflects indigenous design inclusions throughout, on and on top of the building including on the ground – ‘Creek’, understorey – ‘rainforest’ and rooftop ‘peak’. This biophilic design weaved throughout the tower can create comfortable habitats for native flora and fauna. Referencing the ‘Binbilla’ rainforest story up through the tower. Showcasing the sound, feeling and visual connection to flora and fauna as well as the movement of water. > Connection to Land: Embed materials and layers of meaning into the built form of the building to make it a part of country. Allow the building to encapsulate feeling and characteristics of past places around the Magandjin region. Specifically, the ‘Binbilla’ story. > Connection to Sky: Rooftop used as networking/function with biophilic design aligning to that below – Land.
<p>Care for Country</p> 	<p>Health and Wellness</p> <ul style="list-style-type: none"> > By embedding sensory experiences help repair and connect First Nation’s people to Country and world view. > Wellbeing and relationships use the eroded podiums and amenity areas for meeting, networking, and recreational and wellness spaces. > The eroded podiums form visually connects all peoples to elevated levels of native flora, which represent different layers of the ‘Binbilla’ story. > Landscaped areas connect people to the earth by providing moments for people to take off their shoes and have their feet touch natural grass or natural materials. > Rooftop area can be leased/used for networking events, functions. > Provide spaces that allow for the transfer and ongoing preservation of First Nations knowledge of culture, understanding horticulture and cosmology.

Indigenous Design Principle

Binbilla Rainforest Story

Journey & Threshold



Welcoming and inclusive; Integrated Mobility

Entranceway and subsequent foyer space will be impactful through:

- > Accessibility for all abilities and ages
- > Biophilic design – using natural colour, pattern, and texture representative of the natural world.
- > Dramatic entrance with lots of landscaping throughout eroded podiums that weave up the façade of the building - evolving.
- > Spaces created through hard and soft landscaping features that present opportunities for meditation, reflection, creating journeys through a natural Australian landscape
- > Establishing a sense of perspective and place with Country by thoughtfully locating viewing spaces on roof terrace orientating people to significant geological and culturally significant sites.
- > Star charts located in the ground plane or overhead shade structures explaining First Nations understanding of astronomy.

Materiality



Circular Economy

- > Allow for surfaces within the building to have embedded meaning that alludes to specific 'World views'
- > Materiality/art/surface/texture that references First Nations cosmology.
- > Have communal area perhaps with sandstone brought from Ferny Hills as part of yarning circle outside to have meetings in and around or just as a meeting place
- > On site composting system that takes food waste and converts it into compost for the gardens.

Indigenous Design Principle

Binibilla Rainforest Story

Eco-system



Biodiverse and Regenerative

Honouring ecology by:

- > Protecting biodiversity
- > Potential selection of native plants to attract fauna and to support a broader ecosystem
- > Erosion signifying the 'Binibilla' Rainforest canopy
- > Landscaping with indigenous regional flora,
- > Acoustic soundscapes,
- > Create a behavioural and cultural connection to Country

Eco-Systems Educational

Like many proponents of development there is an ecological expectation that remnants of natural vegetation known to be indigenous to the area / site should be used as the dominant species to replant and restore some semblance of what has gone before. This should be prioritised in landscaping brief.

- > To enhance biodiversity, plant species that attract native bees and other insects
- > Paving area at ground level is an opportunity to embed First Nations story within pavement

Geographical Markers



- > Positioning /orientation of building –BIPV to assist in solar efficiency – education piece and focusing on net zero emissions
- > Fins on façade connecting to First Nations Cosmology
- > Connecting to regional landscape and embedded stories
- > Views connecting to geological and culturally significant sites

Sustain Nature Ecology



Resilient and Adaptable

- > Albert street thrives despite short term shocks from weather and acute events, and can adapt to longer term stresses like climate change
- > Entranceway provides shelter and is raised to mitigate any potential flooding
- > External landscaping provides shade & protection from urban heat island effect
- > The landscape area, the terraces and the eroded podiums use plants native to Southeast Queensland to create an authentic representation of place.

Indigenous Design Principle

Binbilla Rainforest Story

Shared Knowledge Embedded in Place



- > Albert street thrives despite short term shocks from weather and acute events, and can adapt to longer term stresses like climate change
- > Entranceway provides shelter and is raised to mitigate any potential flooding
- > External landscaping provides shade & protection from urban heat island effect
- > The landscape area, the terraces and the eroded podiums use plants native to Southeast Queensland to create an authentic representation of place.

Note

- > Detailed information and strategies will be further explored in the design development phase

15. Market Transformation and Leadership

Albert Street is targeting Market Transformation and Leadership points under the Green Star Buildings Tool. 5 points are available to targeted and claimed under Market Transformation if the project team is able to demonstrate that the initiative aligns with the GBCA's scoring metrics:

- > **Control of outcome:** the initiative delivers a guaranteed outcome
- > **Length of impact:** the initiative delivers long-lasting impacts
- > **Scale of impact:** the scale of impact is significant. For example, the outcome may satisfy multiple UN Sustainable Development Goals
- > **Transformation potential:** the initiative has the potential to transform an industry or sector
- > **Value generation:** the initiative can deliver benefits to both stakeholders (e.g., building owner or occupants) as well as the general public

The project team is currently investigating potential market transformation points. Some high-level discussions to date include targeting points in relation to:

- > ESG items
- > Stormwater management
- > Indigenous Inclusion through design

Unlimited Leadership points may be targeted if they promote achievements that are considered leading practice in Australia and meet the requirements of the Leadership Challenges developed by the GBCA.

- > The project team identifies and implements circular economy principles and initiatives
- > Minimisation in the use of fossil fuels, such as diesel, petrol or LPG, for powering construction machinery, equipment and site offices during on-site construction activities
- > High percentage of building's products are comprised of responsibly manufactured products and use Environmental Product Declarations (EPD) to show verification of low carbon and/ or sustainable status.

16. Conclusion

To achieve sustainable and environment friendly with an aim to de-carbonise the buildings, the sustainability initiatives need to be considered in schematic and design development phase of the project.

The project may consider some or all of the sustainability initiatives listed in the report. Based on the decision of the project team, a further update of the report can be provided to the project team.

The project is targeting 5 Star Green Star (Australian Excellence) Green Star Buildings v1, the new holistic Sustainability rating tool developed by GBCA.

The project is also targeting minimum 5.5 Star NABERS for energy.

This report can be used as preliminary Sustainability Initiative report for Council's development approval (DA approval) requirement.

Exclusion

- > NCC Section J 2019 volume 1 Amendment 1 Energy Efficiency Compliance items are not listed in the report. This will be reviewed in subsequent phases in the design.
- > Detail specification and modelling items of Green Stars are not included in this report. These will be conducted in design development phase
- > Any carbon emission reduction strategies and offset policy review to be conducted in subsequent phases of the project
- > An update on indigenous design principle, leadership and market transformation items of Green Star will be further explored in design development phase

Appendix A – Minimum Expectations and Green Star Pathway

Minimum Expectations

There is a set of *Minimum Expectations* that must be targeted by all projects looking to achieve a Green Star rating. *Minimum Expectations* are not awarded points, therefore, to achieve a rating the project must accumulate points in addition to the *Minimum Expectations*.

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
- Be verified to work

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

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.
	Responsible Resource Management	The building must have appropriate spaces for waste management and an appropriately sized loading dock.
Healthy	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 an adequate amount of outside air.
	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 are limited through an acoustic comfort strategy.
Resilient	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.
	Upfront Carbon Emissions	The building has 10% less upfront carbon emissions compared to a standard building from materials.
Positive	Energy Use	The building has at least a 10% lower energy consumption than one built to the National Construction Code 2019.
	Energy Source	The building provides a Zero Carbon Action Plan.
	Water Use	The building has at least a 10% or 15% reduction in potable water usage when compared to a reference building (depending on building class) 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 class 2 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.

There are additional carbon related expectations that are applicable to projects based on their star rating and time of registration or certification (see Climate Positive Pathway).

Managing Minimum Expectations

There may be situations in which a project cannot achieve a *Minimum Expectation* for situations beyond their control, or due to the project's typology. Where an exception or a modification is sought by the project team:

- The project team must submit a Technical Question prior to the submission
- The project team will be asked to justify the reason and nominate a slightly lower level of performance that they will need to meet, or an alternative credit from a list
- The project team must also comply with any instructions for justifying their waiver that may be outlined in the query response
- Waiving *Minimum Expectations* is done via exceptional circumstances and may require additional consultation with our governance process. For more information, contact the GBCA.

Albert St CRR Development

Green Star Preliminary Matrix

Green Star Buildings V1 (Version: Rev B, Dec 2021)

Rev 05 Update	Issue Date	17/11/2022
---------------	------------	------------



Summary	Targeted	Definitions
Targeted Green Star rating	5 Star	Minimum Expectation These are elements of certain credits that must be targeted by all projects looking to achieve a Green Star rating
Credit Achievement	44	Credit Achievement Achieving the <i>Credit Achievement</i> criteria and requirements earns the project a predefined amount of points for each credit.
Exceptional Performance	1	Exceptional Performance Achieving the <i>Exceptional Performance</i> criteria and requirements earns the project points additional to the points earned under <i>Credit Achievement</i>
Leadership points targeted	0	
Total points targeted	45	(including +10% buffer + If we miss some points)
Total points required	35	

Credit Number	Credit Name	Pre-Design Consideration	Credit Tier	Targeted	Credit Elements	Credit Requirements	Responsibility	Project Stage	Consultant Comments
Responsible									
01	Industry Development	1	Credit Achievement	1	Green Star Accredited Professional	The Green Star AP must: • Act as the 'Project Contact' for the purposes of communicating with the GBCA; • Provide advice, guidance and support from project registration through to certification to the rest of the project team; and • Ensures the project team has access to the information covering Green Star principles, structure, timing and process including: – Eligibility – Green Star strategy – Technical Questions – The submission – Certification process – Green Star branding and marketing rules.	ADP Sustainability	Practical Completion	GSAP engaged for Green Star Strategy
					Financial Transparency	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.	Client	Schematic Design	see Proposal & Scope
					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.	Cost Consultant	Whole Project	QS engaged - All consultants must input - WT engaged as cost consultant
							Project Manager	Whole Project	RCP to coordinate
02	Responsible Construction	N/A	Minimum Expectation	must comply	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. • For projects valued at less than \$10 million, the responsible party must have an Environmental Management System (EMS) that complies with either the NSW Environmental Management System Guidelines or another recognised standard. • For projects valued at over \$10 million, 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	Client	Tender	EMS sited in tender docs
					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.	Head Contractor	Tender	Enures EMS included in Tender docs
					Construction and demolition waste	Projects must divert at least 80% 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.	Head Contractor	Pre-Construction	EMP included in Tender Docs
					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.	Head Contractor	Demolition & Construction	Sited Disclosure Statement sited by HC - standard practice
		1	Credit Achievement	1	Construction and demolition waste	Credit Achievement: 90% of Construction and demolition waste must be recycled.	Head Contractor / Waste Contractor	Demolition & Construction	Copies of Training docs to be supplied as evidence to GSAP
					Metering and monitoring	Metering : 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 and 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). 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 park areas) is smaller than 1000 m ² , unless specialist equipment with an annual power consumption of 100kWh/annum. If accessible to the building manager, the utility meter is readily available it must be the responsibility of the building manager to ensure the necessary data collecting equipment above	ADP Services	Design Development	Compliant with NABERS metering and monitoring requirements
						ICA (if appointed)	Design Development	Verification and Handover process	

N/A	Minimum Expectation	must comply		the utility meter is acceptable provided it meets the accuracy and data collection requirements above. Monitoring: The monitoring system must accurately and clearly present the metered data and include reports on consumption trends for the automatic monitoring system. The monitoring strategy must be developed in accordance with a recognised standard, such as CIBSE TM39 Building Energy Metering. The monitoring system must raise an alarm where the energy or water use increases beyond certain parameters and automatically issue an instant alert to the facilities 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	Head Contractor	Procurement	Provide monitoring strategy to GSAP
			Commissioning and tuning	The project team must perform the following prior to construction: <ul style="list-style-type: none"> Set environmental performance targets; and Perform a services and maintainability review During construction and practical completion: <ul style="list-style-type: none"> Commission the building; and Engage building tuning service provider After practical completion: <ul style="list-style-type: none"> Tune the building over the next 12 months 	ADP Services	Pre-Construction	Early in DD phase ICA engaged to ensure design documentaion and coordination with services team.
					Head Contractor	Comissioning	
					ICA	Post-occupancy	Early in DD phase ICA engaged to ensure design documentaion and coordination with services team.
			Environmental performance targets and information	At design, the project team must set and document environmental performance targets for the project outlining: <ul style="list-style-type: none"> The targets for the project energy and water consumption for all nominated building systems; Metering diagrams for energy and water, and expectations relating to the monitoring of energy and water, as well as indoor environment quality, in operation; Descriptions of the functions, intended operation and maintenance requirements of nominated building systems; and Design airtightness targets as described in the Energy Use credit. Examples of common methods for demonstrating compliance with this is through the development (early in the design phase) of a design intent report or an owner's project requirements (OPR) document. The document must provide a clear description of the basic functions, operations, and maintenance of the nominated building systems. It lists targets for the project energy and water consumption for all nominated building systems	Client	Practical Completion	Design intent targeted in NABERS and Green Star Pathways. Coordinated with Metereing & monitoring strategy provided by HC
			Services and maintainability review	Before construction, the project team must conduct a services and maintainability review of the building. The review must include the head contractor, the owner's representative, the commissioning agents, the design consultant and the facilities manager, where possible. The review must address the following: <ul style="list-style-type: none"> Commissionability; Controllability; Maintainability; Operability; and Safety of all systems. The services and maintainability review and its outcomes must be summarised in a 'Service and Maintainability Report'. It must be signed off by all involved parties.	ICA (if appointed)	Pre-Construction	Early in DD phase ICA engaged to ensure design documentaion and coordination with services team.
					ADP Services	Pre-Construction	Coordination amongst all disciplines
					Head Contractor	Pre-Construction	Coordinated resopnse
			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: <ul style="list-style-type: none"> 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 	ADP Services	Tender Documentation	Air Tightness Testing Agent to coordinate with Façade consultants and with ICA
					ICA (if appointed)	Practical Completion	Early in DD phase ICA engaged to ensure design documentaion and coordination with services team.
		Head Contractor	Practical Completion				
Airtightness testing	Air tightness must be included 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 demonstrated. Pre-Construction: A plan for stages of commissioning for air tightness must be defined and included in the project timeline; Construction: - The building must undertake an airtightness testing in accordance with the pre-construction phase air-testing plan. Testing must be carried out by a suitably qualified practitioner. If a quantitative test to determine an air permeability rate is used, it must be conducted as per AS/NZS ISO 9972:2015 Thermal performance of buildings determination of air permeability of buildings - Fan pressurisation method. On sections smaller than the whole building quantitative procedures such as ASTM E1186-17 may be used	Head Contractor, Air tightness Testing Agent, Façade Consultant	Practical Completion	Air Tightness Testing Agent to coordinate with Façade consultants and with ICA - confirm comes under ADP Mech Scope *NB Facade Consultant Input: For Credit 3 Air infiltration tests would be a requirement in the spec to meet the performance we set. We may need to be careful on the lower levels where we			
Building information	Operations and maintenance information The project team must provide operations and maintenance information for all nominated building systems to the building owner (or designated representative). This means: <ul style="list-style-type: none"> Appropriate content for all nominated building systems has been developed and provided; The appropriate user group has access to the information they require to deliver best practice environmental outcomes; and Guidance on keeping information up to date is provided to the facilities management team in these documents. Building log book The project team must develop a building log book to present to the building owner (or designated representative) before practical completion of the project. The building log book must: <ul style="list-style-type: none"> Be developed in line with CIBSE TM31: Building Log Book Toolkit; Cover all nominated building systems; and Include links or references to all relevant operations and maintenance information. Building user information Building user information is a source of up-to-date, relevant information for the building user. Building user information must be able to be updated and edited by the facilities management team, or other appropriate stakeholder groups, to ensure it remains current and relevant to users throughout the life of the building. All building user information must be available to the building owner and facilities management team at the time of practical completion.	Head Contractor	Practical Completion	All documents to be provided by HC			
		Head Contractor	Practical Completion	All documents to be provided by HC			
		Head Contractor	Practical Completion	All documents to be provided by HC			

		1	Credit Achievement	1	Soft Landings Framework OR The soft landings approach is described in 'The Soft Landings Framework Australia and New Zealand' published by CIBSE ANZ, based on the BSRIA guide. • The soft landings framework has five parts: – Briefing (Stage 1) – Design development (Stage 2) – Pre-handover (Stage 3) – Initial after care (Stage 4) – Years 1 to 3 aftercare (Stage 5) Stages 1 to 4 are required for purposes of this credit. Stage 5 is optional, but highly encouraged. The Soft Landings Framework document contains sample worksheets. Project teams are required to fill them in for Stage 1 to 3. Project teams are required to describe the actions that will be taken for Stage 4. The facilities management team (or building owner's representative) for the building must be involved in the soft landings approach. This means, the facilities management team must: • Be involved in commissioning and handover process; • Take part in the development of a brief technical guide for the building and the building operations and maintenance manual; • Sign-off on the operations and maintenance manual; and • Be trained before handover. The training must include a demonstration of the building management system and any control mechanisms. The demonstration must be comprehensive and allow for additional items to be developed, such as log books or other manuals. The facilities management team must have continued access to critical design and construction team members for two years after practical completion to allow for transitioning the responsibility for the building.	Client ADP Services ICA (if appointed)	Whole Project	
					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. The qualified ICA role can be fulfilled by one or multiple persons, if all meet the requirements laid out above. It can also be fulfilled by a person who is part of the client's organisation, if the person is qualified to do so. An independent commissioning company may also meet these requirements.	Client	Design Development	Early in DD phase ICA engaged to ensure design documentaion and coordination with services team. QIC informed to engage ICA - cost uplift
04	Operational Waste	N/A	Minimum Expectation	must comply	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.	Waste Consultant	Schematic Design	TTM already engaged by QIC Archi - Waste Storage space in basement beside loading, input provided by Traffic & Waste Consultants
					Architect	Schematic Design	TTM already engaged by QIC Archi - Waste Storage space in basement beside loading, input provided by Traffic & Waste Consultants	
					Waste Consultant	Schematic Design	TTM Strategy Complies	
					Architect	Schematic Design	Arch - Waste Storage space in basement beside loading, input provided by Traffic & Waste Consultants	
					Sign-off 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 Development	Ongoing operational waste to be determined by QIC - Cost applies
05	Responsible Procurement	1	Credit Achievement	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.	Client	Design Development	This aligns with ESG Biref Sustainable Value Chain- QIC internal Procurement Strategy to be issued to ADP as ESG evidence
					Quantity Surveyor	Design Development	WT Responsible	
					Head Contractor	Procurement		
					Client	Design Development	Procurement Plan must be supplied to ADP to support ESG Tracker	
					Responsible Procurement plan The project must develop and implement a plan to mitigate and manage identified risks and drive implementation of identified opportunities. This can be part of an organisational plan or a stand-alone plan. The plan must: • Identify environmental and social procurement project-level objectives reflecting the risks and opportunities assessment; • Identify targets related to environmental, social and economic objectives in the supply chain and a measurement process for tracking these; • Stipulate clear actions to mitigate and address at least one risk and one opportunity identified in its supply chain; • Establish clear governance structures to ensure implementation of the plan including roles and responsibilities for implementation and monitoring of all procurement and contracts; and • Establish monitoring requirements on site as well as internal reporting requirements to measure impacts and outcomes as well as benefits realised. Contracts must require data collection, monitoring and reporting; and a framework for incentivising the achievement of plan.	Quantity Surveyor	Design Development	WT Responsible - Update cost planning
06	Responsible Structure	3	Credit Achievement	0	Responsible Structural Components 50% of all structural components (by cost) meet a Responsible Products Value score of at least 10.	Head Contractor	Procurement	
					Structural Engineer	Tender Documentation	WT to provide update and confirmation if achievable LCA A1 - A5 undertaken for full life cycle analysis to bridge gap between structure and other to achieve embodied carbon reduction in Positive Category	
					Quantity Surveyor	Tender Documentation		
					ADP Sustainability	Tender Documentation	Include Responsible Product Guide Requirements in Specifications and Schedules	
					Responsible Structural Components 10% of all products in the structure (by cost) meet a Responsible Products Value score of at least 15; OR	Head Contractor	Procurement	
						Structural Engineer	Tender Documentation	
						Quantity Surveyor	Tender Documentation	

10	Clean Air	N/A	Minimum Expectation	must comply	Ventilation system attributes Separation from Pollutants: The 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 Cleaning ductwork: All new and existing ductwork that serves the building must be cleaned prior to occupation in accordance with a recognised Standard	ADP Mechanical	Design Development	All intakes, flow rates and discharges will comply
					ADP Mechanical	Tender Documentation	Will comply	
		ADP Mechanical	Tender Documentation					
		ADP Mechanical	Design Development	Mechanical Services for Concept detailed in Return Brief Issued 20220603 Please refer to ESG folder #9				
2	Credit Achievement	2	Provision of outdoor air (All except Resi) All Buildings: Prescriptive Approach : The building must be provided with at least 50% improvement of outdoor air required by AS 1668:2012 to each space in the regularly occupied areas. To demonstrate compliance, 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. The default occupancy is to be determined by the project team - any assumptions made must be justified within the submission. Where the occupancy density is unknown, projects must utilise the occupancy rates prescribed within Table A1 Appendix A of AS 1668:2012. Demand Control Ventilation is acceptable for energy performance, outside air; OR, Performance based Approach: For this option, the system must be capable of providing enough outdoor air to maintain CO2 levels at or below 800ppm within each space in the regularly occupied areas at all times in the default 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	ADP Mechanical	Tender Documentation			
			ADP Mechanical	Tender Documentation				
			ADP Mechanical	Design Development	Mechanical Services for Concept detailed in Return Brief Issued 20220603 Please refer to ESG folder #9 Adequate access and filtration will be provided as required for credit point			
			ADP Mechanical	Design Development	Prescriptive pathway is proposed at this stage			
11	Light Quality	N/A	Minimum Expectation	must comply	Lighting Comfort Lighting within the building must meet the following criteria: • All LED lighting installed has no observable effect as per the standard IEEE 1789-2015 - IEEE Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to viewers • Light sources must have a minimum Colour Rendering Index (CRI) of 85 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, also referred to as Standard Deviation Colour Matching (SDCM)	ADP Services	Tender Documentation	All criteria to be targeted. Tech data to be provided from the specified suppliers to confirm compliance with flicker free drivers, CRI and SDCM Ensure design intent is maintained
					ADP Services	Procurement		
		ADP Electrical	Tender Documentation	Lighting design to target prescriptive method 1 for general regularly occupied areas. Lighting design to target performance method for all task				
		Architect	Tender Documentation	Arch- regular glazing provided around the perimeter including to the core, roller blinds to be integrated around the façade for glare control. High window wall ratio, 50%WWR Regular glazing on all office space on all façades based on 2.4 module - solid module and glazed module portions Narrative required - letterhead responding to each of those items listed				
2	Credit Achievement	2	Glare Glare from light sources must be limited within the regularly occupied areas (primary and secondary). Three options are provided for demonstrating compliance with this requirement; a performance method, and two prescriptive methods. A combination of methods can be used to demonstrate compliance to suit different spaces. Prescriptive method 1 The light sources must be fitted with baffles, louvers, translucent diffusers, ceiling design, or other means that obscure the direct light source from all viewing angles of The project team is required to show how the building's design: • Maximises the number of occupants that are in or near daylight areas during their daily activities for all building types; • Ensures regularly occupied spaces are in reasonable proximity to glazed façades, windows or skylights; • Controls or mitigates glare in the daylight spaces; • Maximises daylight to spaces that prioritise learning, healing, and living: – For schools, how all classrooms have access to a view and daylight – For hospitals, how all patient areas have access to a view and daylight – For apartments, how in 95% of all apartments, the living rooms and all bedrooms have access to a view and daylight. • Provides building occupants with unrestricted access to daylight indoor common spaces. As part of the submission, the project team is required to submit: • A narrative describing the building's daylight, view and glare control strategy; • A simple calculation of the amount of space that has adequate daylight as a proportion of the primary areas of the building; and • An assessment against the five requirements above. Where the above requirements are unable to be met, the project team must: • Outline the barriers to achieving the requirements and the measures taken to mitigate loss of daylight quality for occupants.	ADP Electrical	Design Development	Lighting design to target prescriptive method 1 for general regularly occupied areas. Lighting design to target performance method for all task related areas.		
			Architect	Design Development	Arch - to be reviewed in detail with lighting consultant			
					Daylight Strategy The artificial lighting solution must address the quality of light in the space, provide highlights and contrast, and seek to avoid excessive lighting or overly uniform solutions. • The walls within the field of view of occupants in regularly occupied spaces must have an average surface reflectance value of 0.70 and an average surface illuminance of at least 50% of the horizontal illuminance levels required for task. This requirement does not apply to green walls or to coloured/patterned/biophilic feature walls that make up less than 20% of the field of view of the occupants; and • Vertical illuminance in workspaces: ensure that 50% of the horizontal task illuminance reaches the average eye height for 90% of primary spaces using vertical illuminance calculation grid. The illuminance values must be calculated in accordance with AS/NZS 1680 series for the relevant task. Where unknown, a conservative estimate can be used. The lighting solution should provide for highlights of colour and contrast across multiple spaces. The contrast between spaces should not exceed	ADP Electrical	Design Development	Lighting design to target prescriptive method 1 for general regularly occupied areas. Lighting design to target performance method for all task related areas.

					Daylight	For non-residential buildings , at least 40% of the principle averaged across the building must receive high levels of daylight with no less than 20% on any floor or tenancy (whichever is smaller).	ADP Sustainability	Design Development	Daylight Modelling required to demonstrate compliance. Deemed achievable. Daylight Modelling to confirm credit achievement. Refine model and increase quality - modelling still being completed
		2	Exceptional Performance	0	Artificial Lighting Daylight	Achieve both Artificial lighting and Daylight credits above under Credit achievement - awaiting modelling - Melb Team	ADP Electrical Architect	Design Development	Modelling still being completed
		N/A	Minimum Expectation	must comply	Acoustic Comfort Strategy	An Acoustic Comfort Strategy must be prepared describing how the building design will deliver acoustic comfort to the building occupants. The following Acoustic Comfort criteria are to be addressed: <ul style="list-style-type: none"> • Quiet enjoyment of space; • Functional use of space; • Control of intrusive or high levels of noise; • Privacy; • Noise Transfer; and • Speech intelligibility. The Acoustic Comfort Strategy is to include: <ul style="list-style-type: none"> • A summary of the Standards, legislation, guidelines and other requirements that apply to the project; • The proposed performance metrics for each of the Acoustic Comfort criteria relevant to the different uses within the building and whether this exceeds minimum legislative or best practice guidelines; and • Description of how the design solution is intended to achieve the proposed performance metrics. The strategy must be prepared by a qualified ADP Acoustics during the design stage and the design solutions described in the strategy must be incorporated into the Contract Documents.	ADP Acoustics	Schematic Design	Acoustic comfort strategy sets up criteria for all available credits for each proposed tenancy ie retail.
12	Acoustic Comfort	2	Credit Achievement	2	Internal Noise	Maximum Internal Noise Levels: Internal ambient noise levels in the nominated areas must be no greater than the upper range value relevant to the activity type in each space as recommended in AS/NZS 2107: 2016. Minimum Internal Noise Levels (required for commercial fit-out): Internal ambient noise levels in the nominated areas must be no less than 5 dB below the lower range value relevant to the activity type in each space as recommended in AS/NZS 2107: 2016.	ADP Acoustics	Schematic Design	Retail specific approach requ'd Relevant to base build only - ADP Acoustic confirm
					Acoustic Separation - pathway	The project must address noise transmission between enclosed spaces within the nominated area. There are two ways to demonstrate compliance: <ul style="list-style-type: none"> • Privacy; or • Sound insulation. 	N/A	N/A	Relevant to base build only ADP Acoustic to confirm
					Acoustic Separation - privacy for spaces:	The sound insulation between internal spaces complies with: $D_w + LA_{eqT} > X$. Where: D_w = Weighted sound level difference measured between two spaces; LA_{eqT} = Indoor ambient noise level in the space adjacent to the enclosed space. $X = 75$ except for: <ul style="list-style-type: none"> • $X = 60$ for any partition with a door, • $X = 80$ for walls/partitions separating areas with elevated privacy requirements (e.g. meeting rooms, classrooms, wards, etc.) The sounds tests from which D_w is derived must be measured in accordance with ISO 16283-1.	ADP Acoustics	Schematic Design	Does not apply to Base Build if open office space
					Acoustic Separation - sound insulation - Sound insulation	The partition between the spaces should be constructed to achieve a weighted sound reduction index (dB Rw) of: <ul style="list-style-type: none"> • At least 45; for all partitions separating enclosed spaces which are: <ul style="list-style-type: none"> – 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 	ADP Acoustics	Schematic Design	
					Impact Noise Transfer	(required for commercial fit-out): Impact noise transfer measured in accordance with ISO 16283-2 through a floor where: <ul style="list-style-type: none"> • Floors are located above nominated areas; or • Adjacent spaces belonging to different tenancies which share a floor must not exceed dB LnT,w: <ul style="list-style-type: none"> – 55 for floors above residential accommodation spaces – 60 for all other spaces 	ADP Acoustics	Schematic Design	Not relevant for base build (retail)
					Reverberation	(required for commercial fit-out): The reverberation time in the nominated area must be not exceed the maximum for the intended use recommended in AS/NZS2107:2016. This criterion does not apply to residential spaces. For open office areas and where note 3 of Table 1 AS/NZ 2107:2016 applies and requires that reverberation times be minimised as far as practical, acoustic absorption should be installed in the noise sensitive space. Acoustic absorption should be applied in locations appropriate to the function of the space and located to maximise the acoustic performance of materials selected. Compliance can be demonstrated by either: <ul style="list-style-type: none"> • Installed acoustic absorption, irrespective of quantity or location installed, must result in a reverberation time equivalent to or lower than the reverberation time predicted for treating at least 50% of the combined floor and ceiling area with a material having a noise reduction coefficient (NRC) of at least 0.5. • Treating 50% of the combined floor and ceiling area with a material having an NRC of at least 0.5. Dedicated teaching space must have reverberation times in the lower half of the range specified in Table 1 of AS/NZS 2107:2016. Measurements must be conducted in at least 10% of the spaces in the regularly occupied area. The range of measurement locations shall be representative of all spaces available within the regularly occupied areas. All relevant buildings systems must be in operation at the time of measurement. Projects less than 500m ² Gross Floor Area (GFA) must account for measurements conducted in at least 95% of spaces within the regularly occupied area.	ADP Acoustics	Schematic Design	Not relevant for base build (retail)
13	Exposure to Toxins	N/A	Minimum Expectation	must comply	Paints, adhesives, sealants and carpets	At least 95% of internally applied paints, adhesives, sealants (by volume) and carpets (by area) must meet stipulated 'Total Volatile Organic Compounds (TVOC) Limits' specified in the Green Star submission guidelines. Compliance can be demonstrated in the following ways: <ul style="list-style-type: none"> • The product(s) are certified under a recognised Product Certification Scheme. The certificate must be current at the time of purchase; • The product(s) are tested in a laboratory; or • There are no paints, adhesives, sealants and carpets in the building at practical completion. 	Architect	Tender Documentation	Coordination with ADP GSAP Arch - to be incorporated with schedule & specification
						ADP Services	Tender Documentation	LCA Consultant to provide advice of material choices & Or	
						Head Contractor	Procurement	Tenant requirement - meets CSR for staff	
						Architect	Tender Documentation	Coordination with ADP GSAP Arch - to be incorporated with schedule & specification	
					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 in the ESD Specification. Where there are engineered wood products, compliance to emission limits can be demonstrated in two ways: <ul style="list-style-type: none"> • The product(s) are certified under a recognised Product Certification Scheme. The certificate must be current at the time of purchase; and/or • The product(s) are tested in a laboratory. Formwork, car parking applications, and non-engineered wood products (such as milled timber) are excluded from the credit.	Head Contractor	Procurement	Tenant requirement - social sustainability

					Lead, asbestos and PCBs	A comprehensive hazardous materials survey must be carried out on any existing buildings or structures on the project site, in accordance with the relevant Environmental and Occupational Health and Safety (OH&S) legislation. Where the survey identified asbestos, lead or PCBs in any existing buildings or structures, the materials must be stabilised, or removed and disposed of in accordance with best practice guidelines; or the survey concluded that no hazardous materials were found in any existing buildings or structures on the project site.	Client	Pre-Construction		
							Head Contractor	Pre-Construction		
		2	Credit Achievement	2	Onsite testing	A test must be undertaken to verify that the TVOC and formaldehyde levels are within the concentration limits stipulated. ESD Specification to be provided at later stage of the project	Client	Practical Completion		
							Head Contractor	Practical Completion	Put into tender docs - contractor cost Subject to contractor engagement	
14	Amenity and Comfort	2	Credit Achievement	0	Designated amenity rooms	The building includes one or several rooms designed to promote either inclusivity, mindfulness or exercise for staff or occupants. For a room(s) to qualify, it must be classified as per below: • Parent room. • Relaxation, meditation, or prayer room. • Exercise room. The room size to be provided must be as follows: • The size of the room is calculated at a ratio of 1m ² per every 10 occupants or staff, and • The room must be no smaller than 10m ² . Building occupancy is determined by the project team and must be consistent with other credits in the submission. The room(s) must be accessible to all staff and building occupants. The room must be separate from bathrooms, showers, lockers, and active facilities. All amenities and/or infrastructure necessary to use the room(s) for its intended purposes must be provided (for example, including a sink or bench for a parent room). In addition, the room(s) must meet the following: • Credit Achievement for the Light Quality credit; • Credit Achievement for the Acoustic Comfort credit; and • The 'Equal access to the building' criterion of the Design for Inclusion credit. These amenity rooms are for staff or regular building occupants. Examples of building occupants are: • Facilities management staff • Building tenants • Residents in an apartment building • Staff in shops in a shopping centre • Workers in an industrial setting • Staff in hospitality buildings, tourism centres, or conference facilities Amenity rooms provided for the primary purpose of visitor enjoyment, even if staff can use them, are not acceptable alternatives, unless the room sizes have been designed to account for visitor numbers too. Examples of visitors include: • People who shop in shopping centre or shops • Delivery drivers • Hotel occupants • Conference attendees	Architect	Design Development	Not currently targeting for 5 Star Tech qu - Space room requirement and also internal???? Bne climate + acoustic comfort -aligning with enjoyable spaces amount of space Roof area be counted for staff tenants? Can leased Space be used?	
							Client	Design Development		
							ADP Services	Practical Completion		
							ADP Acoustics	Design Development		
15	Connection to Nature	1	Credit Achievement	1	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. All floor areas within 8m from a compliant view meet this credit criterion.	Architect	Design Development	Technical qu to GBCA Indoor/vs outdoor-potential tenant expectation Synergy with amenity and comfort outdoor rooms" neuro diverse requirements WELL inspired	
							Architect	Design Development		
							Client	Design Development		
							Landscape Architect	Design Development		
		1	Exceptional Performance	1	Plants (& Nature Inspire Design as below)	Indoor plants must be provided in the nominated spaces. One or more plants in pots with a soil surface area totalling at least 500cm ² for every 15m ² 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.	Architect	Design Development	Arch - proposed to be incorporated in design with on going maintenance contract	
							Client	Design Development		
							Landscape Architect	Design Development		
							Architect	Design Development		
1	Exceptional Performance	1	Nature-inspire 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.	Architect	Design Development	Arch - proposed ground level with integrated natural materials, sensory and water feature and integrated escalator screen and roof top landscape			
					Landscape Architect	Design Development				
					Architect	Design Development				
					Landscape Architect	Design Development				
1	Exceptional Performance	1	Interaction with Nature	Occupants can interact with nature either inside the building, or externally through a green wall or roof garden. At least 5% of the building's floor area/ or site area (whichever is greater) must be allocated to this opportunity. The allocated area must be accessible and have the necessary infrastructure to allow the activity to occur (for example water source/ taps for irrigation, storage area for tools and equipment).	Architect	Design Development	Achievable and closely tied to the designing with Country			
					Landscape Architect	Design Development				
1	Exceptional Performance	1	Views, Plants & Nature-inspired Design, Interaction with Nature	In conjunction with the Credit Achievement, the project must comply with all three of the criteria 1. View, Plants & Nature-Intensive Design, and Interaction with Nature	Architect	Design Development	Confirmed once terraced areas are approved as constituting 'indoor plants' as per GBCA meeting 20221111			
					Landscape Architect	Design Development				
		14	Total	10						
Resilient										
		N/A	Minimum Expectation	must comply	Climate Change Screening	Project team members must consider potential impacts from climate change when completing the checklist including, but not limited to: • Direct damage or failure of project components; • Accelerated deterioration of project components or reduced design life; • Reduced operating capacity. • Climate hazard impacts to surrounding areas (e.g. impacting access and egress); • Impacts to the health and wellbeing of building occupants and other relevant stakeholders; and • Indirect risks from impacts to other interdependent systems and services (e.g. transport networks, power, water, telecommunications). Both historic and future data must be used when completing the checklist. All rows and columns must be completed. The Minimum Expectation is achieved on completion of the checklist and doesn't require identified risks to be treated. The checklist must be signed off by a member of the project leadership team and shared with key project stakeholders, including the client/building owner. If the Credit Achievement for this credit is met, requirements of this assessment are considered to have been met	ADP Sustainability	Practical Completion	ADP Sustainability team to fill in climate change screening checklist. To be issued to QIC for review by 20221118 ESD Team presented 1st Climate Resilience workshop on 20221004. Check in with discipline teams week beginning 20221121 - appetite for workshops early Dec. to confirm	

16	Climate Change Resilience	1	Credit Achievement	1	Climate Change Risk and Adaptation Assessment A suitably qualified professional must undertake a climate change risk and adaptation assessment and author a report. The suitably qualified professional must: • Perform the assessment using the information from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report 1 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. The author must ensure the assessment: • Aligns with the Australian Standard AS 5334:2013 Climate change adaptation for settlements and infrastructure; and • Follows the principles of risk management outlined in the Australian and New Zealand Standard AS/NZ ISO 31000:2009 Risk Management.	ADP Sustainability, Client & the project team	Design Development	ADP Sustainability team to complete Climate Change Risk Register and host design response workshop. This will inform broader disciplines on expectations to complete proforma provided. Timeline moved. *NB Façade Consultant Input: For Credit 16, resilience is an interesting one. Although average temperatures will increase the proportion of conductive gains vs solar gains will be key as the sun doesn't get stronger. Making sure we have a U-Value that can account for a higher Delta-T therefor can be factored in but won't be that significant. In terms of durability / resilience I think this is important, we don't want them needing to replace the glazing in 10 years and so would include them as primary
					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; and • Regardless of risk rating, at least two risks identified in the assessment must be addressed by specific design responses.	ADP Sustainability, Client & the project team	Design Development	Design should respond to high or extreme risks identified in the risk register. Workshop identified two extreme risks: Increasing temperatures and flooding. It is speculated that these will be the primary focus for a specific design response. The
17	Operations Resilience	2	Credit Achievement	2	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. As a minimum, the following shocks and stresses must be addressed in the assessment: Shocks • Failure of critical infrastructure (power, water and 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	Client	Design Development	Back up generator already included in cost plan as per PCA Guidelines
					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.	ADP Sustainability	Design Development	Operations risks can form part of climate adaptation plan risk register.
					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).	ADP Sustainability	Design Development	Need input from Client on operational responses. Further detail in design response will emerge from workshops
					Community resilience plan The project team must develop a community resilience plan that: • Defines its surrounding local community, and the groups which rely on or interact directly or indirectly with the building. In addition to considering tenants and visitors, this must identify key vulnerable communities; • Identifies resilience objectives and goals associated with servicing the community; • Identifies social considerations affecting the community; • Identifies acute shocks and chronic stresses that impact the project's function and ability to service the community (including climate-related shocks and stresses if the Climate Change Resilience credit is not targeted); • Demonstrates how the development of actions (physical and non-physical responses) to manage the impact from shocks and stresses is in response to the outcomes of community engagement; • Shows how the two most significant impacts identified are dealt with specifically through the building's design; and • Identifies how material shocks and stresses identified for the building may impact on these stakeholders by considering a clear set of social indicators (see Guidance section). The project team must undertake at least one community capacity building activity prior to or during construction. A suitably qualified professional must author the community resilience plan.	ADP Sustainability	Design Development	Back up generator already incorporated into cost plan. Aligning design response potentially with Grid Resilience Credit. In progress with Melbourne ADP team.
18	Community Resilience	1	Credit Achievement	1	Community capacity building event The project team must undertake at least one community capacity building activity prior to or during construction	ADP Services	Design Development	Will be informed by Climate and Operational Resilience plans then contextualised to building typology. Put through as a General Query to GBCA as per meeting on 20221111.
					Client	Design Development		
19	Heat Resilience	1	Credit Achievement	1	Urban heat island reduction At least 75% of the whole site area comprises of one or a combination of strategies that reduce the heat island effect. 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.	Architect	Design Development	Arch - landscaping and material selection to be incorporated with design Green Roofs + terraces -selection of material on the roof (SRI)
					Architect	Design Development	Achievable - How? Landscape to input further	
					Head Contractor	Procurement	Tender docs	

20	Grid Resilience	3	Credit Achievement	0	Pathway The project meets at least one of the paths outlined below: <ul style="list-style-type: none"> Active generation and storage systems; Demand response; and Passive design solutions Where active generation and storage systems and demand response management are jointly used, the overall reduction must be 10% of the building's total electrical load.	ADP Sustainability	Practical Completion	Currently not targeted. See Midway approach and contextualise to Qld Does new Energex contract translate with HV approach?
					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 thermal storage solutions (such as chilled water storage systems), by 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: <ul style="list-style-type: none"> 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. Unless a separate agreement exists with the network operator, the generator must not export more than 30% of electricity generated to the grid during peak solar generation periods. That is, the building should be consuming, storing, or transferring through a micro-grid to other buildings, most of the available excess electricity being generated. For this pathway, 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. The active demand management strategies must also be tested and commissioned prior to occupancy, assuming a full load profile on a peak day.	ADP Sustainability	Design Development	
					Demand response The demand response strategy must show how at least 10% of the building's annual peak electricity demand is being shed without affecting occupant amenity (comfort, lighting, movement) as outlined in credits Light Quality and Amenity and Comfort for at least 4 hours. This pathway relies on the building having the plan and infrastructure to manage demand responses, which includes: <ul style="list-style-type: none"> Ensuring the building's automated management system has forward predictive capabilities (based on potential weather events outside standard design days, or predictions by the network operator) to alert building management to a potential event; Having a demand management dashboard that shows the peak demand target, current, historical demand, the demand shedding priorities and enabling button alongside the critical performance characteristics (usually comfort temperature); Having the building management system provide an automated way to start their load shedding strategy and enable communication to relevant parties; Having the ability for the building's automated management system to accept external control signals to enable signing up to current or future demand response programs; and This pathway also relies on ensuring the demand response strategy is tested, and that occupants and the building management system are aware what the implications are. This means: - Including load shedding responses in the scope of work for the commissioning activities. - Including the load shedding strategy in the relevant building management manuals and training. - Introducing a communication strategy to outline to occupants how they will be impacted on the day of a potential event. - Where the building is tenanted, introducing language in leasing contracts outlining the load shedding strategies and what impacts these may have on tenants.	ADP Services	Tender Documentation	
					Passive design solutions For this criterion to be awarded, the building must achieve the below: <ul style="list-style-type: none"> The building's facade demonstrates a 10% improvement over a reference building modelled to Section J requirements of the National Construction Code 2019, or the version of the code applicable to the building's construction, whichever is later. The calculation must follow either Method 2 in the wall/glazing calculator or use a JV3 model; and The building is mostly naturally ventilated (that is, the building has no mechanical cooling or heating for 80% of the building's occupiable area); and The building's occupiable area is less than 3,000sqm. Buildings that don't meet this criterion that have been passively designed, should contact the GBCA for alternative paths. This path does not apply to industrial buildings or data	ADP Sustainability	Design Development	
		8	Total	5				
Positive								
21	Upfront Carbon Emissions	N/A	Minimum Expectation	must comply	Reducing upfront carbon emissions The building's upfront carbon emissions are at least 10% less than those of a reference building. The building's upfront carbon emissions reductions must occur through good design and material selection. Carbon offsets purchased against the building's upfront carbon emissions from construction cannot be used to show compliance against the 20% reduction in the Credit Achievement or the Exceptional Performance. The reduction targets for the Minimum Expectation, Credit Achievement, or Exceptional Performance do not include demolition works. However, to claim the Credit Achievement and Exceptional Performance, demolition works must be offset. Calculating upfront carbon emission reductions To demonstrate compliance, project teams can either: <ul style="list-style-type: none"> Model the proposed and reference buildings following the methodology of the Life Cycle Impacts credit; or Complete the Upfront Carbon Emissions Calculator. Project teams seeking to achieve the Exceptional Performance must use the Life Cycle Assessment pathway.	LCA Consultant	Design Development	Coordination of all discipline approach
					Architect	Design Development	Structural LCA to provide quantifiable details Arch - to be developed with design team	
					Client	Practical Completion		
					Structural Engineer	Design Development	Floor plates currently measured to achieve 20% reduction in embodied carbon - SP1 v SP2 Work currently being undertaken	
					LCA Consultant	Design Development	A1 - A5 Full life cycle analysis to be completed to capture	
Reducing upfront carbon emissions The building's upfront carbon emissions reductions must occur through good design and material selection. Carbon offsets purchased against the building's upfront carbon emissions from construction cannot be used to show compliance against the 20% reduction in the Credit Achievement or the Exceptional Performance. The reduction targets for the Minimum Expectation, Credit Achievement, or Exceptional Performance do not include demolition works. However, to claim the Credit Achievement and Exceptional Performance, demolition works must be offset.	ADP Sustainability	Design Development	Choosing low embodied carbon materials throughout the building. Prescriptive and into tender docs					
Architect	Design Development	Arch - to be developed with design team						
Structural Engineer	Design Development	Supply issues etc structural strength difficult to achieve - if floor plates achieve it regardless of rest of structure should be able to						
Calculating upfront carbon emissions To demonstrate compliance, project teams can use either: <ul style="list-style-type: none"> Model the proposed and reference buildings following the methodology of the Life Cycle Impacts credit; or Complete the Upfront Carbon Emissions Calculator Projects must document a reduction in upfront carbon according to the materials and products in the scope. The GBCA's Upfront Carbon Emissions Calculator uses Modules A1 to A3 to calculate compliance. Module D is excluded.	LCA Consultant	Design Development	Embodied Carbon CAN issued to QIC on 20220927. To be uploaded into ESG Folder #16 Structural Design Considerations					

		3	Credit Achievement	3	Offsetting demolition works	Demolition works must be captured and offset. Where an existing building less than 30 years old has been fully or partly demolished for construction, an embodied carbon calculation must be done for the demolished portion and these emissions offset. Where the existing building is between 30 to 50 years old, the contribution must be calculated and discounted at 10% for every two additional years past year 30. In the absence of available data, the existing building can be assumed to follow modern code-compliant construction techniques for the purposes of this calculation.	Client	Practical Completion	Lodging of a technical question to GBCA is to be expected as there are demolition works that were done by another party. QIC will not be held responsible for this and preferred position is to view site as vacant site with some minor demolition works to be dealt with. Need to ensure that QIC not offsetting existing building already demolished but only remaining pipework etc to be accounted for. Further information coming from Structure. - Further Structure will utilise some remaining materials to reuse on site - aligns with ESG Brief Resource Efficiency and reduces cost of offsets - needs to be quantified Flagged with GBCA meeting 20221111
		3	Exceptional Performance	0	Upfront carbon offsets	A 40% reduction in upfront carbon emissions, and the Client, applicant, or building owner must offset all remaining upfront carbon emissions from Modules A1 – A5	Client	Practical Completion	
22	Energy Use	N/A	Minimum Expectation	must comply	Energy reduction : Reference Building Pathway OR, Energy reduction : NABERS Commitment Pathway	The building's energy use is at least 10% less than a reference building; For all buildings, each building's system and façade must comply with the corresponding Section J requirements in the National Construction Code. That is, the building cannot show that their façade, or any system, performs worse than the reference building even if the overall energy use reduction is 10% or more. NCC Section J DTS Methodology to be used for part J1 to J8. Onsite renewables excluded in the calculation	ADP Sustainability	Practical Completion	Energy modelling to confirm credit achievement
						NABERS Commitment Agreement -5.5 Stars NABERS for class 5 Office	ADP Sustainability	Design Development	Energy modelling to confirm credit achievement currently sitting at 6 Star NABERS with no buffer required
							Architect	Design Development	Energy modelling to inform façade specification
							Façade Consulta	Design Development	Can achieve 5.5 Star with current design iteration if targeting 6 star we would need 500m2 rooftop and 2500m2 BIPV. *NB Further modelling required Regarding energy, Currently the facade does not allow for much BIPV in the design however this may be able to be added into the NE facade if targeting 6*. We would need to investigate if we could meet 2500m2 without suffering from overshadowing. I assume the area rates account for the inefficiencies of BIPV (typically 1/4 of roof mounted mono-crystalline) Roof delivers the same as BIPV canopy above roof green roof under pv or will be more efficient because cooler
		3	Credit Achievement	3	Energy reduction	Reference Building Pathway: The building's energy use is at least 20% less than a reference building OR; NABERS Commitment Pathway: 5.5 Stars NABERS with 25% modelling margin	ADP Sustainability	Design Development	With current NABERS modelling achieving 6 Star no buffer we will still claim these points. However, dependent on façade modelling to ensure capability of BIPV
		3	Exceptional Performance	0	Energy reduction	Reference Building Pathway: The building's energy use is at least 30% less than a reference building OR; NABERS Commitment Pathway: 6 Stars NABERS	ADP Sustainability	Design Development	TBC by client. ADP have issued preliminary NABERS pathway. Please see ESG folder #12 Risk - no 'official buffer required' (LD) will need buffer to maintain as the building 'relaxes' operationally - significant cost uplift
23	Energy Source	N/A	Minimum Expectation	must comply	Zero Carbon Action Plan	The project team must develop a Zero Carbon Action Plan for the building. The plan must be signed off by the building owner or Client and included in any operational documents for the building. The Zero Carbon Action Plan must include a target date by when the building is expected to operate as net zero carbon. The Zero Carbon Action Plan must cover all energy consumption, procurement, and generation and cannot rely on procuring renewable fuels as its only solution. It must also include infrastructure provided for tenants or future occupants such as gas installations for cooking. The Zero Carbon Action Plan must be done prior to the tender phase of the project. The plan must: • Quantify the building's scope 1 (including refrigerants) and 2 emissions between now and 2050 without any interventions; • Quantify the building's scope 1 (including refrigerants) and 2 emissions in 2050 once all interventions have occurred; • Describe the changes the building is required to undertake to be net zero carbon in operation as the distinct parts of the building's systems reach end of life; • Identify spatial considerations and physical interventions needed to replace fossil fuel using equipment, refrigerants and infrastructure; • Perform a cost analysis of the potential costs and savings if the building was designed to be net zero; and • Be signed-off by the building owner or the Client. It must also outline, if relevant: • A description of energy-consuming electrical, mechanical, or hydraulic systems and any refrigerants used; • Any future spatial requirements or changes to plant rooms stemming from changes to existing building systems; • Any additional capacity built into the building, substations, or building systems to enable any proposed changes. This may include the capacity to accommodate any future additional loads, energy storage or demand response solutions which may occur or be implemented during the life of the building; and • An upgrade or replacement timeline for the distinct systems, or system components, describing the point at which they are to be replaced with the appropriate alternatives. The outcomes of the Zero Carbon Action Plan must be integrated with other Green Star credits targeted during certification. For example, any performance targets or activities relating the Zero Carbon Action Plan should be outlined in the Verification and Handover credit.	ADP Sustainability, Client & the project team	Design Development	CAN Positive Pathway details Zero Carbon Action Plan ADP Sustainability to develop Zero Carbon Action Plan, input required from Services. Plan to achieve fully electric will be in plan. Include strategy to decarbonise by upgrading HVAC amongst other items to help achieve Net Zero in the future.
							ADP Services	Design Development	ADP Sustainability to develop Zero Carbon Action Plan, input required from Services.
		3	Credit Achievement	3	Base building electricity (Renewable Electricity)	All electricity under the control of the building owner or operator must be accounted for and sourced from renewables. Electricity use for tenant loads is excluded from this credit (see Tenant Emissions). 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	Client	Operation	ADP Sustainability to develop Zero Carbon Action Plan, input required from Services. PPA 100% Renewable 5 year agreement. Refer to Zero Carbon Action Plan for future planning. See Origin slide commitment for 5 years Time to engage in PPA - Building at practical completion Cost plan it in - WT *NB Origin Contact

		3	Exceptional Performance		Whole Building Energy (Renewable Energy)	This credit addresses the following: All energy under the control of the building owner/operator and all non-electricity energy provided for uses that are not under the building owner's control must be sourced from renewables. Fossil fuels cannot be used on site for any domestic hot water, space heating or cooking under any circumstances regardless of base build or tenant use. Fossil fuels for industrial processes are excluded from the assessment. Any fossil fuels used for emergency power or laboratory equipment must be less than 1% of the total building energy consumption and be offset for the first five years of operation. 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 • 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.	Client	Operation	PPA 100% Renewable 5 year agreement. Refer to Zero Carbon Action Plan for future planning. Requires tenant engagement - Significant cost uplift
24	Other Carbon Emissions	2	Credit Achievement	0	Other Carbon Emissions - Pathways	All refrigerants from building systems or domestic appliances provided by the building must be captured in the credit. This includes where fridges or freezers are provided as part of a fitout package in a residential setting. There are two pathways available: • Eliminates high-GWP refrigerants from the building; or • Offsets 100% of carbon emissions from refrigerants.	N/A	N/A	Need to target in 5 Star to offset refrigerants Carbon Positive Pathway - 2022 refrigerants only Know refrigerant type - waiting on qty from ADP Mech cost uplift
					Eliminating refrigerants	High-GWP refrigerants must be eliminated from the building. The use of refrigerants with a GWP of 10 or less is considered to comply with the credit. Natural refrigerants in most cases comply with this criterion. OR	ADP Services	Design Development	
		Offsetting refrigerants	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. Emissions are then offset with GBCA accepted offset programs	Client	Design Development				
		2	Exceptional Performance	0	Other Emissions	This Exceptional Performance aims to address emissions that have not been addressed by claiming other credits. If other credits have been claimed, the emissions that are to be offset in this credit are lower. The emissions addressed in this credit are: • Emissions from the building's electricity use (as determined in the Energy Use credit) multiplied by the grid coefficient (unless the Energy Source Credit Achievement is met, in which case these emissions are zero); • Emissions from the building's energy use as determined in the Energy Use credit (unless the Energy Source Exceptional Performance is met, in which case these emissions are zero); • Upfront carbon emissions as determined in the Upfront carbon emissions credit (unless the Upfront Carbon Emissions is met, in which case these emissions are zero); Climate Change Impact category for modules A1-A5 • Life-cycle emissions from modules B and C as calculated in Life Cycle Impacts; • Emissions from construction equipment use, and utilities during construction on site; and • Construction waste emissions. The project team must include the above and any other carbon emissions over 1% of the total carbon emissions profile for the building (significant emissions).	Client	Operation	
25	Water Use	N/A	Minimum Expectation	must comply	15% Potable Water Reduction	A 15% reduction against a reference building through the GBCA's Potable Water Calculator is demonstrated	ADP Sustainability	Design Development	
		3	Credit Achievement	0	45% Potable Water Reduction	A 45% reduction against a reference building through the GBCA's Potable Water Calculator is demonstrated. The building has infrastructure for recycled water connection	ADP Sustainability	Design Development	
		3	Exceptional Performance	0	75% Potable Water Reduction	A 75% reduction against a reference building through the GBCA's Potable Water Calculator is demonstrated	ADP Sustainability	Design Development	
26	Life Cycle Impacts	2	Credit Achievement	0	Life Cycle Impacts	The project demonstrates a 30% reduction in life cycle impacts when compared to standard practice.	LCA Consultant	Design Development	
		30	Total	9					
Places									
		N/A	Minimum Expectation	must comply	Changing facilities	There are showers (upto 200 occupants 4 showers, 200+ occupants additional 1 per 200; at least 900x900 mm each), lockers (one for 8 staff/occupants) in the building. Showers and bathrooms provided to meet statutory accessibility requirements dont count towards the minimum showers required to meet this minimum expectation. Facilities should be located within easy access of the building and close to cycle parking (where provided). The lockers must be secure and located in the change rooms. Lockers provided within tenancies, not in changing rooms, dont count toward this credit. More information and calculation to be provided	Architect	Design Development	Arch - integrated in basement mezzanine and EOT Narrative required - letterhead responding to each of those items listed
		N/A	Minimum Expectation	must comply	Safe and inclusive access	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.	Architect	Design Development	Arch - separate EOT entry access provided to basement mezzanine via stair and shuttle lifts and EOT via shuttle lifts Narrative required - letterhead responding to each of those items listed
					Bicycle Parking 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 bicycle parking facilities that are separated from the primary vehicle entrance to ensure safety. Bicycle parking facilities must have signposted access to the changing rooms amenities as per the Minimum Expectation. The bicycle parking facilities must ensure the cycling equipment is safely secured. The amount of bicycle parking facilities is to be informed by the Sustainable Transport Plan.	Architect	Design Development	Arch - proposed to be integrated into design to be developed with Sustainable Transport Plan by the Traffic Engineer (TTM) Narrative required - letterhead responding to each of those TTM - Traffic Consultant engaged.
							ADP Services	Design Development	

27	Movement and Place	3	Credit Achievement	3	Sustainable Transport Plan 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 all the following: <ul style="list-style-type: none"> • 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 public 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 • 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 or Engineer Suitably Qualified Transport Planner The suitably qualified transport planner shall hold a relevant tertiary qualification (including, but not limited to, engineering, sustainability and planning) and comply with at least one of the following: <ul style="list-style-type: none"> • Minimum five years' experience in transport planning; • Has co-authored at least five building Sustainable Transport Plan / Green Travel Plans or similar; or • Chartered member of a relevant industry body. Electric vehicle charging As a minimum, if the project scope includes parking, the building must provide: <ul style="list-style-type: none"> • Ready to charge EV charging points to at least 5% of all car parking spaces. • Connections for car sharing parking spaces, regardless of whether the vehicles are electric at the time of practical completion (in addition to the 5% provided) • Electrical infrastructure and a load management plan prepared to allow for future installation of EV charging to 25% of all car parking spaces (including the minimum 5% and car share spaces already provided). The mix of EV chargers assumed (e.g., 7kW v 22 kW) must be stated. • A dedicated, safe, unobstructed route from the electrical supply point which allows for the future provision of all necessary electrical cabling without the need for substantial builders work in connection to the electrical cabling installation. 	ineer, Transport	Design Development	TTM - Traffic Consultant to be engaged.
					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 public transport use, and reduce vehicle kilometres travelled compared to a reference building. The changes must be at least as follows: <ul style="list-style-type: none"> • Emission reduction: 40% • Active mode encouragement: 90% • Vehicle Kilometres Travelled (VKT) reduction: 20% 	Traffic Engineer, Transport Consultant, Client, Architect	Design Development	Detail on car parking availability min requirement Allocated parking targetd to specifically reduce private vehicle use. Confirm quantity
					Encouraging Walkability The building's design and location must encourage 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. 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. 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. <ul style="list-style-type: none"> • 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 	Traffic Engineer, Transport Consultant, Client, Architect	Design Development	This can be informed by initial amenity study conducted by architect To be uploaded into ESG folder # 2 Community Needs
28	Enjoyable Places	2	Credit Achievement	2	Publicly accessible spaces For buildings >1000m2, publicly accessible spaces = 0.25 m2/ occupant or 2.5% of GFA, whichever is greater. The communal or public space must: <ul style="list-style-type: none"> • Accommodate community-based activities; • Have capacity and flexibility to operate in multiple modes of usage; • Demonstrate relevance of the space for local people (demographics, social profile, current needs); • Demonstrate the space has been designed for enjoyment; and • Be available to the community to use for free. It must be clearly demonstrated that the spaces are publicly accessible. 	Architect	Schematic Design	Arch - greater than 1000m2 publicly accessible space valuable at Ground, Level 1 & 2 (excluding alfresco dining leased spaces) 760+175+190 m2 approx.
					Activation strategy An activation strategy must be provided to ensure placemaking continues after practical completion. The strategy must demonstrate how the future occupants and the wider community can contribute to the place activation, addressing the following: <ul style="list-style-type: none"> • The target of the activation activities; • How the activation will be funded and managed for the first 12 months of operation, and be sustained beyond those months; • Estimated timing of activation; • Potential suppliers, facilitators or initiators of placemaking activation activity commencement; • How the building occupants and the wider community will be encouraged to initiate activations e.g. communication channels and support network; • Demonstrate how the strategy can be further implemented by the future tenants and occupants; and • Assign roles and responsibilities for implementation of the strategy, including evaluation and monitoring. The strategy must be included as part of the building's handover to ensure implementation in operation. 	Client	Practical Completion	TBC Coordination with architect and Landscape
					Contribution to place - pathway There are two pathways for demonstrating compliance with this credit: <ul style="list-style-type: none"> • Urban Context Report and public realm interface design; or • Independent design review 	N/A	N/A	Urban Context Report being produced by Architect
					Urban context Report OR The building must provide an urban context report that outlines the urban context of the development and the design responses. The report must include: <ul style="list-style-type: none"> • Urban context analysis: <ul style="list-style-type: none"> – Assessment and analysis of the local setting and wider urban context. This must include physical, social, cultural and economic factors; – Outline any planned changes to the local area (for example if located in a growth zone) and the project's design response to those. This may include Local or State Government's vision for the area; and – Identify any local challenges which the building can contribute to address. • Design responses: <ul style="list-style-type: none"> – Demonstration of the design responses to the urban context analysis; and – Demonstration that the that the public space is not negatively impacted by the proposed design. 	Town Planner/Ur	Schematic Design	
						Architect	Schematic Design	Arch - initial input to be developed and integrated within the Urban Context Report for the DA submission

29	Contribution to Place	2	Credit Achievement	2	Independent Design Review Design reviews are held at key points in the development of the design. At a minimum, these must occur as follows: • Design Review during concept/schematic design stage, to ensure that proponents can take advantage of the advice offered at a time where the design is flexible enough to accommodate change without impacting on time and cost constraints; • A subsequent review when the design has been further progressed. This review session will typically occur during design development; and • At building permit stage (after development approval) a further check must take place by the Design Review Panel Chair or delegate, to ensure that the final design reflects approved development application and any relevant conditions related to design quality. The Design review panel must be independent of the project. This can occur through an external Design review panel, such as the Government Architect Office, or in-house Design review panel, as long as it can be demonstrated that they act independent of the project team. The design review must use comprehensive terms of reference during the project's design and design development phase. To be classed as independent a panel member cannot be employed by the scheme promoter (an entity or a subsidiary of an entity) or decision maker that has been involved in the project in any meaningful way. Being a contributing member of a design review panel is not considered to be 'employment' for the purposes of this credit. All conflicts of interest that may arise from any panel member's involvement in the project must be disclosed.	Client	Schematic Design	
30	Culture, Heritage and Identity	1	Credit Achievement	1	Culture, Heritage and Identity - pathway There are two pathways to achieving this credit: • Community led design responses; or • Independent design review.	N/A	N/A	Need to target as per QIC ESG mandatory credit requirement Designing with Country - First Nation Artist
					Community led design response The project team must show that they have undertaken local analysis to identify culture, heritage and identity unique to the project site and area. The project team must undertake community engagement as part of this local analysis. As a result of community engagement, the project must reflect local identity, culture and heritage in the design of the building in a publicly demonstrable way. This can be achieved through: • Community art or placemaking projects; • Selection of suppliers/designers of artwork or cultural elements; • Building elements that tell stories of the past and heritage; and • Spaces and uses that reflect the local identities. Where this pathway is being pursued, it must be demonstrated that the International Association for Public Participation Australasia (IAP2) core values for public participation were used and that the project achieved the 'Collaborate' status. The project must produce a report detailing the community engagement activities undertaken and resultant design responses.	Client	Schematic Design	Indigenous site primer, cultural awareness and other literature will assist in the development of a specific approach to engage community and garner responses specifically in relation to and in alignment with placemaking and activation strategies.
					Independent Design Review Design reviews are held at key points in the development of the design. At a minimum, these must occur as follows: • Design Review during concept/schematic design stage, to ensure that proponents can take advantage of the advice offered at a time where the design is flexible enough to accommodate change without impacting on time and cost constraints; • A subsequent review when the design has been further progressed. This review session will typically occur during design development; and • At building permit stage (after development approval) a further check must take place by the Design Review Panel Chair or delegate, to ensure that the final design reflects approved development application and any relevant conditions related to design quality. The Design review panel must be independent of the project. This can occur through an external Design review panel, such as the Government Architect Office, or in-house Design review panel, as long as it can be demonstrated that they act independent of the project team. The design review must use comprehensive terms of reference during the project's design and design development phase. To be classed as independent a panel member cannot be employed by the scheme promoter (an entity or a subsidiary of an entity) or decision maker that has been involved in the project in any meaningful way. Being a contributing member of a design review panel is not considered to be 'employment' for the purposes of this credit. All conflicts of interest that may arise from any panel member's involvement in the project must be disclosed. Composition of the Design Review Panel As a minimum the Design Review Panel must be comprised of one panel chair and two panel members. Members of the panel must: • Possess project-relevant skills and experience; • Be recognised experts in their discipline, with a minimum of 10 years' experience; • Be registered by a relevant professional peak body and be bound by that institutes' code of ethics in relation to objectivity, integrity and accountability; and • Have expertise relevant to this credit.	Client	Schematic Design	
		8	Total	8				
People								
31	Inclusive Construction Practices	N/A	Minimum Expectation	must comply	Gender Inclusive Facilities The head contractor must ensure the following is provided, or available, on-site: • Separate gender inclusive bathroom facilities and changing amenities with a high degree of privacy, and • Diverse gender-specific fit-for-purpose personal protective equipment (PPE) for diverse body sizes and types.	Head Contractor	Pre-construction	HC pays reference to Coordinated response with architect. ADP
					Anti-discrimination awareness The head contractor must: • Implement policies to address issues of discrimination, racism, and bullying on-site; • Introduce on-site redress procedures for any relevant breaches, and corrective measures to be put in place should any incident be identified; • Empower a diverse lead team to manage these policies on-site, and • Provide training to all contractors and sub-contractors on these policies (as per below). 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 drug and alcohol awareness and mental health; and • Information on policies implemented on discrimination, racism, and bullying on site.	Head Contractor	Pre-construction	HC to include in tender docs. HC also to provide evidence of approach for training, onsite work policies etc.
					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.	Head Contractor	Pre-construction	Inclusive work practices expectations ot be included in Tender docs.
					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.	Head Contractor	Pre-construction	HC to include in tender docs. HC also to provide evidence of approach for training, onsite work policies, support etc.as per requirement of tender docs
		1	Credit Achievement	1				

					Evaluating the program's effectiveness	The project must provide an evaluation report to the client and sub-contractors with the following information: <ul style="list-style-type: none"> • 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. 	Head Contractor	Pre-construction	HC to include in tender docs. HC also to provide evidence of approach for training, onsite work policies etc.
32	Indigenous Inclusion	2	Credit Achievement	2	Indigenous Inclusion - pathway	There are two pathways to meeting this credit: <ul style="list-style-type: none"> • The building's design and construction played a central role in the delivery of the targets in the project owner's organisational Reconciliation Action Plan (RAP); or • The building's design process followed Indigenous Design and Planning principles. Both require visible and inclusive participation of Aboriginal and Torres Strait Islander throughout the project's life cycle.	N/A	N/A	
					Reconciliation Action Plan	To meet this Credit Achievement, the project team must demonstrate that: <ul style="list-style-type: none"> • A key member of the Project Team is part of the organisational RAP Working Group; • At least 90% of the RAP targets have been met on the project; and • All implemented actions related to the RAP are publicly reported on the Project's website. Any design element must be informed by consultation undertaken with the local Aboriginal and Torres Strait Islander community or through nominated representatives. Where an organisational RAP has already been developed and endorsed, the project is required to adapt this to the project under certification. The project must detail specific engagement, implementation and actions that have positively influenced the outcomes of the project.	Client	Schematic Design	Touchpoints to ESG Brief and Indigenous Design - ADP Produced for Peer Review (CD)
					Inclusion of Indigenous design	The project team must demonstrate that the Australian Indigenous Design Charter guiding principles are incorporated in the design of the building including: <ul style="list-style-type: none"> • How local Aboriginal and Torres Strait Islander communities have been engaged throughout the design development; • How the project has been designed to acknowledge and recognise the Indigenous culture of the site; • How information on the reconciliation and cultural values of the project will be made available to the public, visitors and building tenants in the operational phase of the project's life. At a minimum, the following four principles from the Australian Indigenous Design Charter are to be addressed: <ul style="list-style-type: none"> • Indigenous Led: Ensure Aboriginal and Torres Strait Islander representation in the creation of the design; • Community Specific: Ensure respect for the diversity of Aboriginal and Torres Strait Islander culture by following community specific cultural protocols; • Impact of Design: Always consider the reception and implications of all designs so that they are respectful to Indigenous culture; and • Shared Knowledge (collaboration, co-creation, procurement): Develop and implement respectful methods for all levels of engagement and sharing of Indigenous knowledge (collaboration, co-creation, procurement). The project team must demonstrate engagement has happened from concept design and continues through to operational handover.	Client, Architect	Schematic Design	Please refer to ESG Folder #1 Stakeholder Analysis Indigenous Inclusion & #2 Community Needs Assessment This has been ongoing engagement as can be seen with outputs from Blaklash e.g. site primer, cultural narrative; engagement timeline etc QIC to respond in relation to touchpoints with Internal RAP team to show stage of engagement and activities undertaken. Also to be included as part of procurement strategy
33	Procurement & Workforce Inclusion	2	Credit Achievement	0	Social Procurement Strategy - 2%	Through the implementation of a social procurement strategy, at least 2% of the building's total contract value has been directed to generate employment opportunities for disadvantaged and under-represented groups. The project team must develop and implement a social procurement strategy or plan (this can be part of an overall project procurement plan/strategy). The project team must also include targets and annual reporting requirements in the strategy. Social procurement strategy The plan must include: <ul style="list-style-type: none"> • A description of the project's social procurement and workforce objectives, needs, and targets; • A demographic study of the local region to inform identification of target workforce groups and their skills; • Descriptions of the roles and responsibilities in the implementation and monitoring of social procurement and workforce targets and contracts; • Data collection and reporting templates / tools, including how data from Tier 2 and Tier 3 contractors will be collected; • Monitoring and reporting requirements; and • Reporting requirements for the project director. Projects must report the following at the time of practical completion: <ul style="list-style-type: none"> • Dollar spent and as a proportion of building contract value; • Supplier(s) engaged; • Where workforce targets are in place, the number of jobs created per target group expressed as Full Time Equivalent; and • Jobs supported. Employment opportunities strategies Generation of employment opportunities for disadvantaged and under-represented groups can be achieved: <ul style="list-style-type: none"> • Directly, through workforce targets; or • Indirectly, through social procurement. A combination of these strategies can be used to achieve the credit, as long as the total dollar spend on the above activities is equal to or greater than Criteria percentage of the building's total contract value. The building's design and construction can contribute to generating employment opportunities for disadvantaged and under-represented groups through the procurement of goods, services and construction by:	Client	Procurement	To be uploaded Supplier Sustainability Questionnaire (QIC) Please refer to ESG folder #5 Indigenous Investment and Procurement Type This goes into tender docs and ADP will facilitate conversations regarding the requirements to meet this credit.
					1	Exceptional Performance	0	Social Procurement Strategy - 4%	In conjunction with the Credit Achievement, the project must comply with both of the following criteria: <ul style="list-style-type: none"> • Social Procurement Strategy • Employment Opportunities Social Procurement Strategy The project team must develop and implement a social procurement strategy or plan (this can be part of an overall project procurement plan/strategy) that directs at least 4% of the building's total contract value to generate employment opportunities for disadvantaged and under-represented groups. See Credit Achievement requirements for further information. Employment Opportunities Generation of employment opportunities for disadvantaged and under-represented groups can be achieved either: <ul style="list-style-type: none"> • Directly, through workforce targets • Indirectly, through social procurement A combination of these strategies can be used to achieve the credit, as long as the total dollar spend on the above activities is equal to or greater than the required 4% value of the building's total contract value

34	Design for Inclusion	2	Credit Achievement	2	Inclusive Design 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.	Architect	Design Development	Arch - equal access to the building to be provided with diverse wayfinding and inclusive spaces integrated within the design. EOT facilities provided - provision for all gender Relates to Enjoyable Spaces Credit #28 & Amenity and Comfort Credit #14 Accessible Public Spaces Further coordination with architect on design solutions for way finding - ramps on ground level accessible ramps, sloping walkway incorporated flush thresholds at boundaries - sloping walkways to gain access to
		1	Exceptional Performance	0	Engagement with target Groups: Needs Analysis The project team must consult with distinct community types to develop a needs analysis that will influence the project during the design phase. The consultation must be undertaken early in the design process and include a balanced cross-section of representation of the target group. The consultation must be considerate and relevant to the project. The consultation process must generate a report that is then used to influence the design of the project. As a result of the needs analysis, the building must show how it aligns with best practice guidelines, such as the Design for Dignity Guidelines: Principals for Beyond Compliance Accessibility in Urban Regeneration. Building solutions that are expected to be included would be assistive technologies, emotional health spaces, acoustic treatments, adaptive strategies, gender, size, and physical appropriate facilities.	Client	Schematic Design	
		9	Total	5				

Nature									
35	Impacts to Nature	N/A	Minimum Expectation	must comply	Site Ecological Value Site Ecological Value This requirement is met where: <ul style="list-style-type: none"> At the date of purchase or option contract, land clearing does not occur on the site as a result of the building, infrastructure, or construction works on the following: <ul style="list-style-type: none"> Old-growth forest Prime agricultural land Any wetland listed as being of 'High National Importance' Aspects considered 'Matters of National Environmental 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, within 100 meters, or 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: <ul style="list-style-type: none"> Both the Waterway Protection Credit Achievement and the Credit Achievement for this credit (Impacts to Nature) is met The light pollution impacts are managed Where the site is next to a wetland (as above), by also putting in place Wetland Protection Measures This requirement 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.	Client	Early works	Engagement of ecologist name to be provided by Landscaper. General question to GBCA regarding clarity of inner city site previously cleared. Assessment form ecologist to imply enhancing ecological value by putting species back and contributing to soil health etc	
					Light Pollution to neighbouring bodies The project team must demonstrate that all outdoor lighting on the project complies with AS/NZS 4282:2019 Control of the obtrusive effects of outdoor lighting. The conditions apply to all boundaries, apart from boundaries with roads. The boundary shall be taken as the site boundary, with no setback and no consideration of the location of adjacent buildings (i.e., worst-case scenario). The following values from Table 2.1 of AS/NZS 4282:2019 must be applied: <ul style="list-style-type: none"> For Class 2 buildings (residential), the compliance is for columns 4 and 5 as per Table 2.1 of AS/NZS 4282:2019 For Class 3 to 9 buildings (non-residential), the compliance is as per column 3 as per Table 2.1 of AS/NZS 4282:2019 The system must comply with both pre- and post-curfew requirements.	ADP Services	Design Development	ADP Electrical Team Design Input in DD Phase Modelling required	
					Light pollution to night sky It must be demonstrated that one of the following specified reductions in light pollution has been achieved by the project. <ul style="list-style-type: none"> Control of Upward Light Output Ratio (ULOR); or Control of Direct Illuminance. This covers all external lighting of a project. In addition to other types of external lighting, for the purposes of this credit, luminaires inside glazed atria and those on the uppermost (uncovered) deck of an outdoor car park are considered external. Control of Upward Light Output Ratio (ULOR) For this option, the project team must demonstrate that no external luminaire on the project has a ULOR that exceeds 5%, relative to its actual mounted orientation. Project teams must demonstrate that the ULOR provided or calculated in the documentation, is relevant to the as-installed orientation of the luminaire. Control of Direct Illuminance For this option, the project team must demonstrate that direct illuminance from external luminaires on the project produces a maximum initial point illuminance value no greater than: <ul style="list-style-type: none"> 0.5 Lux to the site boundary; and Lux to 4.5 metres beyond the site into the night sky, when modelled using a calculation plane set at the highest point of the building. Calculations shall be in accordance with AS 4282:2019 The calculation plane must cover the area between the site boundary and building façade or vertical service to be illuminated. The horizontal calculation plane shall be set at the top of the building fabric, excluding spires. Calculation plane grid points shall have a 0.5m spacing. All illumination results shall be reported to within 2 decimal places.	ADP Services	Design Development	ADP Electrical Team Design Input in DD Phase	
2	Credit Achievement	0	Protection of ecological values The project team must show how ecological values will be protected including: <ul style="list-style-type: none"> 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. 	Ecologist	Design Development	Not currently targeting for 5 Star Engagement of ecologist to be provided by Landscaper. General question to GBCA regarding clarity of inner city site previously cleared. Assessment form ecologist to imply			
			Client	Design Development	TBC				
			Landscape Archi	Design Development	I believe 1 point is achievable, 2 may be difficult as its hard to identify original biomass values for example.				
				0	Retaining High Biodiversity Values Where the area has been deemed an area of high biodiversity value by an assessment undertaken by an ecologist, the project must retain at least 50% of this area contiguously. The project team must then provide a narrative as to how the following impacts to nature and the community have been mitigated: <ul style="list-style-type: none"> Light and noise pollution (this is met if required for the Minimum Expectation) Habitat disturbance and connectivity (deemed met if Biodiversity Enhancement and Nature Connectivity credits are achieved) On-site and downstream water quality (Deemed met if Waterway Protection credit is achieved) Migratory paths of insects, birds, or other species Two local issues appropriate to the project site (e.g., pest management and groundwater) Consideration must be given to these impacts during demolition, siteworks, construction, or future occupation. Where no existing biodiversity is identified through the process outlined above, the project team is not required to provide a narrative to describe how the listed impacts to nature and the community have been mitigated, but instead how the project will add biodiversity value to the site.	Ecologist, Client	Design Development		
					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.	Landscape Archi	Design Development	Complies	

36	Biodiversity Enhancement	2	Credit Achievement	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 500m ² 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. Prescriptive pathway The landscaping must meet the following plant diversity targets: • 10% plant species; • 20% plant genus; and • 30% plant family. Performance pathway	Landscape Archt	Design Development	ADP to communicate exactly what % to what species specifically - Confirmation from Landscape to achieve diversity of species - prescriptive pathway
					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;	Ecologist	Design Development	
		2	Exceptional Performance	0	Landscape Area As a minimum, external landscape in the building, whether horizontal or vertical must be provided at a ratio of either 30% of the site area or at a ratio of 1:300 of GFA, whichever is larger. Vertical or horizontal landscapes are acceptable.	Landscape Archt	Design Development	Achievable. Rooftop area is key.
					Diversity of species Landscape must be shown to be diverse and include multiple species/genus/etc. An ecologist must review, assess and verify how the choice of landscaping and biodiversity is diverse and resilient to climate change impacts, thereby increasing the longevity of the landscape. Greater than 80% of plants must be indigenous and the site must include at least one significant (nesting) tree or equivalent habitat provision per 250m ² of landscaped area. No invasive species are allowed, as per the Australian Weeds Strategy 2017 to 2027. The site must preserve, restore and/or support vulnerable ecosystem through planting critically endangered and/or endangered plant species which are native to the bioregion.	Landscape Archt	Design Development	I believe 1 point is achievable. 1 habitat tree per 250m2 (states 1 per 500m2 above) will be very difficult to achieve and justify.
37	Nature Connectivity	2	Credit Achievement	0	Nature Connectivity The site must be built to encourage species connectivity through the site, and to adjacent sites. If the project sits within a blue or green grid strategy it must contribute to the goals of the strategy. The site may include any of the following strategies: • Landscaping: Where connectivity is being achieved through landscaping, this must be contiguous with existing, restored and new habitats. As a minimum requirement for habitat connectedness, the conservation area must make up at least 25% of the total external area within the building's site boundary. To be eligible, this must be at least 182m ² , or • Infrastructure: Design features such as a canopy bridge, wildlife tunnels, green roofs, amphibian tunnels and green infrastructure are used to connect nature on site to adjacent natural areas, which are either existing, restored or new. For both pathways, the project is to provide a narrative on how the pathway would support the targeted wildlife species. In addition to the above, if the project sits within a blue or green grid strategy, the project team must demonstrate how its design and landscaping contribute to the goals of the strategy.	Architect	Schematic Design	Arch - Native and indigenous plant species proposed to the ground, level 1 & 2 public ally accessible zones as well as erode podiums interconnecting terraces and roof top to be developed with Urbis Landscape
					Landscape Archt	Schematic Design	Difficult to achieve as there is no adjacent natural corridors to connect with. Possibly 1 point only.	
38	Nature Stewardship	2	Credit Achievement	0	Overview The building owner, as part of the project's development, undertakes activities that protects or restores biodiversity at scale beyond the development's boundary. The area of restoration must be equivalent to the total GFA of the development, or site area, whichever is greater.	Client	Practical Completion	
					Area of restoration or protection The area of restoration must be equivalent to the total GFA of the development, or site area, whichever is greater.	Client	Practical Completion	
					Location of restoration or protection Land for restoration must be in Australia and restored to equivalent ecological value of the site before any development occurred. The location of the land designated for the offsite restoration must not be in the development boundary. A qualified Ecologist must confirm that the ecological value is equivalent. There are situations where land restoration may occur in a site where the building is located, but not within the development boundary (e.g. a university campus). Project teams are encouraged to contact GBCA to determine whether this site complies. Project teams must ensure that the land being claimed for restoration and protection activities is not being double counted for multiple buildings or other activities. The Certified Assessor reserves the right to query for additional information during assessment.	Client	Practical Completion	
					Activities to protect or restore Achieving the credit can be done by either: • The project owner protecting or restoring an area offsite themselves; or • The project owner supports an organisation that restores an area on their behalf. In all cases, for the activities above, the project team must show how the action is additional. That is, the action goes beyond any legislated requirements and how it is resulting in an outcome that wouldn't have happened otherwise. There may be other pathways that can be used by building owners to demonstrate that they are restoring or protecting an area outside their development boundary. Project teams are encouraged to contact GBCA to explore these opportunities.	Client	Practical Completion	
					Legislated requirements Where the project is required to purchase biodiversity offsets, invest in land restoration, restore land, or similar, as part of an EPBC action or development approval, or other legislated requirements, these actions cannot be used to demonstrate compliance with this credit The development must demonstrate an annual average flow reduction (ML/yr) of 40% compared to pre-development levels.	Client	Practical Completion	
39	Waterway Protection	2	Credit Achievement	2	Runoff Volume The development must demonstrate an annual average flow reduction (ML/yr) of 40% compared to pre-development levels.	Civil Engineer	Design Development	
					Water Pollution All runoff discharged from site meets specified pollution reduction targets listed: Total Suspended Solids (TSS) 85% Gross Pollutants 90% Total Nitrogen (TN ³) 45% Total Phosphorus (TP) ³ 65%	Civil Engineer	Design Development	Can be achieved. Update as of 20221116 (ADP Hydro Team)
		2	Exceptional Performance	0	Environmental Management Minimise the risk of chemical pollutants and other toxicants entering the stormwater system, including by, but not limited to: • Chemical storage, loading, refuelling or work areas must install bunding, with any spills draining to trade waste or appropriate treatment devices. These areas must have an awning or roofing to separately divert rainfall into the stormwater system. • If a site has more than 200m ² of uncovered areas where vehicles are likely to transit and/or park, then hydrocarbon treatment devices must be installed, specified to remove at least 98% of hydrocarbons, sized to treat a 1-in-3 month ARI (4EY) flow.	Civil Engineer	Design Development	Can be achieved. Update as of 20221116 (ADP Hydro Team) - Diagram of Ocean Guard and filter system strategy confirmed landscape numbers on 20221116.
					Runoff Volume The development must demonstrate an annual average flow reduction (ML/yr) of 80% compared to pre-development levels.	Civil Engineer	Design Development	
				Water Pollution All runoff discharged from site meets specified pollution reduction targets listed: Total Suspended Solids (TSS) 90% Gross Pollutants 95% Total Nitrogen (TN ³) 60% Total Phosphorus (TP) ³ 70%	Civil Engineer	Design Development		

		12	Total	4				
Leadership								
40	Market Transformation	5	Credit Achievement	0				
41	Leadership Challenges		Credit Achievement	0	Net Zero Carbon			
					Fossil Fuel Free Construction Site			
					Resource Efficiency and Circular	Resuse of pre-existing onsite materials to be used for: tiler structure - piling mat concrete slab - crushed and to be used as infill		
		10	Total	0			Total Cost (Indicative)	

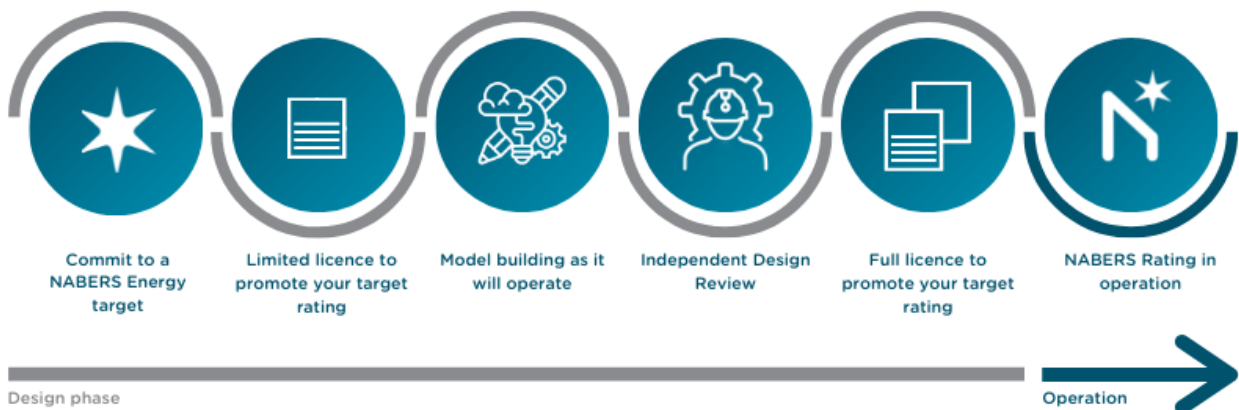
Appendix B – NABERS Pathway

The NABERS Energy for offices rating is a national rating system that measures building performance on a scale of zero to six stars. A six-star rating indicates a market leading performance, with half the greenhouse gas emissions or water use of a five-star building.

To achieve a NABERS rating the following steps need to be followed.

- > Obtain a contract (Target Rating, initial agreement, and target rating license)
- > Design, Document and Model: Estimating the rating
- > Independent Design Review (IDR): Design Review (if a commitment agreement is targeted or required)
- > Submit IDR Review to NABERS
- > Obtain a commitment agreement rating to promote the target rating
- > Operation phase energy data collection and rate the building (12-24 months data) with minimum 75% occupancy Once the building is in operation

A brief outline of the process can be seen below.



Appendix C – Climate Positive Pathway

Consultant Advice Notice

From	M Mahmudul Hasan, Matej Culanic	Advice No.	CAN No-2
Project	Albert St CRR Development	Project No.	BNE 0777
Date	25 October 2022	Pages	6
Subject	Green Star Buildings Positive Credit including Climate Positive Pathway	Revision:	01

Distribution to:

Attention	Company	Email
Greg Atkinson	RCP	GAtkinson@rcp.net.au
Kay Crowley	QIC	K.Crowley@qic.com
Kathryn Ellis	QIC	K.ellis@qic.com
Paul Bosch	QIC	P.Bosch@qic.com
Laurent Deleu	ADP Consulting	L.Deleu@adpconsulting.com.au
Azhar Ali	ADP Consulting	a.ali@adpconsulting.com.au

Executive Summary

The Positive category, one of eight in Green Star Buildings category, is heavily weighted. Of all available points in the Buildings tool, a total of 22% is within the Positive category. As a result, it is important and necessary for the project team to have a clear understanding of all category and credit requirements.

The intention of this document is to clearly outline credit requirements, responsible disciplines and actionable items to ensure the design is on track to achieve the targeted credits under a 5 star or 6-star scenario

Note

Positive Credits and Climate Positive Pathway advice need to be read with any additional requirement of ESG. This advice is subject to registration with GBCA under Green Star Buildings Tool (within 16th Dec 2022). Further advices will be provided if the project is registered in 2023.

Please refer to

- > Section 1.0 Positive Category Summary
- > Section 2.0 Additional Points
- > Section 3.0 Minimum expectation under Positive Credit
- > Section 4.0 Climate Positive Pathway Detail

1. Positive Category Summary

It is currently understood that the project will be registered with the Green Building Council of Australia under Green Star Buildings tools **within 16th Dec, 2022**.

If Albert Street seeks a **5-star** Green Star Buildings rating it must achieve the following credit to achieve total **9 points**:

- > Upfront Carbon: Demolition Offset and 20% reduction in upfront carbon emissions over a typical building (3 points)
- > Energy Use: Commitment Agreement and NABERS 5.5 Stars with 25% modelling margin (3 points)
- > Energy Source: Zero Carbon Action Plan & Renewable electricity (base building) – minimum 5 years contract (3 points)
- > Water use -Minimum 15% reduction of potable water consumption (no points, but it requires for Green Star certification)

If Albert Street seeks a **6-star** Green Star Buildings rating it must achieve following credit to achieve minimum **17 points**:

- > Upfront Carbon: Demolition Offset and 20% reduction in upfront carbon emissions over a typical building (3 points)
- > Energy Use: Commitment Agreement and NABERS 6 Stars (6 points)
- > Energy Source: Zero Carbon Action Plan & Renewable energy (whole building) -minimum 5 years contract (6 points)
- > Other emissions: Scope 1 refrigerants and fossil fuels eliminated or offset (2 points)
- > Water use -Minimum 15% reduction of potable water consumption (no points, but it requires for Green Star certification)

2. Additional Points

As 6 Stars requires more points (70 points) than 5 Stars (35 points), ADP recommends that the project must seek additional points to achieve minimum **22 points** under positive category

The **additional points** options are

- > Upfront Carbon: 40% reduction in upfront of carbon emission over a typical building (additional 3 points to achieve maximum total 6 points)
- > Life Cycle Impact: 30% reduction in life cycle impact compared to standard practice under comprehensive LCA analysis (2 points)
- > All Other emissions: All other emissions not captured in the positive category are eliminated or offset (additional 2 points to achieve total 4 points)

The alternative options to compensate required points under climate positive credit is to seek some credit options under leadership challenges (Innovation)

- > Climate Positive Pathway Leadership Point: One additional point can be claimed under leadership point if a total 15 points is achieved under climate positive pathway credit (06 Stars targets minimum 17 points and maximum 22 points)

3. Positive Credit: Minimum Expectation

Minimum expectation for a Green Star rated building (either 5 Star or 6 Star) under Positive category is provided in Table 1.

Table 1 Minimum Expectation under Positive Category

Category	Credit	Minimum Requirement
Positive	Upfront Carbon Emissions	> The building has 10% less upfront carbon emissions compared to a standard building from materials
	Energy Use	> The building has at least a 10% lower energy consumption than one built to the National Construction Code 2019.
	Energy Source	> The Building provides a Zero Carbon Action Plan
	Water Use	> The building has at least 15% reduction in potable water usage when compared to a reference building (depending on building class in this case Office) or has installed water efficient fixtures and appliances

4. Climate Positive Pathway (Mandatory) and Table 1: Requirements under Climate Positive Pathway

The Climate Positive Pathway is a requirement that must be met under the Green Star Buildings Tool. It relates to **4** specific credits under the Positive category. They are as follows:

- > Credit 21 Upfront Carbon Emissions
- > Credit 22 Energy Use
- > Credit 23 Energy Source
- > Credit 24 Other Carbon Emissions

Depending upon project registration date and targeted star rating, projects seeking a Green Star rating must ensure credit requirements are met. Please refer to Figure 1 below.

Figure 1 Climate Positive Pathway and Registration Date

Credits	Criteria	2020*	2023*	2026*	2030**
Energy source	Renewable electricity	6 star	5 star	All registrations	All certifications
	Renewable energy	6 star	5 star	All registrations	All certifications
Energy use Reductions over typical building	10% reduction	All ratings			All certifications
	20% reduction	6 star	5 star	All registrations	All certifications
	30% reduction				
Upfront carbon emissions Reductions over a typical building	10% reduction	All registrations			All certifications
	20% reduction	6 star	5 star	All registrations	All certifications
	40% reduction			6 star	All certifications
Other carbon emissions	Scope 1 eliminated or offset (refrigerants and fossil fuels)	6 star	5 star	All registrations	All certifications
	All remaining emissions offset (embodied carbon and other under control)			6 star	5 star

* Denotes year of registration
** Denotes year of completion

Requirements: Climate Positive Pathway

Table 2 Requirements under Climate Positive Pathway

Credit Description	Criteria	ADP Comments	Actions and Responsibilities
21 Upfront Carbon Emissions <i>Reducing upfront carbon emissions</i>	<ul style="list-style-type: none"> Upfront carbon emissions refer to modules A1 – A5 in the life-cycle stage. Consideration is given to raw material extraction, transport to manufacturing site, manufacturing, transport to construction site and installation/assembly. This can be calculated by either by GBCA calculator approach (A1-A3) or LCA analysis (A1-A5) A 10% reduction (minimum expectation) in upfront carbon emissions is required when compared to a reference building. A 20% reduction (credit achievement) in upfront carbon emissions is required when compared to a reference building along with demolition offset (3 points) A 40% reduction (exceptional performance) in upfront carbon emissions is required when compared to a reference building along with demolition offset (6 points) 	<ul style="list-style-type: none"> For 5 Star -A 20% reduction of upfront carbon is being targeted for a 5 Star building for credit achievement (3 points) For 6 Star -Minimum 20% reduction is being targeted for a 6 Star building for credit achievement (3 points) To target 40% reduction, (6 points). Engagement of LCA consultant is required as a part of exceptional requirement of upfront carbon credit <p>Note: If 3 points are targeted, then remaining 3 points can be targeted from other credits (e.g. leadership and innovation)</p> <ul style="list-style-type: none"> Carbon offsets purchased against the building's upfront carbon emissions from construction cannot be used to show compliance against the 20% reduction. Must occur through good design and material choice. 	<p>QIC Need to decide for either 5 Star or 6 Star Green Star Buildings</p> <p>ADP ESD Will provide upfront carbon calculation and report using data from structural engineers, architects and the project team. Will also assist to LCA consultant for the RFI and co-ordination in this process.</p> <p>Architect Will provide materials data relevant to upfront carbon analysis</p> <p>Structural Engineer Will provide materials data relevant to upfront carbon analysis</p> <p>LCA Consultant Will analyse comprehensively to ensure the most points under LCA with input from project team</p> <p>WT Will provide cost for the material choice (e.g. façade, floor, finishes etc) and LCA consultant fees</p>
	<i>Offsetting demolition works</i>	<ul style="list-style-type: none"> Calculation of embodied carbon of existing structure is required for demolition works in accordance with GBCA requirements. 	<ul style="list-style-type: none"> ADP advised to offset demolition for a 5- and 6-star green star building

Credit Description	Criteria	ADP Comments	Actions and Responsibilities
	<ul style="list-style-type: none"> > Offset purchases need to be eligible under GBCA requirements. The older the building, the less offsets required. 		<p>(documentation) will require for GBCA submission. QIC will provide evidence (documentation) that states that the land purchased as open land with no existing building was there</p> <p>WT</p> <p>Will provide cost for the demolition offset</p>
22 Energy Use	<p><i>NABERS commitment pathway</i></p> <ul style="list-style-type: none"> > Commitment agreement required as a minimum expectation > 5.5 Star NABERS Base Building rating required with 25% energy modelling margin for credit achievement > 6 Star NABERS Base Building rating for exceptional performance 	<ul style="list-style-type: none"> > 5.5-star -6 Star NABERS base building rating targeted for a 5-star building. (3/6 points) > 6 Star NABERS base building rating targeted for a 6-star building (6 points) 	<p>ADP</p> <p>Will provide design options and NABERS report to achieve the 5.5/6 NABERS rating</p> <p>QIC</p> <p>Will decide on the design choice (e.g. Thermal storage, BIPV, Solar PV, Battery)</p> <p>WT</p> <p>Will provide cost for the design choice and HVAC equipment</p>
23 Energy Source	<p><i>Zero action carbon plan</i></p> <ul style="list-style-type: none"> > Minimum expectation for the project. Mandatory. > The Zero Carbon Action Plan must include a target date by when the building is expected to operate as net zero carbon. The Zero Carbon Action Plan must cover all energy consumption, procurement, and generation 	<ul style="list-style-type: none"> > ADP advised for the 5- or 6-star pathway 	<p>ADP</p> <p>ADP will assist QIC to prepare the Zero Carbon Action Plan with input from Building Services Team and Project team</p> <p>QIC</p> <p>QIC needs to review and to advise for the plan.</p> <p>WT</p> <p>Will provide cost for the future design choice and HVAC equipment</p>
	<p><i>Base building electricity (Renewable Electricity)</i></p> <ul style="list-style-type: none"> > All electricity under the control of the building owner or operator must be accounted for and sourced from renewables. Electricity use for tenant loads is excluded from this credit. 	<ul style="list-style-type: none"> > Targeted under the 5-star pathway (3 points) > Renewable energy contract with a minimum of 5 years required if offsite renewable energy is purchased. > Renewable energy contract cost dependent on building energy use > Contract can be part of a corporate power purchasing agreement for a building portfolio 	<p>QIC</p> <p>QIC (as a building owner or operator) will sign renewable electricity contract</p> <p>WT</p> <p>Will provide estimated cost of contract</p>
	<p><i>Whole building energy (Renewable energy)</i></p> <ul style="list-style-type: none"> > All energy under the control of the building owner/operator and all non-electricity energy provided for uses that are not under the building owner's control must be sourced from renewables. > Fossil fuel use onsite cannot be used except for emergency power generation. That emergency power generation must be less than 1% of building energy use and offset for the first 5 years. 	<ul style="list-style-type: none"> > Targeted under the 6-star pathway (6 points) > Renewable energy contract with a minimum of 5 years required if offsite renewable energy is purchased. > Renewable energy contract cost dependent on building energy use > Contract can be part of a corporate power purchasing agreement for a building portfolio 	<p>QIC</p> <p>QIC (as a building owner or operator) will sign renewable energy contract</p> <p>WT</p> <p>Will provide estimated cost of contract</p>
24 Other Carbon Emissions	<p><i>Eliminating refrigerants OR</i></p> <ul style="list-style-type: none"> > High-GWP (Global warming potential) refrigerants must be eliminated from the building. The use of refrigerants with a GWP of 10 or less is considered to comply (credit achievement) with the credit. 	<ul style="list-style-type: none"> > Credit is not being targeted under a 5-star pathway (not required) > Targeted under a 6-star pathway (mandatory) 	<p>ADP Mechanical</p> <p>Will advise for design choice</p>

Credit Description	Criteria	ADP Comments	Actions and Responsibilities
	<p><i>Offsetting refrigerants</i></p> <ul style="list-style-type: none"> > 100% of carbon emissions from refrigerants must be offset (credit achievement) > All refrigerants within the building. 	<ul style="list-style-type: none"> > Credit is not being targeted under a 5-star pathway > Targeted under a 6-star pathway > Discussion around refrigerant choice, availability and cost is required. Different refrigerants have different GWP. Would impact number of offsets required. 	<p>ADP Mechanical</p> <p>Will advise for refrigerant offset (depending number of times its recharged and associated CO2 emissions and offset)</p>
	<p><i>Other Emissions</i></p> <ul style="list-style-type: none"> > Other emissions from building construction, energy operation (electricity and energy) and climate impact must be calculated and offset. > This requires remaining upfront carbon (A1-A5) offset and any emission from the building which were not offset under climate positive credit > Any other carbon emissions over 1% of the total carbon emissions profile of the building 	<ul style="list-style-type: none"> > Must be Targeted under a 6-star pathway from 2023, not required if registered within 16th Dec 2022 > Calculation is required to be completed in order to purchase correct offset amount 	<p>ADP ESD</p> <p>Will provide advice to QIC (if required)</p> <p>QIC</p> <p>Will review offset options and advice accordingly</p> <p>WT</p> <p>Will provide estimated cost for offset</p>
25 Water Use	<p><i>15% potable water reduction</i></p> <ul style="list-style-type: none"> > Reduce potable water consumption of the building by 15% when compared to a reference building OR > All fixtures and water-using appliances installed within the project's scope must, at a minimum, meet the following WELS ratings: <ul style="list-style-type: none"> - Taps 5 star - Urinals 5 star - Toilets 4 star - Showers 3 star - Clothes washing machine 4 star - Dishwashers 5 star 	<ul style="list-style-type: none"> > This is a minimum requirement (15% reduction for any Green Star Project > This (15 % reduction) must be achieved for Green Star certification though points are not awarded to the project under this credit by GBCA > No points will be targeted for this credit under the 5- or 6-star pathway due to credit achievement difficulty (45% reduction). <p>Note</p> <ul style="list-style-type: none"> > PCA A grade or Premium grade requires 3/4 points in water credit (under Office V3 and Green Star v1.2/1.3) > No GBCA water calculator is available under Green Star Buildings tool > QIC requires WSUD strategies and report as a part of ESG requirement 	<p>ADP</p> <p>Will conduct high level calculation with input from Civil, Hydraulic, Landscape architect</p> <p>Civil & Hydraulic</p> <p>Will conduct the analysis for rainwater tank sizing and storm water quality assessment. WSUD report to be provided by Civil consultant</p> <p>Architect</p> <p>Will specify water efficient appliances and fixtures.</p> <p>Landscape Architect</p> <p>Specify landscape areas for irrigation, plant selection</p> <p>WT</p> <p>Will provide estimated cost for equipment (e.g. rainwater tank, storm water treatment device, piping, etc)</p>
26 Life Cycle Impact	<p><i>Life cycle impact</i></p> <ul style="list-style-type: none"> > Whole-of-life (Module A1 to D) Life Cycle Assessment to determine wholistic impacts of building on the environment. In addition to material sourcing, manufacturing and construction, this includes operational energy and water use, maintenance, demolition and waste processing (among other items) > 30% reduction (credit achievement) when compared to a standard practice building (2 points) 	<ul style="list-style-type: none"> > ADP recommends to engage an LCA consultant to target the credit for 6 Star Building > If any credit items require additional points or lacks in required credit points to achieve 6 stars, these 2 points can be an option > LCA consultant needs to be engaged in schematic for material choice and building modelling can be done detail design phase 	<p>QIC</p> <p>Will engage LCA Consultant</p> <p>LCA Consultant</p> <p>Will conduct the analysis and advise for material choice</p> <p>ADP ESD</p> <p>Will be in co-ordination and input</p> <p>Project Team</p> <p>Will provide input as required for LCA analysis</p>

M Mahmudul Hasan, Matej Culanic
Sustainability Consultant
ADP Consulting Pty LT

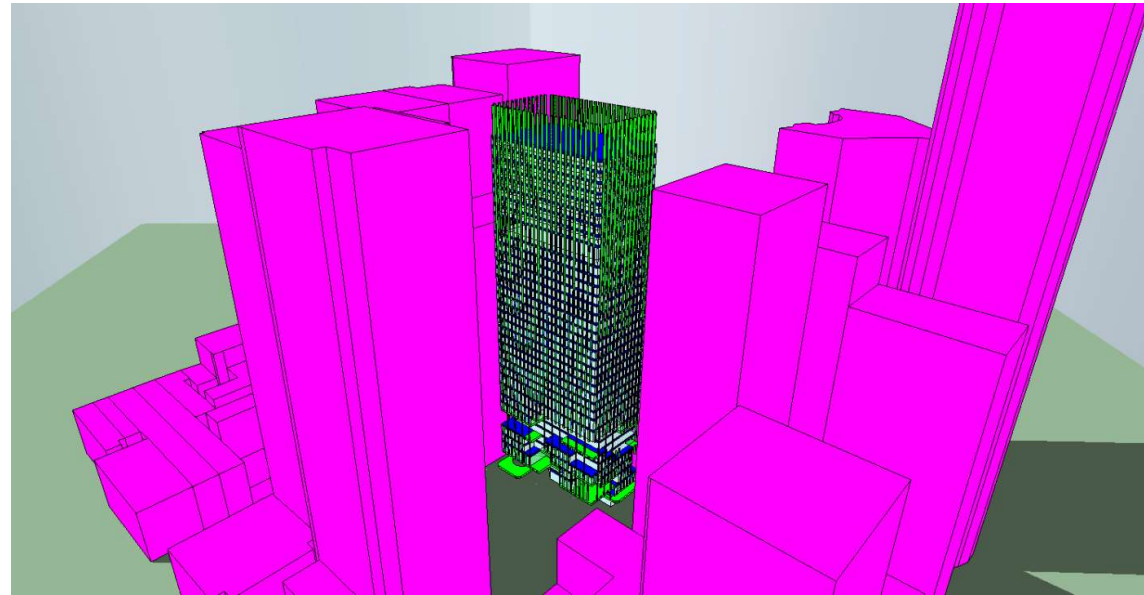
Appendix D – Climate Resilience

Albert St CRR Development

ESD Presentation: Climate
Resilience Workshop

Presentation -Part 5

04th October 2022

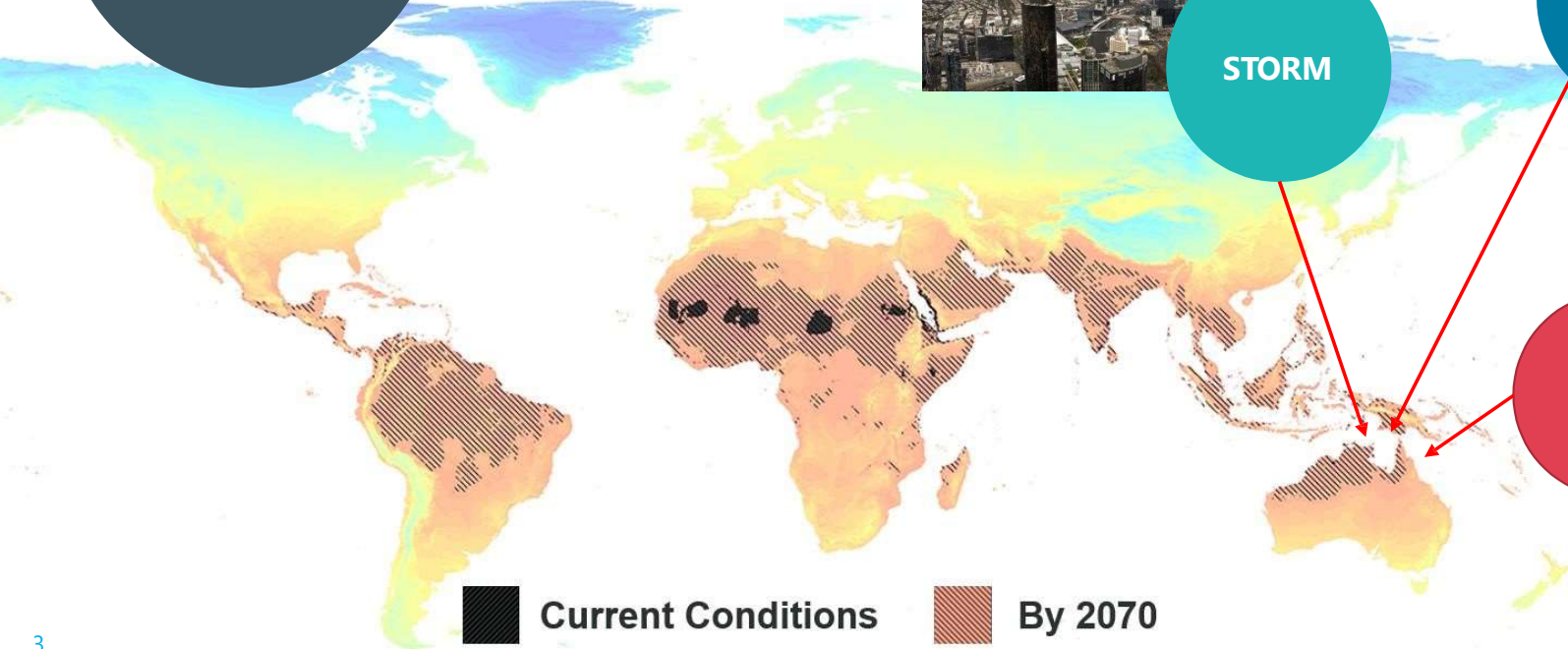


Agenda

- > **Climate Crisis**
- > **Context : Climate Change Adaptation**
- > **Climate Change Effects in Brisbane, QLD**
- > **Climate Change : Resilience Credit in Green Star Buildings**
- > **Pre-screening Checklist**
- > **Climate Risk & Adaptation Assessment**
- > **Design Response**
- > **Documentation Requirements**
- > **Discussion**

Climate Crisis

Earth's Uninhabitable Zones



'State disaster' as 'rarely seen phenomenon' thunderstorm asthma strikes in Melbourne



STORM

Melbourne weather forecast: heavy rain, strong winds to hit Victoria



FLOOD

The New York Times

Apocalyptic Scenes in Australia as Fires Turn Skies Blood Red

Thousands of people fled from their homes as wildfires raged on the last day of the warmest decade on record in Australia.



FIRE

Context : Climate Change Adaptation

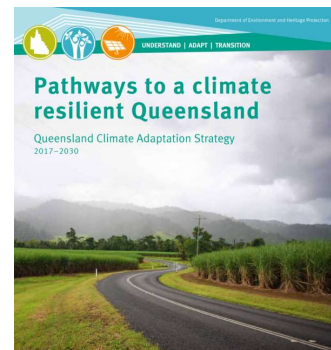
> Global Context

- Paris Agreement 2015/2016
- Sustainable Development Goal (SDG's)



> Local Context

- Queensland Climate Change Adaptation Strategy (Q-CAS) -2007/2017
- BCC climate resilience policy



PARIS CLIMATE AGREEMENT



Climate resilience



Brisbane
City Council

Brisbane City Council is working hard to ensure Brisbane is a climate-resilient city and is taking an adaptive management approach which aims to:

- understand our risk to future events
- establish good leadership and strong governance
- undertake resilience planning to prepare, respond and recover from events
- coordinate implementation across all government levels and with the community
- benchmark system performance and continually review and adjust for improvements.

Creating great environments
with great people

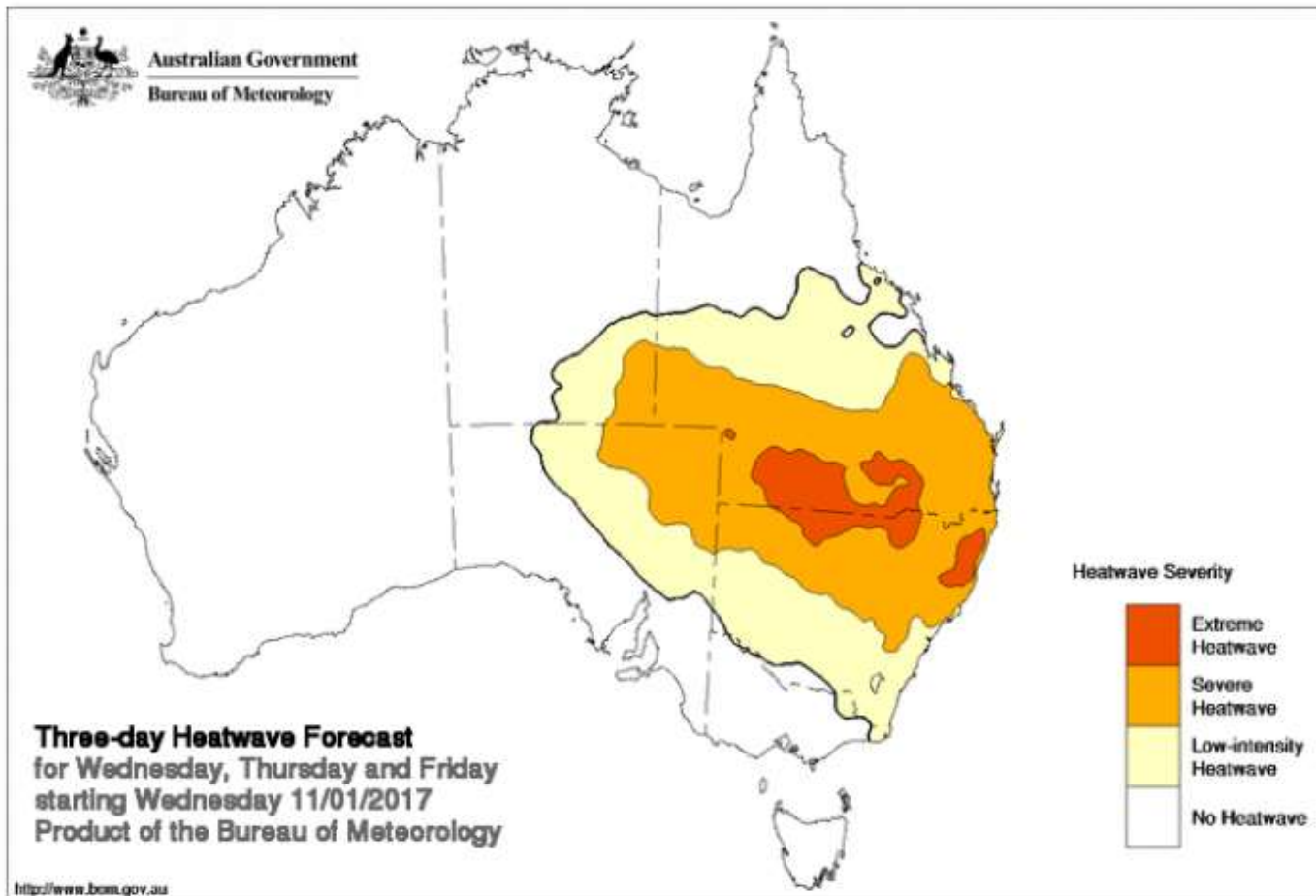
Climate Change Effects : Brisbane, QLD



18,000 properties were inundated in metropolitan Brisbane, 30,000 homes and businesses were damaged or destroyed in Brisbane, Ipswich and other local areas, 36 people died due to flooding event in Jan 2011

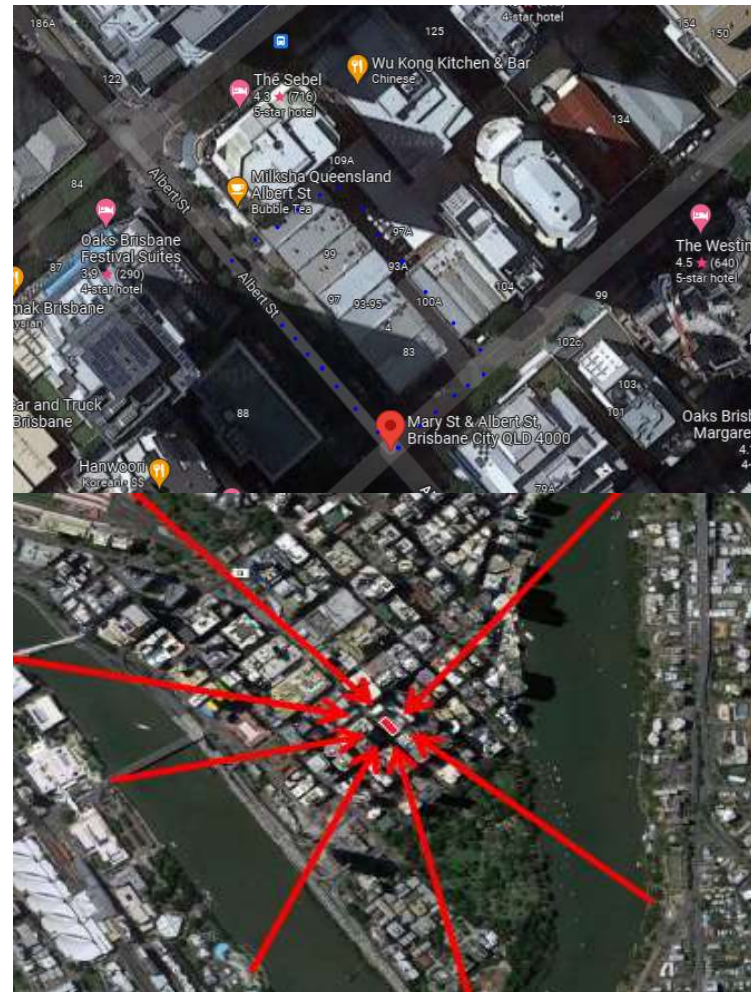
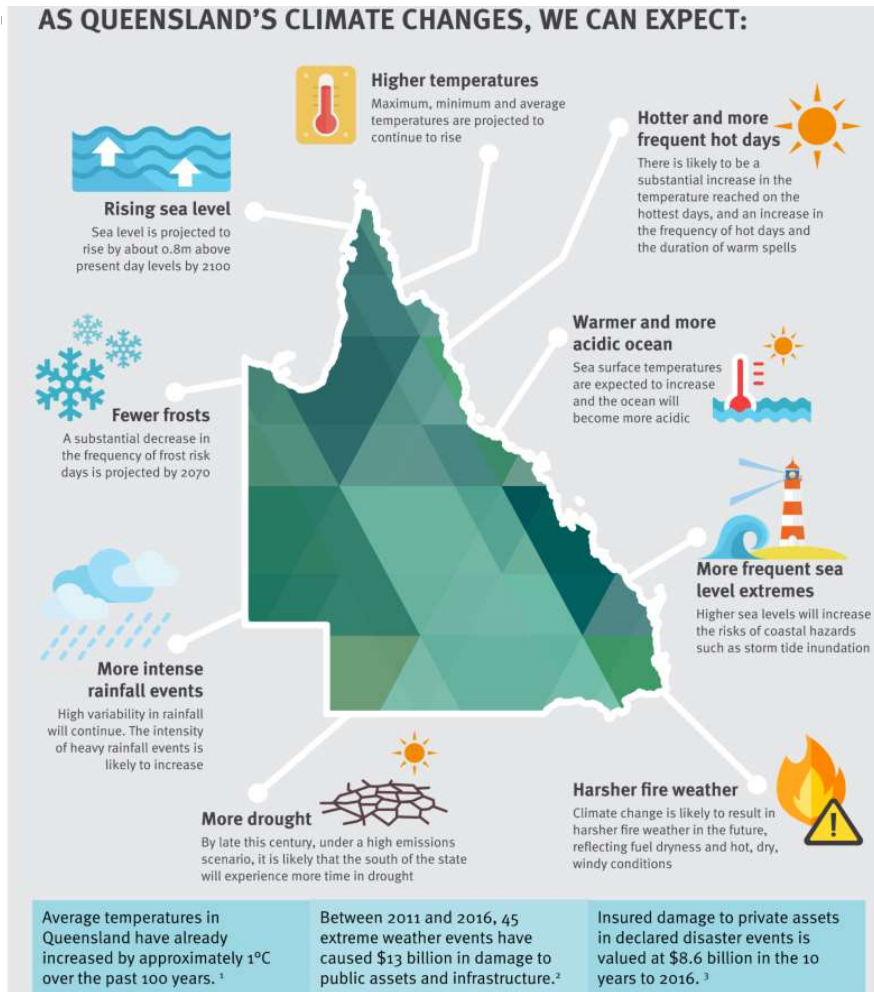
The flood peaks in Brisbane on January 13, 2011.

Climate Change Effects: Brisbane, QLD



Heatwaves are the deadliest natural hazard in Queensland, leading to the loss of more than 100 lives every year.

Climate Change Effects on Albert St CRR

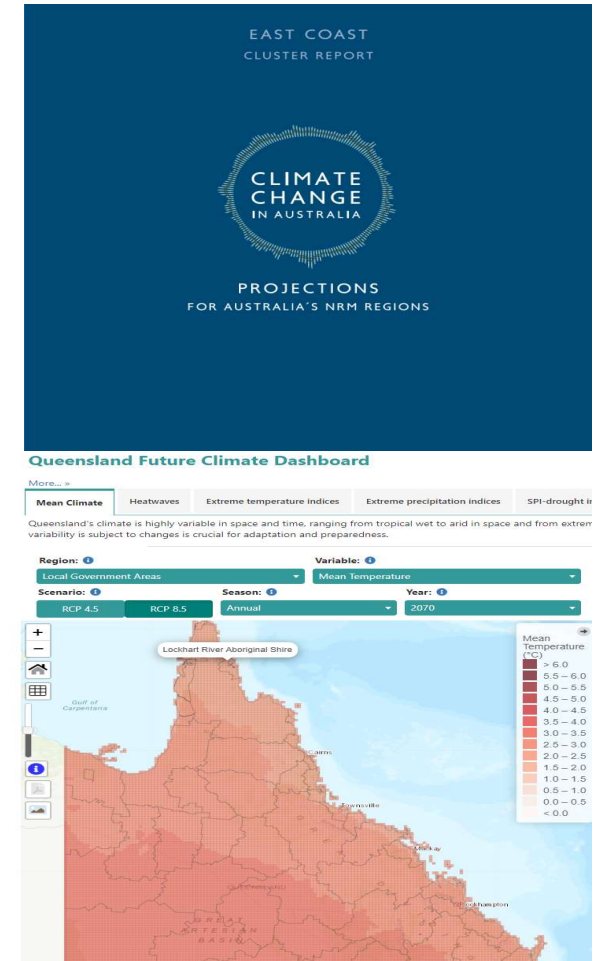


Climate Change Projections

Climate Projections

RCP level – Representative Concentration Pathways considers future emission

- > 2040-2050 Scenario (RCP Level 4.5), medium emission
- > 2070-2090 Scenario (RCP Level 8.5), high emission

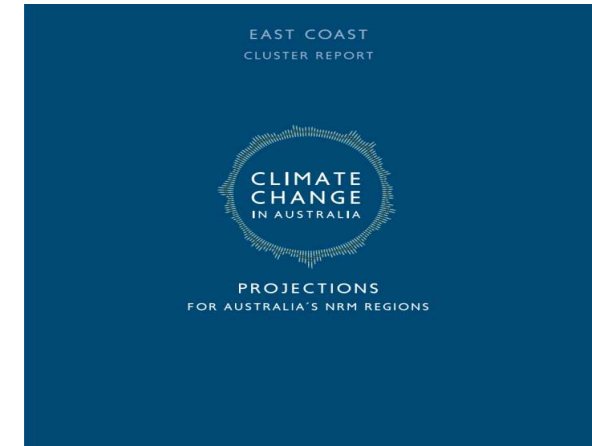


Climate Change

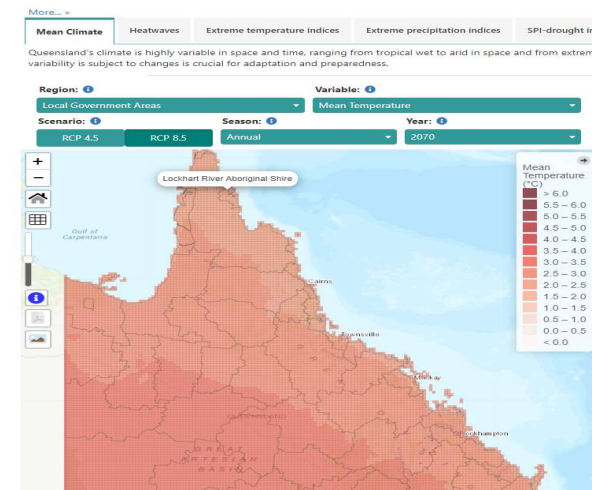
Climate Variables

Global warming causes changes to essential climate variables:

Primary Effects	Air temperature	Assessed using publicly available climate data
	Solar radiation	
	Sea-surface temperature	
	Precipitation	Assessed using publicly available climate data
	Humidity	
	Wind	Assessed using publicly available climate data
Secondary Effects	Relative humidity	Assessed using publicly available climate data
	Bushfire weather	
	Sea-level rise	Assessed using publicly available climate data
	Drought	Assessed using publicly available climate data
	Flood	Assessed using publicly available climate data
	Cyclones	
	Coastal inundation	
	Heatwave	Assessed using publicly available climate data

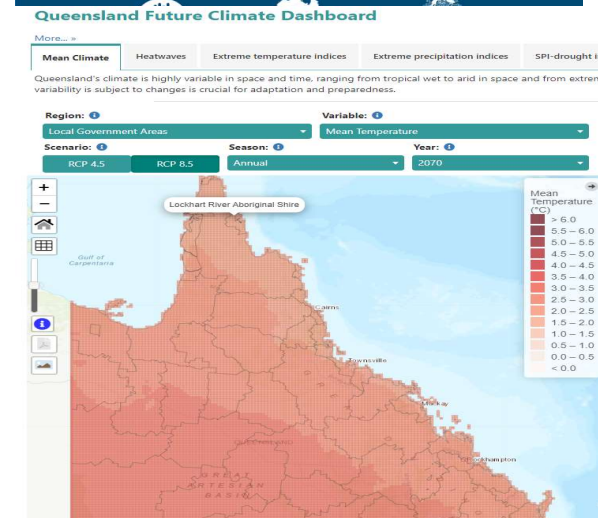
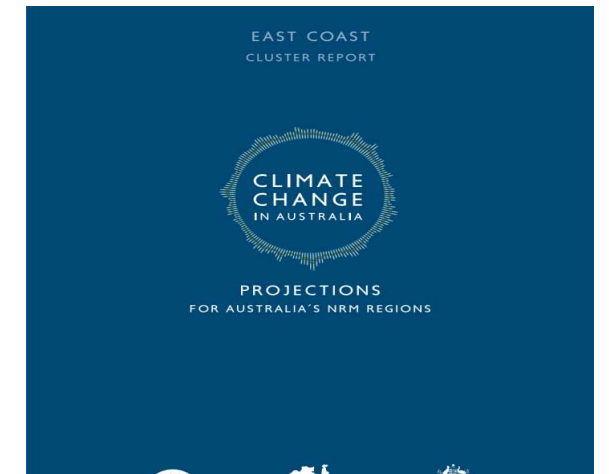


Queensland Future Climate Dashboard



Climate Change Projections

		CURRENT	2030 (RCP4.5)	2070 (RCP8.5)
Annual temperature	Maximum	34	+ 1.2°C	+ 3.7°C
	Minimum	14	+ 0.6°C	+ 2.1°C
	Average		+ 0.9°C (+0.4 to 1.3°C)	+ 2.9°C (+2.2 to 3.8°C)
Extreme temperature	Days over 40°C	1	Increase to 1.6	Increase to 2.1
Extreme temperature	Days over 35°C	12	18	27
Average annual rainfall		No specific annual record (365.8 mm Feb 2020)	Reduce 4% (-16 to 4%)	Reduce 16% (-32 to 17%)
Rainfall intensity	NA		High confidence heavy rainfall intensity events will increase, though the magnitude and timing cannot be reliably projected. (+5% occurrence in a year based on 20 years average)	
Frequency of severe drought conditions			21-22 days (cannot be reliably projected)	39 to 48 days (cannot be reliably projected)
Frequency of severe wet conditions			16-42 days (cannot be reliably projected)	39 to 54 days (cannot be reliably projected)
Fire Danger Days index (FDDI)			+5%	+13%
Sea level rise			+0.1- 0.2 m	+0.44-0.88 m
Projection data obtained from Climate Change in Australia East Coast Cluster Report CSIRO, BOM 2015 and Future Climate Dashboard, Queensland Government ²				



Creating great environments
with great people

Climate Change : Green Star Credits



Resilient

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

> Climate Resilience

Synergies with other credits

- > Energy Use
- > Lifecycle Impacts
- > Operations Resilience
- > Community Resilience
- > Contribution to Place
- > Impacts to Nature

Direct/Indirect Impact to Credits



Positive

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



Responsible

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



Places

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



Nature

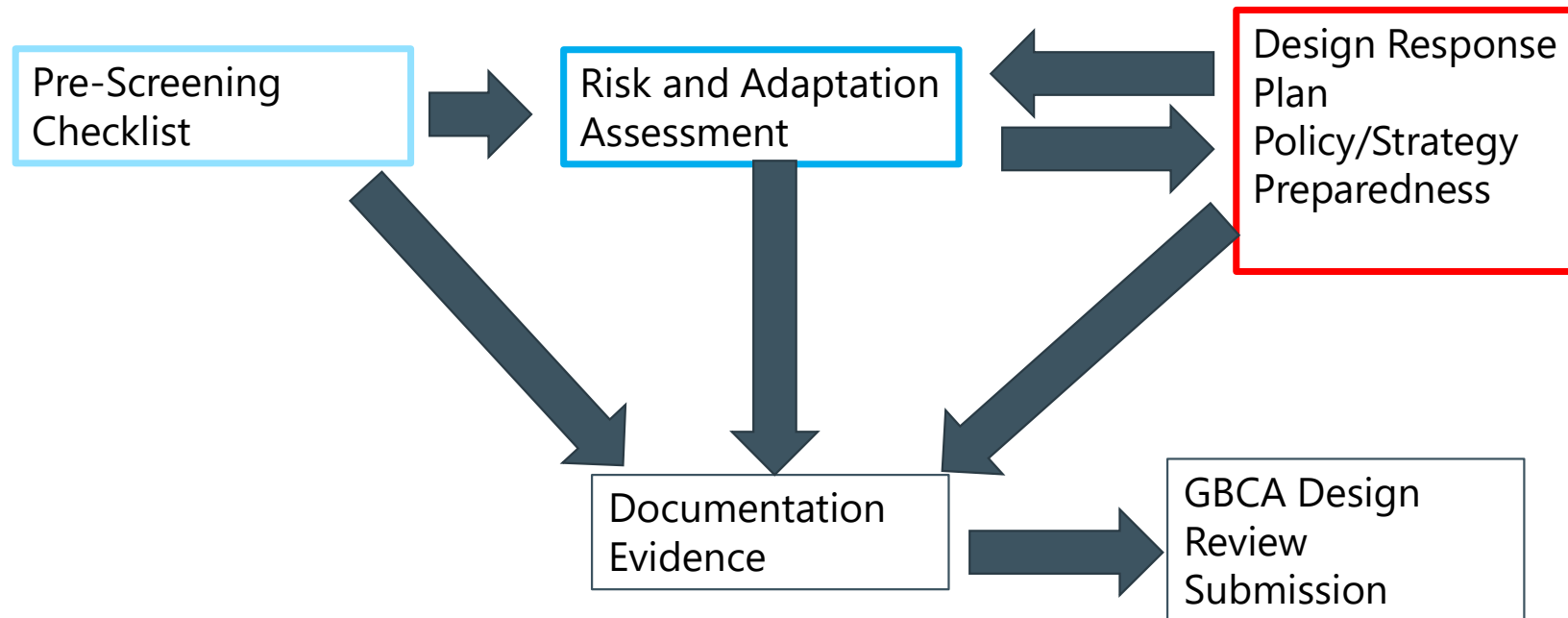
Encourages active connections between people and nature and rewards creating biodiverse green spaces in cities.

Climate Resilience: Credit 16

- > **Pre-Screening Checklist**
- > **Climate Risk and Adaptation Assessment**
- > **Design Response (Design actions)**
- > **Plan, Policy /Strategy, Preparedness document**

Climate Resilience: Credit 16

> Process



Climate Resilience: Credit 16

> Pre-Screening Checklist (Mandatory)

Project Name: Albert St CRR Development Project No: BNE 0777					
Climate Change Pre-Screening Checklist (Mandatory)					
Note: If the pre-screening item does not apply to the project, the questions in the remaining three columns do not need to be checked off.					
Item No	Pre-Screening Item	Applies to Project (Yes/No)	Has data regarding future climate exposure been reviewed? (Yes/No/N/A)	Has a risk to the project been identified? (Yes/No/N/A)	Has a risk treatment been identified? (Yes/No/N/A)
1	The project area has previously been impacted by extreme climate events (e.g. storms/tropical cyclones, extreme rainfall and flooding, damaging winds, damaging hail, bushfires, heatwaves, drought or coastal inundation)				
1.a	Storms/tropical cyclones				
1.b	Extreme rainfall and flooding				
1.c	Damaging hail				
1.d	Bushfires				
1.e	Heatwaves				
1.f	drought or coastal inundation				
2	The project is located in a cyclone zone				
3	The project is located in or adjacent to a bushfire prone area.				
4	The project is located in or adjacent to a flood prone area.				
5	The project is located at or adjacent to the coastline or tidally influenced waterway.				
6	The project will accommodate occupants vulnerable to the impacts of climate extremes (e.g. children, elderly, low mobility, seeking medical treatment)				
7	Direct damage or failure of project components				
8	Accelerated deterioration of project components or reduced design life				
9	Reduced operating capacity				
10	Climate hazard impacts to surrounding areas (e.g., impacting access and egress) Impacts to the health and wellbeing of building occupants and other relevant stakeholders				
11	Indirect risks from impacts to other interdependent systems and services (e.g., transport networks, Power, Water, telecommunications)				
11.a	Transport Networks				
11.b	Power				
11.c	Water				
11.d	Telecommunications				
Note					
Both Historic and future data must be used when completing the checklist					
All sections must be completed					
The minimum expectation is achieved on completion of the checklist					
The credit achievement will be achieved by the following (both will require)					
1. Climate Change Risk and Adaptation Assessment - ADP and Project Team, Client, & Stakeholders will assist in this process					
2. Managing Risks - ADP and Project Team, Client, & Stakeholders will assist in this process					

Climate Resilience: Credit 16

> Climate Change Risk and Adaptation Assessment

Albert Street CRR Development, Brisbane, QLD 4000- Climate Change Risk Assessment																				
Climate Variable Risk Scenario #	Climate Variable	Risk Statement	Initial Risk Assessment						Current Controls and Actions	Residual Risk Assessment										
			Current		2040/2050		2070/2090			Current		2040/2050		2070/2090						
			Likelihood	Consequence	Likelihood	Consequence	Likelihood	Consequence		Likelihood	Consequence	Likelihood	Consequence	Likelihood	Consequence					
Adaptation Action Plan																				
Precipitation	P7	Increase in frequency of high precipitation extreme	Unlikely	Low	Low	Possible	Moderate	Medium	Likely	Moderate	High	Unlikely	Moderate	Low	Unlikely	Moderate	Low	Likely	Minor	Medium
Precipitation	P1	Decrease in mean precipitation	Possible	Minor	Medium	Possible	Minor	Medium	Likely	Moderate	High	Unlikely	Minor	Low	Unlikely	Minor	Low	Possible	Minor	Medium
Temperature	T1	Higher mean temperatures	Possible	Minor	Medium	Likely	Minor	Medium	Almost Certain	Major	Extreme	Unlikely	Minor	Low	Possible	Low	Low	Likely	Minor	Medium
Temperature	T14	Higher maximum temperature extreme	Possible	Major	High	Likely	Major	High	Almost Certain	Major	Extreme	Unlikely	Major	Medium	Possible	Moderate	Medium	Possible	Moderate	Medium

Climate Resilience: Credit 16

> Climate Change Risk and Adaptation Assessment

Albert Street CRR Development, Brisbane, QLD 4000- Climate Change Risk Assessment																						
Climate Variable	Risk Scenario #	Climate Variable	Risk Statement	Initial Risk Assessment						Current Controls and Actions	Residual Risk Assessment						Adaptation Action Plan					
				Current		2040/2050		2070/2090			Current		2040/2050		2070/2090							
				Likelihood	Consequence	Risk Level	Likelihood	Consequence	Risk Level	Likelihood	Consequence	Risk Level	Likelihood	Consequence	Risk Level							
Precipitation	P7	Increase in frequency of high precipitation extreme	An increase in intense rainfall, runoff, wind and hail events (in combination or in isolation) could result in higher costs of property maintenance and clean up.	Unlikely	Low	Low	Possible	Moderate	Medium	Likely	Moderate	High	Unlikely	Moderate	Low	Unlikely	Moderate	Low	Likely	Minor	Medium	Need a comment from clients. Flood management strategy is in place for 100 year flood event.
Precipitation	P1	Decrease in mean precipitation	Decreases in annual rainfall will affect potable water availability (water restrictions) which may impact ability to operate buildings optimally.	Possible	Minor	Medium	Possible	Minor	Medium	Likely	Moderate	High	Unlikely	Minor	Low	Unlikely	Minor	Low	Possible	Minor	Medium	
Temperature	T1	Higher mean temperatures	An increase in summer cooling loads on buildings could result in higher energy demand/costs.	Possible	Minor	Medium	Likely	Minor	Medium	Almost Certain	Major	Extreme	Unlikely	Minor	Low	Possible	Low	Low	Likely	Minor	Medium	Include manual operated blinds in living areas?
Temperature	T14	Higher maximum temperature extreme	An increase in the number of extreme heat days could lead to heat stress and solar exposure of the occupants, resulting in increased illness, dehydration related illness and/or morbidity.	Possible	Major	High	Likely	Major	High	Almost Certain	Major	Extreme	Unlikely	Major	Medium	Possible	Moderate	Medium	Possible	Moderate	Medium	Include public water stations and drinking fountains in the building (future consideration) Have trained first aiders on site in centre management

Climate Resilience: Credit 16

> Risk Analysis

- > The risk analysis methods used is consistent with *AS 5334-2013 Climate Adaptation for Settlements and Infrastructure – A risk-based approach*

	Insignificant	Minor	Moderate	Major	Catastrophic
Almost Certain	Medium	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Low	Low	Medium	Medium
Rare	Low	Low	Low	Medium	Medium

Climate Resilience: Credit 16

> Design Response

Climate Change Adaptation Design Response

Project Name: Albert Street CRR Development

Address: Albert Street

ADP Ref: BNE 0777

Reference Document: Risk Report, Climate Change Presentation, Climate Change Adaptation Report

Items	Discipline	Current Control Actions /Design Response
T1- An increase in summer hot days could lead to higher water demand.	Hydraulics	
Rainwater / stormwater system blockage as a result of higher flows / dust settling, and silting.	Civil, Hydraulics	
Risk Item – P7 An increase in intense rainfall, runoff, wind and hail events (in combination or in isolation) could result in higher costs of property maintenance and clean up.	Civil, Hydraulics	
Decrease in available rainwater due to lower rainfall	Civil, Hydraulics	

C6- An increase in extreme winds could lead to a higher exposure of built assets and property to strong winds resulting in a higher frequency of falling trees and branches impacting assets, building users and local community members	Structural
T1- An increase in summer cooling loads on buildings could result in higher energy demand/costs.	Electrical
T11- Risk Report: An increase in the number of extreme heat days could lead to power supply disruptions from programmed load shedding and heat damage to network infrastructure (increases in black outs and brown outs) causing inconvenience and interruption.	Electrical
T12- Risk Report: An increase in the number of extreme heat days could lead to higher summer cooling loads on buildings resulting in increased water and energy demand/costs.	Electrical

Climate Resilience: Credit 16

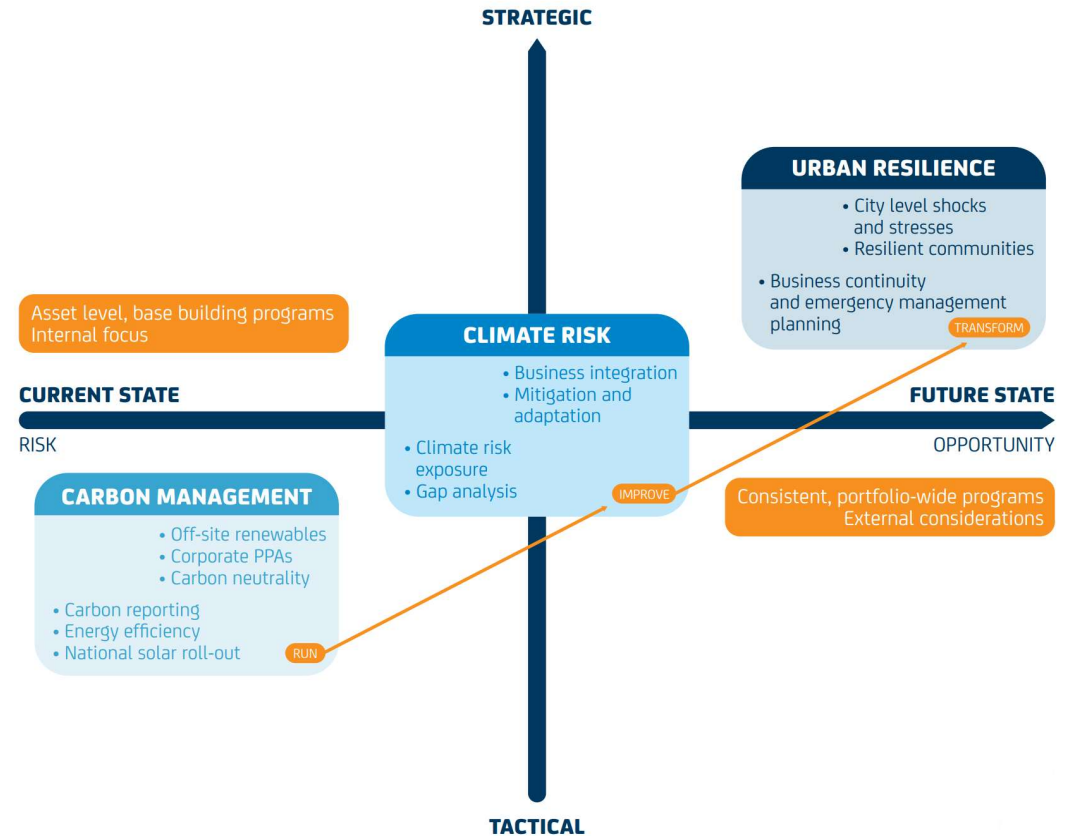
> Plan, Policy/Strategy, Preparedness

> Zero Carbon Action Plan : 2050 Scenario

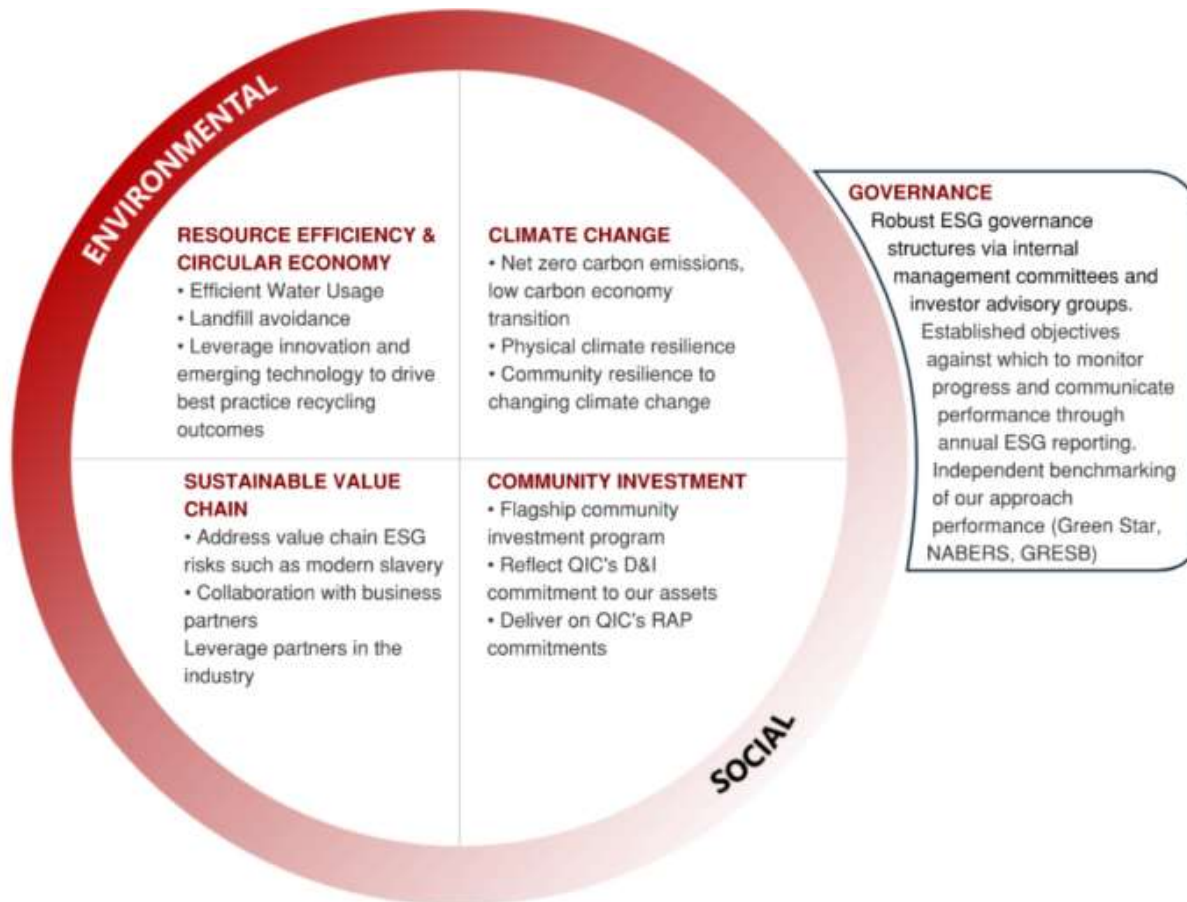
Minimum Requirement : Energy Source Credit

(Must be done before tendering)

> Emergency Preparedness



Climate Resilience: Credit 16 & ESG



> Relevant to Green Star Buildings

- > Zero Carbon Action Plan : 2050 Scenario (Energy Source Credit 23 & Climate Resilience Credit 16)
- > Physical Climate Resilience : Credit 16
- > Community Resilience : Credit 16 and Credit 18

Climate Resilience: Base Build Vs Tenants / ADP

Consulting : Engineering

- > By undertaking the climate change risk and adaptation assessment during project design, opportunities to incorporate adaptation responses in the base building can be maximised, thereby improving the resilience of the building for tenant use.
- > Additional non-physical adaptation responses, including emergency management plans and information on how to cope during extreme climate events, should be communicated to tenants and used to inform relevant tenant agreements

e.g.,

- agreements with tenants to mandate use of blinds and shading to reduce thermal load,
- to reduce energy consumption and
- to reuse water to reduce reliance on mains supply

Climate Resilience: Future Documentations

Future Documentations Requirement : Evidences

- > Consultants Report, Brief, Drawings, Specification,
- > Contract Documentation (e.g. Green Power, PPA's)
- > Base Building Vs Tenants Agreement
- > Mark up plan with narratives
- > Plan, Policy, Strategy, Preparedness Document
- > ESG Documentation relevant to Climate Change Resilience
- > Pre-screening checklist, Design Response and Risk Assessment Document
- > Workshop, Record (Email, Meeting)
- > Photograph of Built/Purchased items (As Built stage)



Creating great environments with great people

Melbourne
Level 11, 60 Albert Road
South Melbourne VIC 3205
t. 03 9521 1195

Sydney
Level 3, 8 Spring Street
Sydney NSW 2000
t. 02 8203 5447

Brisbane
Level 16, 15 Adelaide Street
Brisbane QLD 4000
t. 07 3088 4022

adpconsulting.com.au