

APPENDIX I

**SUSTAINABILITY
REPORT**

Summary

Climate Positive Pathway

Registering from / certified	2023 onwards	Desired Green Star rating	5 Star
Green Star rating			
Core points targeted	43	Minimum expectations met	Yes
Leadership points targeted	1	Green Star rating targeted	5 Star
Total points targeted	44	Climate Positive Pathway met	Yes

Credit	Minimum Expectation	Credit Achievement	Exceptional Performance	Total points available	Targeted performance level	Total points targeted	Comments
Responsible 17							
1 Industry Development		1		1	Credit Achievement	1	GSAP; Financial Transparency; Marketing Achievement
2 Responsible Construction	+	1		1	Credit Achievement	1	Head Contractor Responsibility EMP, EMS, Sustainability Training; 90% Landfill diversion
3 Verification and Handover	+	1		1	Minimum Expectation	-	Metering using QUU Guidelines; Monitoring; Design Intent Report; Service and Maintainability Review and Report
4 Operational Waste	+			0	Minimum Expectation	-	
5 Responsible Procurement		1		1		0	TBC by client
6 Responsible Structure		3	2	5	Credit Achievement	3	50% of all structural components by cost meet a Responsible Product Value of at least 10.
7 Responsible Envelope		2	2	4		0	NOT TARGETING
8 Responsible Systems		1	1	2		0	TBC
9 Responsible Finishes		1	1	2	Credit Achievement	1	TBC
					Total	6	
Healthy 14							
10 Clean Air	+	2		2	Minimum Expectation	+	Coordination required between architect and Mechanical to confirm if spatial allocation meets Green Star requirements for Credit Achievement.
11 Light Quality	+	2	2	4	Minimum Expectation	-	Daylight or Artificial Strategy coordinated between Architect and Electrical
12 Acoustic Comfort	+	2		2	Credit Achievement	2	Will require specific strategy and modelling to achieve
13 Exposure to Toxins	+	2		2	Credit Achievement	2	Aligns with Responsible Finishes
14 Amenity and Comfort		2		2		0	TBC
15 Connection to Nature		1	1	2		0	TBC could be a potential leadership point
					Total	4	
Resilient 8							
16 Climate Change Resilience	+	1		1	Credit Achievement	1	Provided by Arkes 4
17 Operations Resilience		2		2	Credit Achievement	2	TBC by Client - Variation Required
18 Community Resilience		1		1	Credit Achievement	1	TBC by Client - Variation Required
19 Heat Resilience		1		1	Credit Achievement	1	Coordination required with Architect and other services and landscape
20 Grid Resilience		3		3		0	NOT TARGETING
					Total	5	
Positive 30							
21 Upfront Carbon Emissions	+	3	3	6	Credit Achievement	3	20% Reduction compared to a reference building LCA Consultant Required
22 Energy Use	+	3	3	6	Credit Achievement	3	20% reduction over typical building
23 Energy Source	+	3	3	6	Exceptional Performance	6	As per 5 Star Climate Positive Pathway Requirement
24 Other Carbon Emissions		2	2	4	Credit Achievement	2	Refrigerants only as per 5 Star Pathway (2023-2036 registration)
25 Water Use	+	3	3	6	Minimum Expectation	+	10% Reduction in potable water
26 Life Cycle Impacts		2		2		0	NOT TARGETING
					Total	14	
Places 8							
27 Movement and Place	+	3		3	Credit Achievement	3	
28 Enjoyable Places		2		2	Credit Achievement	2	Complies with EDQ requirement
29 Contribution to Place		2		2	Credit Achievement	2	Architect to confirm
30 Culture, Heritage and Identity		1		1		0	TBC
					Total	7	
People 9							
31 Inclusive Construction Practices	+	1		1	Credit Achievement	1	
32 Indigenous Inclusion		2		2		0	TBC by client
33 Procurement and Workforce Inclusion		2	1	3	Credit Achievement	2	2% Construction Costs
34 Design for Inclusion		2	1	3		0	TBC Workshop required with ESD and Architect
					Total	3	
Nature 14							
35 Impacts to Nature	+	2		2	Credit Achievement	2	Lighting strategy to be determined and coordinated with Landscape and architect
36 Biodiversity Enhancement		2	2	4	Credit Achievement	2	
37 Nature Connectivity		2		2		0	TBC if part of Green Grid Strategy and aligned with BCC Management Strategy
38 Nature Stewardship		2		2		0	NOT TARGETING
39 Waterway Protection		2	2	4		0	TBC
					Total	4	
Leadership 0							
40 Market Transformation				0		0	
41 Leadership Challenges				0		1	TBC
					Total	1	



41-49 Plaza Place
Carseldine

Sustainability Strategy

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REPORT DETAILS	
PROJECT:	BNE05 SGCH Carseldine
PREPARED BY:	Arkes 4
REVISION:	02 - Issued for DA
DATE:	13/08/24

ACKNOWLEDGEMENT



We acknowledge all Aboriginal and Torres Strait Islander peoples as the Traditional Custodians and pay our respects to elders past, present and emerging. We thank them for their ongoing stewardship and willingness to share deep knowledge and understanding of these lands on which we live, work and play.

1.0 EXECUTIVE SUMMARY

This sustainability Strategy has been prepared by Arkes 4 Sustainability Consulting to accompany the Development Application (DA) for the community housing located at 41-49 Plaza Place, Carseldine.

The report concludes that the proposed development is seeking Australian Best Practice with a 5 Star Green Star Buildings Rating, under the new rating tool released in 2022 by the Green Building Council of Australia (GBCA). The project is yet to be formally registered.

The sustainability framework incorporating the requirements of the rating tool will be implemented to deliver national best practice sustainability outcomes against a range of environmental and social issues. The framework categories are as follows:

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

These categories present an opportunity to design the project with a balance to achieve a building responsive to human needs, encouraging biophilic design and connection to nature as well as contributing to the reduction of carbon from our atmosphere.



The building will achieve national best practice sustainability demonstrated through third party certification of the following rating tool: 5 Star Green Star Buildings Rating v1

In addition to the certified sustainability route using Green Star Buildings Rating Tool, the building at 49 Plaza Place will also reference the New World City Design Guide – Buildings That Breathe. This is a practical guide developed by the City of Brisbane in 2014 and acts as an inspirational design benchmark that includes illustrating best practice. Aligning the eight key design elements to the Green Star trajectory will lend a robustness to designing a building within the context of a sub-tropical climate.

2.0 INTRODUCTION

Arkes 4 Sustainability Consulting has been engaged by SGCH to undertake design and documentation of the exciting new community housing development proposed at 41 - 49 Plaza Place, Carseldine, QLD, 4034. The project is a new 7 story, 152 apartment community housing accommodation, focused on a human centered design approach.

The following report outlines the environmentally sustainable design (ESD) strategy initiatives that demonstrate the compliance of the proposed residential development at 49 Plaza Place Carseldine, in alignment with the City of Brisbane Planning Scheme.

The objective of this report is to describe how best practice ESD will be incorporated in the development, including targets and proposed design approaches, and to demonstrate that the development meets or exceeds the standards required.

As part of the EDQ directive of the development to meet 5 Star Green Star requirements of the Green Building Councils' new 'Buildings' rating tool this document serves as a preliminary guide as to how this project will seek to achieve this outcome.

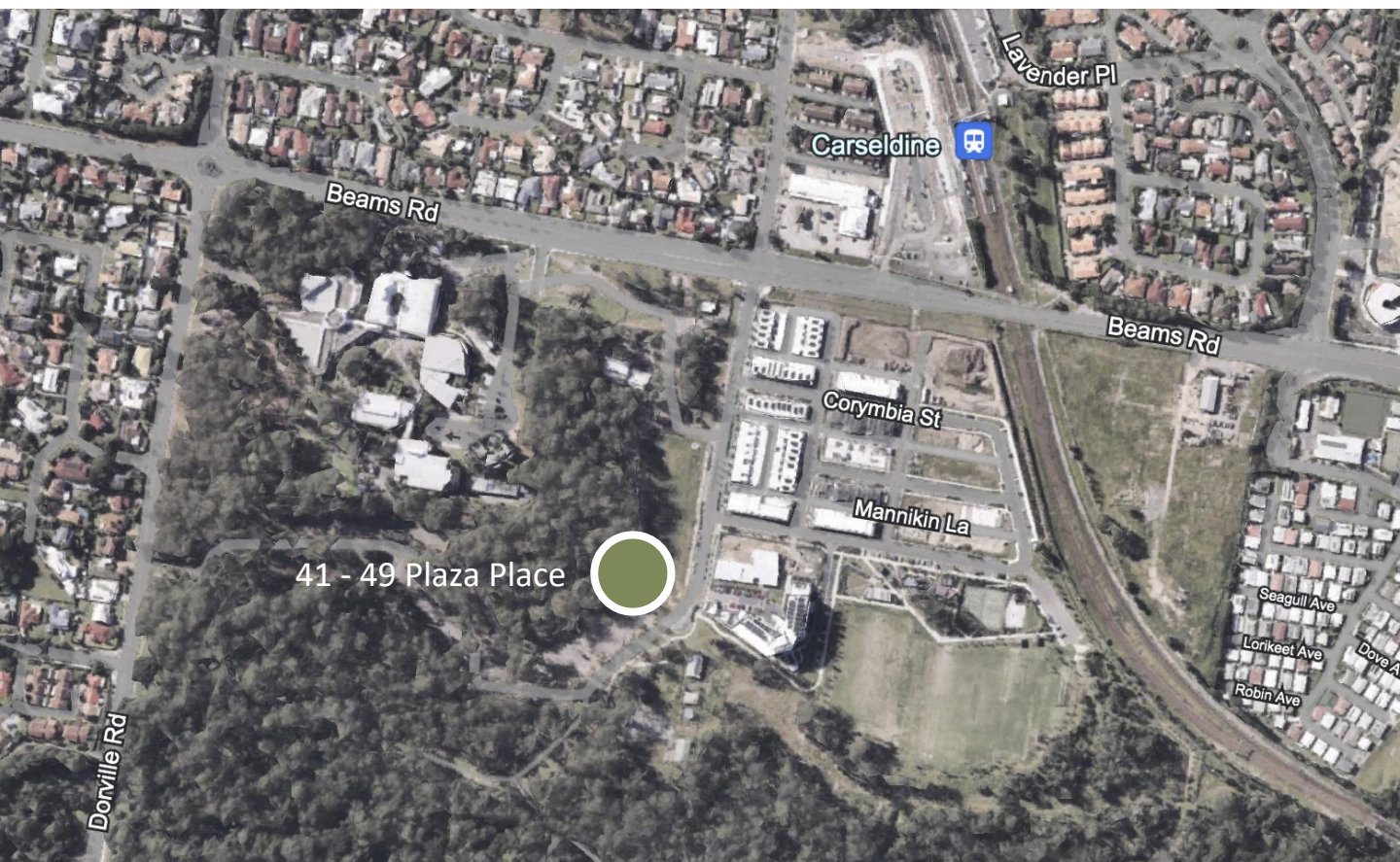


Figure 1 Site location shown with green pin

2.1 PROJECT OVERVIEW

Located within the Carseldine Urban Village Master Plan the Carseldine 49 Plaza Place is a priority Project for Economic Development Queensland (EDQ) and the Queensland State Government. The Project will deliver a 7–storey construction of a 152-unit new build multi-storey apartment complex comprising of community housing with one, two and three bedroom dwellings. using materials such as precast concrete, masonry, perforated metal, and high quality glazing. Additionally included in the proposed design is a car park with 46 parking spaces.

As a leader in delivering high integrity social and community housing projects whilst achieving best in class sustainability targets, SGCH prides itself in delivering quality homes with high efficiency performance, whilst providing, where possible, high levels of amenity and comfort within each development.



Figure 2 Carseldine Urban Village Master Plan

2.2 DEVELOPMENT RATING TOOLS

49 Plaza Place is potentially targeting (exact targets and pathway to be confirmed throughout concept stages of the projects) the following sustainability related initiatives :

- A formal 5 Star Green Star under the current Green Star Buildings tool (see Appendix A- Green Star Summary)
- Gas Free Development (As per adherence to Climate Positive Pathway)

2.3 STANDARDS, REGULATIONS AND GUIDES

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

- Green Star Buildings v1 framework
- National Construction Code 2022
- 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.



Figure 3 Urban Context Map

2.4 SUSTAINABILITY STRATEGY FRAMEWORK

The report will be reviewed along with the following documents:

- Green Star matrix
- Any future specification document (TBC)
- Consultant Advice Notices (CAN's) by Arkes 4
- External Consultant Documents if referenced throughout the document.

3.0 CLIMATE ZONE

The development is in climate zone 2 as per Figure 4. 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 eliminating the need for heating in winter and reduce the need for cooling in summer, in a humid climate.

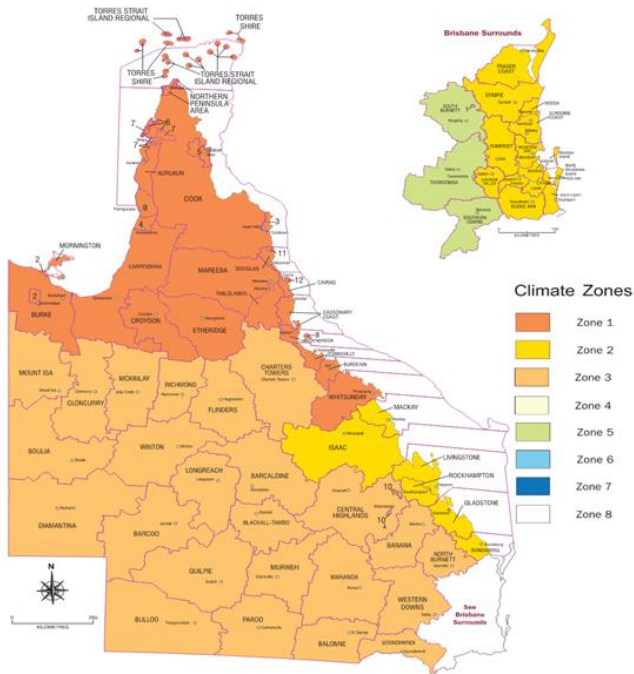


Figure 4 Climate Zone map for QLD

3.1 CLIMATE STUDY

A climate study was conducted of Brisbane to investigate the potential 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” however, the climate is changing across Queensland.

- 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

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.

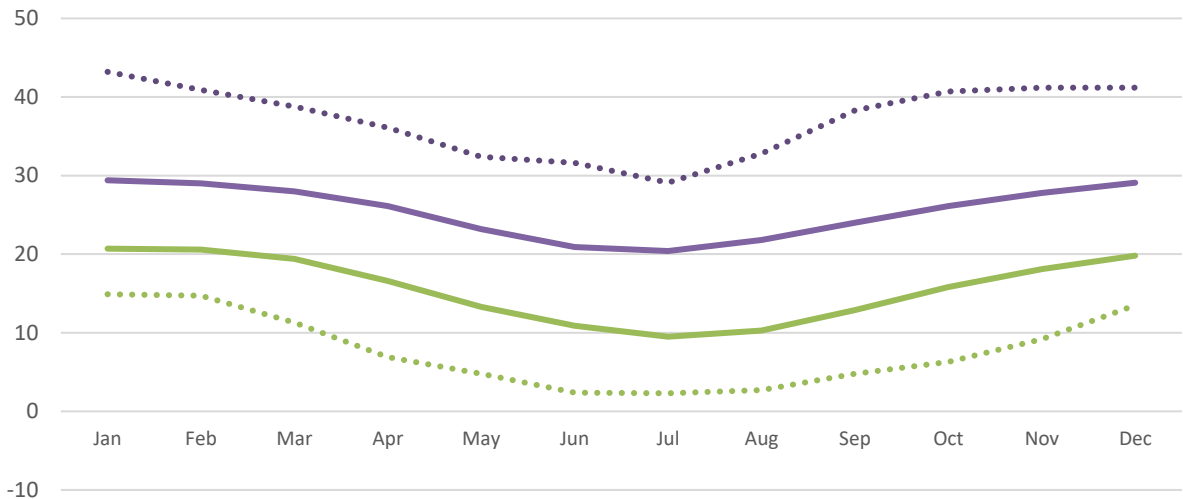


Figure 5 Current Site Climate Data

- Mean Maximum Temperature
- Mean Minimum Temperature
- Highest Temperature
- Lowest Temperature

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
- 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.

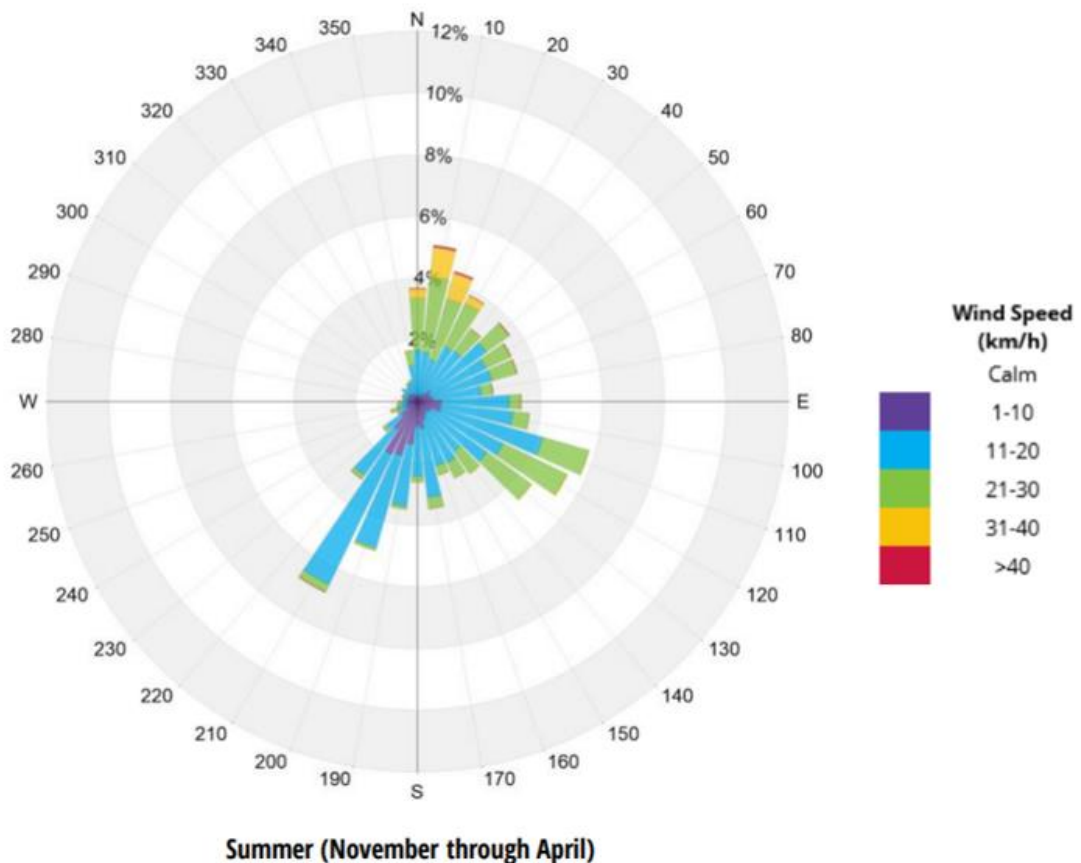


Figure 6 Summer Conditions

3.6 WINTER CODITIONS

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.

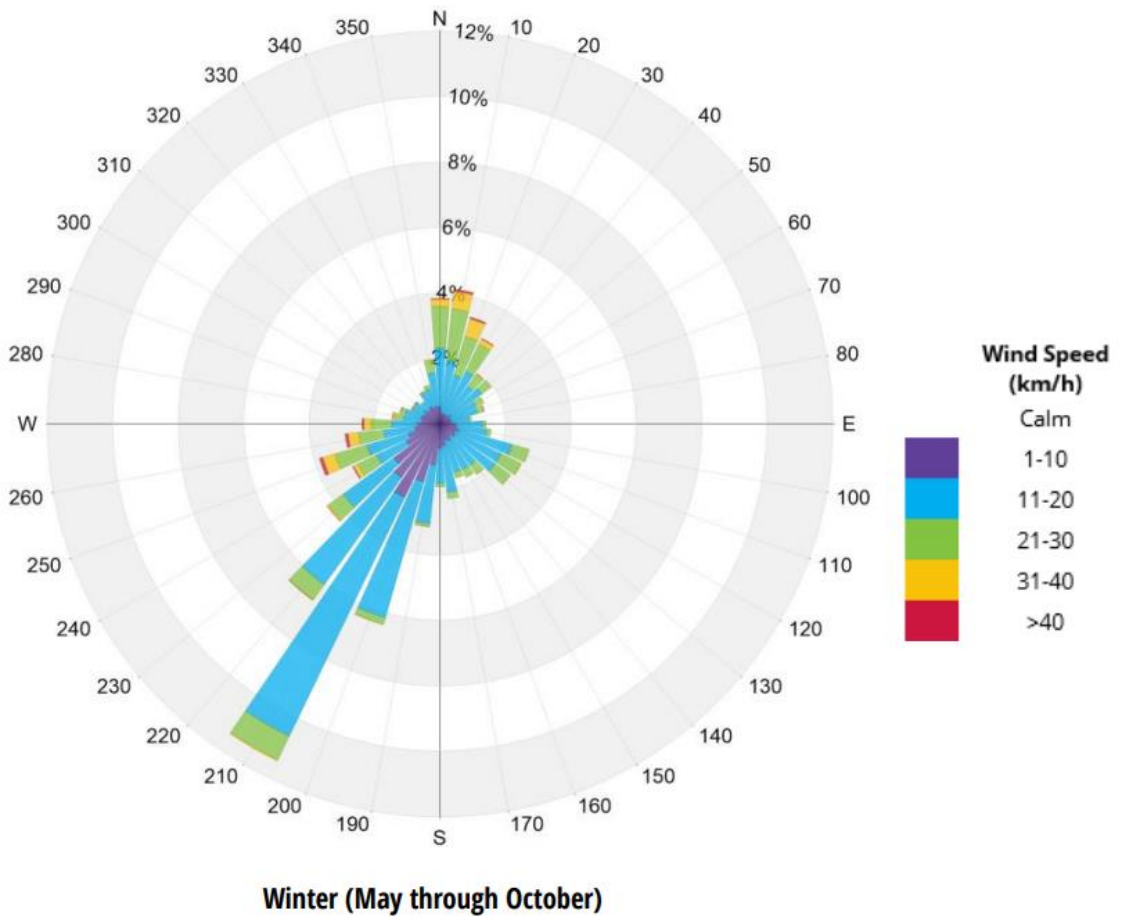


Figure 7 Winter Conditions

Orientation

- Orientate the building for exposure to cooling breezes and design for cross-ventilation.
- Glazing areas to be rationalised for each orientation.

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.
- Optimising shading solutions

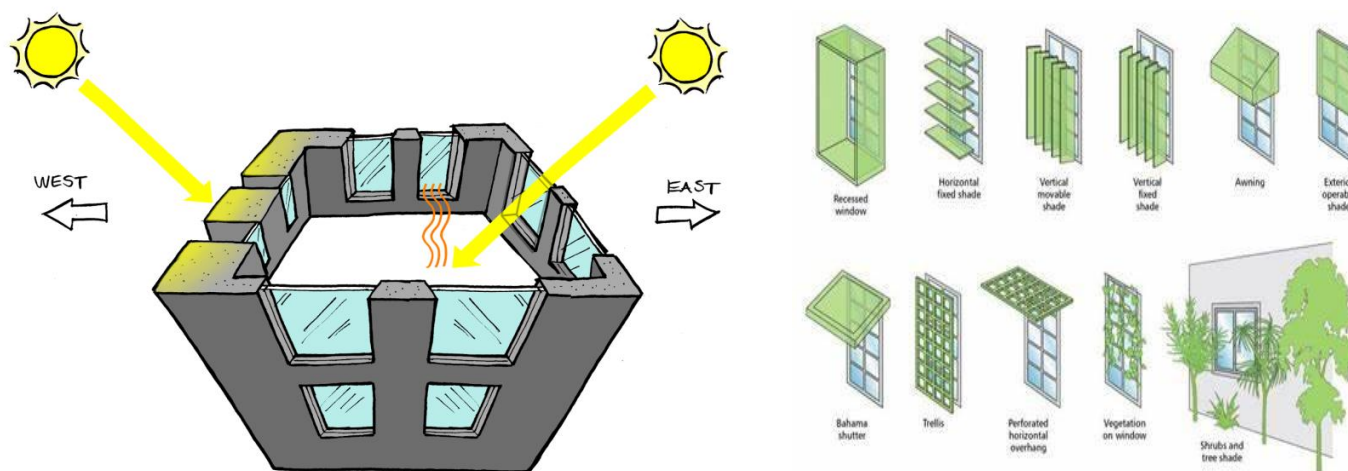


Figure 8 Orientation & Shading Solutions

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.

Heating and Cooling

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

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 degree Celsius.

5.0 EMBODIED CARBON AND UPFRONT EMISSIONS

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 below.

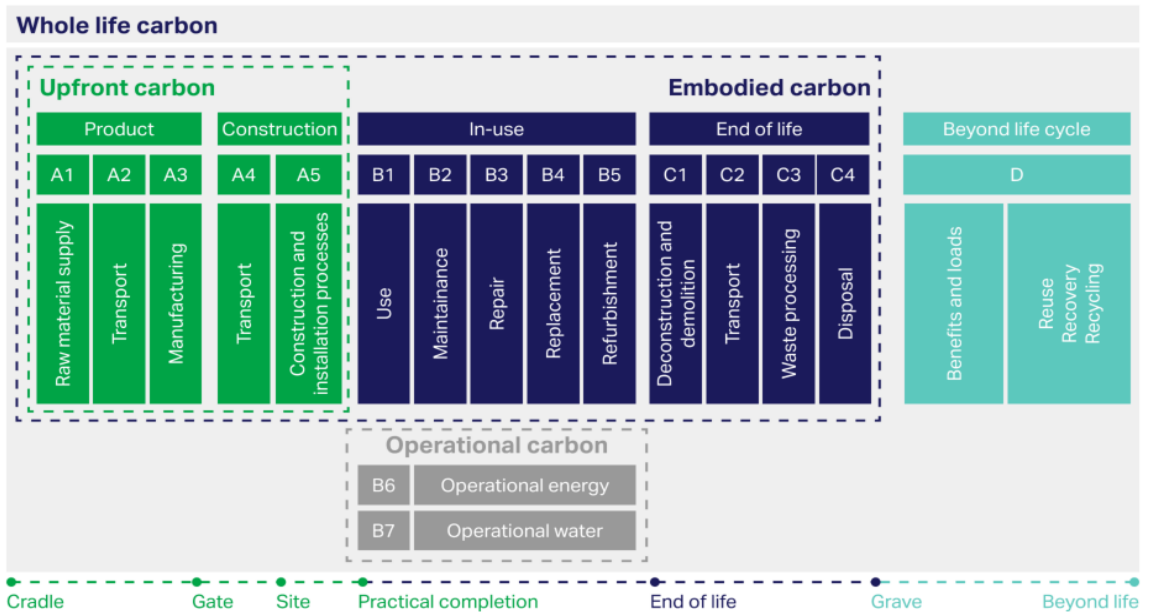


Figure 9 Upfront, Embodied and Whole life Cycle of carbon

5.1 GOALS FOR REDUCTION IN EMBODIED CARBON

The development is considering 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 10% 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)

5.3 GREEN STAR TARGETS

49 Plaza Place 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.

Types of Carbon in Buildings

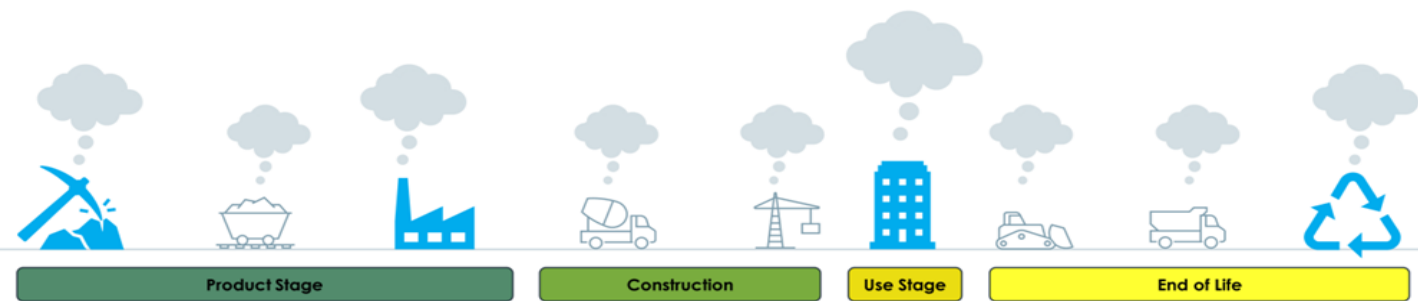


Figure 10 Life Cycle Assessment – Material Stages

Design work and in-depth discussions will need to occur around the strategy to reduce upfront carbon emissions.

- For credit achievement under Credit 21, the structural floor system:
- 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 a recognised database (such as EPiC) and GBCA calculator.
- Input will be required from the entire design team to complete the Upfront Carbon Calculation

The New World City Design Guide: Buildings that Breathe released by Brisbane City Council in 2014 help developers understand the requirements of building within a subtropical climate. Key design elements include diverse wayfinding, occupying outdoor spaces which can be deemed standard practice in the Brisbane climate, illuminating with daylight as much as possible. The ability to naturally ventilate, shading and protection speaking to climate resilience as well as biophilic design through landscape as well as patterning and nature inspired design. Creating operational efficiencies for energy and water and being inclusive to all people of all ages and all abilities and genders.



Figure 11 Urban Oasis Future Vision

49 Plaza Place being community housing has a human centred design at its heart offering building occupants' memorable places to meet and relax including that of the groundplane landscaped areas that will offer shading through structural and landscape design solutions. The quantity of landscaping design throughout the building design celebrates our subtropical climate through connection to nature for occupants whilst enhancing biodiversity as well as creates resilience by reducing urban heat island effect. The development will be considerate of opportunities to create shading from sun whilst creating as many opportunities for natural light as possible. Maximising outdoor spaces to create amenity and comfort for social interaction, relaxation, and quiet reflection perfect for mitigating the impacts of isolation and solitude for particularly sole residents and sole parent families. The inclusion of subtropical landscaping and water sensitive design will create a visible journey and threshold entryway to the building, presenting as an urban oasis.

Illuminating with natural daylight is the optimum design response for any building but can prove to be challenging in an established urban environment. Investigating the optimal light penetration while managing solar gain in conjunction with careful design and placement of glazing solutions will be a primary consideration for this building as will opportunities for natural air and ventilation. There is a distinct understanding throughout the design team of the importance of reducing overall energy consumption for a number of reasons including the decarbonisation of our electricity grid, to take the heating and cooling loads off the mechanical systems which also subsequently helps to reduce carbon emissions from entering the atmosphere. Further it is widely recognised that to increase fresh air through natural or hybrid ventilation systems increases indoor health and occupant productivity.

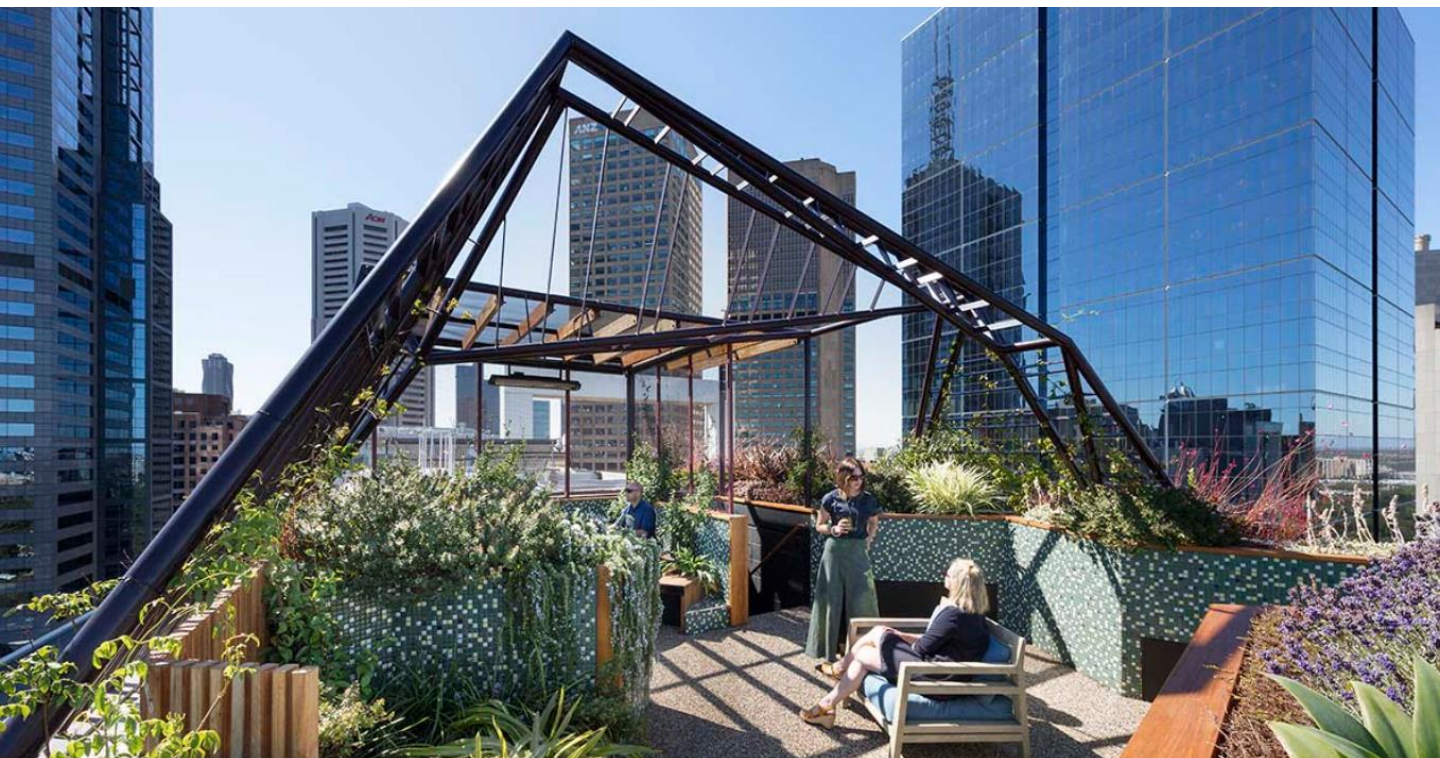


Figure 12 Social Connectivity Future Vision

Through ongoing investigation and modelling will give the design team for 49 Plaza Place an optimal result for shading and protecting design choices best suitable for the building to be responsive to solar gain, thermal efficiencies and create resilience for this vertical community. The biophilic response to this building primarily achieved through the landscaping brief contributes to the urban greenery of the immediate environment and creates equivalent habitat for species diversification in our city. The Green Star Buildings Tool synergises very well with Brisbane City Council's Buildings that Breathe Guidelines and as such the design team are optimistic that design features will align with many of the key elements highlighted.

7.0 A SENSE OF PLACE

The development of place-based relationships are crucial for several reasons the most pertinent being to create a sense of belonging. Community and social housing has witnessed a transient state of affairs particularly in the current housing crisis. Where families and people are moved about from pillar to post unable to settle into a community emphasizing a feeling of displacement and insecurity.

Fostering a sense of belonging and identity among residents help people feel connected to their community where they are more likely to engage, contribute and invest in the well-being of their surroundings. When this occurs a sense of resilience can be formed encouraging strong relationships to be developed that enhance community resilience in times of crisis. The social interactions, support networks and a sense of security all play vital roles in promoting health and reducing stress allowing for the development of close-knit communities who look out for each other.

When people feel connected to their place, they are more likely to participate in civic activities such as volunteering, community projects which empower residents to shape their environment.

The location of Carseldine Village that has created infrastructure that creates amenity, recreation and connections to nature in the adjoining reserved bushland area contribute to a new model of urban design that adds to peoples' livability and resiliency goals.



Figure 13
Top Left: Local Carseldine Fresh Food and Artisan Markets
Bottom Left: The Sanctuary Bushland – Carseldine Village
Right: Local Carseldine Market

7.1 CARSELDINE PLACE

The proposed development at 41-49 Plaza Place, Carseldine, QLD, 4034, and is located approximately 14km North of the Brisbane CBD.

Located within the proposed Carseldine Village Masterplan, having achieved a Green Star Communities rating, the development is 500m from Carseldine Railway Station and directly opposite The Green sport and recreation Precinct and the 150 bed Rockpool Residential Aged Care Facility as well as the new 98 –place C&K Childcare Centre.

The building classification under the National Construction Code (NCC) is Class 2 Apartments and Class 7a Carpark



Figure 14 Carseldine Village Heart Location

Carseldine is mainly a residential suburb with a population of 10,093 people (2021 census). The median age in 2021 was 40 years. Children aged under 15 years made up 16.7% of the population and people aged 65 years and over made up 22.1% of the population. 64.1% of people living in Carseldine were born in Australia with representation from other countries such as India (4.6%), New Zealand (4.1%), England (3.1%), Philippines (1.9%) and Africa (1.6%).

There are many parks located throughout Carseldine and the suburb is serviced by Carseldine Railway Station and buses operated by Brisbane City Council.

The area has recently seen the development of the Masterplan for Carseldine Village, an exemplar sustainable development achieving a Green Star Communities Rating that includes a mix of affordable residential housing, childcare, aged care, commercial and retail and recreational open spaces. It also celebrates The Green, a \$6.5 million sport and recreation precinct that stretches over four hectares all of which showcases the latest in energy and water saving and sustainable technology.

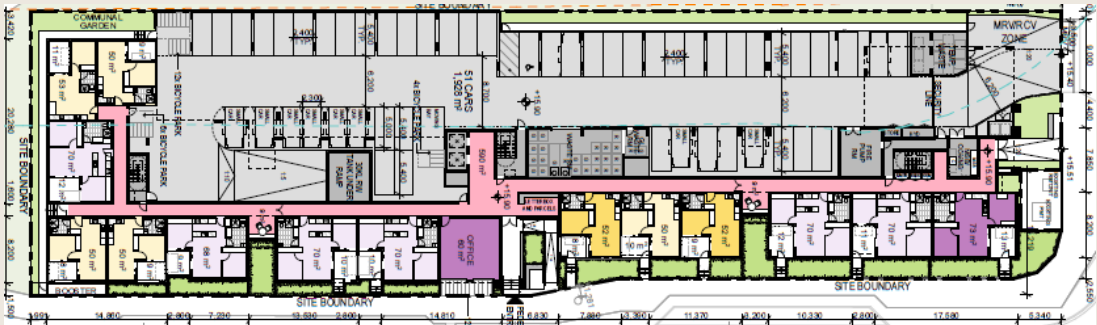
The area also boasts a vibrant weekly fresh food and artisan market and is surrounded by 18 hectares of retained bushland. A future Village Heart retail and commercial precinct is expected to be developed in close proximity to the proposed development at 41-49 Plaza Place.

8.0 SUSTAINABILITY APPROACH

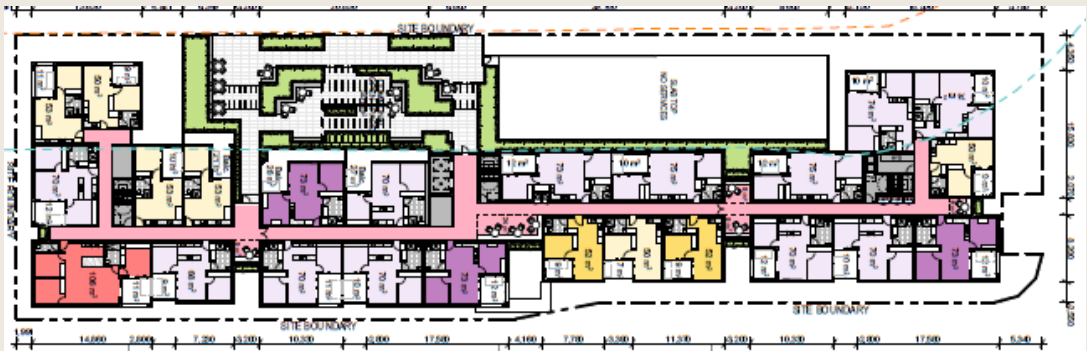
This building is looking to be a Certified 5 Star Green Star Building.

The development shall achieve a minimum design standard of 7-star NatHERS rating with a target of 8 stars. The development will also aim for a 5-star design rating under the GBCA Buildings rating tool. As a result, the units will surpass the NCC standards concerning energy efficiency and livable design.

GROUND FLOOR



LEVEL 2



LEVEL 3 - 6



Figure 15 49 Plaza Place, Carseldine

8.1 DESIGNING WITH COUNTRY

At its inception the development of the design for 49 Plaza Place was to begin through a Designing with Country lens acknowledging the deep connection between Indigenous people and their land. This approach enables the design team the opportunity to create a place-based relationship integrating elements of design that are sustainable, using eco-friendly materials, and sustainable practices that honour the land and reduce environmental impact as well as address health and wellbeing outcomes by encouraging improved daylight penetrations, ventilation and promoting a connection with nature through biophilic design elements and landscaping.

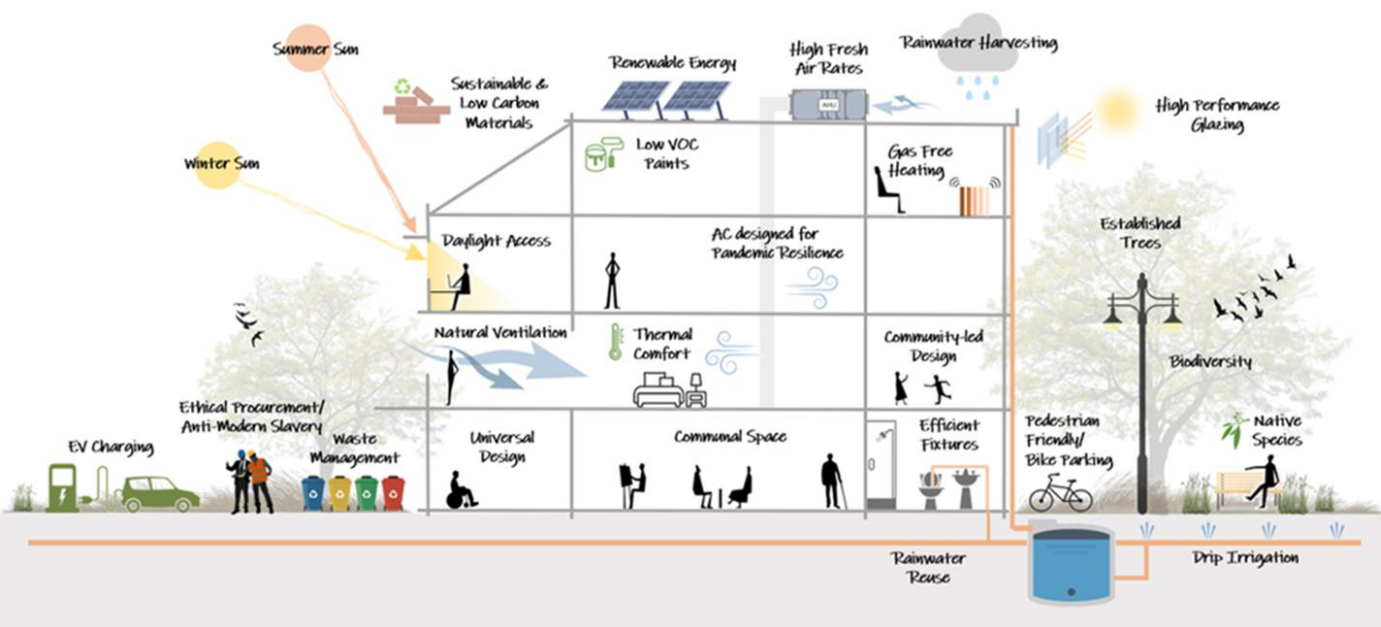


Figure 16 Sustainable Initiatives

8.2 SUSTAINABILITY VISION

Fundamental sustainability initiatives introduced into the design address a whole of building approach to sustainability. This holistic approach will attempt to meet the desired Environmental, Social and Economic outcomes for the Community Housing Project.

Thermal comfort and efficiency of the building occupants is a primary focus where consideration is given to daylight penetration and access, the material selection pertaining to not only low carbon products but in addition the toxicity as well as transparency around the supply / value chain.

8.3 SUSTAINABILITY RATING TOOLS - GREEN STAR CONTEXT

Green Star, developed and administered by the Green Building Council of Australia (GBCA), is a set of internationally recognized rating tools that deliver independent verification of sustainable outcomes throughout the life cycle of the built environment. 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 coordination process from schematic phase to final post construction phase.

With the release of the new Buildings Tool in 2022, the GBCA, using global trends of health and wellbeing, resource and circularity and climate action, aims to address throughout the built environment some of the most pressing issues pertaining to sustainability such as:

- Protecting the environment and enhancing biodiversity
- Water efficiency, stormwater harvesting and waterway protection
- Improved air, light, acoustics and product finishes
- Promote physical activity
- Embrace the diversity of our population
- Emit less carbon in construction and operations.

8.4 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 Figure 18 (p19) representing the issues that will define the next decade of the built environment.

Note:

- For pathway, please refer to Appendix A –Green Star Summary
- The development at 49 Plaza Place is yet to be registered with the GBCA
- A 5 Star Green Star project registered in 2024 MUST comply with the Climate Positive Pathway as per Green Star Submission Guidelines (See Figure 17 on following page).

8.4 GREEN STAR BUILDING TOOLS Continued . . .

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 a typical building	10% reduction	All ratings			
	20% reduction	6 star	5 star	All registrations	All certifications
	30% reduction				
Upfront carbon emissions Reductions over a typical building	10% reduction	All registrations			
	20% reduction	6 star	5 star	All registrations	All certifications
	40% reduction				6 star
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

Figure 17 Green Star Buildings Climate Positive Pathway

To achieve a 5 Star Rating the project must comply with Credit Requirements and obtain a total of thirty-five Points out of one hundred. There are a total of eight categories to choose individual Credits from in context of the project itself, however there are Minimum Expectations in some of the Credits that must be met as a minimum requirement to be successful.

The following Categories will inform the credits targeted specifically to 49 Plaza Place and the cohort of residents living in the building.









	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.
	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.

Figure 18 Green Star Buildings Categories

The Sustainability Framework and the environmental performance targets associated with the Green Star Buildings tool are consistent with, and in many cases go beyond, national best practice in sustainability for development of a similar scale and nature.

The following pages are organized by each Green Star Category to provide some insight into Credits being potentially targeted for this development

RESPONSIBLE

The Responsible category recognises activities that ensure the building is designed, procured, built, and handed over in a responsible manner.

Industry Development

*GSAP appointed
Financial Transparency*

Verification and Handover

Metering and Monitoring

Responsible Construction

*Landfill diversion
ISO14001
EMP
Sustainability Training*

Responsible Resource Management

*Waste Management
Strategy*

Responsible Materials

*Review of materials to have
sustainability certifications to
minimize impacts*

Responsible Procurement

ESG

Responsible Structure

*Target 20% upfront carbon reduction
Low carbon concrete
Lean design*

Responsible Finishes

*Responsible Products Value (RPV)
Low VOC
Non-Toxic
Environmental Product Declaration (EPD)*



HEALTHY

The Healthy category is focused on improving the indoor environment quality of rated buildings. The emphasis is on the important role the built environment has in enhancing the health and wellbeing of occupants.

Exposure to Toxins

Low VOC paints, adhesives, sealants
Certified Engineered wood products
Verifies investment in Responsible
Finishes

Clean Air

Management of air flow
Minimise indoor toxins

Acoustic Comfort

Acoustic performance
Critical near railway

Light quality

Daylight access
Long lasting LEDs as well as both uniform
and where applicable non uniform
responses and fit for purpose.

Connection to Nature

Community Garden
Direct Engagement



RESILIENT

The Resilient category allows building owners to demonstrate to investors and the community that risks that threaten the short- and long-term performance of the building have been considered.

Heat Resilience

Urban heat island effect
SRI Value
Roof colours
Roofing materials

Climate Change Resilience

*Design for long term climate risk
Increased temperatures
Flooding
Increased frequency of storm events*

Community Resilience

Social considerations
Addresses vulnerable communities
Community engagement

Operations Resilience

*Response Procedures
Shocks and stresses
Partnership Responses
Power Loss*



POSITIVE

The Positive category is focused on reducing our energy consumption and switching to renewable energy. In addition, the category also focuses on the importance of reducing water consumption, and understanding the full life cycle impacts of the building, which, in turn, can lead to better designs and material selection.

Energy Use

10% less energy
NatHERS 7 Star – 8 Star
Efficient appliances

All Electric
Fossil Fuel Free

Upfront Carbon Emissions

20% Reduction compared to reference building
Low carbon structure
Low carbon finishes

Indoor Environmental Quality

- Thermal Comfort
- Natural Daylight Amenity
- Low toxicity finishes

Water Use

WELS rated fixtures
Rainwater harvesting for reuse

Other Carbon Emissions

Offsetting remaining emissions (refrigerants)

Energy source

100% Renewables
On-site solar

NatHERS Rating
Weighted Average

PLACES

The Places category is focused on putting people at the forefront of design. It focuses on the integration of the building into the urban fabric and delivers places that increase social cohesion.

Movement and Place

*Encourage active transport
Encourage walkability
Reducing private vehicle use
Bicycle parking facilities*

Contribution to Place

*Urban Context
Socio-cultural analysis*

Enjoyable Places

*Publicly accessible spaces
Communal areas for recreation and amenity
Activation strategy*

Culture, Heritage and Identity

*Community Led Design
Placemaking
AP2 Community Engagement Framework*

PEOPLE

The People category encourages solutions that address the social health of the community by bringing a new dimension to the design and construction of buildings. It highlights issues such as diversity and gender equity, inclusion, and mental health.

Design for Inclusion

*Universal Design Principles
Equal access
Diverse wayfinding
Multi sensory methodology
inclusive spaces that enable communication
and connection amongst residents.*

Inclusive Construction Practices

*Gender inclusivity
Physical and mental health programs
Health and Safety training
Diversity training
Ongoing evaluation*

Indigenous Inclusion

Reconciliation Action Plan

Procurement and Workforce Inclusion

Social Procurement Plan

NATURE

The Nature category shifts the focus of the built environment from a passive observer seeking to minimize impacts to one that is actively bringing nature and biodiversity back into cities. It also ensures the built environment considers impacts beyond its boundary and takes responsibility for rebuilding our natural environment.

Impacts to Nature

*Existing site baseline of ecological value
Light pollution to neighbouring bodies
Light Pollution to night sky
Protecting Ecological Values*

Nature Connectivity

*Encourage species connectivity through the site
Green Grid Strategy*

Nature Stewardship

*Protecting ecology
Restoration and protection
Giving Back*

Biodiversity Enhancement

*Greater than 60% of plants must be indigenous
Significant nesting tree or equivalent habitat
No invasive species
Plant diversity
Prescriptive pathway
Performance Pathway
Ecological verification*



LEADERSHIP

The Leadership category aims to recognise the implementation of innovative practices, processes and strategies that promote achievements in the built environment and drive market transformation

Biophilic Design

*Natural sensory experiences
Natural cultural patterns and forms
Natural materials and motifs*

Climate Positive Pathway

Achieve one free point if achieved



Circularity

*Enhanced waste streams
Communal 'toolshed'
Communal laundry
Organic waste reused for fertiliser*

Wellness Behaviour Change

50m Perimeter Fitness Track

Market Transformation
Behaviour Change

CONCLUSION

The Carseldine social, affordable and community housing project exemplifies St George's commitment to sustainability, community wellbeing and environmental responsibility. By aligning with the 'Buildings that Breathe' Design Guidelines, and targeting a 5 Star Green Star Buildings rating, highlights St. George's dedication to creating spaces that foster health, comfort, and connectivity.

The integration of natural ventilation, abundant greenery, and energy efficiency systems ensures that residents enjoy a high quality of life while minimizing their environmental footprint. Furthermore, the thoughtful design enhances social cohesion and accessibility, providing a supportive and inclusive environment for all.

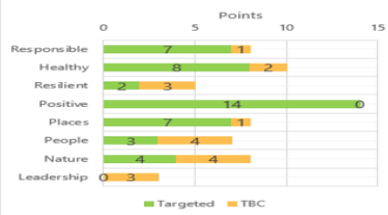
In summary, this project not only sets a benchmark for sustainable residential developments but also reinforces St George's vision of building vibrant, resilient, and thriving communities in Brisbane.



APPENDIX A Green Star Pathway_v2

Project	St George Carseldine
Rating	5 Star
Date	24.07.24

Green Star Points Summary



Category summary - Table		
	Targeted	TBC
Responsible	7	1
Healthy	8	2
Resilient	2	3
Positive	14	0
Places	7	1
People	3	4
Nature	4	4
Leadership	0	3
Total	45	18

Credit summary					
Credit	Credit Name	Available points	Min Expectation	Points targeted	TBC
RESPONSIBLE					
1	Industry Development	1		1	
2	Responsible Construction	1	Y	1	
3	Verification and Handover	1	Y	1	
4	Responsible Resource Manager	Min Expectation	Y	0	
5	Responsible Procurement	1		0	1
6	Responsible Structure	5		3	
7	Responsible Envelope	4		0	
8	Responsible Systems	2		0	
9	Responsible Finishes	2		1	
HEALTHY					
Available points Min Expectation					
10	Clean Air	2	Y	2	
11	Light Quality	4	Y	2	
12	Acoustic Comfort	2	Y	2	
13	Exposure to Toxins	2	Y	2	
14	Amenity and Comfort	2		0	
15	Connection to Nature	2		0	2
RESILIENT					
Available points Min Expectation					
16	Climate Change Resilience	1	Y	1	
17	Operations Resilience	2		0	2
18	Community Resilience	1		0	1
19	Heat Resilience	1		1	
20	Grid Resilience	3		0	
POSITIVE					
Available points Min Expectation					
21	Upfront Carbon Emissions	6	Y	3	
22	Energy Use	6	Y	3	
23	Energy source	6	Y	6	
24	Other Carbon Emissions	4		2	
25	Water Use	6	Y	0	
26	Life Cycle Impacts	2		0	
PLACES					
Available points Min Expectation					
27	Movement and Place	3	Y	3	
28	Enjoyable Place	2		2	
29	Contribution to Place	2		2	
30	Culture, Heritage, and Identity	1		0	1
PEOPLE					
Available points Min Expectation					
31	Inclusive Construction Practices	1	Y	1	
32	Indigenous Inclusion	2		0	2
33	Procurement and Workforce In	3		2	
34	Design for Inclusion	3		0	2
NATURE					
Available points Min Expectation					
35	Impacts to Nature	2	Y	2	
36	Biodiversity Enhancement	4		2	
37	Nature Connectivity	2		0	2
38	Nature Stewardship	2		0	
39	Waterway Protection	4		0	2
LEADERSHIP					
Available points Min Expectation					
40	Market Transformation	5+			
40	Leadership Challenges	TBC			3