Western Sydney University Indigenous Centre of Excellence
SSDA - Environmental Sustainability Report

3 June 2025

Prepared for:

WESTERN SYDNEY UNIVERSITY

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Acknowledgement of Country

We acknowledge and pay respect to the Darug Ngurra people as the Traditional Custodians of the land. We pay our respect to their Elders past, present, and emerging, and honour their enduring connection to this land. We acknowledge and hold in high regard their ongoing cultural significance and contributions to the life of this city and its surroundings.

Acknowledgement

We gratefully acknowledge the use of the images sourced from third parties. All externally sourced images have been duly noted and credited individually.

Executive Summary

This report consolidates the Environmentally Sustainability Design attributes of the Western Sydney University Indigenous Centre of Excellence.

The Western Sydney University Indigenous Centre of Excellence aims to serve as a dynamic hub for Indigenous communities, education, employment, creativity, and research. Located within the Central City District in Rydalmere, the site is identified within the Greater Sydney Region Plan.

The environmentally sustainable design initiatives are outlined within four themes in the design competition brief: Connection to Nature, Health and wellbeing, Passive Design and Resilience, and Sustainable Procurement. These aspects collectively aim to create a building that is environmentally responsible, resilient to a changing climate and promotes occupant health and comfort.

Key strategies and attributes of the design include:

- An all-electric net zero ready building
- Use of mass timber to reduce the embodied energy associated with construction.
- Planning around a courtyard to screen from the road and provide sensory engagement for the users.
- A building facade that provides solidity and insulation from Victoria Road's noise and pollution, as well as varying permeability to time natural light and solar protection on kinder aspects.
- Natural ventilation and mixed mode approach to spaces to suit use and occupancy
- Conserving water through rainwater reuse and elimination of cooling towers
- Utilising onsite renewable energy with all-electric building systems.
- Avoidance of Synthetic Greenhouse Gas and high GWP refrigerants in air conditioning compressors and heat pumps.
- Resilience to flooding through elevation of the ground floor.
- A zoned approach to air conditioning to suit a range of needs from AA-rated conservation through to mixed mode and transient spaces.
- Using mass timber and locally sourced materials while avoiding harmful substances.

The project is targeting a 6-star Green Star rating, given the inherent strengths of the design approach.

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Document Control

Project Name	Western Sydney University Indigenous Centre of Excellence
Project Number	216
Document Title	SSDA - Environmental Sustainability Report

Revision	Date	Prepared By	Approved By	Changes
Draft	6 May 2024	Helda Lim	Ché Wall	
Final	6 May 2024	Helda Lim	Ché Wall	Nil
A	16 May 2024	Ché Wall	Ché Wall	Minor changes to address client comments.
B	22 May 2024	Ché Wall	Ché Wall	Minor change to 4.3.1.
C	3 July 2024	Ché Wall	Ché Wall	Project address updated.
D	3 June 2025		Ché Wall	Updated to include revised car parking scope

Introduction

1. Introduction

This report documents the Environmentally Sustainable Design strategies and attributes for the proposed Western Sydney University (Western) Indigenous Centre of Excellence to support an SSDA.

1.1. Project Description

Figure 1. Western Sydney University Indigenous Centre of Excellence (Source: JCB)

- The Applicant seeks development consent for the construction of a new state-of-the-art Indigenous Centre of Excellence as a new tertiary education facility on campus. The Indigenous Centre of Excellence project is funded by the NSW Government's Western Sydney Infrastructure Grants Program in association with Western Sydney University. The new Indigenous Centre of Excellence will be an important asset for both the University and local community alike, providing a space for the commitment to advancing Indigenous education, leadership, and reconciliation.

This State Significant Development Application (SSDA) specifically seeks detailed approval for the following works:

- Site preparation including demolition of the existing car park, tree removal and installation of inground utility infrastructure services.
- Construction of a four-storey Indigenous Centre of Excellence encompassing the following facilities:
    - Outdoor amphitheatre,
    - Cinema and lecture theatre,
    - Artist studios and gallery exhibition space.
    - Teaching workspaces, general study meeting areas, staff and student lounge areas,
    - Library and other educational research spaces,
    - Multi-functional recreational sports court, with ancillary amenities,
    - Astronomy garden and BBQ area,
    - Plant and other mechanical services.
- Construction of hardstand paving and line marking to accommodate new parking areas, including:
    - 13 spaces on the existing P1 car park site, adjacent to the new dedicated arrival zone to the proposed ICoE,
    - 107 spaces proposed in new western car park on the western side of Bridge Street, adjacent to the existing oval, and
    - 181 spaces proposed in new eastern car park on the southern side of Fifth Street, adjacent to the new ICoE.
- · Landscaping works to provide outdoor educational and recreational spaces.

This report responds to the relevant SSD-64916225 Secretary's Environmental Assessment Requirement (SEARs), as well as addresses updated Amending SSD cumulative impacts associated with the revised car park scope.

1.2. Site Description and Location

The Western Sydney University South Parramatta Campus is located within the City of Parramatta Local Government Area (LGA).

The site is legally described as Lot 100 and 101 in DP 816829 and largely comprises the P1 Car Park and grassed embankments along Fifth Street in the northern portion of the wider site campus. The broader project site comprises these 3 x separate development areas.

The site location and project boundary is identified in Figure 2.

The site is located approximately 3km east of the Parramatta CBD and is also located adjacent to the recently completed Parramatta Light Rail Corridor, with direct access to the Yallamundi Light Rail stop.

Figure 2. Western Sydney University Parramatta South Campus locational context (Source: Nearmap/ Ethos Urban)

1.3. Report Structure

Secretary's Environmental Assessment Requirements presents SEARs and a summary of responses.

Climate Context outlines the climate conditions that will inform design development.

Sustainable Design Initiatives refers to principles and strategies aimed at integrating sustainability into the design and construction of the project.

Parramatta DCP 2023 provides a review against Parramatta DCP 2023 Part 5.4 Environmental Performance.

SEPP (Sustainable Buildings) 2022 responds to the relevant parts of the SEPP.

Green Star pathway outlines the initial approach to progress a 6-star Green Star Buildings citification.

1.4. Sources of Information

Sources of information relied upon are noted within the body of this document.

1.5. Limitations

This framework has been compiled within the scope and programme provided.

Secretary's Environmental Assessment Requirements

2. Secretary's Environmental Assessment Requirements

The EP & A Regulation outlines four principles of ecologically sustainable development. The project responds to these four principles through the following attributes:

The Precautionary Principle

The project takes a precautionary approach by avoiding using fossil fuels for normal operations, which will align the building to net zero requirements whilst reducing energy-related greenhouse gas emissions and air pollution. A do no harm approach is being adopted for materials to avoid those materials that impact human and ecological health.

Inter-generational Equity

The project's focus on sustainability, energy efficiency, and passive design strategies helps minimise the building's environmental impact, contributing to maintaining a healthy environment for future generations. Renewable energy sources and reduced energy consumption also support this principle.

Conservation of Biological Diversity and Ecological Integrity

The project's repurposing of an existing open-deck car park minimises disturbance to existing ecosystems and habitats. Native and drought-tolerant landscaping, measures to manage stormwater runoff, and measures to minimise light pollution will help conserve local biodiversity and ecological integrity.

Improved Valuation, Pricing, and Incentive Mechanisms

Energy-efficient design and using renewable energy sources reduce the building's operational costs and environmental impacts over its lifetime.

Overall, the proposed Western Indigenous Centre of Excellence project addresses the principles of ecologically sustainable development through its commitment to energy efficiency, renewable energy, passive design strategies, avoidance of fossil fuels and toxic materials and pursuit of a high sustainability rating.

Section 9 of the Secretary's Environmental Assessment (SEARs) Requirements, titled "Ecologically Sustainable Development (ESD)". The table below surmises the SEARS and where the project responses can be found:

SEARS Key Issue 9.	Response
Identify how ESD principles (as defined in section 193 of the EP&A Regulation) are incorporated in the design and ongoing operation of the development.	Refer above response and to Section 4 - Sustainable Design Initiatives for further details of how ESD principles are incorporated in the design and ongoing operation of the development.
Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards.	The developments is targeting a 6-star Green Star Buildings rating. The pathway to achieve this is provided in Section 7
Demonstrate how the development minimises greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources.	Refer to : - Section 4 - Sustainable Design Initiatives - Section 5 - Parramatta DCP 2023. - Section 6 - SEPP (Sustainable Buildings (2022)
If Chapter 3 of SEPP (Sustainable Buildings) 2022 applies: Demonstrate how the development has been designed to address the provisions set out in chapter 3.2(1).	Refer to Section 6.

Climate Context

3. Climate Context

This section outlines the climatic context that informs the design of the Indigenous Centre of Excellence. Key characteristics of the future climate in Parramatta are described below.

The future climate is derived from CSIRO projections[1] for 2050 under Representative Concentration Pathway (RCP) 8.5. RCP 8.5 represents a high-emission pathway where emissions continue to rise throughout the 21st century, leading to significant warming and increasing average temperatures by approximately 4.5°C by 2100 compared to pre-industrial levels. The pathway provides a worst-case for designing for resilience.

3.1. Solar radiation

The stereographic diagram below shows the sun's annual path through the sky relative to the site. The orange lines running east-west indicate the sun's path on the 21st of each month, with the winter solstice having the lowest elevation and the summer solstice showing near 80° elevation. The loose figure-of-eight shapes indicate the sun's position at each solar hour.

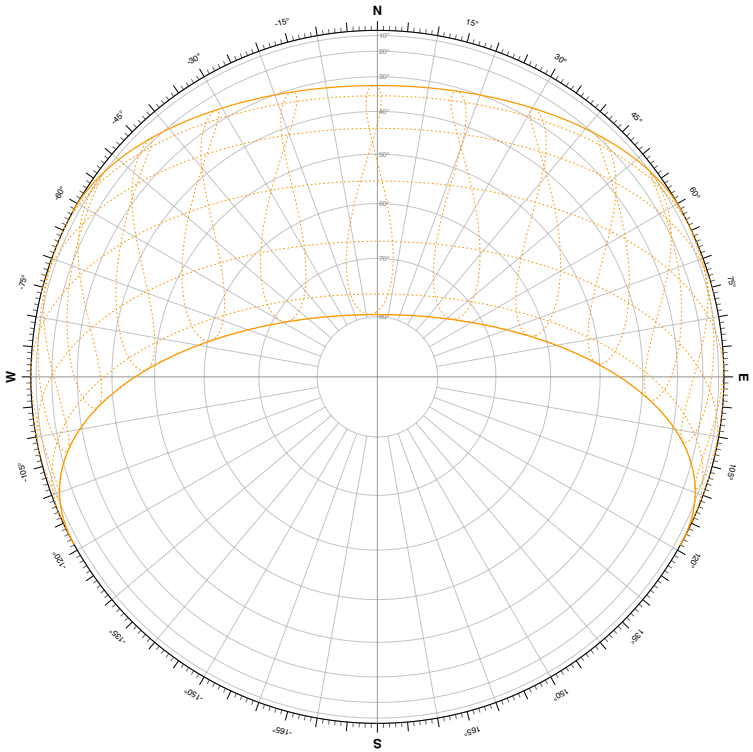

Figure 3. Sunpath diagram for the site. (source: 2D Sun-path/Flux)[2]

The following diagrams show the cumulative radiation forecast from each part of the sky vault in each season in the calendar year 2050. Both direct and diffuse radiation are included.

[1] https://agdatashop.csiro.au/future-climate-predictive-weather
[2] https://andrewmarsh.com/software/sunpath2d-web/

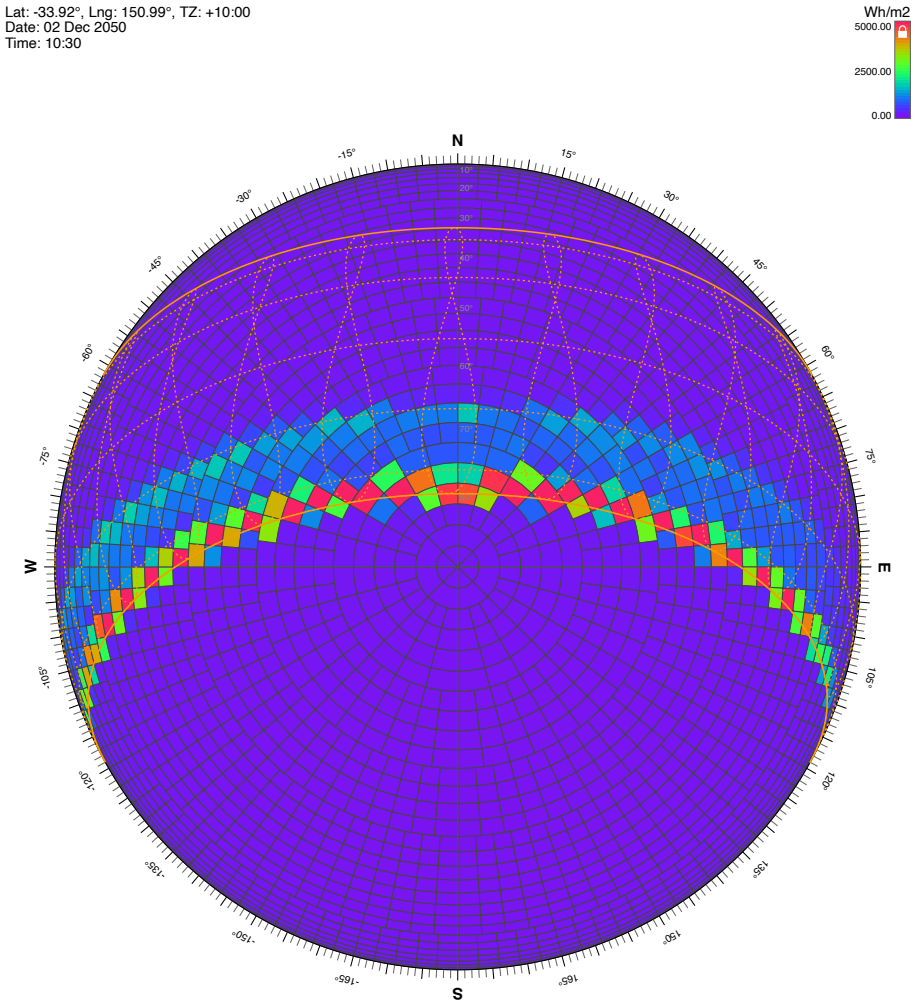

Figure 4. Cumulative radiation - Summer. (source CSIRO/CIE Sky Generator[3]/Flux)

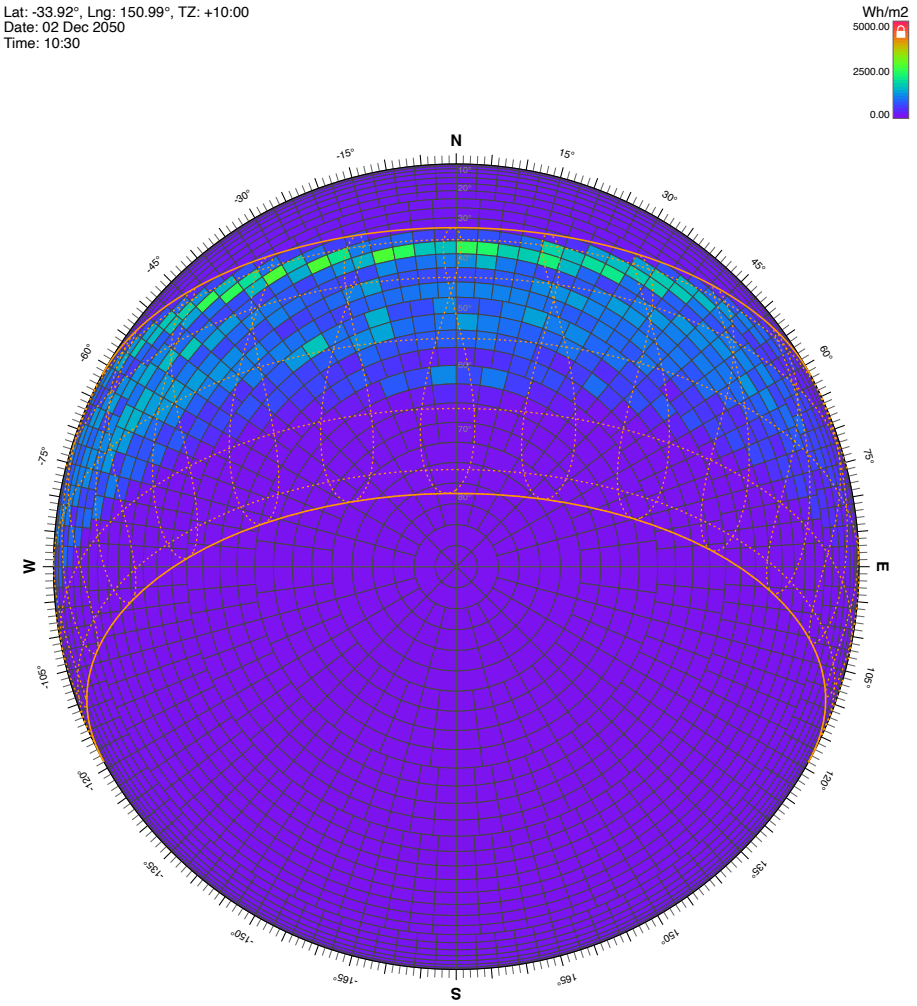

Figure 5. Cumulative radiation - Autumn. (source CSIRO/CIE Sky Generator/Flux)

[3] https://drajmarsh.bitbucket.io/cie-sky.html

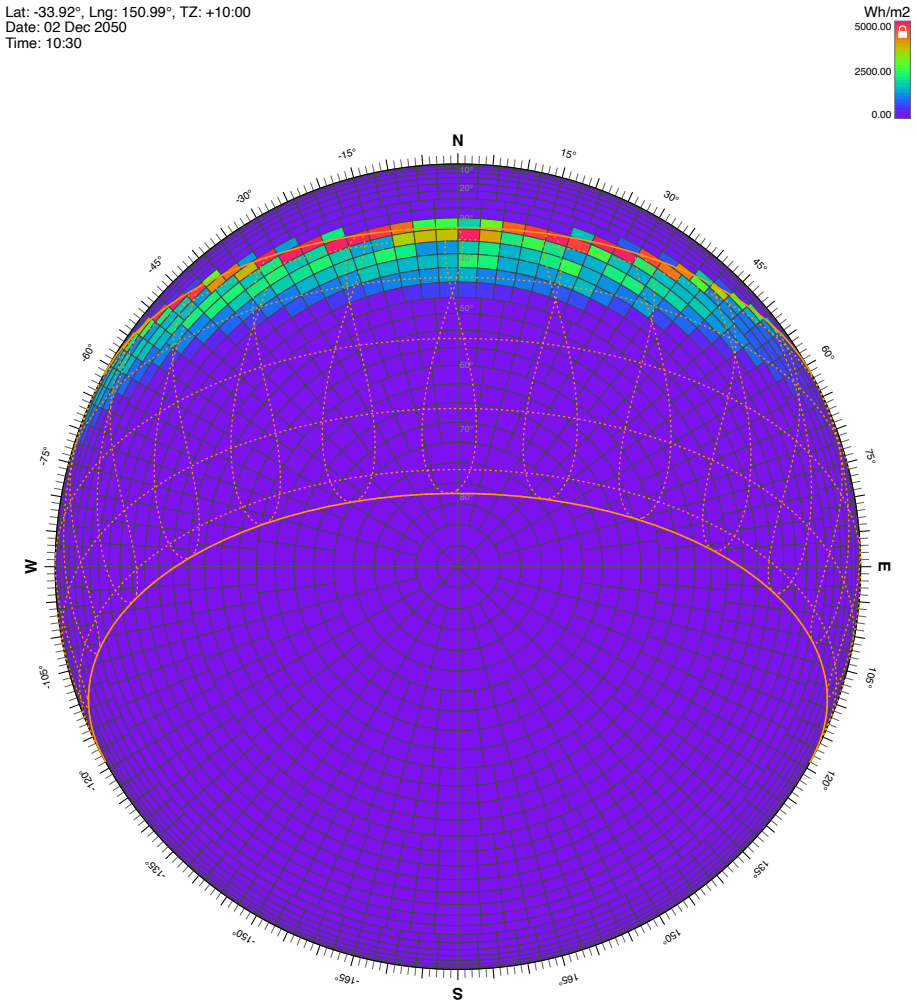

Figure 6 Cumulative radiation - Winter.(source CSIRO/CIE Sky Generator/Flux)

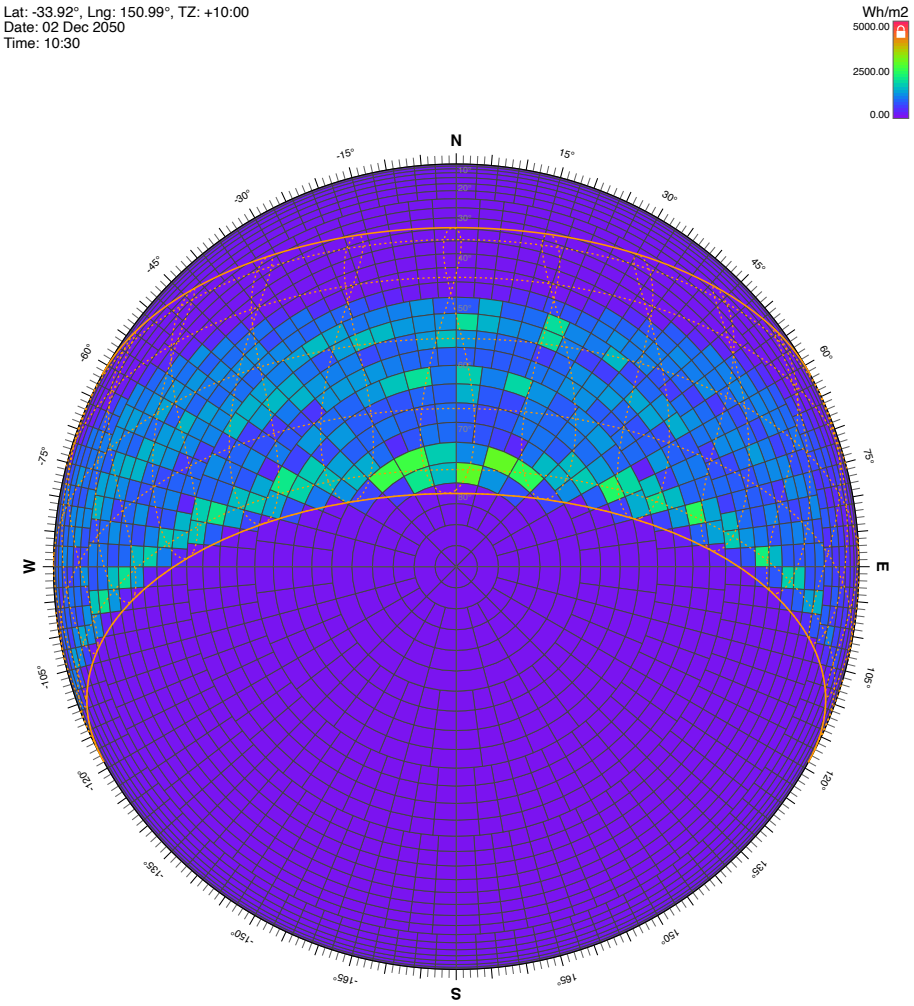

Figure 7. Cumulative radiation - Spring. (source CSIRO/CIE Sky Generator/Flux)

3.2. Wind

The wind environment is relevant to natural ventilation, uncontrolled air infiltration, and the comfort of outdoor spaces and landscapes supporting the building. The seasonal distribution of wind direction and velocities over a 24-hour daily period of future climate is shown below.

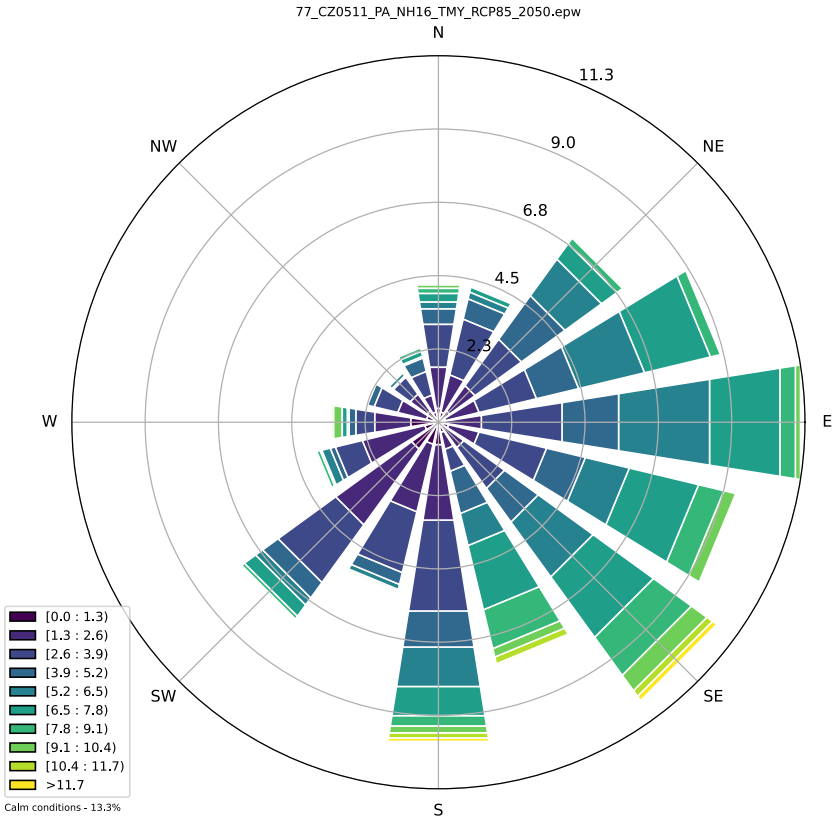

Figure 8. Summer wind rose.

The length of the bars indicates the frequency of wind from any direction, and the colour of the bar segment indicates the wind speed. The size of the segment indicates the frequency of the speed range.

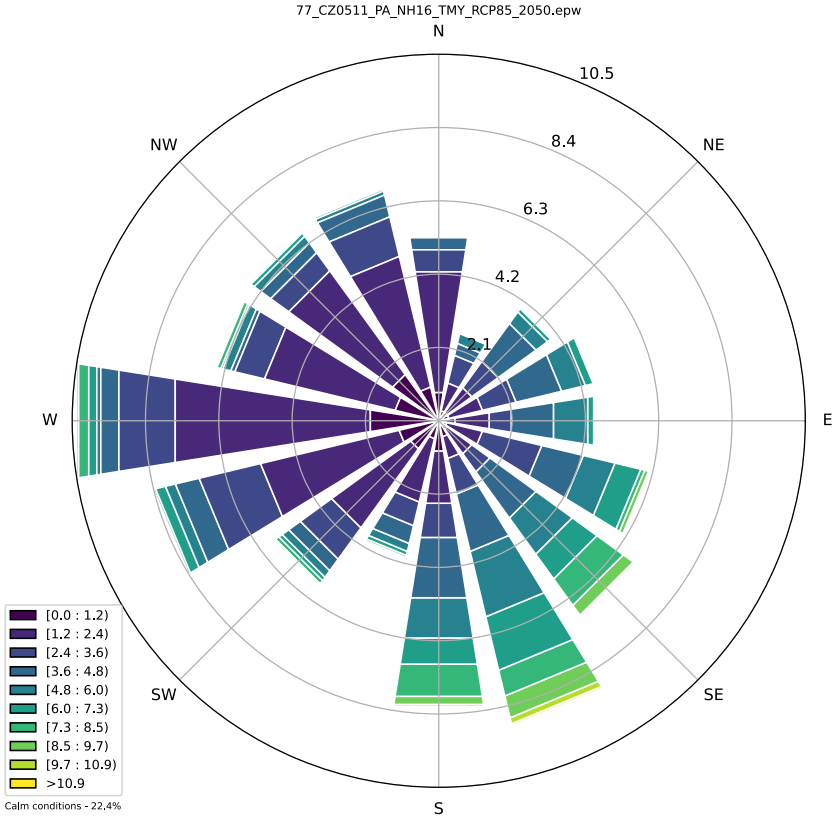

Figure 9. Autumn wind rose.

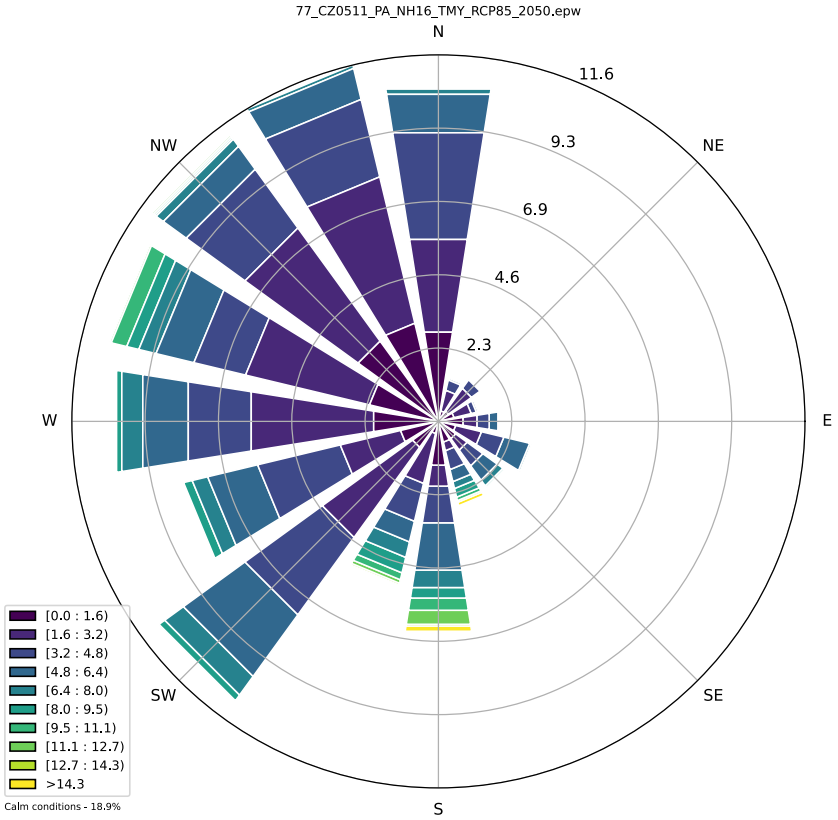

Figure 10. Winter wind rose.

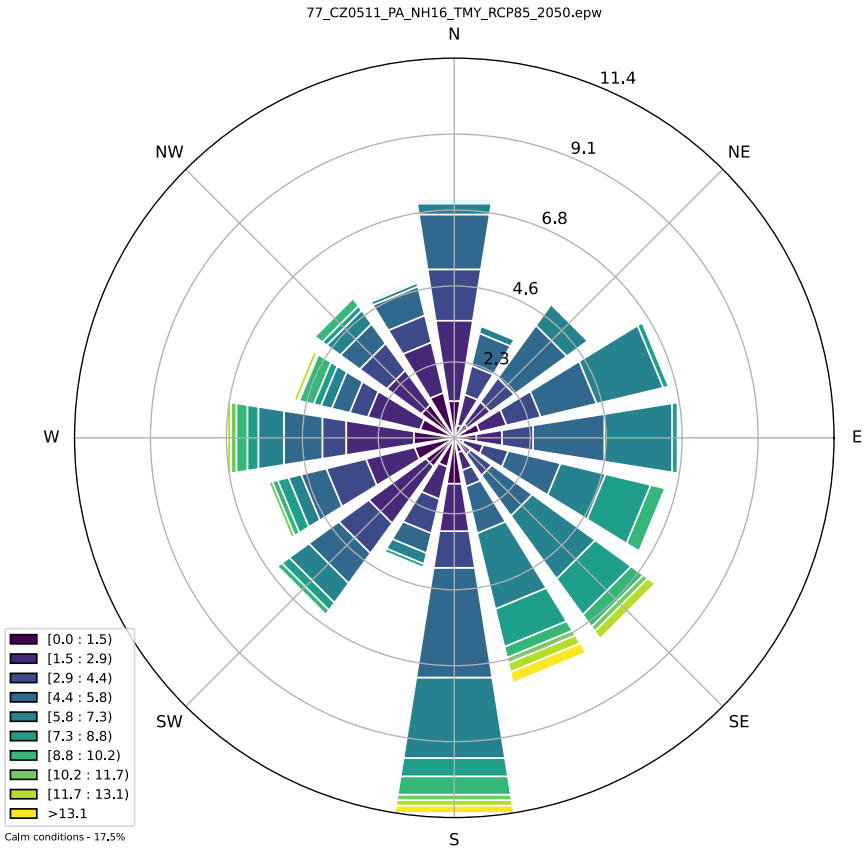

Figure 11. Spring wind rose.

3.3. Temperature and humidity of air

Air conditioning will be the single most significant component of energy consumption, and the energy demand will be significantly influenced by the temperature and humidity of the outdoor air required for ventilation. The gallery's air conditioning will also depend on conditioned outdoor air to maintain a positive pressure in the space and reduce the risk of unconditioned air infiltration. The following diagrams plot projected future coincident humidity and temperature through the year.

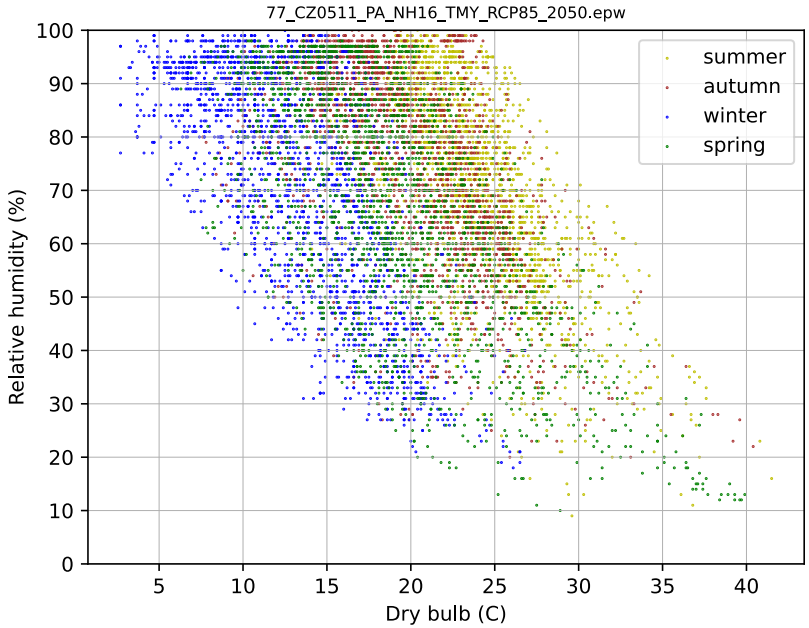

Figure 12. Coincident air temperature and relative humidity - all hours

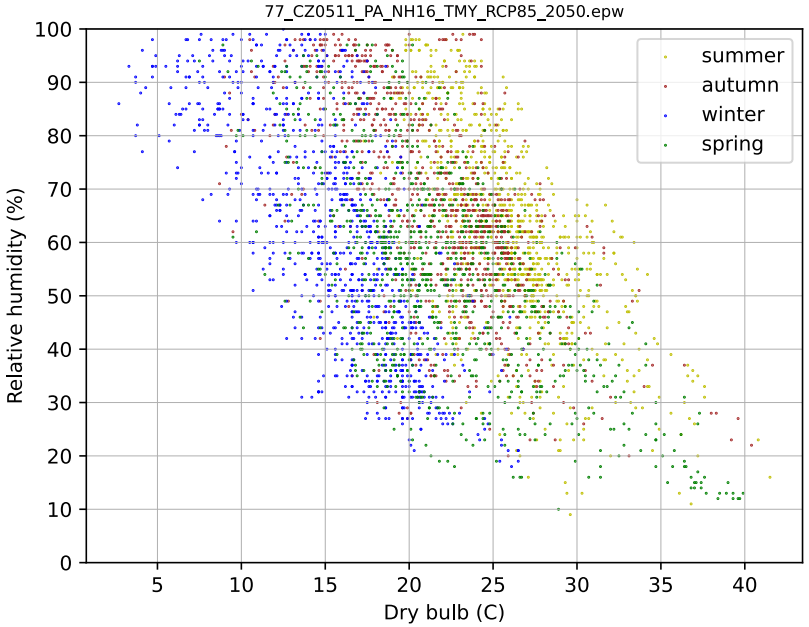

Figure 13. Coincident air temperature and relative humidity - daytime hours

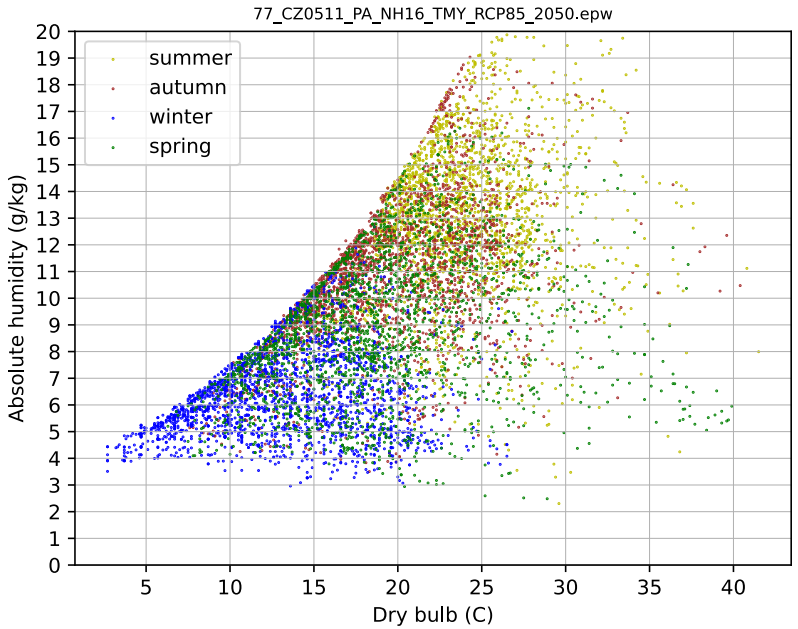

Figure 14. Coincident air temperature and absolute humidity - all hours

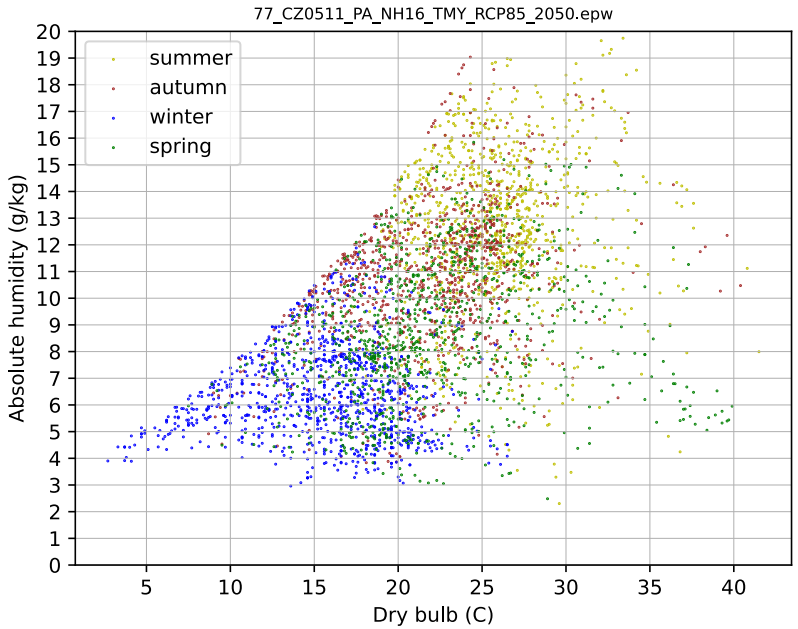

Figure 15. Coincident air temperature and absolute humidity - daytime hours

3.4. Rainfall

Rainfall projections are unavailable in CSIRO's future annual weather years, so statistical analysis has been performed on historical records to determine a reference year for the design and assessment of rainwater harvesting.

58 years of recorded weather data was statistically analysed to determine 'typical' years for rain events in each season. The four reference seasons were chosen as the most typical based on the sum of percentiles representing the 75th, 85th, and 95th percentile thresholds. This can be seen in the graph below.

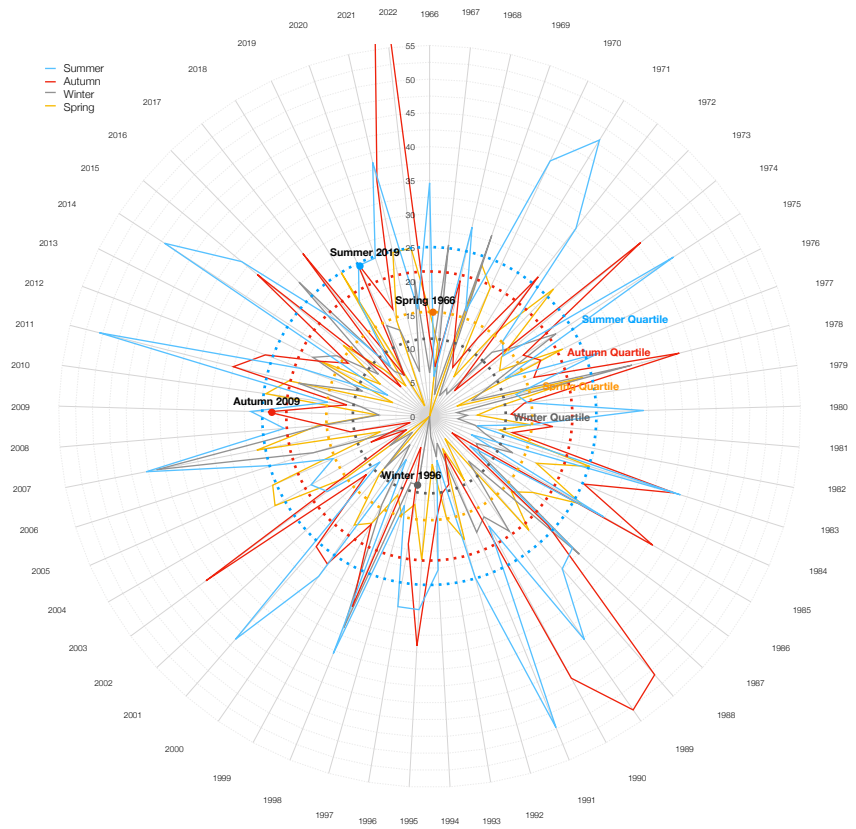

Figure 16. Typical rain years based on percentile thresholds (source BOM/Flux)

The final reference year combines the four representative seasons.

The annual reference rainfall calculated is 985mm. The sizing of the rainwater tanks must balance the lost potential for reusing rainwater due to tank overflow and the limited ability to collect water during dry days. The figure below shows broad flows predicted from approximately 1,500 sqm roof collection area under the reference year's rainfall, consistent daily water demand for toilets, approximately 5,000 sqm of irrigation, and the briefed rainwater storage tank of 100 kL.

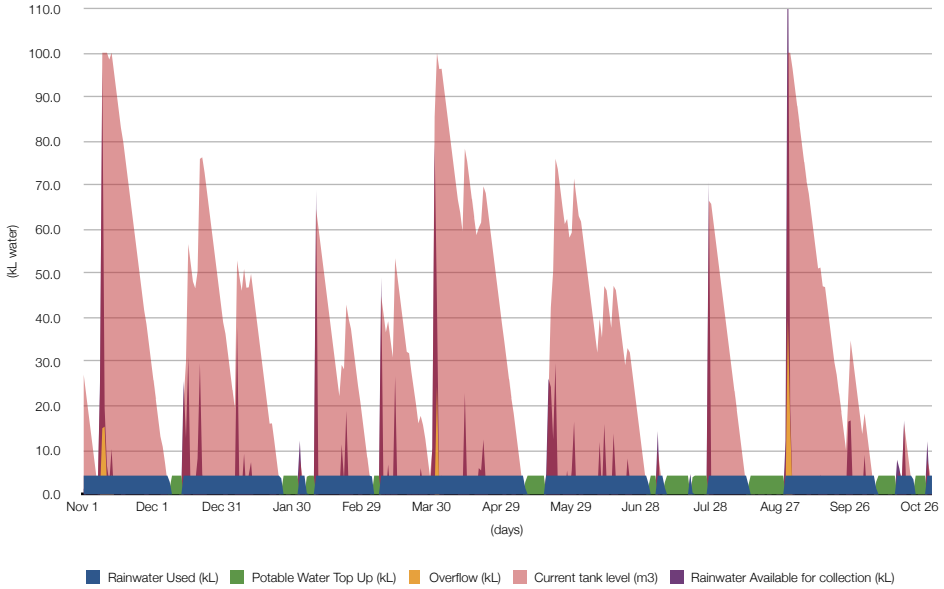

Figure 17. Daily water and reuse water balance over a typical rain year.

Sustainable Design Initiatives

4. Sustainable Design Initiatives

The initiatives described below are developed from a first-principles approach to satisfy the university's thoughtful environmentally sustainable design brief for the project. The quality of the brief and the team's understanding of environmental imperative and design have led to an approach integral to the building form and planning. The team has focussed on high-value initiatives and has avoided a bolt-on approach to sustainability.

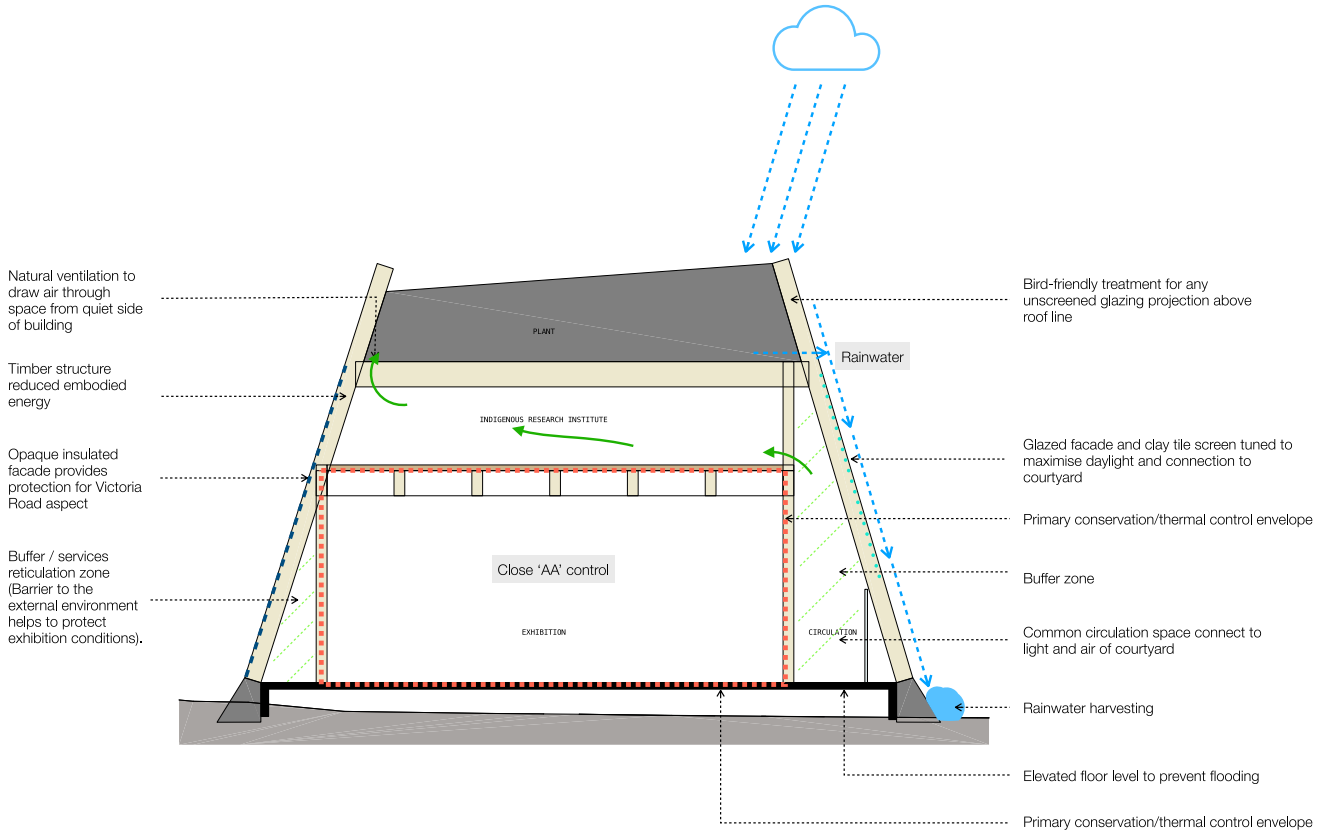

Figure 18. Illustration of environmental design initiatives

4.1. Connection to Nature

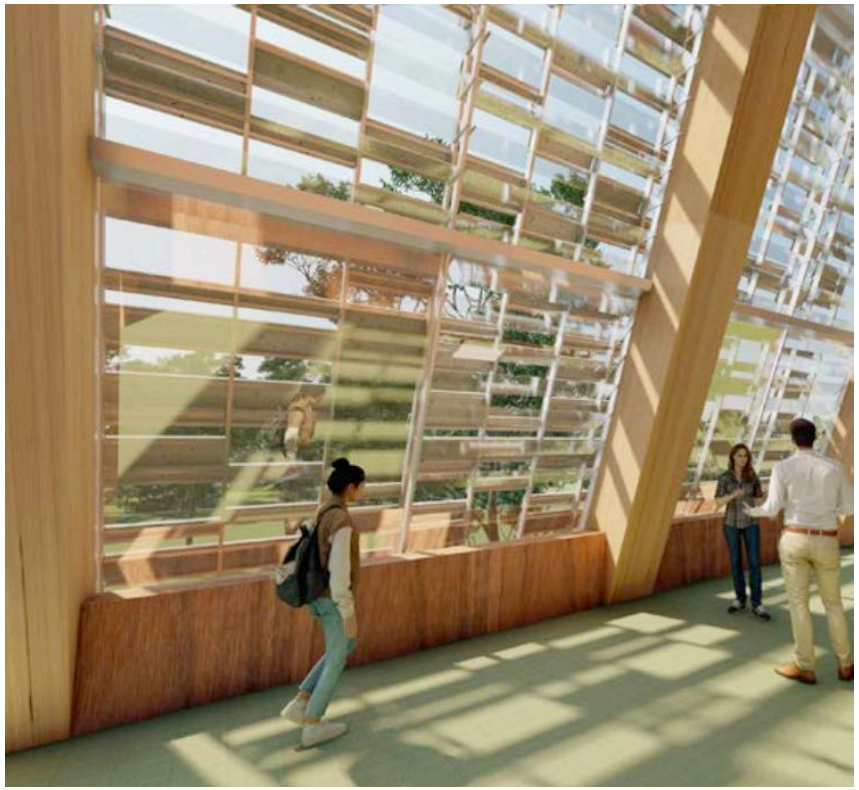

Figure 19. Clay tile facade screening (Source: JCB)

The design incorporates an innovative clay tile facade that transitions from solid to highly permeable to suit the external environment and the needs of the internal uses. Facade aspects orientated towards the central courtyard will be more permeable, allowing for a multi-sensory connection between inside and out. External solar shading from the clay tiles will be tuned to suit orientation and exposure and, importantly, can be altered gradually as the facade wraps around the building.

Finding the right balance between maximising the connection to the outside, necessary solar protection, and natural light takes time and will progress as the design develops. Below is an early exploration of solar heat on the facade compared to a flat roof. This testing will be progressed in design development to inform the optimum solar shading.

Figure 20. Early solar availability testing (Source: Flux)

In addition to the role of the facade in providing a connection to nature, skylights and upward views from public areas through the facade give a connection to the sky.

4.2. Health and Wellbeing

Health and wellbeing are intrinsic informers of the plan.

A protective facade buffers against noise and air pollution from the central thermal plant and Victoria Road's traffic. The central landscape court increases the extent of the facade with an aspect conducive to heat and wellbeing.

Mechanical systems draw fresh air from the roof, reducing exposure to harmful pollutants like CO and NO_x from the surroundings.

AHU units will allow the installation of HEPA filters so they can be introduced during bushfire events.

Users of 'owned' space will have control over their environment with the options to adjust air conditioning, open spaces, or manipulate shading for glare reduction and privacy,

Automated systems will ensure optimal conditions in spaces where users lack direct control to maximise efficiency.

4.3. Passive Design and Resilience

4.3.1. Natural Ventilation

A mix of natural and mechanical air conditioning systems is proposed.

Natural ventilation pathways will be developed to bring natural ventilation deep into the plan. These pathways are likely to include chimneys integrated into the walls of the protected facades.

Natural ventilation will be provided for spaces with air conditioning, such as the main performance space, for a large portion of the year when the space is not in performance mode.

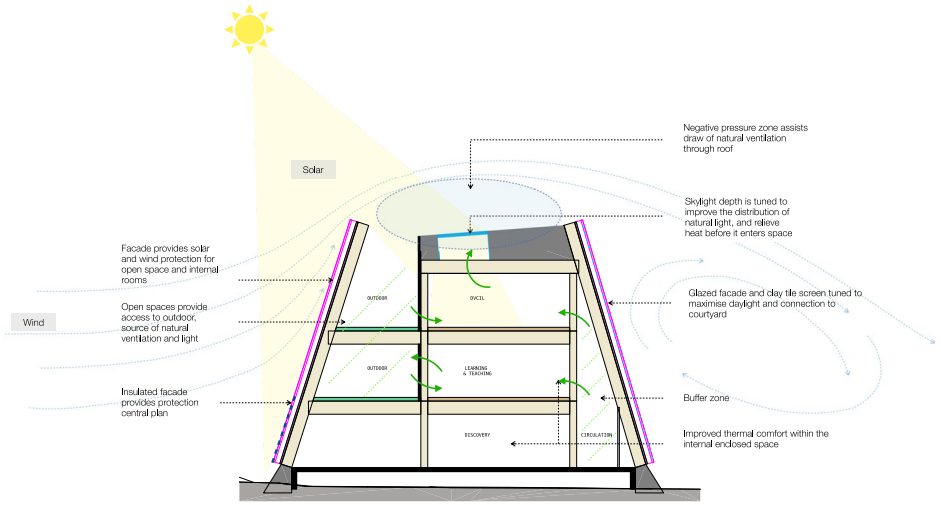

Figure 21. Illustration of natural ventilation and thermal envelope strategies

4.3.2. Thermal envelope

The thermal envelope will meet the minimum requirements of the National Construction Code for solar transmission and conduction of heat.

Solar transition requirements are expected to be met without reliance on treated glazing, which provides a better visual connection to the outside and full access to the sun's warmth in winter.

The NCC provides requirements for thermal insulation, and it is not proposed to invest in additional insulation beyond the minimum requirements. This will protect against over-investment, where returns will be minimal and the additional embodied energy significant.

Solar shading is extensive and will be carefully calibrated to the needs of the climate.

4.3.3. Water Conservation

Water conservation will be achieved by eliminating cooling towers, using water-efficient fittings, and designing a landscape that does not demand year-round irrigation.

Water from the roof will be collected for reuse for non-human contact needs through dual piping throughout the building.

Water in the landscape will be retained to reduce the flow of pollutants off the site and to meet irrigation demands.

The volume of stormwater flow leaving the site is restricted to those required to sustain the nearby creek ecosystem.

4.3.4. Resilience to flooding

Due to the site’s exposure to flood paths associated with a major drain and riverine flooding, the consultant team has elevated the floor level so as not to disrupt the flood path or adversely displace flood waters.

In addition, adequate freeboard will be provided to allow safe passage of flood waters under the structure per best practice design principles for a floodway.

Plant and equipment will be above the probable maximum flood level to avoid damage and system interruption during flood events.

4.3.5. Future-proofing

Future-proofing strategies will contribute to significant reductions in greenhouse gas emissions over the life of the building.

The development will be all-electric for normal operations and not be connected to gas systems.

Onsite solar PV will be provided to reduce demand on the electricity grid.

The design will avoid using HFC synthetic greenhouse gases in air conditioning compressors and heat pumps. This will protect against premature redundancy of plant and equipment due to the regulated phase-down of HFCs, which provides no allocation for use in buildings after 2036.

4.3.6. Shading

The clay tile screen provides extensive solar shading. The density of shade and openness is tuned to suit the facade's orientation and the space's needs.

4.3.7. Operational Efficiency

The Gallery and associated spaces will maintain high indoor air quality through careful control measures, including buffer zones and positive air pressure to prevent unregulated air and moisture ingress.

4.4. Sustainable Procurement

A mass timber structure exemplifies sustainable sourcing, while locally sourced finishes and materials are prioritised. The project employs a “do no significant harm” approach, ensuring materials are free from scheduled carcinogens and harmful to human health or the environment.

The team is working with a local supplier on the opportunity for the clay tile screen to use clay sourced in the Sydney region.

4.5. Green Star

The building is targeting a 6-star Green Star rating.

The design will maximise the credits achieved through the buildings' inherent design qualities and minimise reliance on credits not directly aligned with the project’s core sustainability brief.

Further, the approach avoids Green Star pathways that the team considers to have less substance and long-term benefits to the environment and university.

The initial Green Star pathway can be found in Section 7 of this report.

5. Parramatta DCP 2023

This section summarises how the proposed development satisfies the Parramatta DCP 2023 requirements.

5.1. Energy Efficiency

The building will fully comply with NCC 2022 Section J Energy Efficiency provisions.

Additionally, the building is committed to 100% renewable energy, will be all-electric and have onsite solar PV to reduce demand on the electricity grid.

5.2. Water Efficiency

The building will provide a 100kL of rainwater tank serving toilets and irrigation. Rainwater will be collected from the roof, and the tank is projected to capture 93% of typical year rainfall for reuse.

5.3. Urban Cooling

This control doesn't technically apply. However, reducing urban heat is a key priority of the project to maintain a quality external environment.

Retaining moisture in the landscape, shade, and the selection of materials will mitigate urban heat.

The outer facade of the building will minimise the heat entering the landscape by avoiding highly reflective surfaces and providing extensive clay tile shading.

5.4. Solar Light Reflectivity (Glare)

A reflectivity report is not required as the building is below 40 meters in height. However, the primary risk to vehicular traffic would arise from the north facade of the building facing Victoria Road, which is fully opaque with no reflective surface, thus eliminating risk. The clay tile screen and its ability to reduce direct solar reflections will protect pedestrian visual comfort within and beyond the site.

5.5. Natural Refrigerants in Air Conditioning

The Indigenous Centre of Excellence proposes to use GWP < 10 for refrigerant for all air conditioning systems.

5.6. Bird Friendly Design

The clay tile facade thoroughly screens the majority of the glazing. Where glazing extends above the roof line and is not screened by the clay tiles, bird-friendly treatments will be applied.

5.7. Wind Mitigation

A qualitative wind assessment has been undertaken by CPP Wind Engineering Consultants.

5.8. Waste Management

The mass timber structure brings benefits for early life and end-of-life waste management. Off-site manufacturing of structural elements will reduce waste on site, and the timber structure can be upcycled at end-of-life.

More than 90% of construction and demolition waste will be diverted from landfill per the Green Star Buildings credit requirements.

5.9. Green Star

The building is targeting a 6-star Green Star rating.

The design will maximise the credits achieved through the buildings' inherent design qualities and minimise reliance on credits not directly aligned with the project's core sustainability brief.

Further, the approach avoids Green Star pathways that the team considers to have less substance and long-term benefits to the environment and university.

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Parramatta DCP 2023

SEPP (Sustainable Buildings) 2022

6. SEPP (Sustainable Buildings) 2022

This section summarises how the proposed development addresses the relevant requirements of the SEPP (Sustainable Buildings 2022

6.1. Waste from associated demolition and construction

Demolition waste will be minimised by targeting credit achievement under the Green Star Buildings team. This will contract a minimum of 90% diversion from landfill from demolition waste.

The use of a mass timber structure minimises construction waste. The structural elements will be manufactured offsite, reducing construction waste. The construction contract will also require more than 90% diversion from landfill of all waste generated on-site in the construction process.

6.2. Reduction of peak electricity demand

The building is designed for energy efficiency operation and will provide for on-site renewable energy generation. The primary circulation spaces target air tempering through spilled air from air-conditioned spaces, reducing the maximum demand for air conditioning.

A Building Management System (BMS) will control the efficient operation of services, and zoning of air handling plans will allow isolation or set-back of spaces that are not in use or when natural ventilation conditions are favourable.

6.3. Passive Design

The passive design will maximise natural lighting to avoid dependence on artificial lighting during daytime hours.

The primary circulation spaces will be provided with natural ventilation during suitable conditions. Air tempering will be targeted through spilled air from air-conditioned spaces when it is too hot outside for natural ventilation. A mixed-mode approach will be adopted in other spaces to reduce the energy use associated with cooling.

The clay tile screen applied to the glazed facade provides extensive solar shading. This feature allows the amount of shade to be tailored to suit the orientation of the facade and the needs of the adjacent internal program. This architectural approach allows significant flexibility to adjust requirements on a bay-by-bay basis and even more discretely if the design requires it.

6.4. Generation of renewable energy

Rooftop photovoltaic panels will provide renewable energy. The energy generated by the rooftop PV will reduce the demand for externally supplied electricity, which, under the University Policy, is already procured from 100% renewable sources.

Energy storage will be investigated in concert with the stay power requirements for the close control air conditioning of the gallery.

6.5. Metering and monitoring

Electrical metering will be interfaced with the BMS. The metering will be in accordance with Section J of NCC 2022 Volume One and include the main switchboard, mechanical Control centre, Lifts submains and each distribution board.

6.6. Minimisation of potable water

Rainwater collection and reuse will be provided. The captured rainwater will be used for irrigation and non-human contact building uses, including toil flushing.

Not using cooling towers for heat rejection is a significant contribution to minimising potable water.

6.7. NABERS Embodied Emissions Material Form

This is prepared by Slattery as Quantity Surveyors for the proposed development and is provided separately to this report.

6.8. Net Zero Statement

The Net Zero Energy Statement is prepared by Steenson Varming, the Building Services engineer for the proposed development, with input from the team and is provided separately. The Net Zero Statement confirms:

- The development will have all-electric servicing and be fossil fuel free, except for standby power requirements. This is consistent with the accepted approach to net zero and the Green Star Buildings Climate Positive Pathway requirements.
- The building's design prioritises passive design and energy efficiency, will be served by 100% renewable energy, and will be supplemented with the on-site generation of renewable energy from rooftop photovoltaic panels.
- Estimates of annual energy consumption are not available at this early stage. Energy and thermal modelling are being undertaken to guide the resolution of facade solar shading, natural lighting, and natural ventilation.
- Scope 1+2 annual operating emissions will be zero. Scope 1 emissions will be limited to the diesel consumed by the standby equipment, which is deemed immaterial (<1% of inventory). All Scope 2 emissions from electricity consumption will be 100% offset through the university's renewable power purchase agreement.

Green Star pathway

7. Green Star Pathway

This section outlines the initial pathway to achieving a 6-star Green Star Building certification.

The pathway will evolve as the design progresses, and delivery risks can be isolated and assigned.

Ref	Category	Credit	Expected	Targeted	Minimum Requirements	Credit Achievement		Exceptional Performance		Primary Responsibility	Other Responsible	Action(s)	Notes
1	Responsible	**Industry Development**	1		-	1	- Green Star Accredited Professional; - Financial transparency; and - Marketing sustainability achievements		-	TBD	-	-	-
2	Responsible	**Responsible Construction**	1		- Builder has EMS in place; - 80% C+D water diverted from landfill; and - Head contractor provides training on targets	1	- 90% of C+D waste is diverted from landfill, and contractor's facilities comply		-	Builder	JCB/ PSA	Specification of credit requirement in tender documents	-
3	Responsible	**Verification and Handover**	1		- Metering and monitoring ; - Commissioning + tuning (+ air tightness testing), and - Building information	1	- A soft landings approach, that involves the facilities management team; and - ICA in the commissioning and tuning process		-	Steenson Varming	Western	Services design and specification. Building Users Guide Western to appoint ICA [Credit]	Air tightness is not compatible with design aspiration and climate context
4	Responsible	**Operational Waste**	0		- Separating waste streams; - Dedicated waste storage area; and - Easy and safe access to waste storage areas		-		-	JCB/PSA	-	Space planning	-
5	Responsible	**Responsible Procurement**	0		-	1	- The building's design and construction procurement process follows ISO 20400 and at least one identified supply chain risk and opportunity is addressed		-	-	-	-	-
6	Responsible	**Responsible Structure**	3	2	-	3	- 80% of all structural components (by cost) meet a RPV score of at least 10.	2	In addition to credit achievement: - 10% meet a RPV score of at least 15, or - 30% meet a RPV score of at least 12	TTW	-	Confirm ability to achieve credit with mass timber.	

Ref	Category	Credit	Expected	Targeted	Minimum Requirements	Credit Achievement		Exceptional Performance		Primary Responsibility	Other Responsible	Action(s)	Notes
7	Responsible	**Responsible Envelope**	2	2	-	2	- 60% of all building envelope components (by cost) meet a RPV score of at least 10.	2	In addition to credit achievement: - 10% meet a RPV score of at least 15, or - 25% meet a RPV score of at least 12	JCB/PSA	TTW	Confirm ability to achieve credit with clay bricks	
8	Responsible	**Responsible Systems**	0		-	1	- 20% of all building systems components (by cost) meet a RPV score of at least 6.	1	In addition to credit achievement: - 5% meet a RPV score of at least 11, or - 15% meet a RPV score of at least 8	Steenson Varming	-	Review whether credit can be added will low to no cost impact	-
9	Responsible	**Responsible Finishes**	1	1	-	1	- 60% of all building systems components (by cost) meet a RPV score of at least 7.	1	In addition to credit achievement: - 10% meet a RPV score of at least 12, or - 20% meet a RPV score of at least 9	JCB/PSA	-	Confirm ability to achieve credit.	
10	Healthy	**Clean Air**	2		- Ventilation system attributes; and - Provision of outdoor air (+50%); and - Exhaust or elimination of pollutants.	2	- Ventilation Systems Attributes; and - Provision of outdoor Air (+100%)		-	Steenson Varming	-	Specification of credit requirement in tender documents	-
10	Resilient	**Grid Resilience**	3		-	3	- Provide active generation and storage systems; and/or - Infrastructure to deliver an appropriate demand response strategy; and/or - The building has reduced its electricity consumption through passive design (no A/C for 80% of area).		-	Steenson Varming	Flux	Strategy to be developed	
11	Healthy	**Light Quality**	2	2	- Lighting Comfort; and - Glare from Light Sources; and - Daylight	2	- Artificial Lighting; or - Daylight	2	- Artificial Lighting; and - Daylight	Steenson Varming	Flux	Specification of light fittings Daylight and glare testing [Flux]	Gare control requirements may be problematic with built form
12	Healthy	**Acoustic Comfort**	0		- An Acoustic Comfort Strategy is prepared to describe how the building and acoustic design aims to deliver acoustic comfort to the building occupants.	2	3 or 4 (depending on building use type) of the following: - Maximum Internal Noise Levels - Minimum Internal Noise Levels - Acoustic Separation - Impact Noise Transfer - Reverberation Control		-	TBD	-	Acoustic Comfort Strategy to be prepared	-

Ref	Category	Credit	Expected	Targeted	Minimum Requirements	Credit Achievement		Exceptional Performance		Primary Responsibility	Other Responsible	Action(s)	Notes
13	Healthy	**Exposure to Toxins**	2		- Paints adhesives, sealants, and carpets are low in TVOC; and - Engineered wood products are low in TVOC: and - Occupants are not exposed to banned or highly toxic materials.	2	- On-site tests verify that the building has low TVOC (0.29 ppm) and formaldehyde (0.02 ppm) levels		-	JCB/PSA	TTW	TTW to confirm engineered wood achievable. Specification of finishes	-
14	Healthy	**Amenity and Comfort**	2		-	2	- The building has dedicated amenity rooms to act as a parent room, relaxation room, or an exercise room.		-	JCB/PSA	-	Space planning	-
15	Healthy	**Connection to Nature**	1	1	-	1	- The building provides views; and either of - The building includes indoor plants and incorporates nature-inspired design; or - 5% of the building's floor area or site area is allocated to nature in which occupants can directly engage with	1	- The building provides views; and - The building includes indoor plants and incorporates nature-inspired design; and - 5% of the building's floor area or site area is allocated to nature in which occupants can directly engage with	-	-	-	-
16	Resilient	**Climate Change Resilience**	1		- Climate Change Pre-screening Checklist	1	- Climate Change Risk and Adaptation Assessment; and - Extreme and high risks are addressed		-	Flux	-	Climate Change pre-screening checklist to be prepared Risk and adaptation framework [credit]	-
17	Resilient	**Operations Resilience**	2		-	2	- Undertake a comprehensive review of the acute shocks and chronic stresses. - Design and operations address any high or extreme system-level interdependency risks. - The building's design maintains a level of survivability and design purpose in a blackout.		-	Steenson Varming	-	Review and design	-
18	Resilient	**Community Resilience**	1		-	1	- Undertake a needs analysis of the community that identifies shocks and stresses that impact the building's ability to service the community and develops responses to manage these.		-	JCB/PSA	-	Review and design	-
19	Resilient	**Heat Resilience**	1		-	1	- At least 75% of the whole site area comprises of one or a combination of strategies that reduce the heat island effect.		-	Flux	JCB/PSA	UHI review	Urban Cooling requirements of Parramatta DCP 2023

Ref	Category	Credit	Expected	Targeted	Minimum Requirements	Credit Achievement		Exceptional Performance		Primary Responsibility	Other Responsible	Action(s)	Notes
21	Positive	**Upfront Carbon Emissions**	3		- Reducing Upfront Carbon Emissions (10% less than reference building)	3	[Mandatory for 5+ stars if registered 2023 or later] - Reducing Upfront Carbon Emissions (20% less than reference building) - Offsetting Demolition Works	3	- Reducing Upfront Carbon Emissions (40% less than reference building) - Offsetting Demolition Works	Flux	Builder	Embodied Energy study Builder to offset demolition emissions	-
22	Positive	**Energy Use**	6		- The building's energy use is at least 10% less than a reference building.	3	[Mandatory for 5+ stars if registered 2023 or later] - The building's energy use is at least 20% less than a reference building.	3	- The building's energy use is at least 30% less than a reference building.	Flux	JCB/ PSA	Mixed mode ventilation design Testing	Sustainable Buildings SEPP
23	Positive	**Energy Source**	6		- Zero Carbon Action Plan	3	[Mandatory for 5+ star if registered 2023 or later] - 100% Renewable Electricity (5 year agreement)	3	[Mandatory for 5+ star if registered 2023 or later] - 100% Renewable Energy (all-electric building)	Steenson Varming	Western	All electric building Western to confirm renewable energy purchase	Zero carbon action plan not needed if all electric?
24	Positive	**Other Carbon Emissions**	2		-	2	[Mandatory for 5 star if registered 2023 or later] - The building owner eliminates emissions from refrigerants; or - The building owner offsets emissions from refrigerants	2	[Mandatory for 6 star if registered 2023 or later] - The building also offsets not captured elsewhere category (1% materiality threshold).	Steenson Varming	Western	Natural refrigerants or synthetics with GWP <10.	Consistent with the Parramatta DCP 2023
25	Positive	**Water Use**	3	3	- The building installs efficient water fixtures; or - The building uses 15% less potable water compared to a reference building.	3	- Reducing Water Use (40% less the reference); and - Recycled Water Infrastructure (where council or authority gas plans)	3	- Reducing Water Use (75% less the reference); and - Recycled Water Infrastructure (where council or authority gas plans)	Steenson Varming	JILA	Rainwater storage to be maximised (95% utilisation?) Dual piping Retention capacity to be tested	Consistent with the intent of Parramatta DCP 2023, but not requirement.
26	Positive	**Life Cycle Impacts**	2		-	2	- The project demonstrates a 30% reduction in life cycle impacts when compared to standard practice.		-	Flux	JCB/ PSA	LCA analysis to be undertaken	
27	Place	Movement and Place	3		- The building includes showers and changing facilities for building occupants - The facilities are accessible, inclusive, and located in a safe and protected space	3	- The building's access prioritises cycling and includes bicycle parking facilities; and - Sustainable Transport Plan; and - The building has EV charging capabilities; and - Transport options that reduce the need for private fossil fuel powered vehicles are prioritised; and - The building's design and location encourage walking		-	JCB/PSA	Steenson Varming	Space Planning for bicycles and EOT Sustainable Transport Plan EV infrastructure to be designed	NCC 2023 EV requirements

Ref	Category	Credit	Expected	Targeted	Minimum Requirements	Credit Achievement		Exceptional Performance		Primary Responsibility	Other Responsible	Action(s)	Notes
28	Place	Enjoyable Place	2		-	2	- The building delivers memorable, beautiful, vibrant communal or public places where people want to gather and participate in the community; and - The spaces are inclusive, safe, flexible, and enjoyable.		-	JCB/PSA	JILA	Reporting	-
29	Place	Contribution to Place	2		-	2	- The building's design contributes to the livability of the wider urban context and enhances the public realm; or - Independent reviews are held during the development of the design.		-	JCB/PSA	-	Reporting Is there a Design Integrity Panel established?	-
30	Place	Culture, Heritage and Identity	1		-	1	- The building's design reflects and celebrates local demographics and identities, the history of the place, and any hidden or minority entities; or - This outcome was arrived through meaningful engagement with community groups early in the design process.		-	JCB/PSA	-	Reporting	-
31	People	Inclusive Construction Practice	1		- On-site Facilities, Policies, and Training	1	- Policies and programs implemented are relevant to construction workers on site. - The head contractor provides high quality staff support on-site to reduce at least five key physical and mental health impacts. - The effectiveness of the interventions is evaluated.		-	Builder	JCB/PSA	Specification of credit requirement in tender documents	-
32	People	Indigenous Inclusion	2		-	2	- The project team plays an active role in the organisational Reconciliation Action, or; - The building's design and construction incorporates design elements using the - Indigenous design and planning strategies and principles.		-	JCB/PSA	Western	Reporting Western to ensure active engagement	-

Ref	Category	Credit	**Expected**	**Targeted**	Minimum Requirements	Credit Achievement		Exceptional Performance		Primary Responsibility	Other Responsible	Action(s)	Notes
33	People	Procurement and Workforce Inclusion	3		-	2	- The project implements a social procurement plan. - At least 2% of the building's total contract value has been directed to generate employment opportunities for disadvantaged and under-represented groups.	1	- The project implements a social procurement plan. - At least 4% of the building's total contract value has been directed to generate employment opportunities for disadvantaged and under-represented groups.	Builder	JCB/ PSA	Specification of credit requirement in tender documents	-
34	People	Culture, Heritage and Identity	3		-	2	- The building is designed and constructed to be inclusive to a diverse range of people with different needs.	1	- Engagement with target groups has informed the inclusive design.	JCB/PSA	-	space planning and design	-
35	Nature	Impacts to Nature	2		- The building was not built on or significantly impacted a site with a high ecological value. - The building's light pollution has been minimised. - There is ongoing monitoring, reporting, and management of the site's wetland ecosystem.	2	- The building's design and construction conserves existing natural soil, hydrological flows, and vegetation elements; and - If deemed necessary by an Ecologist, at least 50% of existing site with high biodiversity value is retained		-	JILA	Steenson Varming	Ability to achieve credit to be tested design of external lighting to minimise light spill	-
36	Nature	Biodiversity Enhancement	2	2	-	2	- Site includes 15% landscape area; and - The landscaping includes a diversity of species and prioritises the use of climate-resilient and indigenous plants; and - Site-specific Biodiversity Management Plan provided to the building owner or building owner representative.	2	- 30% area of landscaping is provided; and - The landscaping includes critically endangered and/or endangered plant species	JILA	-	Biodiversity Management Plan required Ability to achieve exceptional performance to be tested	-
37	Nature	Nature Connectivity	0		-	2	- 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.		-	JILA	-	Credit requirement to be reviewed	-

Ref	Category	Credit	Expected	Targeted	Minimum Requirements	Credit Achievement		Exceptional Performance		Primary Responsibility	Other Responsible	Action(s)	Notes
39	Nature	Nature Stewardship	0		-	2	- Areas of restoration or protection are provided; and - Restoration or protection activities are beyond the development's boundary; and - The building owner, through the project undertakes activities that protect or restore biodiversity at scale; and - These actions occur beyond legislated requirements.	-	-	-	-	-	-
39	Nature	Waterway Protection	2	2	-	2	- The project demonstrates a reduction in average annual stormwater discharge of 40% across the whole site; and - Specified pollution reduction targets are met.	2	- The project demonstrates a reduction in average annual stormwater discharge of 80% across the whole site; and - Higher specified pollution reduction targets are met.	JILA	-	Ability to achieve exceptional performance to be tested	-
40	Leadership	Market Transformation	0				-	-	-	-	-	-	-
41	Leadership	Leadership Challenge	0				-	-	-	-	-	-	-
			71	**15**									