NORTHROP

SUSTAINABILITY REPORT

SCEGGS Darlinghurst Wilkinson Building

215 Forbes Street, Darlinghurst NSW 2010

PREPARED FOR
Sandrick Project Directions
Suite 412, 4 Columbia Court
Baulkham Hills NSW 2153

Ref: SY211000-SER04
Rev: 2
Date: 29.10.21

Sustainability Report

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
23.08.2021	1	Preliminary	I.Van Eerden	M.Santos
29.10.21	2	Final	I.Van Eerden	M.Santos

Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Level 11, 345 George Street, Sydney NSW 2000

02 9241 4188 | sydney@northrop.com.au | www.northrop.com.au

Table of Contents

EXECUTIVE SUMMARY

This Sustainability Report outlines how the proposed redevelopment of the Wilkinson House meets the Secretary's Environmental Assessment Requirements (SEARs) as a state significant development.

The project's sustainability objectives outlined within the SEARs are as follows:

- The incorporation of the principles of Ecologically Sustainable Development into the design, construction, and on-going operation of the new building.
- The consideration of opportunities for the incorporation of green roofs.
- The inclusion of measures to minimise the consumption of resources, water and energy.
- Alignment to the best practice ESD standards outlined within the Government Architect of New South Wales (GANSW) Environmental Design in Schools Manual.
- An assessment against an accredited ESD rating system or equivalent program of ESD performance inclusive of a minimum rating scheme target level.

Additional to these requirements the project aims to achieve a future ready learning environment, resilient to the expected future changes relating to climate and technology. As such this report also outlines climate resilience actions and wellbeing initiatives aligned to the above objectives.

Specifically, the report details how the project has addressed sustainability through incorporation of the following key measures.

- A strong commitment to energy efficiency with the project design to demonstrate a significant energy reduction over a standard construction building of its type.
- A highly efficient façade system that leverages the constraints of the existing heritage fabrics to both manage heat gains while promoting the entry of daylight into classroom spaces.
- Low impact materials selections with the project maximising the reuse of onsite materials and minimise the upfront carbon emissions associated with the project.
- The use of highly efficient water fixtures and fittings, alongside a waterless heat rejection system and connection to the adjacent Joan Freeman Centre's non potable water supply.
- Integration of educational signage, wayfinding, and monitoring systems across the project.
- An optimised ventilation system to provide good provision of outside air while maintaining thermal comfort in the classroom areas.

Through the inclusion of the above and the sustainability initiative outlined within this report the project clearly addresses sustainability within the design and adequately equips the project for its long-term operation thereby addressing the project SEARs.

1. Introduction

Northrop has been engaged to provide input to the redevelopment of Wilkinson House to meet the requirements outlined by the Department of Planning within the project SEARS.

The Sydney Church of England Girls Grammar School (SCEGGS) is preparing a State Significant Development Application (SSDA) to support the major refurbishment of Wilkinson House to support a variety of new educational spaces assisting in the achievement of the educational mission of the school.

1.1 Overview

This Sustainability Report has been prepared by Northrop on behalf SCEGGS (the Applicant). It accompanies an Environmental Impact Statement (EIS) in support of State Significant Development Application (SSD-19989744) for Wilkinson House at 215 Forbes St, Darlinghurst.

The purpose of this Sustainability Report is to outline the project approach to sustainable design and detail how the project proposes to meet the Secretary's Environmental Assessment Requirements (SEARs).

1.2 Site Description

Wilkinson House is in the Northeast corner of the SCEGGS campus bounded by Forbes Street to the East and St Peters Street to the North.

Figure 1 Wilkinson House Site

1.3 Response to Secretaries Environmental Assessment Requirements (SEARs)

This sustainability report is required by the Secretary's Environmental Assessment Requirements (SEARs) for SSD-19989744. This table identifies the SEARs and relevant reference within this report.

Item 7 (ESD) of the SEARs lists four requirements and three specific inclusions which are outlined below, alongside is listed where the response to each can be found within this report.

Item	Action to Address the Requirement	Report Location
Address the Ecologically Sustainable Development conditions imposed under SSD-8993	As below	
• Detail how ESD principals (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) will be incorporated in the design and ongoing operation phases of the project.	This ESD report details how the project aims to address the ESD Principles and their incorporation into the design and ongoing operation of the project through the incorporation of the GANSW sustainability design recommendations and through a gap analysis against holistic industry sustainability.	Section 2 & 4
• All future development applications for new built form must consider opportunities for the incorporation of green roofs.	The project has included an area of vegetation within the roof design (the oculus) at the northwestern corner of the roof. Green roof opportunities were considered within the design however the limitations of the heritage façade and restrictions on roof type have prevented a more significant green roof area.	
Identify proposed Measures to minimise consumption of resource, water (including water sensitive urban design) and energy	The project is including significant energy and water efficiency through good selection of equipment, the inclusion of rainwater reuse and energy production systems.	Sections 2.1 and 2.3
Identify how environmental design will be achieved in accordance with the GANSW Environmental Design in Schools Manual (GANSW, 2018).	The project is being assessed against the GANSW Environmental Design in Schools Manual. This is detailed within Section 4 of this report.	Section 4
Provide an assessment against an accredited ESD rating system or an equivalent program of ESD performance. This should include a minimum rating scheme target level.	The project is being assessed against the GANSW Environmental Design in Schools Manual and against the Green Building Council's holistic sustainability rating system against a best practice rating level.	Section 4 and 5

Additional to these conditions the SEARs also notes that the City of Sydney (CoS) Design for Environmental Performance Template is of relevance to the project. It is noted that this template is provided to standardize how applicants for planning approval demonstrate compliance with the City of Sydney's planning controls. We attach this template within Appendix A this report to support the projects compliance against the CoS Policies.

2. Sustainability Initiatives

The following section describes how ESD principles (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) are being incorporated in the design and ongoing operational phases of the project. These initiatives illustrate how the project addresses the following;

- The precautionary principle – through the implementation of environmental management and building maintainability, the project attempts to incorporate adaptability and resilience into the project design. The concept behind the precautionary principle is to create spaces that can both; accommodate for changes, which may eventuate in the future, and avoid the risk of serious or irreversible damage to the environment.
- Inter-generational equity to ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations – through the inclusion of zero ozone depleting refrigerants, best practice PVC and low impact paints, sealants and adhesives, alongside a focus on the buildings connection with nature, the project demonstrates a strong commitment to the preservation of environmental health, diversity and productivity of the local area.
- Conservation of biological diversity and ecological integrity – through the planting of native vegetation, improvement of stormwater runoff from the site and use of integrated landscaping including roof landscaping, the project will act to improve, conserve and support the local biological diversity and integrity.
- Improved valuation, pricing and incentive mechanisms - the project has involved significant input from the Quantity Surveyor who will be involved throughout the entire design process to ensuring that the project both remains on budget and effectively considers environmental factors in the valuation of assets and services. Furthermore, the project has looked more broadly and considered the economic cost benefits that will stem from the project both short and long term. Additional to this process extensive cost modelling has been completed to consider both capital and operational costs over the expected lifetime of the project.

Through the inclusion of the above and the sustainability initiative outlined within this report the project clearly addresses the ESD Principles as defined in clause 7(4) of schedule 2 of the Environmental Planning and Assessment Regulation 2000. Further details of the general sustainability initiatives are outlined below.

2.1 Energy Efficiency and Greenhouse Gas Emission:

Energy efficiency has been considered throughout the project schematic design and will continue to heavily influence the design development process with the following improvements already considered as part of the design process. It is noted that the CoS has adopted targets for a 70% reduction in Greenhouse Gas Emissions by 2030 and for Net Zero Emissions by 2040. This section nominates measures to support the achievement of these targets provided by the proposed project.

2.1.1 Natural Ventilation of Circulation Spaces

Most circulation areas within the project will be able to operate as naturally ventilated spaces exploiting the buildings design to promote flow of air. The buildings central stairwell will support the natural ventilation strategy within the building, helping to draw air both up and through the building.

2.1.2 Improved building fabric and glazing performance

The building envelope is dominated by the heritage façade, and as such the project team have completed parametric modelling to optimise and balance heat gains throughout summer, losses in winter and maintain good views and daylighting throughout of the building. The operable windows and doors on the façade contribute strongly to the ventilation strategy allowing for minimal use of space conditioning across the year and reducing the need for mechanically forced ventilation.

The use of targeted insulation and good glazed façade layout assists in optimising energy consumption of the building during the operational stages of the building. Given the high occupant density of the building energy efficiency is driven by the cooling demand meaning thermal mass and glazing performance have a greater effect the building performance, as such the structural design has been adapted to ensure concrete mass is incorporated at the facade.

Additionally, the inclusion of roof ventilation and the roof vegetation will help to limit heat gain throughout the school's operational periods that fall during the summer period. It is noted that school holidays generally occur over the hottest periods of summer, and this provides the design some flexibility in optimising for the shoulder seasons.

2.1.3 Mixed Mode HVAC

The mechanical systems are designed to operate as mixed mode to account for opportunities to use the operable windows, cross ventilation, and adaptive thermal comfort approach to the site. Space conditioning will still be provided to accommodate heating and cooling during peak periods across the year, but the systems design will be to minimise its use when external conditions are able to meet the occupant comfort needs.

To accommodate potential future needs the HVAC systems will also look to include full outside air supply systems and a simplified economy cycle, which will reduce heating and cooling demands during periods when outdoor air supply can meet the loads within a space.

2.1.4 HVAC System Control

The proposed HVAC system will incorporate individual room control for thermal comfort conditions allowing building occupants to maintain comfort conditions suitable to the use and occupancy of spaces. This system assists in optimising the sites energy efficiency while maintaining comfortable conditions within the conditioned areas and ensures that vacant spaces are not conditioned.

2.1.5 Adaptive Thermal Comfort Control

Through consideration of space uses and expected clothing use when HVAC systems are active, they will be set to drift within a larger than standard dead band to reduce overcooling and heating of spaces. These set points will be determined for each space through consideration of the expected comfort bands across the year, considering things such as external temperatures, school uniforms, activity and room layouts.

2.1.6 Energy Metering and Monitoring

An energy metering and monitoring strategy will be considered to effectively monitor the main energy uses within the project, alongside the lighting and small power use. This aims to provide fault detection and monitoring of the different areas and systems operational within the building.

This system will also look to provide an educational tool to the school to assist in creating behavioral change for students and staff.

2.1.7 Improved outdoor air provision

The project will aim to improve the outdoor air provided to regularly occupied spaces. This will help to minimise CO_2 build up and improve cognition for the building occupants.

To address energy use concerns the design will also look to incorporate on an outdoor air economy cycle an operable windows which will allow the building to exploit periods where the buildings external conditions can effectively provide thermal comfort in the space reducing the run times of the air-conditioning system.

2.1.8 Highly efficient lighting system

The installation of LED lighting throughout all areas of the building will assist in the minimisation of lighting energy use. Improved lighting energy also reduces the heat loads within the spaces and therefore lowers the energy used to condition the building.

2.1.9 Onsite Renewable Energy

The project has been designed to include a rooftop solar array (anticipated to be circa 30kW) providing energy production onsite to both reduce energy costs and provide educational outcomes for students and staff.

2.1.10 Passive Design Measures

A focus has been placed on good passive design within the building and shading systems for the project. Examples of this includes the following;

- Incorporation of shading within the façade design on the north, east and west facades of the buildings where new glazed areas are proposed to be added.
- Use of well-designed western glazed and operable facade areas to exploit precooling effect from overshadowing provided by the adjacent Joan Freeman center to precool air drawn into the stair well.
- Strong use of thermal mass to help to regulate temperatures. This is achieved through the selection of a concrete materiality and the positioning of additional heavy weight materials within the slab upturns at the building facade.
- Integration of roof landscaping where possible to minimise heat islanding and promote passive cooling through transpiration. It is noted that due to the constraints of the building heritage the roof colour and extent of vegetation is limited.
- Inclusion of the central stairwell to improve the flexibility of the natural ventilation solution and promote the flow of air through the building.

2.1.11 Shading

Given the constraints around the façade design a shading analysis was completed to assist in optimising the balance of glare and heat control during occupied periods. Given the sites temperate climate with warmer summers and cooler winters the optimisation of shading for the shoulder months has been prioritized, accounting for the sites heritage constraints the project has set back the proposed large glazing elements to provide 490mm of self-shading of these elements. This element of the building design helps block the significant heat gains throughout summer during school hours (until 3pm) but allows this entry during winter helps to minimise heating loads while still allowing diffuse daylight to penetrate the space.

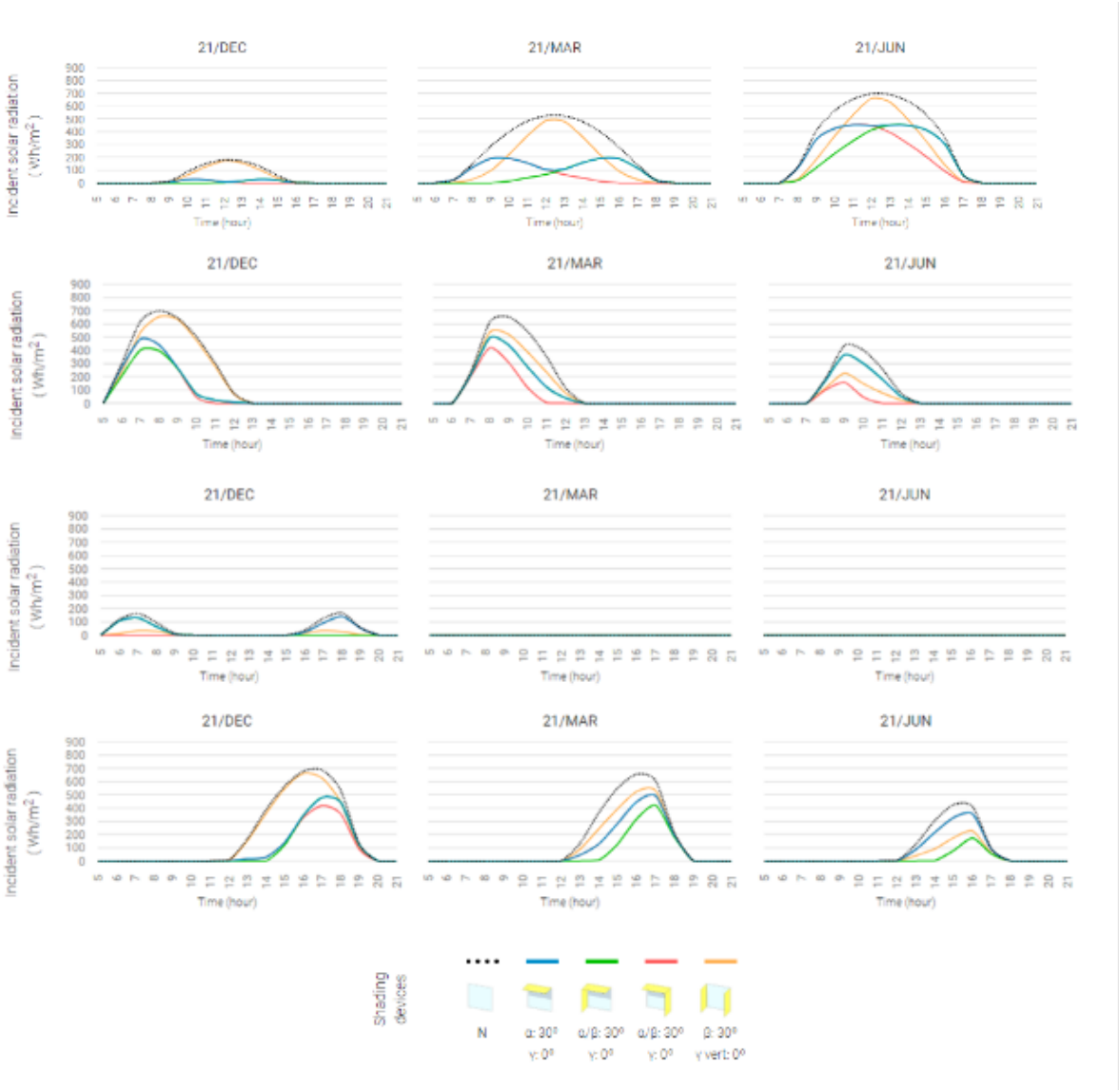


Figure 2 - Comparative assessment of the hourly profile of direct beam radiation between four facade orientations (from the top of the figure: N,E,S,W)

The above analysis illustrates the horizontal shading provided to the east and west (on the dominant areas of glazed facades) controls glare and heat gains almost entirely between the hours of 9am and 3pm as such the larger glazed areas (balcony spaces) have incorporated shading using these parameters.

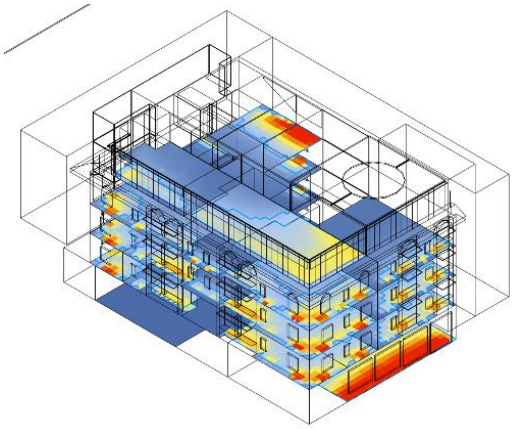
The considered shading selection allows the building to optimised daylight, thermal comfort, energy and views solution while working within the constraints of the existing façade.

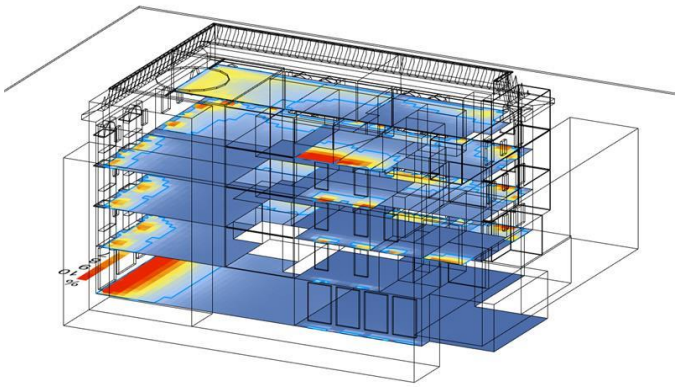
2.2 Indoor Environment Quality

Indoor environment quality is always paramount in Education projects. The following initiatives have been considered as part of the building design:

2.2.1 Daylight Access

The design of the building addition aims to allow daylight penetration into internal spaces. This access to daylight throughout the building will both minimise energy used for lighting and will improve occupant connection to their external environment.





Given the constraints of the heritage façade glazing the options around glazing have been simulated to ensure that over 30% of the building area achieves good daylight while balancing operational and capital costs.

2.2.2 Interior noise level control

Internal noise levels have been considered in both the fabrics selections and the building layout. The design team has included an assessment as to how noise will reverberate through each space and within building. The use of acoustic insulation and sound isolation will ensure that interior noise levels to be maintained below acceptable limits and noise to adjacent sites is minimised.

2.2.3 Access to views

Access to external views allows the switch between short and long focal lengths reducing eye strain for students. There is significant evidence to support that eyestrain and related health problems can be significantly reduced in situations where the eyes can be refocussed periodically on a distant object. This is easier to achieve where there is a nearby window with a view.

As such the layout of the educational spaces promote the provision of views within all classrooms and areas where students are expected to concentrate for extended periods of time. The project has also looked to provide a variety of spaces to both staff and students with different aspects, to create both flexibility and variety in the visual interest provided as they move from room to room.

2.2.4 Material selection

Materials selection for the project aims to improve the internal environment of the site with materials with low volatile organic compound and formaldehyde content preferred to help minimise respiratory issues for building occupants. Additionally the use of natural materials such as stone and timber floors will be prioritized during the detailed design, these materials help to facilitate a biophilic response in occupants and have been shown to improve educational outcomes.

Maximum TVOC limits for paints, adhesives and sealants are detailed in the table below:

Table 1 Maximum TVOC Limits for Paints, Adhesives and Sealants

Product Category	Max TVOC content in grams per litre (g/L) of ready to use product
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

All engineered wood products used in the building will meet the relevant limits specified in the table below as per the specified test protocol or have product specific evidence that it contains no formaldehyde.

Table 2 Formaldehyde Emission Limit Values for Engineered Wood Products

Test Protocol	Emission Limit/Unit of Measurement
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1mg/ L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1mg/ L
AS/NZS 4357.4 - Laminated Veneer Lumber (LVL)	≤1mg/ L
Japanese Agricultural Standard MAFF Notification No.701 Appendix Clause 3 (11) - LVL	≤1mg/ L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1 mg/m²hr
ASTM D5116 (applicable to high pressure laminates and compact laminates)	≤0.1 mg/m²hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419), applicable to high pressure laminates and compact laminates	≤0.1 mg/m²hr (at 3 days)
ASTM D6007	≤0.12mg/m³
ASTM E1333	≤0.12mg/m³
EN 717-1 (also known as DIN EN 717-1)	≤0.12mg/m³
EN 717-2 (also known as DIN EN 717-2)	≤3.5mg/m²hr

2.3 Water Efficiency

A strong focus has been put on the effective management of water within the building with the following initiatives being included in the design in all areas throughout the project:

2.3.1 Water efficient fixtures and fittings

Water Efficient fixtures and fitting will reduce the water consumption of the site. As an indication, the following is being be targeted:

- Wash hand basin taps 6 star WELS
- General taps 6 star WELS
- Toilets dual flush 4 star WELS
- Urinals 0.8 L per flush 6 star WELS
- Shower heads 7-9 L per minutes 3WELS

Figure 3 WELS Label

2.3.2 Behavioral change support

Through the removal of hot water supply to hand washing in toilets (other than where required by the code) the project design supports reductions in water consumption through behavioral change. The removal of hot water supply reduces the amount of water wasted in ablution areas associated with users waiting for water to warm. This alongside motion sensors and timed taps can reduce the water used for handwashing significantly.

Additionally the removal of hot water supply to these areas reduces the risk associated with bacterial growth in these systems, reducing the need to recirculate hot water and creating further reductions in both energy and water use.

2.3.3 Use of low maintenance landscaping

The sites landscaping will incorporate native and low maintenance vegetation where possible which will significantly reduce the potable water consumption of the site. This use of native vegetation will also help support local flora and fauna, create a strong connection to space and incorporate learning opportunities for the school community. The rooftop landscaping incorporates a native crabapple tree and low water use grasses while the rest of the site will look to incorporate other endemic species to both reduce water used in irrigation and support local biodiversity.

2.3.4 Water Sensitive Urban Design

In line with the aim of the SEARs, the project is incorporating a strong focus on water sensitive urban design with the landscape design assisting to minimise water use for irrigation. The inclusion of vegetation within both the building and the surrounding site, assists in the reduction of site stormwater discharge and in the management of the projects broader impact on urban stormwater flows. Onsite rainwater collection and reuse also helps to reduce the sites flow of rainwater into stormwater systems and reduce the risk of localised flooding during storm events.

2.4 Improved Ecology

Through planting native vegetation and promoting improved interaction with the natural environment, the project will improve the site's ecology and minimise the ongoing environmental impact of the project. The project is currently implementing the following:

- Incorporation of a plants and vegetated areas within the building itself.
- Minimisation of light spill from the facility which impacts on migratory animals and insects.
- Reduced dissolved pollutants in stormwater discharged from the site, and
- Adaption and reuse of the previous building to minimise the further use of green space.

2.5 Sustainable Transport

The project design is currently well located to support the use of active and sustainable transport. The site is walkable, with proximity to Kings Cross Train Station for trains and busses. The project will capitalise on the existing transport links provided by the school and does not propose to increase site parking.

2.5.1 Walkability

Walk Score is a number between 0 and 100 that measures the walkability of any address. It is indicative of the number and type of existing amenities located nearby Wilkinson House. The site achieves a walk score of 99, a 'Walkers Paradise" location, in accordance with the website www.walkscore.com using their street-smart method of calculation. The site location is currently very well serviced by public transport and achieves an excellent rating indicating that there are many transportation options available within walking distance of the site.

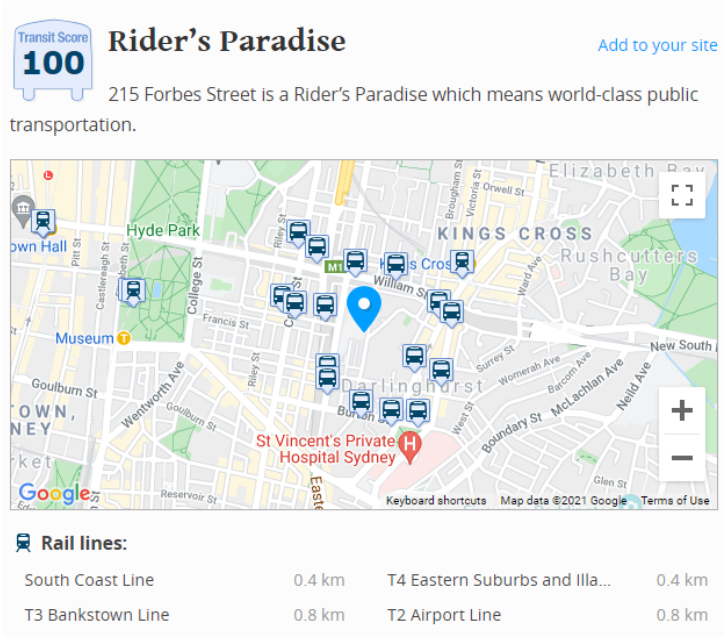


Figure 4 Walk score Transit Results

2.6 Waste Management

Effective waste management throughout demolition, construction and operation of the site will help to promote resource efficiency and minimise the adverse environmental impacts of the project. The following are being considered as part of the design process:

2.6.1 Operational Waste

The provision of separated waste and recycling streams allows for more effective recycling of the projects operation waste. Providing separate bins for cardboard/paper waste, glass, food wastes, comingled recycling and general waste will improve the buildings operational efficiency and result in significant environmental benefits.

Figure 5 Waste bin colours

2.6.2 Construction and Demolition Waste Minimisation

The project will also look to limit the amount of construction and demolition waste sent to landfill with the aim of at least 90% of all waste produced by the project to be sent to recycling facilities or reused onsite.

2.6.3 Reuse of Building Facade

The reuse of the existing heritage facade of the building will reduce the projects material consumptions significantly reducing the upfront waste and the projects embodied carbon, we estimate that the project has reduced the projects associated emissions by around 15% through the reuse of existing building elements.

3. National Construction Code (NCC) SECTION J

3.1.1 Overview

Wilkinson House is primarily made up of Class 9b spaces and is in Climate Zone 6.

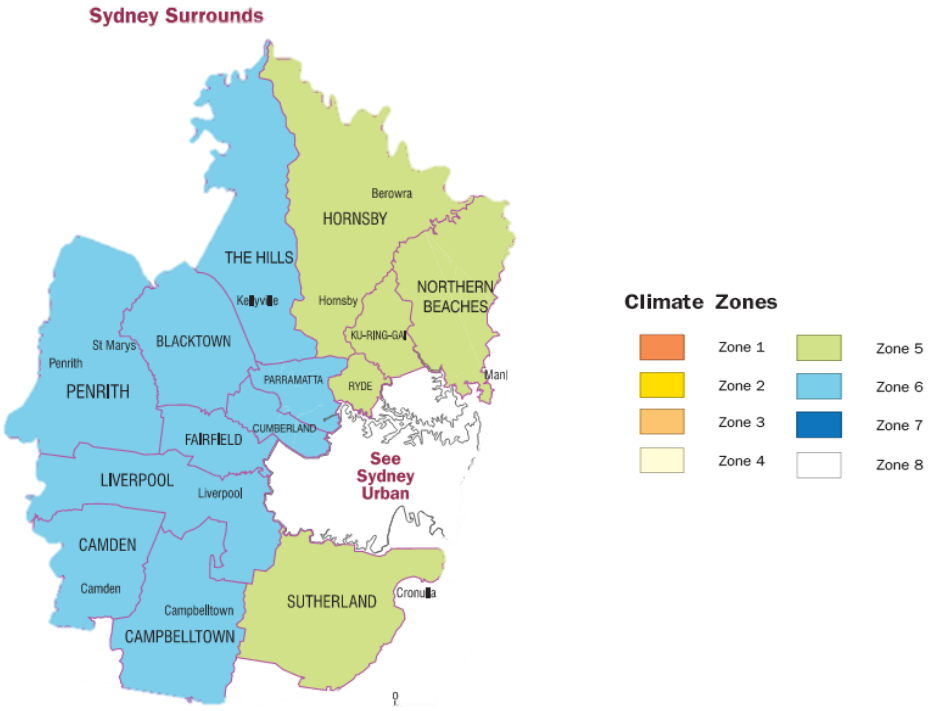


Figure 6: Map of the BCA Climate Zones for Sydney Urban

There are two methods of achieving Section J compliance. The building can be assessed against the Deemed-to-Satisfy (DTS) provisions of the code; or JV3 performance-based solution.

Broadly the project is aiming to achieve compliance with the code through the incorporation of a moderate-performance façade. Broadly the following performance of systems will be perused, these have been validated within the initial JV3 compliance modelling.

Table 1: Insulation System requirements for the main building elements

Building Fabrics	Required total R-value
Roof and Ceiling	3.7
External Walls (Non-Heritage)	1.0

Where windows are being added these will incorporate a high performance single glazing with a performance of U-Value circa 4.4 and Solar Heat Gain Coefficient of around 0.4. This can be achieved by a Comfort Plus Neutral glass within a Standard Capral frame.

4. Government Architect NSW Design Guide

The Government Architect NSW (GANSW) provides strategic design leadership in architecture, urban design and landscape architecture. In order to improve school design and incorporate the seven objectives for the design of the built environment set out in Better Placed: An integrated design policy for the built environment of NSW, the GANSW has produced the Environmental Design in Schools guide. This document considers the following objectives;

- Better Fit – A project that is contextual, local and of its place
- Better Performance – A project that is sustainable adaptable and durable
- Better for the community - A project that is inclusive connected and diverse
- Better for people - A project that is safe, comfortable and livable
- Better working - A project that is functional, efficient and fit for purpose
- Better Value - A project that creates and adds value
- Better look and feel - A project that is engaging, inviting and attractive

The guide sets out a process for assessment which includes three basic steps these are as follows with general strategies to address the goals of the design guide outlined in the following sections;

- Understand the project surroundings;
- Understand how our surroundings effect people
- Adopt strategies that will benefit people.

To demonstrate that the project design has aligned to this guide the project team provide the following discussion outlining the various areas of focus.

4.1 Ventilation Strategy (Air)

Good air quality in schools can improve student and staff wellbeing and performance, the project incorporates a mixed mode approach to ventilation and where possible has incorporated elements of natural ventilation to increase the outdoor air provided and lower CO_2 buildup and pollutant levels within learning spaces.

Additionally, using variable refrigerant flow systems the humidity within learning spaces will be passively controlled minimising the risk of mold growth within systems.

4.1.1 Natural Ventilation Opportunities

Using natural ventilation for the central circulation spaces will help to passively cool and ventilate the space and minimise the use of mechanical air conditioning systems. This is an effective way of minimising energy consumption in the building. Additionally, through the incorporation of operable windows, the building can capture prevailing winds to help ensure passive ventilation options are maximised.

By specifically providing openings on multiple sides of the learning spaces space layout promotes the flow of air though the classrooms bringing in fresh air and providing passive heating and cooling. It is however noted that due to the constraints of the heritage façade, mechanical assistance is required to ensure compliant provisions of outside air.

Where feasible the project will provide window coverings, which can be used to block out unwanted summer sun. In winter, these can also be closed at the end of the day to help rooms stay warmer overnight.

Additionally the architectural design has incorporated the projects central stairwell to increase the areas where cross ventilation can be achieved and create a passive ventilation chimney during times of poor air movement.

4.2 Comfort Strategy (Comfort)

Good learnings spaces need to be comfortable across the year for staff, students, and visitors. To ensure that the proposed buildings achieve comfortable learning spaces the project has incorporated a mixed mode ventilation strategy that can provide conditioning when required and mechanically assisted natural ventilation when external conditions are favorable. Additional to this the design of the buildings has focused on good passive design elements including the following.

4.2.1 Passive Solar Design & External Shading

The project design incorporates a strong focus on the use of optimised glazing and the use of window reveals to provide shading that exploits the suns relative position in the sky. This allows solar heat gains through winter while blocking most of the heat entering the building throughout the summer period.

The incorporation of the proposed indoor-outdoor spaces on the top floor also provides shaded external spaces to support both reduction in heat islanding and shaded areas for outdoor learning.

4.2.2 Thermal Mass

Thermal mass is the ability of a material to absorb and store heat energy for use during cooler times. The project has included the use of a concrete structure to capture energy throughout the day and release this at night minimizing the internal temperature variation across the day. The structural upturns at the edge of the new slabs also help to maximise the thermal mass provided at the building envelope promoting a stable internal temperature and assisting to moderate diurnal temperature shifts in both summer and winter.

4.2.3 Glazing Selection

The types of glass used within the project windows can lead to unwanted heat gain in summer and heat loss in winter or help retain heat in winter and limit unwanted heat gain in summer. The project is aiming to using well shaded glazing throughout with a low-e spectrally selective coating to help to maximise daylight penetration into the spaces while effectively managing heat gains and losses across the year.

To add to this passive control of heat entry, blinds are also being provided to external windows

4.2.4 Incorporation of Fans

Where possible the project will consider the use of ceiling fans to help control the room comfort conditions by promoting air movement within rooms. In summer, with the windows open, ceiling fans can help to push hot air outside. In winter, with the windows shut ceiling fans can help to make a room feel warmer by gently pushing warm air down from the ceiling level.

4.3 Lighting Strategy (Light)

Daylight and natural light can minimise electricity usage, however direct sunlight can also bring unwanted heat gain, these impacts should be balanced across the year.

4.3.1 Daylight Access

The current design of the site aims to optimise daylight penetration into both internal and external spaces, acknowledging the constraints of the heritage facade. This access to daylight throughout the

building will both reduce energy used for lighting and will improve occupant connection to their external environment.

In educational environments research also indicates that students in classrooms with access to natural light perform better in all academic fields, have longer attention spans, and achieve better health outcomes than those without ready access to daylight, as such this measure has been emphasized within the building design.

4.3.2 Highly efficient lighting system

The installation of LED lighting throughout the facility will assist in the minimisation of lighting energy use with a target a lighting power density of less than 4W/m2.

Improved lighting energy also reduces the heat loads within the spaces and therefore lowers the energy used to condition the classroom areas.

4.3.3 Melanopic Lux Consideration

The project lighting design will consider the impacts that lighting has on melatonin production in the brain and will look to create a lighting layout to promote good provision of light matching solar lux levels. This has been shown to improve sleep patterns and educational outcomes.

4.3.4 Motion, photoelectric (PE) and timer controls for circulation space lighting

The project design has included motion and PE controls for lighting throughout the circulation and classroom spaces. This will ensure that lighting is not used when spaces are unoccupied. Lighting systems will also be linked to the period bells for the school and timers to ensure that lighting does not remain on after hours and is only active when students are occupying circulation spaces.

4.4 Acoustics Strategy (Noise)

Noise can have an impact on student performance and has been considered in the layout of the buildings to create quiet and noisy spaces for a variety of leaning styles.

Within learning spaces the acoustic environment should also be managed using soft furnishings or surfaces, like wall treatments or floor rugs. These have been considered within the design alongside passive strategies.

4.4.1 Interior noise level control (sound masking + treatment)

Acoustic considerations have been included into the design of the building layout and systems design with interior nose levels to be maintained below the acceptable limit of 45dB (in line with industry accepted practice).

4.4.2 Reverberation through the building

Reverberation of noise throughout the building will be considered throughout the detailed design phases of the project with isolation measures to prevent the transition of noise through the building structure.

4.4.3 Acoustic separation

Acoustically sensitive spaces such as counseling rooms and quiet spaces will incorporate measures to separate these areas from noise transmission, this will include actions like;

- Taking walls to the underside of slabs;
- Incorporating brushes on windows and doors; and
- Inclusion of soft furnishings and acoustic panels in these areas.

4.5 Water

Taking responsibility for water usage is key to its preservation and the project will incorporate quality management of water throughout the construction and operation of the building. Details of the water efficiency measures proposed can be found in Section 2.3.

4.6 Energy

Simple strategies like turning off lights and adjusting air-conditioning set points over the year will assist with operational energy use. Details of the energy efficiency measures being considered in the design can be found in Section 2.1. further measures are detailed below:

4.6.1 Improved building fabric and glazing performance

The building envelope comprises a number of different façade types, with the proposed scheme using a combination of heritage brick, glass, screens and glazing set back into the heritage brickwork to achieve low solar heat gains while providing views and daylighting into learning and circulation spaces.

The use of performance glazing and building materials will also assist to maximise the projects energy efficiency while managing acoustic and thermal comfort considerations.

4.6.2 Energy efficient domestic hot water

The use of heat pump hot water systems will be confirmed during the detailed design process with an efficient solution that minimises greenhouse gas emissions incorporated into the final design.

4.6.3 Photovoltaic (PV) Energy Systems

The project has incorporated the installation of PV array within the project, initial investigation suggests that a 30kW system is able to be accommodated on the available roof. This PV system will provide onside renewable energy and will reduce the sites electricity consumption from the grid.

4.7 Landscape

Through planting native vegetation and promoting improved interaction with the natural environment, the project will improve the site's ecology and minimise the ongoing environmental impact of the project. The project is currently implementing the following:

- Extensive native vegetation endemic to the local area;
- Minimisation of light spill from the facility which impacts on migratory animals and insects;
- Reduced dissolved pollutants in stormwater discharged from the site; and
- Adaption of an existing building.

Additionally, landscaping plays an important part in the education of students around local biodiversity and natural systems.

4.8 Materials

The construction and upgrading of buildings consume a large amount of resources. To minimise this consumption the project reuses much of the existing façade and elements of the structure of the existing building. Additional to these measures have been taken within the design to maximize the expected lifespan of the installed fixtures and finishes. This will assist in project longevity and help to mimise waste going to landfill.

Furthermore the internal layout alterations to the building aims to create highly adaptable spaces easily altered with structural elements kept to the external areas of the building. This will enable the building to be easily altered to meet changing needs over time and help to reduce the undergo significant alterations in the future.

4.9 Education

Given the educational focus of the project, the following initiatives will help to promote an understanding of sustainability and building operation within the school population.

4.9.1 Energy, water, waste and indoor environment monitoring

The project will include monitoring systems which can be connected to in-classroom displays that track energy, water, waste and indoor environmental performance. This will assist in understanding the operational performance of the facility and will promote the connection between utility services and outputs e.g. when the air conditioner is on the energy consumption increases.

4.9.2 Educational tools

The project is investigating the installation of new energy technologies to illustrate the connection between energy production and use, equipment such as green gym facilities (which produce energy), solar panels and piezo electric tiles in common areas will help educate students about energy production.

4.9.3 The provision of WiFi Connectivity across the site

High speed WiFi will be installed throughout the entire building to provide support educational tools including tablets and laptop learning.

5. Green Building Council of Australia Framework

5.1 Overview

The Green Building Council of Australia's provides an internationally recognised system to assess sustainable outcomes throughout the life cycle of the built environment. It was developed by the Australian Building Industry through the Green Building Council of Australia (GBCA), which is now the nation's leading authority on sustainable buildings and communities. Although the Project is utilizing the Government Architects to benchmark the project to Industry Best Practice Sustainability there are several initiatives covered by the Green Star tool that are additional to the requirements outlined in this tool. As such the project has also considered the inclusion of elements drawn from this tool to address some elements of Ecologically Sustainable Design Principles more holistically.

When considered against the Green Star benchmark the project would exceed a 4 Star rating or Australian Best Practice Sustainability. SCEGGS has set a design benchmark to incorporate the design principals of an Australian Excellence (5 Star) rating.

This section provides a summary of the additional elements drawn from the Green Star tool that are being included within the Wilkinson House refurbishment.

5.2 Management

The Management category promote the adoption of environmental principles from project inception, design, and construction phase, to commissioning, tuning and operation of the building and its systems. The following credits are currently being considered for incorporation;

5.2.1 Commissioning and Tuning

5.2.1.1 Services and Maintainability Review

The project team will perform a comprehensive services and maintainability review led by the head contractor during the design stage and prior to construction.

The services and maintainability review helps to facilitate input from the design team, the facilities manager and operations staff, and any relevant suppliers and subcontractors. The review looks to address the following aspects of the project:

- Commissionability;
- Controllability;
- Maintainability;
- Operability, including 'Fitness for Purpose'; and
- Safety

5.2.2 Adaption and Resilience

5.2.2.1 Implementation of a Climate Action Plan

The project has considered the impacts of climate change, which is detailed in the following sections, this process will be formalised in the detailed design stage through the formal identification and response to all high and extreme risks posed over the expected lifecycle of the of the project. This will be done through the creation of a site-specific Climate Adaption Plan in line with the Green Star tool.

The Climate Adaption Plan will contain the following information:

- Summary of project's characteristics (site, location, climatic characteristics);

- Assessment of climate change scenarios and impacts on the project using at least two time scales, relevant to the project's anticipated lifespan. This must include a summary of potential direct and indirect (environmental, social and economic) climate change impacts on the project;
- Identification of the potential risks (likelihood and consequence) for the project and the potential risks to people. This risk assessment is to be based on a recognised standard;
- A list of actions and responsibilities for all high and extreme risks identified; and
- Stakeholder consultation undertaken during plan preparation and how these issues have been

5.3 Sustainable Transport

Sustainable transport criteria aim to provide design and operational measures that reduce the carbon emissions arising from occupant travel to and from the project, when compared to a benchmark building. In addition, it also promotes the health and fitness of commuters, and the increased accessibility of the location.

5.3.1 Access by Public Transport

The site is well connected to public transport and will look to support these connections to the site and provide strong support for students and staff to mode switch utilize more sustainable transport options.

5.3.2 No Additional Car Parking Provision

The project does not propose to add any carparking to the site, this will encourage building occupants to use the existing transport links or active transport options.

5.3.3 Bicycle Parking Provision

The project will consider the incorporation of additional site bike parking and end of trip facilities to support the staff who work within the proposed buildings.

5.4 Water

The aim of the category is to encourage building design that minimizes potable water consumption in operations. The potable water credit will be considered for implementation as follows;

5.4.1 Heat Rejection Water

A waterless heat rejection system is utilised on site minimizing water use for air-conditioning.

5.4.2 Landscape Irrigation

Rainwater supported drip irrigation with moisture sensor override is to be installed to minimise potable water used for the project irrigation and, where possible, xeriscape landscaping used.

5.5 Materials

The aim of the materials category is to reward projects that include building materials that are responsibly sourced or have a sustainable supply chain.

5.5.1 Lifecycle Impacts

The project has completed an initial benchmarking assessment of the embodied impacts and will further quantify these during detailed design. This assessment has focused on reducing the overall environmental impacts across the entire building lifecycle. The project is aiming for a 130% reduction in cumulative impact, across the 6 different categories measured by the Green Star tool when compared to a standard practice building. Much of this improvement is achieved through the re-lifeing

of the existing building elements however additional savings will be achieved using low impact concrete, recycled steel and certified low impact fixtures and finishes.

5.5.2 Responsible Materials

5.5.2.1 Permanent Formwork, Pipes, Flooring, Blinds and Cables

The project has committed to using only best environmental practice cables, pipes, flooring and blinds which will either:

- Contain no PVC; or
- Meet Best Practice Guidelines for PVC outlined by the GBCA.

5.5.3 Construction and Demolition Waste – Percentage Benchmark

The project is targeting the recycling or reuse of at least 90% of the waste generated during construction and demolition. This will help to reduce the upfront impacts of the project and positively contribute to the sites environmental performance.

5.6 Land Use and Ecology

The 'Land Use & Ecology' category aims to reduce the negative impacts on sites' ecological value because of urban development and reward projects that minimise harm and enhance the quality of local ecology. The project has incorporated endemic native species and being a redevelopment of an existing building attempts to minimise its impact on the local biodiversity and ecology.

5.7 Emissions

The 'Emissions' category aims to assess the environmental impacts of 'point source' pollution generated by projects. Negative impacts commonly associated with buildings include damage to the environment through refrigerant leaks or disturbances to native animals and their migratory patterns because of light pollution.

5.7.1 Reduced Peak Discharge

The project is aiming to achieve a post-development peak event discharge from the site which does not exceed the pre-development peak event discharge using the design Average Recurrence Interval (ARI) that corresponds to the associated flooding risk identified in the Climate Change and Adaption Assessment undertaken as part of the Adaption and Resilience targets outlined in section 5.2.2.

5.7.2 Reduced Pollution Targets

Additionally the project aims to demonstrate that all stormwater discharged from the site meets the pollution reduction targets in Table 3 below.

Table 3 Minimum Pollution Reduction Targets

Pollutant	Reduction Target (% of the Typical Urban Annual Load)
Total Suspended Solids (TSS)	80%
Gross Pollutants	85%
Total Nitrogen (TN)	30%
Total Phosphorus (TP)	30%
Total Petroleum Hydrocarbons	60%
Free Oils	90%

5.7.3 Light Pollution to Neighbouring Bodies

The project design ensures that all outdoor lighting on the project complies with AS 4282:1997 at all inhabited boundaries, apart from boundaries with roads.

5.7.4 Light Pollution to Night Sky

Outdoor lighting has been designed to control upward light through the selection of external luminaires. This will reduce light pollution and its associated impact on migratory patterns of birds and insects.

5.7.5 Microbial Control

The project achieves will be no water-based heat rejection systems preventing the buildup of microbes in these systems.

5.8 Innovation

The 'Innovation' category aims to recognise the implementation of innovative practices, processes and strategies that promote sustainability in the built environment.

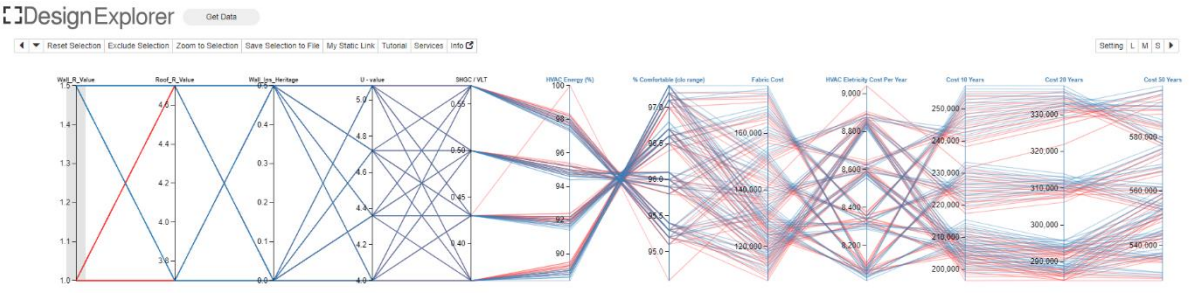
5.8.1 Market Transformation

The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in Australia or in the world. Through the targeting of world leading sustainability principles at project is contributing to a broader market transformation that repositions student health and well-being as a key indicator of sustainability.

5.8.2 Innovation Challenge – Financial Transparency

This Innovation Challenge aims to encourage owners, developers, and operators to disclose the costs of sustainable building practices, and to agree to participate in a yearly report developed by GBCA that will inform the building industry on the true costs of sustainability. Additional to this commitment significant energy, thermal comfort and cost modelling has been completed to consider operational, capital and environmental costs associated with the project design decisions. The initial consideration

of this within the façade systems are shown below with several hundred design permutations assessed for lifecycle costing.



Wall_R_Value	Roof_R_Value	Wall_Ins_Herit...	U - value	SHGC / VLT	Glazing Cost (...	HVAC Energy (...	JV3 check	Heating (kWh/...	Cooling (kWh/...	Fans (kWh/m2)	% Comfortable...	Wall Insulation...	Wall Heritage I...	Roof Insulatio...	Glazing n Cost	Fabric Cost
Fabric cost or...	HVAC Eletricit...	Cost 10 Years	Cost 20 Years	Cost 50 Years	Cost 50 Years ...	Rating										
1	3.7	0	5.08	0.36	345	89	COMPLIANT	0.4	10.55	2.14	97	1855.293	0	2865.8	118783.5	123504.593
39	8068.681236	204191.4054	284678.2177	526938.6548	1	0										
1	3.7	0.5	5.08	0.36	345	89	COMPLIANT	0.4	10.53	2.15	97.2	1855.293	1089	2865.8	118783.5	124593.593
43	8062.517232	205218.7653	285843.9376	527719.4546	2	0										
1	4.7	0	5.08	0.36	345	88.8	COMPLIANT	0.4	10.53	2.13	97.1	1855.293	0	4903.9	118783.5	125542.693
45	8050.189224	206044.5852	286546.4775	528052.1542	3	0										
1.5	3.7	0	5.08	0.36	345	88.8	COMPLIANT	0.39	10.52	2.14	97.1	4467.014	0	2865.8	118783.5	126116.314
47	8044.02522	206556.5862	286996.8184	528317.575	4	0										
1	4.7	0.5	5.08	0.36	345	88.8	COMPLIANT	0.39	10.51	2.15	97.3	1855.293	1089	4903.9	118783.5	126631.693
48	8044.02522	207071.9452	287512.1974	528832.954	5	0										
1.5	3.7	0.5	5.08	0.36	345	88.7	COMPLIANT	0.38	10.51	2.15	97.3	4467.014	1089	2865.8	118783.5	127205.314
51	8037.861216	207583.9262	287962.5383	529098.3748	6	0										
1.5	4.7	0	5.08	0.36	345	88.6	COMPLIANT	0.38	10.51	2.14	97.2	4467.014	0	4903.9	118783.5	128154.414
53	8031.697212	208471.3861	288788.3582	529739.2746	7	0										
1.5	4.7	0.5	5.08	0.36	345	88.4	COMPLIANT	0.37	10.48	2.15	97.3	4467.014	1089	4903.9	118783.5	129243.414
56	8013.2052	209375.466	289507.518	529903.674	8	0										
1	3.7	0	4.72	0.36	362.25	89.2	COMPLIANT	0.4	10.57	2.14	97	1855.293	0	2865.8	124722.675	129443.768
57	8081.009244	210253.8604	291063.9529	533494.2302	9	0										
1	3.7	0.5	4.72	0.36	362.25	89	COMPLIANT	0.39	10.55	2.15	97.2	1855.293	1089	2865.8	124722.675	130532.768
60	8068.681236	211219.5804	291906.3927	533966.8298	10	0										
1	4.7	0	4.72	0.36	362.25	89	COMPLIANT	0.39	10.55	2.14	97.1	1855.293	0	4903.9	124722.675	131481.868

5.8.3 Innovation Challenge – Microbial Control in Hot Water Systems

The projects hot water systems have been designed to manage the risk of microbial contamination.

6. Climate Adaption

As identified in the previous section the design team has considered climate adaption planning within the design process and in later stages will look at longer term risks and adaption opportunities on a recurring basis over the building lifetime. The assessment of the site initial design has included a risk assessment and the following provides an overview of how the design of the development is responsive to the CSIRO projected impacts of climate change.

6.1 Climate Region

The site lies within Climate Zone 5 as identified by the Australian Building Codes Board (ABCB) maps as seen in Figure 4 below. Climate Zone 5 relates to warm temperate conditions, characterized by mid to cool winters with low humidity and hot summers with moderate humidity. Four distinct seasons are present, where summer and winter have the potential to exceed human comfort range and spring and autumn are ideal for human comfort.

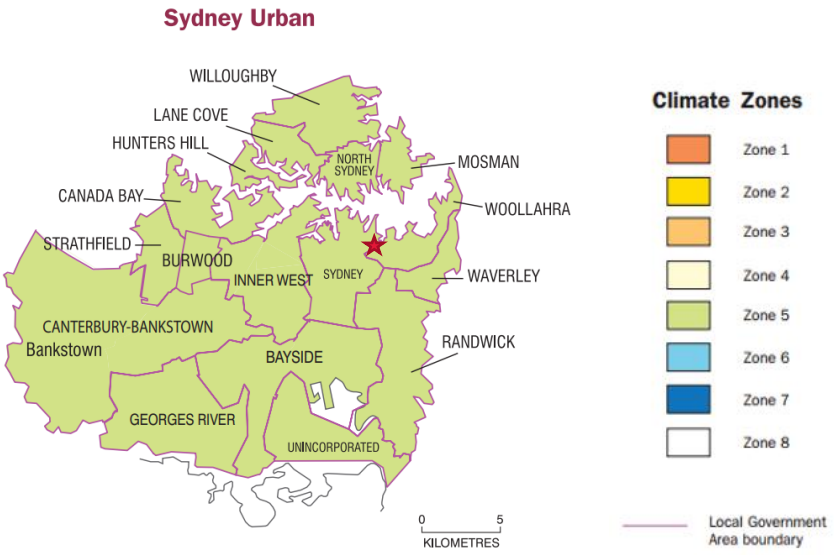


Figure 6 ABCB Climate Zone Map

6.2 Current Climate Hazards

The project initially assessed the current climate hazards relevant to the site, based on the site conditions and building characteristics for the proposed development. The exposure and vulnerability to floods, hail, bushfire and extreme winds (or cyclones) were identified with the assistance of the Insurance Council of Australia's Building Resilience tool. Exposure relates to the building location relevant to the site characteristics. The outcome of the assessment can be seen in table 3.

Table 4 Identified Climate Hazards

Climate Hazards	Exposure	Vulnerability Risk	Comments
Extreme Heat	Medium	Medium	Development is in Climate Zone 5 – mild temperate conditions. Subject to hot summers.
Floods	Low	Low	The site is classified as being partly within Low Flood Risk Precinct and not affected by flood.
Bushfire	No exposure	Low	Site is not located on bush fire prone land as identified by the NSW Rural Fire Service (RFS)
Severe Thunderstorms/ Hail	Medium - high	Medium	More than 15 severe storms occur here annually, a 5% probability. During the 100yr storm event over 275mm of rainfall is predicted to fall in 24hrs.
Extreme Winds	Low	Medium	The site is in a built-up urban area with medium to high density surrounds
Cyclones	Low	Low	The site is not located in a cyclone prone region

6.3 Climate Change Effects

The following list provides a summary of the primary climate effects and the risks associated due to secondary climate effects applicable to the development. The climate change projection data relevant to the climate and site conditions of the project identified within the CSIRO projected impacts of climate change were utilised to establish the below scenarios for the development and how they have been addressed within the design of the project.

6.3.1 Changing Surface Temperature

- An increase in the average surface temperature could lead to reduced thermal comfort for the building occupants over time – reflective and vegetated surfaces have been included throughout the site to minimise urban heat island effects; the building has been designed to capture prevailing winds and promote movement of air through the building; mixed mode ventilation and conditioning strategy allows the building to ramp up space conditioning to accommodate the thermal comfort needs of occupants when required.
- An increase in extreme heat could lead to an increase in energy and water demand and associated utility and maintenance costs – the incorporation of native low water use vegetation

and no water-based heat rejection systems will minimise water demand for key systems; the use of a flexible mixed mode system supported by onsite solar power generation will work to balance increased energy costs for space conditioning.

- An increase in extreme heat could place additional stress on building services including air conditioning equipment – an increased average outside design temperature will be used to size the air conditioning systems to ensure that they are sufficiently sized for the potential increases in temperature; adaptability of these systems will also be considered with the potential to add additional cooling capacity if required in the future.

6.3.2 Changing Precipitation

- An increase in rainfall intensity could increase local flood events limiting access to the building for vehicles, building occupants and pedestrians – the onsite stormwater management systems will be designed for the forecast increases in rainfall intensity; the landscape design incorporates vegetation to assist in the management of stormwater runoff and improve the permeability of the site.

- Increased severe thunderstorms and intensity could result in blockages in roof drainage systems from build-up of hail and debris, causing stormwater to overflow and damage the building asset, goods and equipment owned by the school – the projects hydraulic design will consider this risk and increase the capacity of roof drainage to accommodate.

- Power outages during major storm events could lead to a potential disturbance to building systems including security, lighting, posing a safety issue to occupants on site – the flexible mixed mode ventilation systems and project focus on good daylight penetration will enable the building to continue operation across most of the year in the occasion of power outages; emergency lighting and safety systems will have redundancy to minimise safety risks posed to building occupants.

6.3.3 Changing Wind Speed

- An increase to wind speed intensity could lead to damaged building assets including windows and roof elements – this is considered within the structural and landscaping design of the site.

- Increased wind speed intensity could result in damaged vegetation, creating a disturbance to the local ecosystems and increased maintenance costs for the property – this risk is considered within the landscaping design with the use of endemic native species well suited to the site and these future risks

- An increase in wind speed intensity could potentially damage power lines, resulting in a power outage for the building - the flexible mixed mode ventilation systems and project focus on good daylight penetration will enable the building to continue operation across most of the year in the occasion of power outages

6.3.4 Changing Humidity

- Decrease in humidity could relate to higher risks of fires – the inclusion of a rainwater supplied drip irrigation system for landscaping and the general location of the site should minimise this risk.

- Decrease in humidity could lead to changes in the micro-climate, impacting the local ecology (flora and fauna) of the site – the use of endemic native vegetation will act as a buffer to this impact as will the provision of the rainwater supplied irrigation systems.

6.4 Statement on Design

The project design has included specific measures detailed within section 2-4 of this report to respond to the CSIRO and Insurance Council's projected impacts of climate change. These measures include simple alteration such as including good façade design and operable windows to promote airflow through the building and the projects use of vegetation, through to more complex solution such as the proposed HVAC controls and mixed mode ventilation strategy. Overall, these measures alongside the adaptability of the building and its systems shows a strong consideration within the design of potential future climate change adaptation needs.

7. Conclusion

This Sustainability Report outlines how the proposed redevelopment of Wilkinson House meets the Secretary's Environmental Assessment Requirements (SEARs) as a state significant development.

The project's sustainability objectives outlined within the SEARs are as follows:

- The incorporation of the principles of Ecologically Sustainable Development into the design, construction, and on-going operation of the new building.
- The consideration of opportunities for the incorporation of green roofs.
- The inclusion of measures to minimise the consumption of resources, water (including water sensitive urban design) and energy.
- Alignment to the best practice ESD standards outlined within the Government Architect of New South Wales (GANSW) Environmental Design in Schools Manual.
- An assessment against an accredited ESD rating system or equivalent program of ESD performance inclusive of a minimum rating scheme target level.

Additional to these requirements the project has aimed to achieve a future ready learning environment, resilient to the expected future changes relating to climate and technology. As such this report has also outlined climate resilience actions and wellbeing initiatives aligned to the above objectives.

Specifically, the report details how the project has addressed sustainability through incorporation of the following key measures.

- A strong commitment to energy efficiency with the project design to demonstrate a significant energy reduction over a standard construction building of its type.
- A highly efficient façade system that leverages the constraints of the existing heritage fabrics to both manage heat gains while promoting the entry of daylight into classroom spaces.
- Low impact materials selections with the project maximising the reuse of onsite materials and minimise the upfront carbon emissions associated with the project.
- The use of highly efficient water fixtures and fittings, alongside a waterless heat rejection system and connection to the adjacent Joan Freeman Centre's non potable water supply.
- Integration of educational signage, wayfinding, and monitoring systems across the project.
- An optimised air conditioning system to provide good provision of outside air while maintaining thermal comfort in the classroom areas.

Through the inclusion of the sustainability initiative outlined within this report the project clearly addresses sustainability within the design and adequately equips the project for its long-term operation thereby addressing the project SEARs. The extensive nature of this report also demonstrates the schools overarching commitment to incorporating a strong focus on sustainability within the projects design, construction and operation.

Appendix A

CITY OF SYDNEY

City of Sydney Design for Environmental Performance (DEP) Template – Word Version

The City of Sydney is committed to sustainable development and ambitious reductions in greenhouse gas emissions, water consumption and waste, improving air and water quality and greening our city. Our targets are outlined in our Sustainable Sydney 2030 plan, which informs our policies and planning controls.

A precondition to receiving development consent is the demonstration of design excellence which incorporates the principles of ecologically sustainable development. The development must also meet the requirements under Section J of the National Construction Code and State Environmental Planning Policy (Building Sustainability Index: BASIX), where relevant.

This template standardises how applicants demonstrate compliance with relevant planning controls. It ensures the design and technology responses for environmental performance that the applicant proposes are reflected in the submitted plans where appropriate.

It replaces the need for an ecologically sustainable development / ESD report, generic energy efficiency report, or consultant's BASIX report. The information you provide here will form part of any development consent granted.

You will still need to submit any other supporting documentation required under SDCP 2012 and associated codes and policies, such as stormwater/hydraulic plans, landscape plans, NCC Section J Reports, BASIX and NatHERS documentation.

The template must be completed for the specific development types and scales defined in Section 2.

Please use this Word version to draft your responses to each section of the report prior to completing the online version.

If you have any questions regarding this form, please contact David Zabell on 9288 5842

Notes on completing this template

You are urged to use this Word version to prepare your responses before completing the template on-line.

You will need advanced plans to complete the template

Many of the design elements referenced within the template need to be illustrated on the accompanying architect's drawings, civil engineering drawings, or landscape plans.

The template does not prevent applicants from submitting supporting environmental design documentation if you are proposing novel or innovative design or technology.

Topics covered in this template

The template contains questions on familiar environmental design themes. These cover energy efficiency, greenhouse gas emissions abatement, design for building envelope thermal performance, renewable energy opportunity, design for resilience to climate change, water conservation, stormwater quality, sustainable transport, waste avoidance and resource recovery, and city greening.

Where applicable, the questions direct you to sections of the City of Sydney's planning policies.

Section 1 - Glossary

- GFA - Gross Floor Area. Refer to definition under Standard Instrument
- NCC - National Construction Code
- NLA - Net Lettable Area
- SDCP - Sydney Development Control Plan 2012

Section 2 - General information about the development application and person completing the template

Site address

Response: 215 Forbes Street Darlinghurst

Postcode

Response: 2010

Name of person completing this form

Response: Ian Van Eerden

Occupation

Response: Senior Sustainability Consultant

Email address

Response: ivaneerden@northrop.com.au

Is this the first version of the template submitted for this development proposal?

Yes

If you answered 'No', briefly describe the amendments made from your previous Design for Environmental Performance template. Please include the development application number, version and date of your most recent template

Response:

Development type (if not listed, template submission not required)

Response: Education Facility

For the following question select all that apply (these options relate to NSW Dept of Planning, Industry and Environment typologies)

Residential Apartment Building(s) (with or without commercial/retail lower levels)	Yes/No
Group Homes (4 storey or greater)	Yes/No
Multi Dwelling Homes (5 or more dwellings)	Yes/No
Hotel - +1,000sqm – New building or extension of existing (increase in GFA 30% or greater)	Yes/No
Motel - +1,000sqm – New building or extension of existing (increase in GFA 30% or greater)	Yes/No

Boarding House/Student Accommodation (4 storey or greater)	Yes/No
Centre-based Childcare - +1000sqm New building or extension of existing (increase in GFA 30% or greater)	Yes/No
Commercial Premises (office, business and/or retail) - +1000sqm – New building or extension of existing (increase in GFA 30% or greater)	Yes/No
Education Facility (school, college, university) – New building or extension of existing (increase in GFA 30% of greater)	Yes
Entertainment Facility - +1000sqm New building or extension of existing (increase in GFA 30% or greater)	Yes/No
Health Services Facility - +1000sqm – New building or extension of existing (increase in GFA 30% of greater)	Yes/No
Industrial - +1000sqm - New building or extension of existing (increase in GFA 30% of greater)	Yes/No

Is the subject application associated with a previously approved site-specific development control plan (DCP) and/or concept approval?

Yes/No

For this question, you must consider any pre-existing site-specific controls, conditions of consent or voluntary planning agreement that impose certain sustainability-related targets or technologies such as:

- BASIX scores
- NABERS ratings
- renewable energy generation
- canopy cover

If your application relates to either a site-specific development control plan (DCP) and/or previous concept approval, please provide the relevant section number and name within the Sydney DCP and/or concept approval reference number.

Response:
For example D / 2018 / 999

Ashmore estate site specific DCP, Section 5.5 of the Sydney DCP **Summarise the environmental performance targets/technologies that must be met by the**

controls or consents listed above.

Response:

Section 3 - BASIX

BASIX (the Building Sustainability Index), is a mandatory state government policy and tool for reducing greenhouse gas emissions and water consumption in residential development in NSW.

For further information, please visit https://www.planningportal.nsw.gov.au/basix

The targets for both energy and water efficiency may differ depending on the scale of residential development you are undertaking. Please note that site-specific controls or voluntary planning agreements may reference specific BASIX energy or water efficiency scores to be achieved.

There are up to 2 questions in this section.

Is this application BASIX affected development?

Yes/No

How many BASIX certificates are being submitted for this development?

Response:

Please complete the following information from each of your BASIX certificates. If you have more than one certificate, please copy and paste the table below and complete as necessary.

BASIX Certificate Number (in full)	123456_M_01
Number of BASIX affected buildings	
Highest number of residential storey in the development covered by this BASIX Certificate	
BASIX Energy target set by BASIX Tool	(This is the minimum target set by BASIX that your development must achieve. Please do not enter any minimum BASIX target required under a site-specific DCP, concept approval or VPA.)

BASIX Energy score achieved	
BASIX Water target set by BASIX Tool	(This is the minimum target set by BASIX that your development must achieve. Please do not enter any minimum BASIX target required under a site-specific DCP, concept approval or VPA.)
BASIX Water score achieved	

Section 4 - Energy efficiency and greenhouse gas emissions abatement

City of Sydney adopted targets for the LGA:

- 70% reduction of greenhouse gas emissions by 2030 from 2006 levels
- Net zero emissions by 2040

This section interrogates, at a high level, design and technology aspects of the proposal that relate directly to energy end use, energy efficiency and greenhouse gas emissions. This section also asks about energy-related scores/targets where these apply due to:

- a legislative requirement
- commitments made under a planning proposal/design excellence strategy/concept approval
- applicant's commitment to third-party certification (e.g. GreenStar)

Sections 3.6.1 of SDCP and 8.2.1 of Green Square Town Centre DCP mandate:

- NABERS Offices Energy 5.5 Stars for new office buildings with NLA 1000sqm or greater
- NABERS Offices Energy 5 Stars for additions/renewal with NLA 1000sqm or greater.

Please include any NABERS targets agreed under a site specific DCP, concept approval or voluntary planning agreement.

Only nominate a NABERS Energy rating where the proponent has made a clear commitment to formally register via a NABERS Commitment Agreement. Consultants acting for applicants should ensure their client is aware of NABERS Commitment Agreement requirements and processes.

There are up to 8 questions in this section.

Does the application propose a NABERS Energy Commitment Agreement?

No

Specify the NABERS Energy Commitment Agreement rating/s being targeted below.

Tick the appropriate boxes.

	4 star	4.5 star	5 star	5.5 star	6 star	N/A
NABERS Office Energy (base building)						NA
NABERS Hotels Energy						NA
NABERS Shopping Centres						NA
NABERS Apartments Common Area						NA
NABERS Data Centres						NA

Does the application propose an industrial use?

No

For industrial proposals (including warehouses and data centres) you must include an operational energy management plan.

Response:

For this question, Operational Energy Management Plans must briefly describe:

- If energy end-use modelling has been performed for the proposed development
- Specific building envelope treatments designed to reduce dependence on air conditioning
- If a NABERS Energy Commitment Agreement is to be entered into (for data centres)
- How energy end uses will be metered to enable energy consumption to be effectively monitored
- How energy efficiency has been designed into all industrial equipment and processes
- If any on site renewable energy generation is proposed to meet onsite energy demand
- Any other matters that relate to the proposal's operational energy demands and efficiency measures

Briefly describe the predominant artificial light technology that will be installed within buildings, outdoors, and for specific significant areas. For example, basement car parking or public domain.

Response:

For this question, please include, where relevant:

- Lighting wattage per square meter – Circa 4W/m2
- LED lighting will be used throughout
- NCC Section J JV3 modelling report by Northrop Consulting Engineers

For residential, where relevant, just summarise BASIX lighting commitments, plus additional note(s) if applicable (e.g. proposed outdoor lighting technologies)

Briefly describe the predominant HVAC technology/technologies that will be installed

Response:

For this question, please include, where relevant:

- Coefficient of Performance (CoP) – circa 3.0 and incorporation of mixed mode ventilation.
- NCC Section J JV3 modelling report by Northrop Consulting Engineers
- Efficient fixtures and fittings and other measures nominated in section 2.3 of the SSDA reporting
- SSDA ESD report nominates a range of ESD measures to support the

Briefly describe all water heating technologies that will be installed

Response: Heat pump

Briefly describe any Building Management Control System (BMCS) included in the design and any metering or sub-metering strategy that will enable energy end-use metering and monitoring.

Response: Building BMS including energy and water metering for the primary consumption uses.

Section 5 - Passive design for thermal performance - building envelope design

All sets of architectural plans and elevations for BASIX affected development (not just the NatHERS Stamped plans) must include the insulation and glazing performance details used in the NatHERS modelling.

For all other development, the following questions are about specific design features and inclusions to meet/exceed "NCC Section J - Energy Efficiency"

This template does not override any requirement to submit an NCC Section J Statement/Report as evidence that NCC compliance is achievable.

Both NatHERS and BASIX protocols require accredited assessors to ensure plans

are marked up with thermal performance elements by the designer (architect) with insulation detail (type and R value) and glazing/frame schedules (including U and SHGC values for glass/frame combinations) before plans are stamped as compliant by a NatHERS assessor.

See:

- https://www.nathers.gov.au/publications/nathers-technical-note
- https://basix.nsw.gov.au/iframe/thermal-help/simulation-method.html

You should check compliance with these rules by viewing 'clean skin' plans (plans not stamped by NatHERS Assessor) for insulation and glazing schedule annotations.

Where insulation and glazing thermal design differs for individual apartments this should be shown in a schedule within the plan set itemising variations against the affected dwelling unit number.

There are up to 3 questions in this section.

Is this application subject to NatHERS?

No

Please confirm that all sets of architectural plans (not just the NatHERS stamped plans) identify insulation detail (type and R value) and glazing/frame schedules in line with NatHERs Certificates.

Select all options below that apply for this development proposal.

The Architect has plan-marked insulation & includes glass/frame schedule with thermal performance details (i.e. are shown on unstamped plan set)	NA
As above and Architect's thermal performance schedule lists individual apartment thermal design variations (i.e. are shown on unstamped plan set)	NA
Architect has not provided thermal performance details on plans (Note: Revised plans will need to be submitted, may delay assessment0	NA
The NatHERS-stamped plan set has summarised insulation and glazing/frame specifications including thermal performance but does not list individual apartment variations	NA
The NatHERS-stamped plan set has insulation and glazing/frame specifications including thermal performance and lists individual apartment variations	NA

Briefly describe how the proposal has incorporated passive design to avoid high dependence on mechanical HVAC for internal comfort

Response:

For this question, please summarise, with cross reference to any NCC Section J report where relevant, design responses relating to:

- Facade and glazing orientation – fixed due to the existing nature of the facade

- Existing adjacent structures influencing solar exposure – there are existing buildings on all sides of the building those of very close proximity are to the south (gym) and west (Joan Freeman center)
- Effective shading for solar-exposed glazing – Shading devices are proposed for new windows.
- High performance glazing – low e films are proposed if acceptable under the heritage constraints.
- Facade materials/colours - re: heat retention/reflection – façade is existing
- Window-to-wall ratios – WWR is minimised and governed by the existing façade.
- Insulation material for walls/ceilings/roof & between basement level with occupied floors directly above – parametric modelling has been completed to determine the optimal insulation and glazing performance. This is noted in the SSDA ESD report.
- Insulation materials selections that are able to be correctly installed, without compromising performance, within the structural wall, ceiling, roof and floor elements – allowance has been made to accommodate the required insulation.
- Location of thermal mass – thermal mass is largely within the structure additional massing has been positioned in the site envelope to manage diurnal shifts in temperature as part of the structural slab upturns.
- Use of thermal stacking and cross-ventilation – where possible operable windows will support the ventilation strategy however safety and façade design constraints have prevented a fully naturally ventilated building.

To improve NCC Section J governance and compliance standards The Better Building Partnership initiative has developed a specific Section J Reporting Requirements Template for when the JV3 Verification Using a Reference Building (VURB) is used

For a copy of this NCC Section J Template email **ems@cityofsydney.nsw.gov.au**

Section 6 - On site renewable energy generation and storage

This section asks whether onsite renewable energy generation and/or storage is proposed. The renewable energy and carbon emissions targets for the City of Sydney are:

- 50% of electricity from renewable sources by 2030
- Net zero emissions by 2040

There are 2 questions in this section.

Please specify all renewable energy generation and/or energy storage technologies included in the application. Any renewable energy solutions not included in the table below should be described in Section 13 of this Template

Photovoltaic systems	Yes
Solar thermal systems for domestic hot water	No
Heat pump systems for domestic hot water	Yes
Battery storage linked to onsite renewable energy generation	No
Each renewable energy generation/storage technology nominated ‘Yes’ above is identified on the architectural plans	Yes

Please indicate the combined Kilowatt Peak Capacity (kWp) of any photovoltaic systems shown on plans, and reference relevant plan sheet number(s).

Response:

For Example:

See Roof plan – showing provision of 100 panels, it is expected that this will accommodate a circa 30kW array.

Section 7 - Design for resilience to climate change

This section seeks information about any planning/design elements made explicitly in response to well established physical impacts of climate change that are being or will be experienced in the City of Sydney.

These impacts are:

- more frequent extreme heat days (days of 35 degrees C or higher)
- more frequent heatwave conditions (3 or more days of unusually high maximum and minimum temperatures)
- extended drought periods
- more extreme (heavier) rainfall events and stronger wind gusts (more severe storm activity)
- sea level rise with risk of inundation especially when combined with storm surge conditions

Some examples of design responses that proponents should consider:

- locating plant away from flood prone underground areas
- selecting adhesives/fillers/sealants designed to cope with extreme heat events
- oversizing gutters/down pipes to cope with extreme rainfall
- exceeding minimum insulation shading &/or glazing requirements to prevent heat gain within buildings
- attention to overland flow paths for excess surface water
- drought-tolerant landscaping
- addressing risk of inundation of basements due to sea level rise
- contingency for power-outages during extended heatwave periods

There are 2 questions in this section. These relate, where applicable, to your climate change action plan, strategy or resilience plan.

Please identify whether any specific design responses to address climate change resilience and/or a dedicated climate change plan or statement is provided?

An action plan or resilience plan has been developed as part of a registered GreenStar Rating process	No
An action plan, strategy or resilience plan has been developed but is not GreenStar-driven	Yes
Elements of the action plan, strategy or resilience plan are reflected in the architectural plans	Yes
No action plan, strategy or resilience plan but some specific design/technology inclusions responses to climate change are within the design and reflected in the plans	No
No overt design elements (above base compliance) to address climate change resilience are included in this proposal	No

Briefly describe specific designs/technology elements identified in the plans that address resilience to climate change.

Response:

The details of the plan are outlined in section 6 of the SSDA reporting.

Section 8 - Design for mains potable water savings and water efficiency

This section seeks information about any specific planning/design elements included to achieve mains potable water savings.

For context, the City of Sydney water target for the local government area is zero increase in potable water use by 2030 from the 2006 baseline, achieved through water efficiency and use of recycled water.

Sections 3.6.2 of SDCP and 8.5.1 of Green Square Town Centre DCP refer to water efficiency measures. This template does not replace the need to submit hydraulic plans/documentation where applicable.

All items identified below must be annotated on the architectural plans and/or accompanying documentation. Architectural plans should also include annotation/plan marking for:

- onsite water storage capacity
- any basement infrastructure/space required to receive/buffer off-site supply of non-potable water to the site if a precinct non-potable supply is accessible
- dual plumbing within buildings

There are 2 questions in this section.

Confirm which of the following water recycling/water efficiency measures are included in the design.

Does the development connect to a precinct-scale recycled water scheme (currently Green Square town centre only)?	No
Is dual plumbing supplied to 1 or more in-building end-uses – for example cooling towers, toilet, laundry?	No
Rain/stormwater capture, storage (water tanks) and re-use onsite is provided, but only for irrigation, car-washing and/or wash down of paved areas.	Yes
Rain/stormwater capture, storage (water tanks) and reuse onsite is provided, for 1 or more in-building end-uses for example cooling towers, toilet, laundry	Yes
Does the development provide efficiency strategies for water consumption for testing of fire protection systems?	Yes

Is a building management control system for water efficiency provided?	Yes/No
Is sub-metering of major water end-uses (such as pools, cooling towers, irrigation) provided?	Yes/No
All water supply fixtures (taps, showerheads, toilet flushing systems) are within 1 star of highest WELS Star rating commercially available	Yes/No

Please indicate any on-site rainwater and/or stormwater storage capacity (retention only, excluding detention volumes) in the application

Response:

Please indicate, where relevant:

- The site is proposing to connect to the Joan Freeman rainwater reuse facility to provide water for toilet flushing.
- No water based heat rejection systems are proposed.

If no on site retention or re-use is included in design state "NONE"

Section 9 - Stormwater quality

This section seeks high level information regarding design and technology responses to the city's stormwater quality targets, including water sensitive urban design (WSUD) responses.

Please refer to Section 3.7 of SDCP or 3.4.3 of Green Square Town Centre DCP

All applications connecting to the City of Sydney's stormwater system must submit plans through MUSIC Link - https://ewater.org.au/products/music/music-link/

For context, the City of Sydney area-wide targets to reduce pollution loads in stormwater are:

- Litter/vegetation larger than 5mm - 90% reduction
- Total Suspended Solids (TSS) - 85% reduction
- Total Phosphorus (TP) - 65% reduction
- Total Nitrogen (TN) - 45% reduction

This template does not replace the need for comprehensive stormwater modelling, stormwater management plans and hydraulic plans where required.

All items identified below must be annotated on the relevant architectural plans, landscape plans, hydraulic plans and/or referenced in accompanying documentation.

There is 1 question in this section.

Which of the following stormwater quality design elements / technologies, if any, are proposed for this development?

Underground detention and/or retention tank(s)	No
Above-ground detention and/or retention tank(s)	No
Buffer strips	No
Constructed wetland, raingardens, detention pond(s)	No
Swales/bioretention swales	No
Infiltration trenches	No
On site gross pollutant traps	No
In-pit litter capture 'baskets'	No
Filter / treatment cartridges	No
Green roofs	No
Pervious pavement	No
Other WSUD design solutions	Yes

Section 10 - City greening

This section seeks information about tree management, deep soil zones and green walls/roofs. The relevant sections of the SDCP 2012 are identified in the questions below. Please refer to the City of Sydney Landscape Code (2016).

For context, the City of Sydney is seeking to increase the total canopy cover within our local area by 50% by 2030 and 75% by 2050. This will result in an increased tree canopy cover equal to 23% in 2030 and 27% in 2050, up from the 2006 baseline of 15.5%.

You will need access to landscape plans and/or arborist's report to hand to complete the questions below. Please see the glossary under SDCP 2012 for the definition of deep soil.

Applications subject to State Environmental Planning Policy 65 – Design Quality for Residential Apartment Development (SEPP 65) and located outside of Central Sydney and Green Square Town Centre are to consider:

- Section 4.2.3.6 of the SDCP 2012
- Objective 3E-1 of the Apartment Design Guide.

Please select 'N/A' where your application does not propose this type of development or the development is not subject to any of the controls listed.

If you select 'No' to any of the options regarding deep soil, please provide justification within the Statement of Environmental Effects.

A 'green roof' occupies a minimum of 30% of the roof area of the buildings. For guidance on the design and maintenance of green roofs and walls see cityofsydney.nsw.gov.au/environmental-support- funding/green-roofs-and-walls

There are 9 questions in this section.

Does the development provide deep soil zones in line with:

For industrial development: Section 5.8.2.5.1 of the SDCP 2012?	N/A
For all development except industrial: Section 4.2.3.6 of the SDCP 2012?	No
For residential apartment development: NSW Government Apartment Design Guide: Objective 3E-1?	N/A

Does the landscape plan demonstrate that development will provide at least 15% canopy coverage of the site within 10 years of completion of the development?

No

Evidence of compliance with tree canopy cover must be illustrated on the landscape plans.

Make Reference to specific page / plan sheet numbers of landscape plans

Please identify the number of trees (greater than 5 metres in height) proposed to be retained within the site boundary.

Response: NA

Please identify the number of trees (greater than 5 metres in height) proposed

to be removed from within the site boundary.

Response: NA

Please identify the number of trees (greater than 5 metres in height at maturity) proposed to be added within the site boundary.

Response: NA

Identify the number of street trees proposed to be removed from the public domain.

Response: NA

Does the application provide a green roof or green wall? (Green roofs are defined as covering 30% or more of the roof area of any single building)

No

What is the area of green roof (sqm) provided?

Response: NA

What is the area of green wall (sqm) provided?

Response: NA

Section 11 - Promoting active transport, a connected city and reducing transport emissions

This section asks how the development promotes active transport through the provision of bike parking and end of trip facilities, access to on-site car share service(s) and/or electric vehicle charging facilities.

For context, the City of Sydney area-wide targets for transport are:

- 33% of trips to work during the morning peak undertaken by walking by 2030, by city residents
- 10% of total trips made in the city are taken by bicycle by 2030
- 80% of trips to work during the morning peak are undertaken by public transport by 2030, by city residents and those travelling to Central Sydney from elsewhere
- 30% of city residents who drive are members of a car sharing scheme by 2030

For bike parking rates and requirements for end of trip facilities see Section 3.11 of

SDCP or Section 10.3 of Green Square Town Centre DCP.

All items must be illustrated within the plans. Any non-compliance must be discussed within the Statement of Environmental Effects.

There is 1 question in this section.

Please indicate whether the development complies with the City of Sydney's sustainable transport controls.

	Required under DCP	Provided
Number of bike parking spaces	N/A	N/A
Number of bike lockers	N/A	N/A
Number of showers	N/A	N/A
Number of car share spaces	N/A	N/A
Number of vehicle charging spaces provided	N/A	N/A

Section 12 - Waste management, resource recovery and materials innovation: Demolition, construction and operation

For context, City of Sydney adopted targets for our area:

- 70% recycling and recovery of residential waste from the local government area by end June 2021
- 70% recycling and recovery of commercial and industrial waste from the local government area by end June 2021
- 80% recycling and recovery of construction and demolition waste from the city by end June 2021.

Development must follow Sections 3.14 and (where relevant) 4.2.6 of the SDCP 2012 or 8.4 of the Green Square DCP and the City of Sydney's guidelines for waste management in new developments. Every application must be accompanied by a waste and recycling management plan. You can find a template for this plan in the appendices of the guidelines at cityofsydney.nsw.gov.au/development-guidelines-policies/guidelines-waste-management-new-developments

These questions also ask if there are any waste or resource recovery innovations within the development and if any third-party environmental certification of specific

building materials is proposed.

Waste rooms, collections areas and circulation spaces in accordance with City of Sydney policies are to be identified on the plans.

There are 2 questions in this section.

Which of the following waste management and resource recovery elements apply to this development proposal?

The City of Sydney's waste management plan template has been completed and accompanies the application.	Yes
Existing buildings/parts of buildings are being retained for re-use as part of the (re) development.	Yes
Development is registered for Green Star Certification - Green Star Construction and Demolition Waste Reporting Criteria applies.	No
At least 1 innovation (not “business as usual”) with a waste avoidance outcome is being applied within construction materials selection. Examples: materials with high recycled content; materials substitution; building elements designed for easy disassembly and re use.	Yes
1 or more of the primary construction materials to be used will be certified under a credible environmental certification and/or Environmental Product Disclosure scheme.	Yes

Identify all commitments to use construction materials that have environmental certification (for example timber) or environmental product disclosure documentation (for example, concrete). Please identify commitments to any certified or Environmental Product Disclosure materials in this development proposal.

Response:

The project is committed to reducing construction and demolition waste through the retention of the sites façade and diversion of waste from landfill for reuse and recycling.

Section 13 – Third party certification and design, construction or technology innovations

This section seeks information about any third-party certification (other than NABERS Energy - addressed in Section 4) that is applicable to this development proposal can also be described in this section.

Third party certification and unique innovations described below will not be conditioned in development consents unless referenced in site specific DCP, in concept approvals, or other planning controls.

There are 2 questions in this section.

If applicable, state any third-party certification (whole building) that this development proposal is committed to achieving other than NABERS Energy rating.

Greenstar Design + As Built	No
Greenstar Buildings	No
Living Building Challenge	No
WELL Building Standard	No
Earth check (hotels/tourism)	No
Other, please specify	NA

Are any overtly innovative design, construction and/or technology elements included in this proposal that will deliver environmental performance gains.

Response:

The reuse of the building façade.

Describe concisely below any specific design, construction or technology innovations included in this development proposal

- State clearly whether any innovations are design, construction method or technology innovations
- State whether these innovation elements are indicated on or other architectural or other plans submitted with the development application
- Make reference to any additional documentation (design details, specifications) that have been submitted in relation to the innovation(s).

If no overt innovations feature in this development proposal state "NONE"

Section 14 – Submitting your completed template with the development application

A PDF version will be sent to the email address you provided in Section 2 after submitting this template online.

If you are not the development applicant, you should provide the PDF version to

your client, or your client’s planning consultant, responsible for collating all documentation for the development application.

The applicant must submit an electronic version of this template as part of the development application if the development type requires you to do so.

This template captures information on the environmental design aspects of new development.

The data helps the City of Sydney report progress in design for urban sustainability. If you have any feedback about this form or the submission process, please add your comments below.

Response: