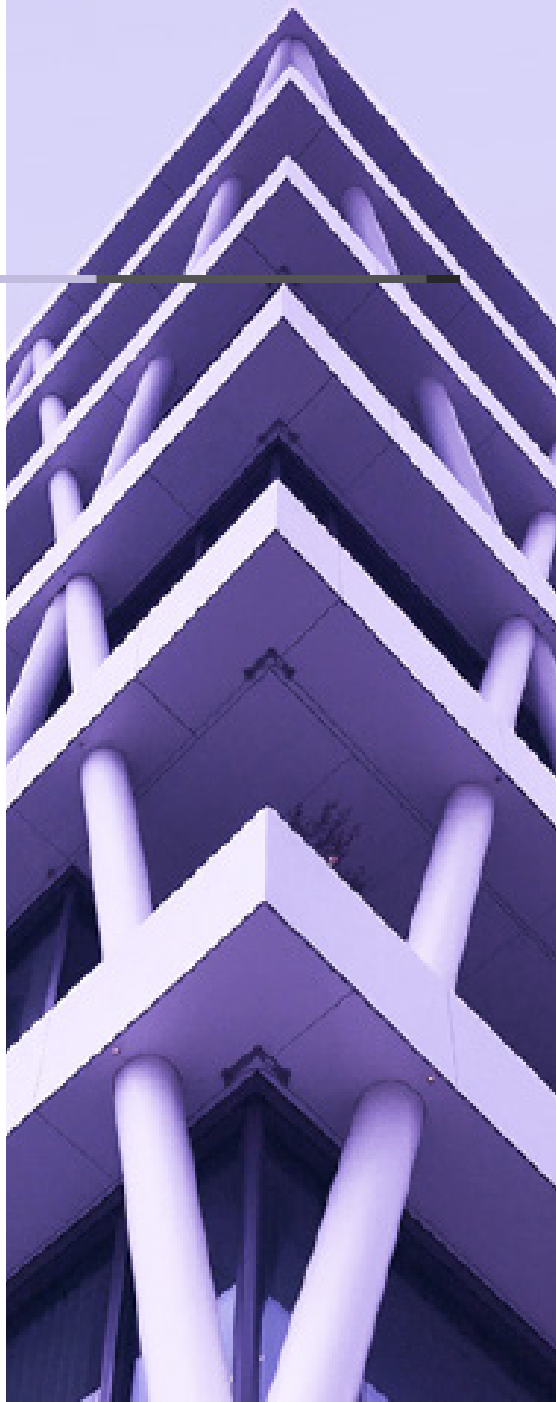
Attachment A10

Sustainability Statement

Sustainability Statement | PP

8 Kippax St, Surry Hills |

December 2023



E-LAB Consulting
Where Engineering and Science Inspire Design.

Issue and Revision Record

Revision	Date	Originator	Approver	Description
00	4.12.2023	J. Madew	A. Davis	Progress Issue
01	6.12.2023	J. Madew	A. Davis	Draft Issue
02	7.12.2023	J. Madew	A. Davis	Final Issue

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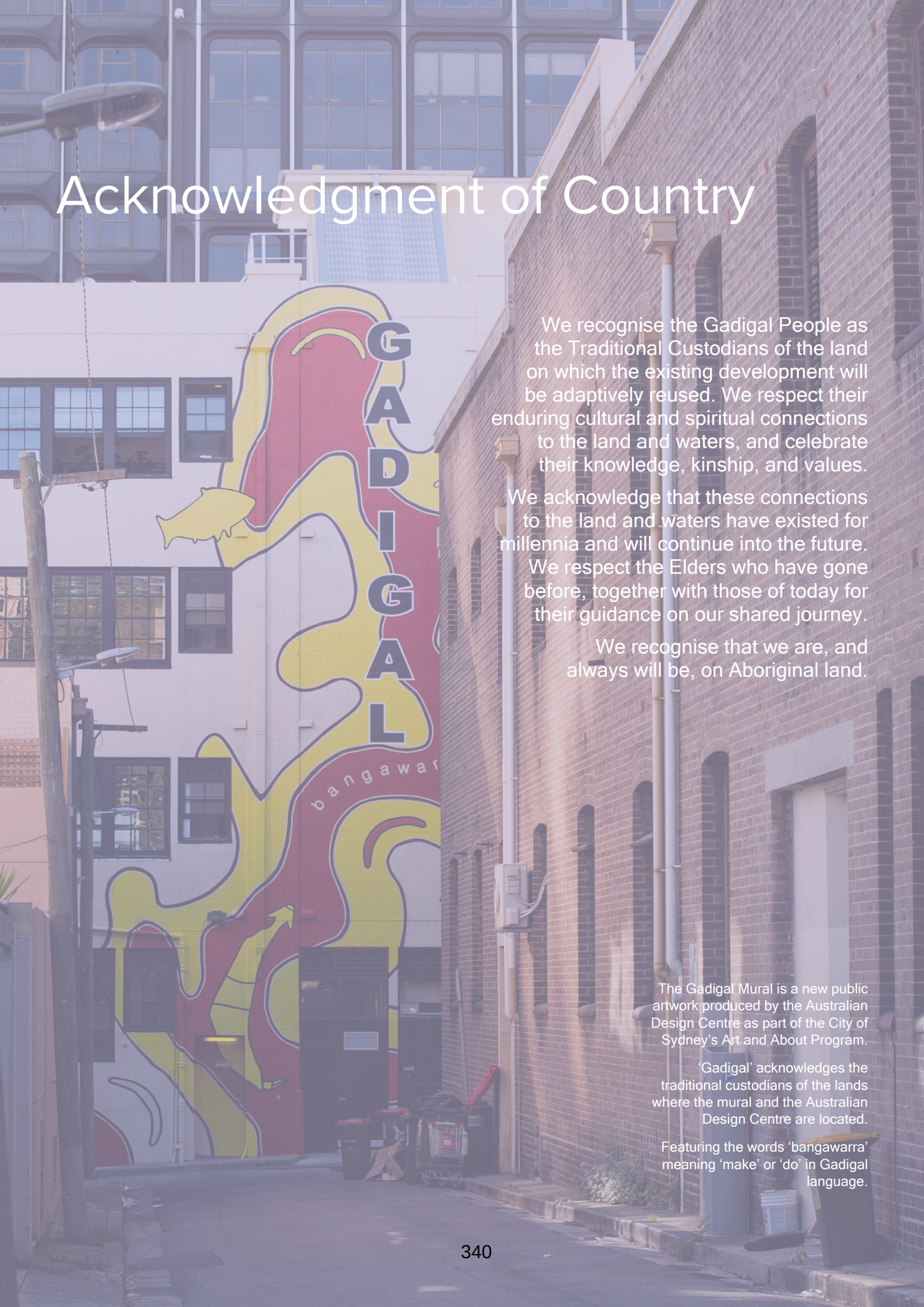
Acknowledgment of Country



We recognise the Gadigal People as the Traditional Custodians of the land on which the existing development will be adaptively reused. We respect their enduring cultural and spiritual connections to the land and waters, and celebrate their knowledge, kinship, and values.

We acknowledge that these connections to the land and waters have existed for millennia and will continue into the future. We respect the Elders who have gone before, together with those of today for their guidance on our shared journey.

We recognise that we are, and always will be, on Aboriginal land.

The Gadigal Mural is a new public artwork produced by the Australian Design Centre as part of the City of Sydney's Art and About Program.

'Gadigal' acknowledges the traditional custodians of the lands where the mural and the Australian Design Centre are located.

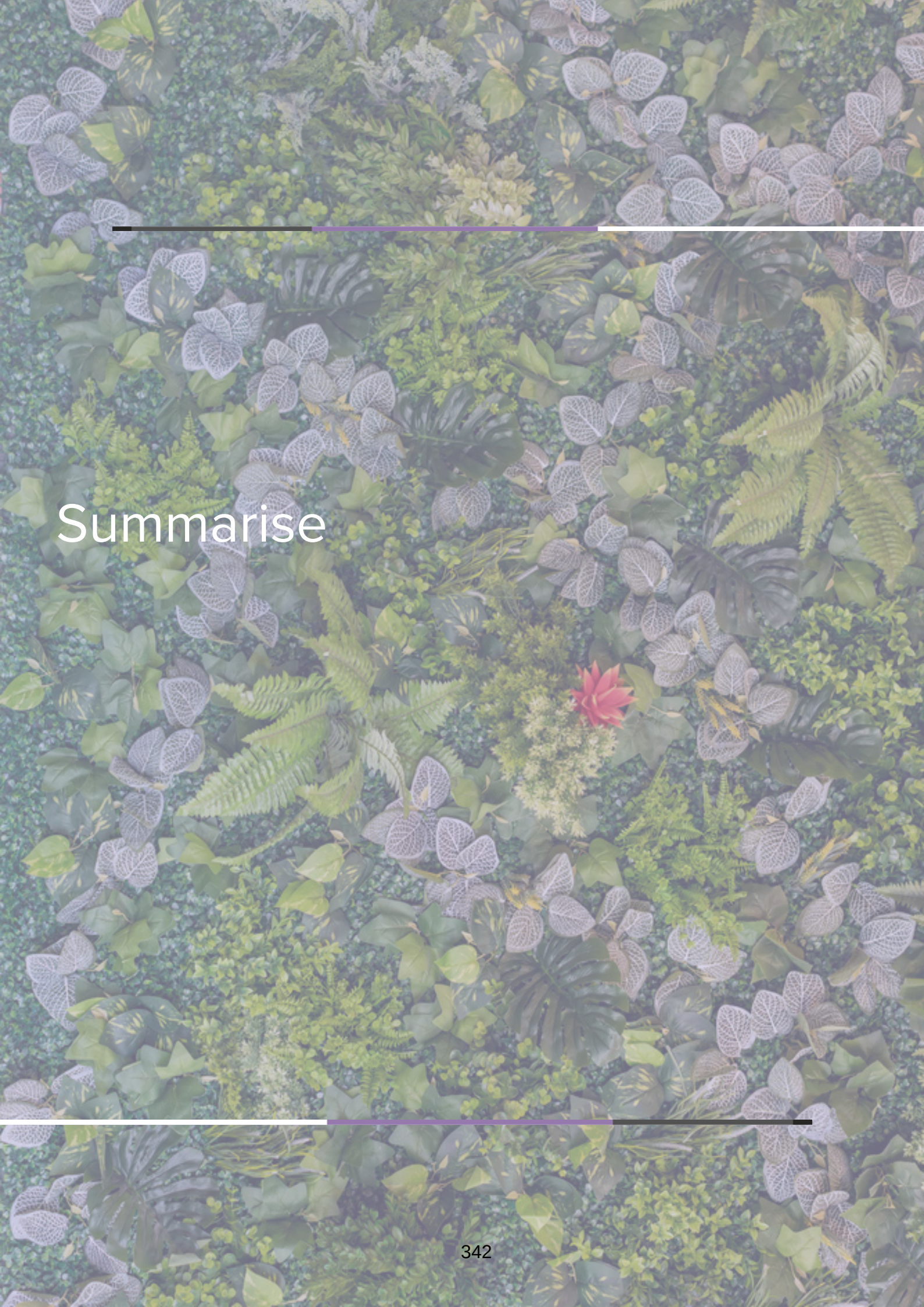
Featuring the words 'bangawarra' meaning 'make' or 'do' in Gadigal language.

Contents

Table of Contents

List of Tables

List of Figures



Summarise

Designing for a more sustainable future -

Translating Canva's sustainability practices and goals into the adaptive reuse of 8 Kippax St to showcase bold climate action in the built environment

Purpose

Advancing Net Zero, a World Green Building Council (WorldGBC) global program, is working towards total built environment sector decarbonisation by 2050. It sets a 'Whole Life Carbon Vision'.

Canva is a vocal about its stance on protecting the planet and the urgency in which we need to take serious action. As one of the fastest growing technology companies in the world, Canva is in a unique position to help champion this effort.

The built environment sector must pursue a strategy to compensate for the total impacts of its activities that prioritises a reduction first approach, and embraces the potential of the offsets market to facilitate positive social and environmental impact in pursuit of overall net zero emissions.

This Sustainability Statement has been prepared by E-LAB Consulting on behalf of Canva for the proposed redevelopment (the Project) at 8 Kippax St, Surry Hills, NSW. It explores Canva's sustainability practices and goals, and translates these into an implementation framework that showcases bold climate action in the built environment.

This Sustainability Statement accompanies a Planning Proposal (PP) to the City of Sydney. Canva's aspirations of 'being a force for good", and the principle to "do more with less", have been embraced, with the proposed rooftop additions retaining as much of the existing building as possible and only making pragmatic interventions where it improves functional planning or sustainability initiatives.

This Sustainability Statement can be read in conjunction with the Ecologically Sustainable Development (ESD) Report prepared in support of a Development Application (DA1) for the Project.

This Sustainablity Statement demonstrates a Project design response that represents design excellence and is aligned with the following statutory planning documents:

- Sydney Local Environment Plan (LEP) 2012
- Sydney Development Control Plan (DCP) 2012
- NSW State Environment Planning Policy (Sustainable Buildings) 2022 (or Sustainable Buildings SEPP)

Strategise

The Project design, delivery, and operation will be governed by a guiding value → Climate Action. This guiding value fundamentally informs sustainability practices → Sustainable Offices → Beyond Net Zero → Running on Renewables

Figure 1 outlines the Project sustainability strategy → setting sustainability practices and goals that translate into action.

Figure 2 details credible 'Whole Life Net Zero Ready' requirements for the Project, aligned with the Climate Positive Pathway defined in the Green Star Buildings tool.

Figure 1 Sustainability practices and goals

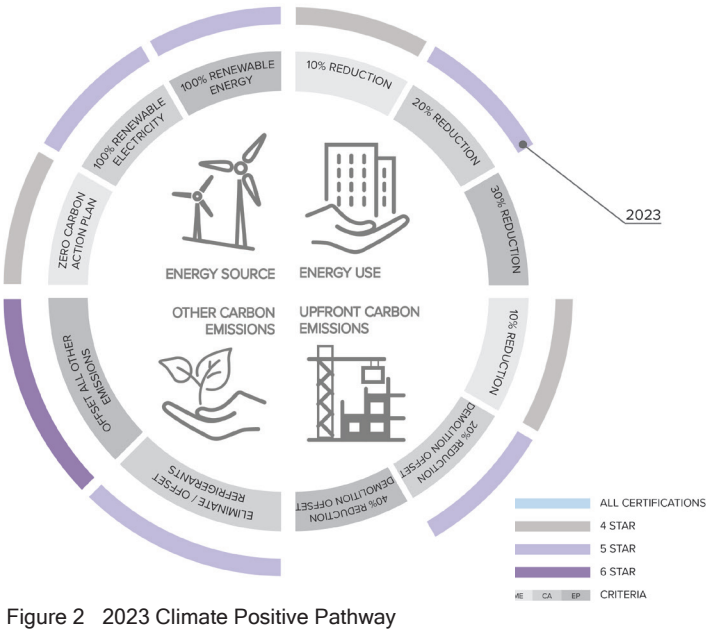


Figure 2 2023 Climate Positive Pathway

Whole Life Net Zero Ready

1. Highly energy efficient - 20% reduction in energy use
2. Low environmental impact - 20% reduction in upfront carbon
3. Fossil fuel-free - all-electric + 100% renewable electricity
4. Address high impact refrigerant systems

Implement

Table1 summarises the Project design response against key sustainability goals.

The Project is capable of achieving:

- Design excellence in sustainable development, in line with the ESD principles of the Sydney LEP 2012
- ESD objectives and controls of the Sydney DCP 2012
- Energy and water standards, and net zero provisions (see Appendix A) of the NSW Sustainable Buildings SEPP

The Project will be a force for good → acting on climate change by going beyond net zero + building social cohesion through the Canva Community

Table 1 Implementation of key sustainability goals

Requirement		Met	Design Response
1.	Highly energy efficient - 20% reduction in energy use	Yes Sections 4.2.1 - 4.2.3	• Predicted 5.5 star NABERS Energy performance (margin ≥ 25%) • Operational net zero
2.	Low environmental impact - 20% reduction in upfront carbon	Yes Section 4.2.4 Embodied Emissions Materials Form (by others)	• Established design response for primary construction materials and construction-related activities • NABERS Embodied Carbon performance (equivalent to a benchmark performance of 600 kgCO2e/m^2)
3.	Fossil fuel-free - all-electric + 100% renewable electricity	Yes Section 4.2.2	• Full building electrification, including commercial kitchen use • 100% renewable electricity supply
4.	Low impact refrigerant systems	Chillers - Yes Heat pumps - Future ready Section 4.4.5	• HFC refrigerant volume is minimised through the selection of air-to-water heat pump systems, which do not circulate refrigerants • Future ready for phase out of HFC refrigerants by 2035
5.	Meet the water standard	Section 4.4.2	• Predicted 3 star NABERS Water performance, incl. commercial kitchen use • Where commercial kitchen use is excluded, the Project is capable of meeting a 4 star NABERS Water performance
6.	Building strong communities, provide nutritional support, and integrate biophilic design initiatives	Section 4.4.1	• A Shared Zone to address the poor street condition and create a more functional public realm • Ground, accessed from Kippax Street, will connect to Lower Ground, accessed from Sophia Street, visually linking the two streets • Integration of a solar canopy and biosolar green roof, extensive roof terrace landscaping and wintergardens, the Project offers a leading design response to reduce the urban heat island effect
7.	Address the the permeability of the pedestrian network		

1 Introduce

Designing for a more sustainable future -

Translating Canva's sustainability practices and goals into the adaptive reuse of 8 Kippax St to showcase bold climate action in the built environment

1.1 Purpose

Advancing Net Zero, a World Green Building Council (WorldGBC) global program, is working towards total built environment sector decarbonisation by 2050. It sets a 'Whole Life Carbon Vision' (see Figure 1.1).

Canva is a vocal about its stance on protecting the planet and the urgency in which we need to take serious action. As one of the fastest growing technology companies in the world, Canva is in a unique position to help champion this effort.

The built environment sector must pursue a strategy to compensate for the total impacts of its activities that prioritises a reduction first approach, and embraces the potential of the offsets market to facilitate positive social and environmental impact in pursuit of overall net zero emissions.

This Sustainability Statement has been prepared by E-LAB Consulting on behalf of Canva for the proposed redevelopment (the Project) at 8 Kippax St, Surry Hills, NSW (see Figure 1.2). It explores Canva's sustainability practices and goals, and translates these into an implementation framework that showcases bold climate action in the built environment.

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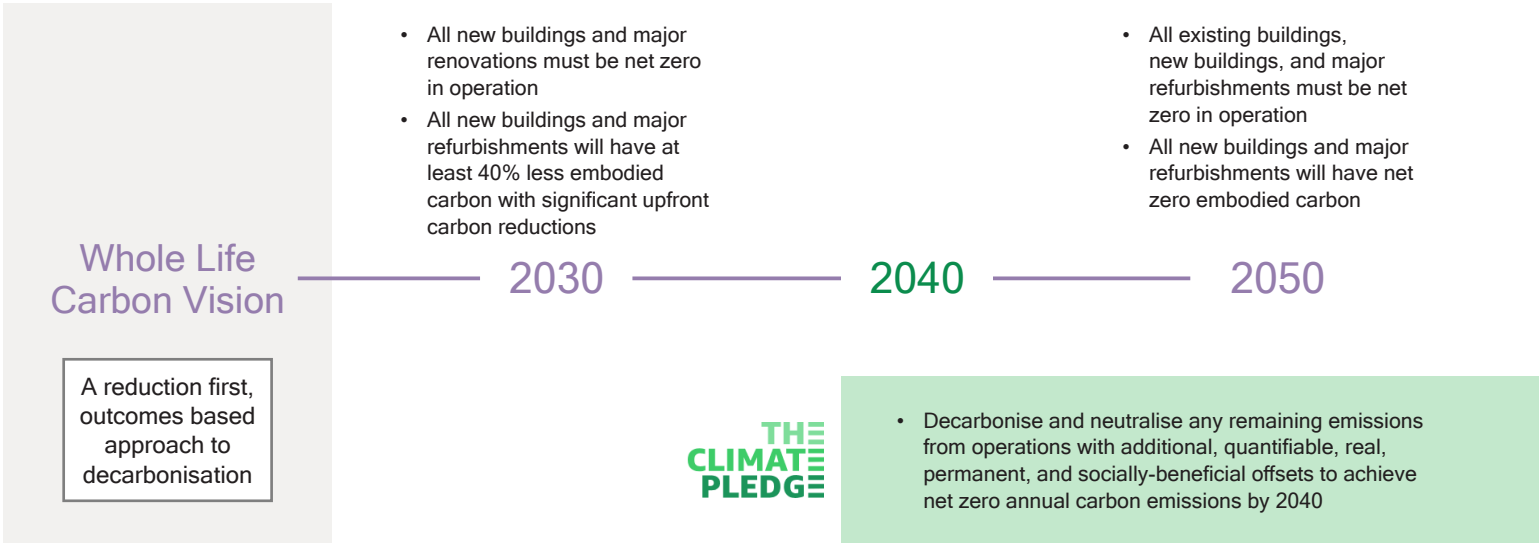


Figure 1.1 Decarbonisation roadmap

Canva is the first Australian company to sign The Climate Pledge

1.2 Project

Growing the Canva Community

In December 2022, Canva completed the acquisition of 8-24 Kippax Street, Surry Hills. The building comprises a basement, lower ground, ground, and nine (9) levels of commercial office space totalling approximately 8,500m^2 of net lettable area (NLA) (see Figure 1.4). Built in the 1960s, the property last underwent a refurbishment in the late 1990s.

The Project will involve undertaking a comprehensive refurbishment and fit out of the building to meet Canva's ambition to create the best workplace for Canvanaughts. It offers a unique opportunity to improve Canva's presence and commitment of giving back to the Surry Hills community. Although currently occupying several properties in the area, Canva now aims to consolidate their office spaces to a headquarter building specifically designed to meet their workplace requirements.

8-24 Kippax Street, located just off Elizabeth Street and only a two-minute walk from Central Station (see Figure 1.2), will firmly position Canva as part of Australia's largest technology and innovation hub, Tech Central.

In keeping with Canva's aspirations of "being a force for good", the Project seeks to retain as much of the existing building structure and envelope as possible (see Figure 1.5), and only apply pragmatic interventions where it improves functional planning or sustainability outcomes (e.g., improving daylight availability).

The proposed additions will offer a benchmark model in the re-use and rejuvenation of an existing, tired, and under-performing commercial asset (see Figure 1.3).

The addition of a function room and roof terrace over the existing building, will offer Canva the opportunity to gather, connect, and celebrate their unique 'vibe' with Canvanaughts, collaborators, and guests.

The function room will not increase the workplace area, but will fundamentally support its function; specifically designed for in-house functions, events, and entertaining that presents opportunities for formal and informal collaboration.

The Ground Level, accessed from Kippax Street, will directly connect to the Lower Ground Level along Sophia Street, visually linking the two streets.

Table 1.1 provides a development summary for the Project.

Works include:

- Relocating and upgrading the transformer chamber substation on Sophia Street, including demolition and reinstatement of basement ground slab to support infrastructure augementation
- Relocating the core to the east to maximise daylight access, and high quality external and internal views to the floor plates, and set back rooftop plant and equipment to be less visible
- Reinforcing the existing structure to accommodate a new core, rooftop, and plant and equipment
- Installing a new façade to Lower Ground, Ground, and Level 1 to increase transparency and maximise activation
- Fitting out new end of trip facilities
- Providing a biosolar green roof (combined solar PV array and green roof) and solar canopy over the roof terrace
- Providing extensive landscaping to the roof terrace
- Installing new high performance glazing throughout workplace Levels 1 (north only), and Levels 2 to 9 (all) with optimised external shading to the north façade. Neutral glazing with a high solar control and a good visible light transmittance (VLT) performance is applied, in combination with automated internal blinds, to provide a high indoor environment quality.
- Introducing wintergardens to the north-west corner of the floor plates on Levels 1 to 9 to create a connection to nature. This will be reinforced with extensive planters at each level.
- Retrofitting high efficiency building services that are capable of supporting the Project's structural constraints, workplace drivers and sustainability targets

Figure 1.2 Site location

Figure 1.3 Proposed concept design

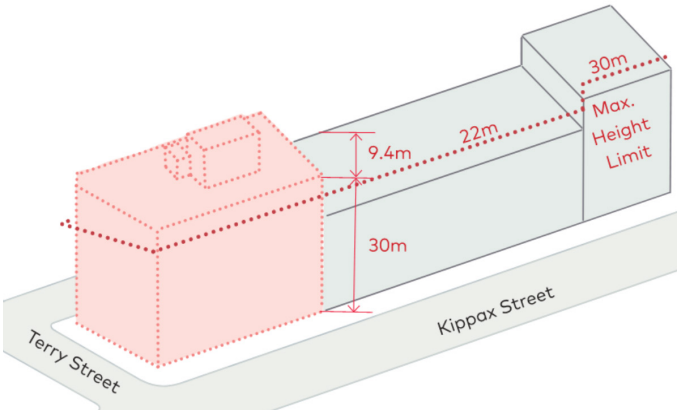


Figure 1.4 Existing envelope

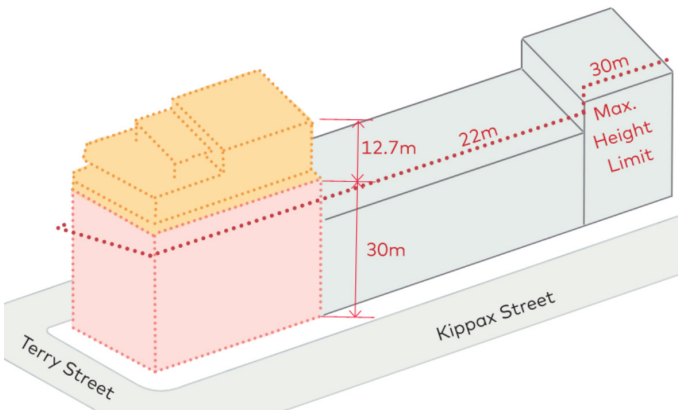
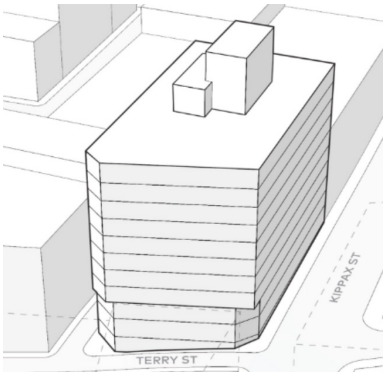


Figure 1.5 Proposed envelope

Table 1.1 Development summary

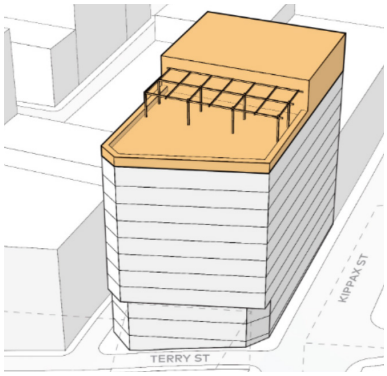
Control	Existing	Permissible	Proposed
Building height	30m + 9.5m Plant	22m	42.7m
FSR	9.1 : 1	3.5 : 1	9.86 : 1
GFA (m^2)	9,374	3,611	10,173

1.3 Design Principles



Existing Massing

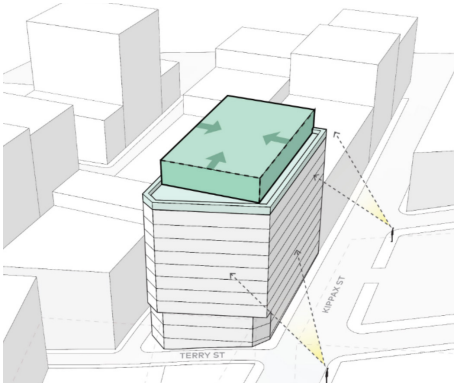
- Reuse - integrate existing materials
- Perform - introduce high performance glazing
- Adapt - improve as opposed to upgrade



DA1 Massing

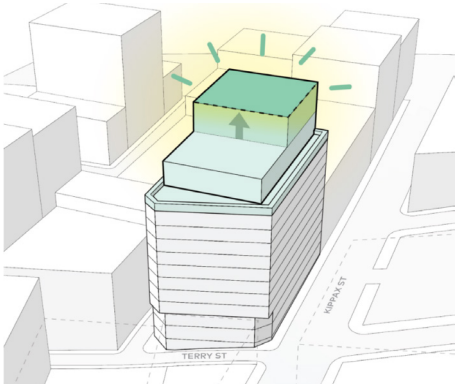
- Respond - sensitive massing
- Integrate - solar canopy and biosolar green roof
- Create - Level 10 communal open space (rooftop terrace)

Planning Proposal



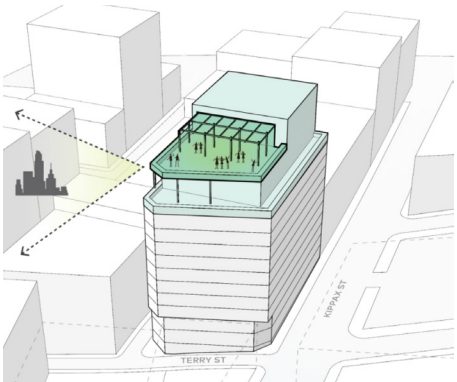
Push Back

- Manage - push back and reduce the visual bulk



Touch the Sky Memorably

- Resolve - massing approach
- Maintain - solar canopy and biosolar green roof



Reach Out

- Add - Level 11 communal open space
- Enhance - views to City for the Canva Community

1.4 Sustainability Practices & Goals

Tackling climate change by actively working to reduce carbon emissions is one of the ultimate ways of "being a force for good", one of Canva's guiding values.

To reinforce this thinking, Canva has developed sustainability practices and 'big' goals, which recognise that companies have a much greater responsibility than the old mantra 'to do no evil'.

Climate action

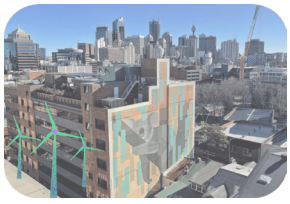
- Thinking about our ability to reduce our carbon emissions

Beyond net zero

- Thinking about our ability to reduce the carbon emissions of our supply chain, and redefine the boundary of our operational carbon footprint

Sustainable offices

- Sourcing fresh food from responsible sources
- eWaste management systems and organic waste composting
- Biodiversity initiatives, incl. beekeeping



Running on renewables

- Australian operations are powered by renewable energy
- Working to match demand to renewable energy generation

2 Require

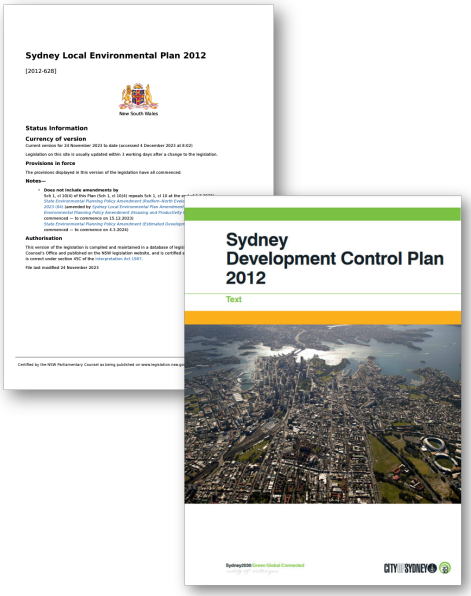
2.1 Basis

The Project, a large commercial development of greater than 1,000m² NLA involving the major refurbishment of an existing commercial office premises with a project value greater than $10 million, is subject to a range of statutory planning controls, policies, and guidelines at a local and state government level, and sustainability certification tools.

These controls, policies, guidelines, and tools are a material consideration when developing project sustainability requirements that reflect a credible, market-leading sustainability strategy and implementation framework for the Project.

1. Sydney Local Environment Plan (LEP) 2012
2. Sydney Development Control Plan (DCP) 2012
3. NSW Sustainable Buildings SEPP
4. Green Star (Green Building Council of Australia)
5. NABERS Energy and Water for Offices
6. A Guide to Office Building Quality (Property Council of Australia)

2.1.1 Development Objectives and Controls



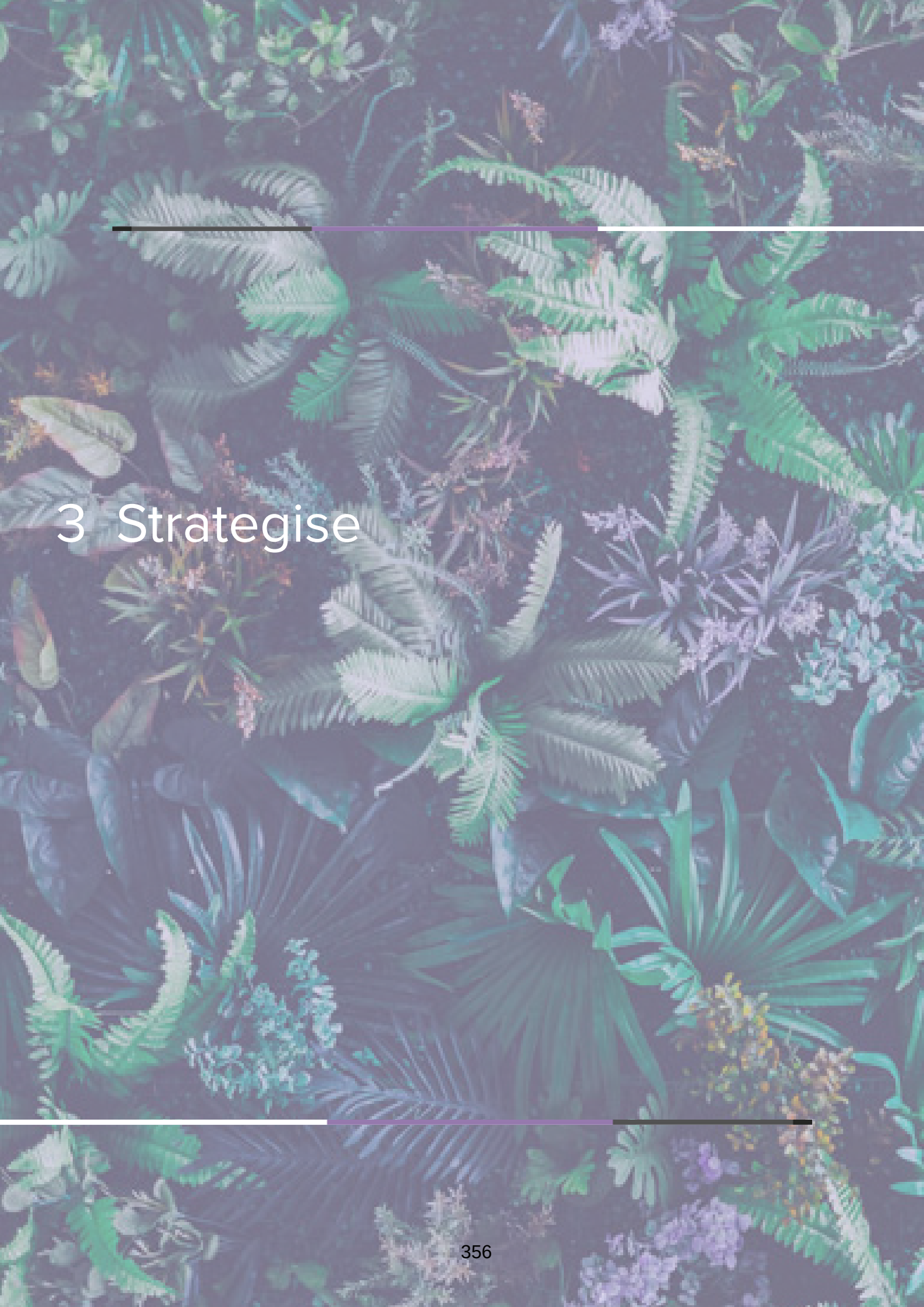
- Improve the quality and amenity of the public domain
- Integrate the principles of ecologically sustainable development
- Reduce the need for active heating and cooling by incorporating passive design measures
- Target a 5.5 star (+25% margin) NABERS Energy Commitment Agreement or meet the Green Star Buildings v1, Credit 22 Energy Use, Credit Achievement criteria - achieve a 20% reduction in energy use when compared to a reference building
- Develop a robust water strategy, including water efficient fixtures and fittings, and rainwater harvesting and reuse for landscape irrigation
- Install adequate energy and water metering, and sub-metering to support monitoring and reporting for efficient building operations
- Promote active movement and low carbon transport options
- Specify non-toxic interior finishes, including paints, adhesives, sealants, carpets, and engineered wood products
- Procure responsible building materials and products to support a supply chain transformation

2.1.2 Sustainable Buildings Policies

- Prepare a Net Zero Statement, including:
  - High performance building design, including on-site active generation and energy storage systems
  - Estimated scope 1 and 2 emissions up to 2050
  - Transition planning for residual fossil fuel-dependent building services to operate fossil fuel-free by 2035
- Offset the fossil fuel use of any residual fossil fuel-dependent building services calculated over a 10-year period
- Achieve the following minimum energy and water standards:
  - 5.5 star NABERS Energy for Offices (base building) (Commitment Agreement) (without GreenPower)
  - 3 star NABERS Water for Offices (Agreement to Rate)
- Measure primary construction materials for structure, envelope, permanent internal walls and doors, services, and external works via a bill of quantities (BOQ)

2.1.3 Sustainable Buildings Tools

- Respond to global megatrends, and national and regional policies to define a Climate Positive Pathway
- Demonstrate a credible path to whole life net zero
- Disclose operational energy and water performance
- Demonstrate credible savings in energy and water costs through the efficient design of a building's fabric and services
- Represent good quality design and reflect market requirements
- Generally align with Grade A office environmental quality guidelines, including:
  - Achieve a 5.5 star NABERS Energy for Offices rating (base building) (Commitment Agreement) (without GreenPower)
  - Undertake operational waste management planning and implement waste reduction practices
  - Deliver a high indoor environment quality
  - Conduct a climate change risk assessment and undertake adaptation planning



3 Strategise

3.1 Sustainability Framework

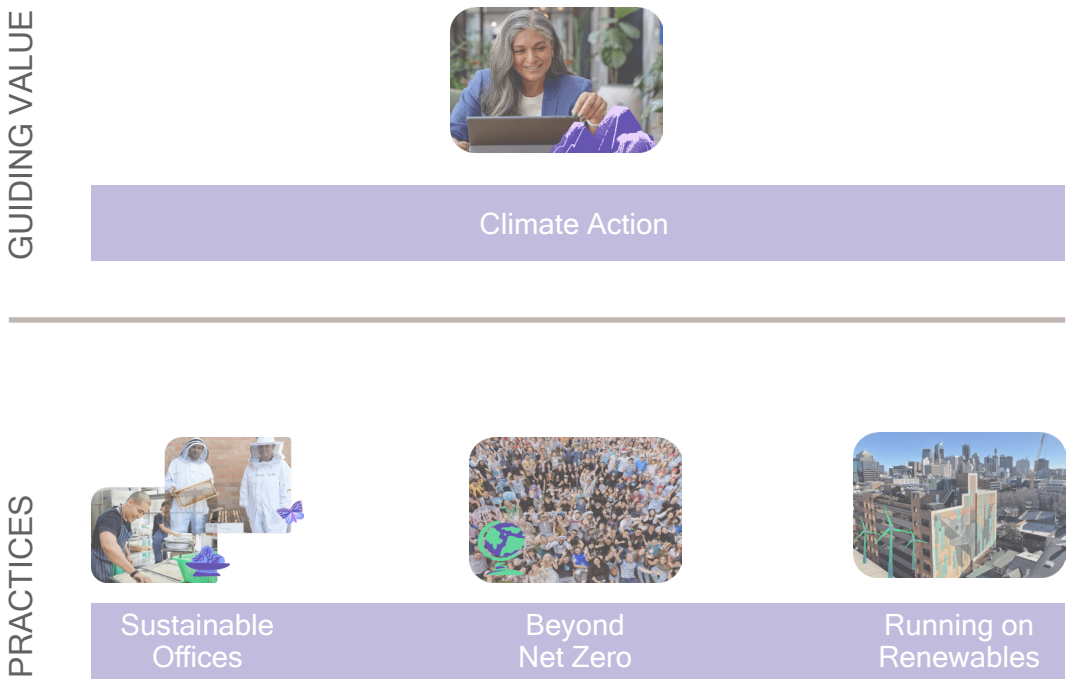
The Project will be a force for good → acting on climate change by going beyond net zero + building social cohesion through the Canva Community

The Project design, delivery, and operation will be governed by a guiding value

→ Climate Action

This guiding value fundamentally informs sustainability practices

→ Sustainable Offices
→ Beyond Net Zero
→ Running on Renewables



3.2 Sustainability Strategy

The Project will adopt and implement Canva's guiding value, and supporting sustainability practices and goals (see Figure 3.1).

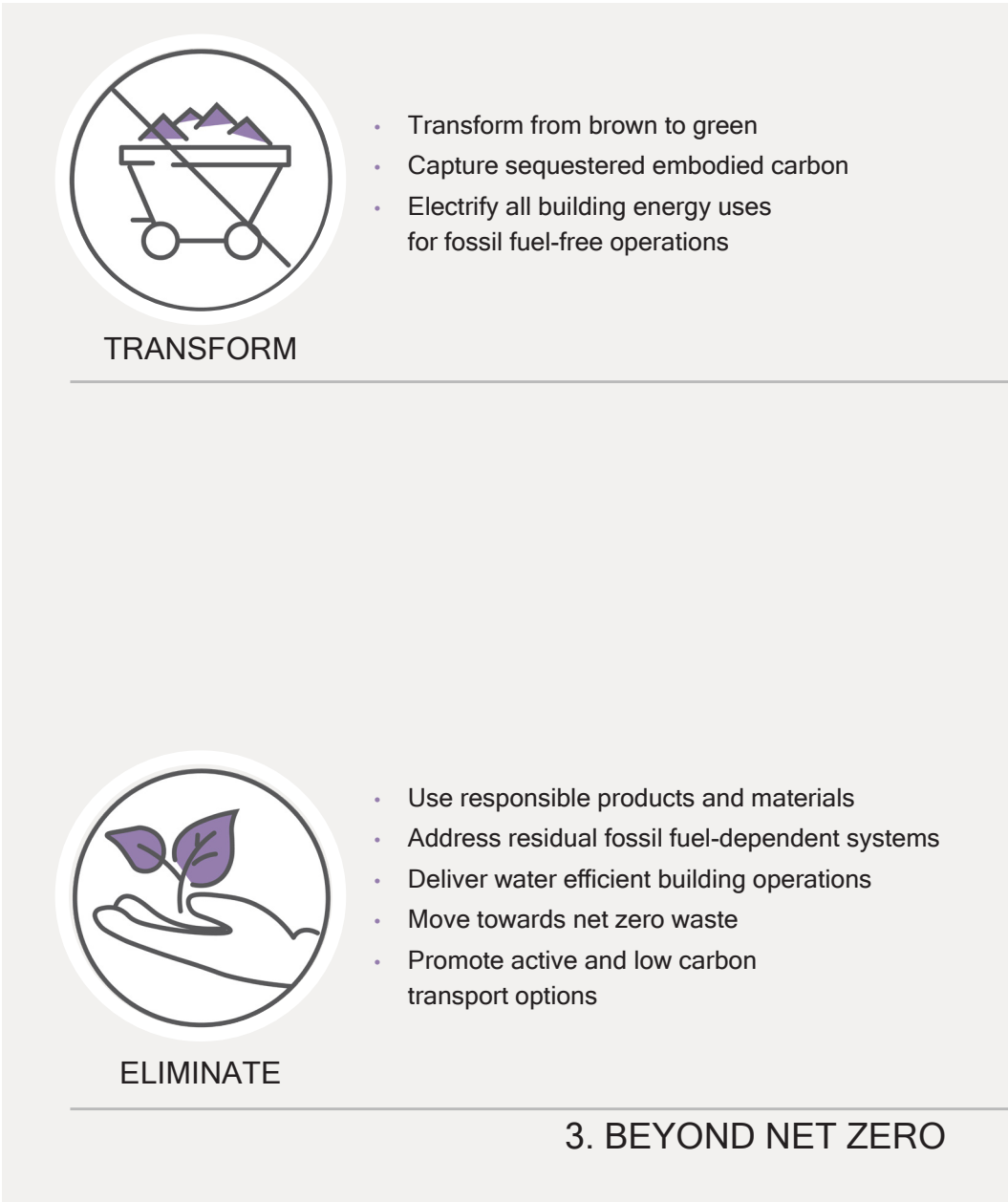


Figure 3.1 Sustainability practices and goals

READY

- Deliver energy efficient building operations
- Deploy on-site active generation systems
- Be 'Whole Life Net Zero Ready'

1. CLIMATE ACTION

- Deliver an exceptional workplace design & reinforce the Canva Community

2. SUSTAINABLE OFFICES

DECARBONISE

- Power the Australian operations with renewable electricity
- Leverage on-site active generation systems and demand response management strategies to match demand to renewable electricity generation

4. RUNNING ON RENEWABLES

3.3 Sustainability Practices & Goals

3.3.1 Climate Action

To be a force for good, the Project must demonstrate a credible response to global heating. In the built environment, this calls for real and transparent carbon reductions in the design and delivery, and operation of buildings, and limiting the reliance on compensation mechanisms, such as the procurement of carbon credits to offset carbon emissions.

A 'Whole Life Net Zero Ready' design response is required.

This thinking is reinforced by the NSW Government's objective to achieve net zero emissions by 2050, and reduce emissions by 50% below 2005 levels by 2030, and 70% beloow 2005 levels by 2035. The transformation of the built environment towards net zero emissions is being accelerated under a range of Net Zero Buildings initiatives and policies.

The Green Star Buildings rating tool embeds the WorldGBC's 'Whole Life Carbon Vision' by defining a Climate Positive Pathway for building design and delivery (see Figure 3.2). It's represents the market-leading benchmark for ecologically sustainable development in Australia.

The Climate Positive Pathway increases in stringency over this decade. All projects are required to achieve whole life (upfront and operational) net zero by 2030. This sustainable built environment response is captured in strengthening credit criteria over three-year cycles (2020 → 2023 → 2026 → 2030).

Figure 3.2 2020-2030 Climate Positive Pathway

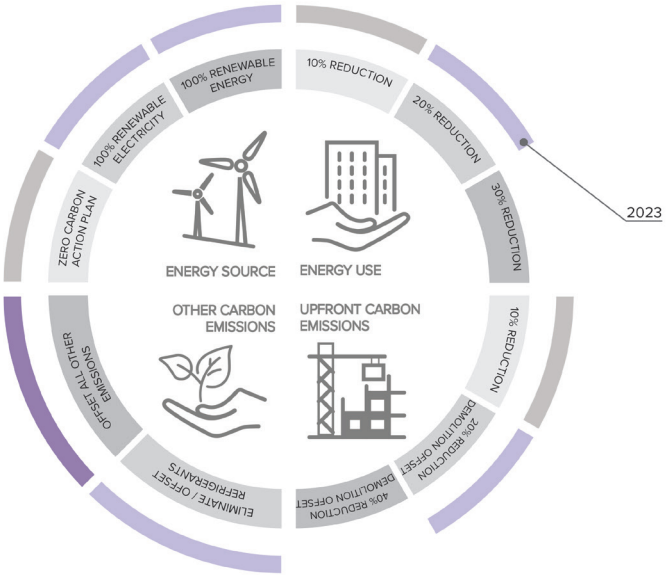


Figure 3.3 2023 Climate Positive Pathway

For the 2023 cycle, the Climate Positive Pathway includes:

1. Whole Life Net Zero Ready
   a. Highly energy efficient - 20% reduction in energy use
   b. Low environmental impact - 20% reduction in upfront carbon
   c. Fossil fuel-free - all-electric + 100% renewable electricity
   d. Address high impact refrigerant systems

3.3.2 Sustainable Offices

The Canva workplace will be designed to excite Canvanaughts, attract community, and provide an environment that has a net positive health and wellbeing benefit to staff, workers, and visitors.

Human-Centred Design Framework

The Project will overlay a robust evidence-based human-centred design (HCD) framework that responds to a range of factors:

1. High Indoor Air & Water Quality | Prevent significant impacts on human physiology and performance metrics, such as short-term memory, focus, and cognition
2. Building Strong Communities | Tune the space mix needs, operations, and policies to achieve a common culture
3. Nutritional Support | Ensure good healthy food availability and nutritional education is weaved into the fabric of the workplace
4. Lighting Design |
    a. Understand lighting is a powerful bio-influencer with significant impact on human circadian rhythms, mood, and overall wellbeing
    b. Balance the availability of daylight in harmony with artificial lighting
5. Enhancing Active & Passive Movement | Increase the availability of incidental movement and greater opportunities for physical activity
6. Achieving Thermal Comfort | Aspire to provide a variability in thermal environments that cater for the needs of varying thermal expectations of the Canva community
7. Acoustic Excellence | Strive to provide good acoustic amenity through the use of technology, spatial planning of acoustic zones throughout, and operational procedures
8. A Mentally Healthy and Resilient Workplace | Provide a workplace environment that supports mental health and nurtures mental fitness
9. Biophilic Design | Integrate nature-based solutions to create a connection to nature and visual interest in the workplace
10. Universal Design | Implement a design process that encompasses topics such as accessible design, designing for neurodiversity, and sensory sensitivity, among others

3.3.3 Beyond Net Zero

Beyond net zero requires us to redefine the boundary of the Project's operational carbon footprint. The Project will develop a design response to these building emissions impacts.

The carbon life cycle also recognises the emissions impact of:

1. Building water use and wastewater treatment
   - To support water resilience, the Project will integrate water efficiency measures and make use of alternative water sources to reduce the demand for potable water
2. Waste
   - During design and delivery, the Project will focus on circular economy principles (See Figure 3.4). Avoided demolition and extending the lifespan of building components is a key Project design driver. At least 80% of construction and demolition waste will be diverted from landfill.
   - In operation, the Project will recover > 50% of its waste streams, including food organics, to convert them to valuable resources
3. Refrigerant plant and equipment
   - Current refrigerant plant and equipment contain HFC refrigerants, which are potent greenhouse gases with a high global warming potential (GWP) and long lifetime. HFC refrigerants are set for eventual phase out by 2035.
   - HFO and natural refrigerant plant and equipment (zero ODP and GWP < 10) will be selected, wherever possible
4. Movement and transport of Canvanaughts, workers, and visitors to support building/organisation operations
   - The Project will leverage the high quality public transport infrastructure available by implementing a range of Project-specific sustainable transport measures that will minimise private vehicle use

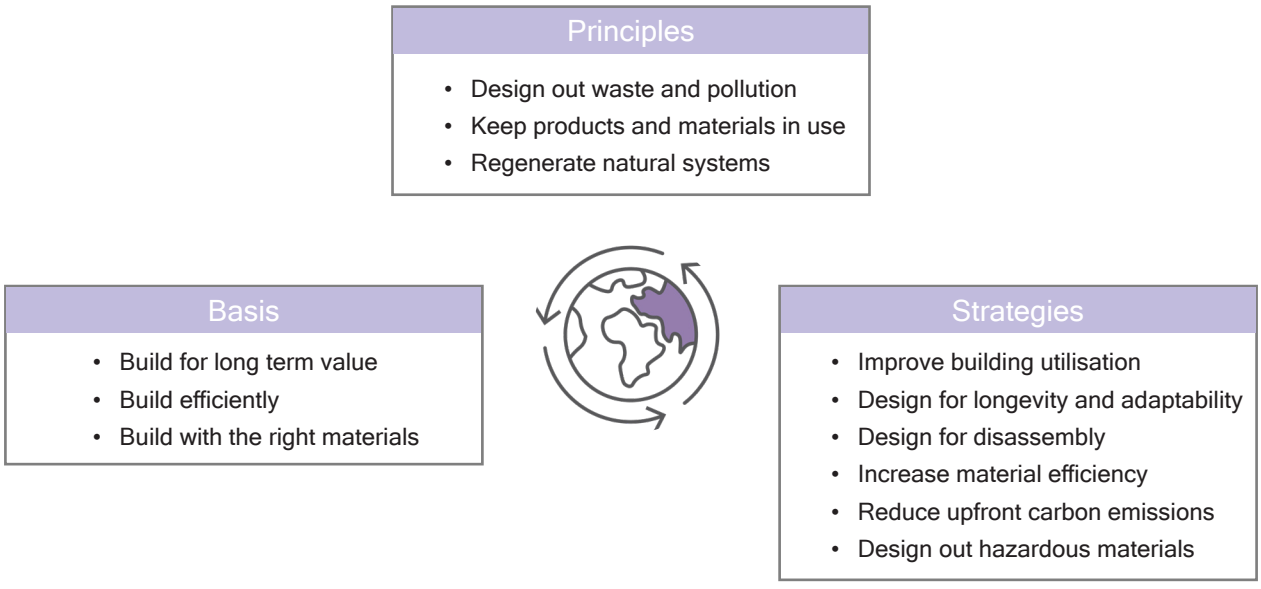


Figure 3.4 Circular design response

3.3.4 Running on Renewables

Canva already powers its Australian operations with renewable energy and recognises that, by working to match building energy demand to grid-scale renewable energy generation, further operational carbon reductions are achievable, and running cost relief for renewable firming can be realised.

The ability to flexibly shift the time of use of a building's energy demand is critical in supporting further decarbonisation by dynamically responding to favourable grid conditions.

The Project will pursue a smart building design response, coupled with on-site solar photovoltaic (PV) systems, to drive grid resilience and demand management outcomes (see Figure 3.5).

This sustainability practice will be further explored and expanded during design development.

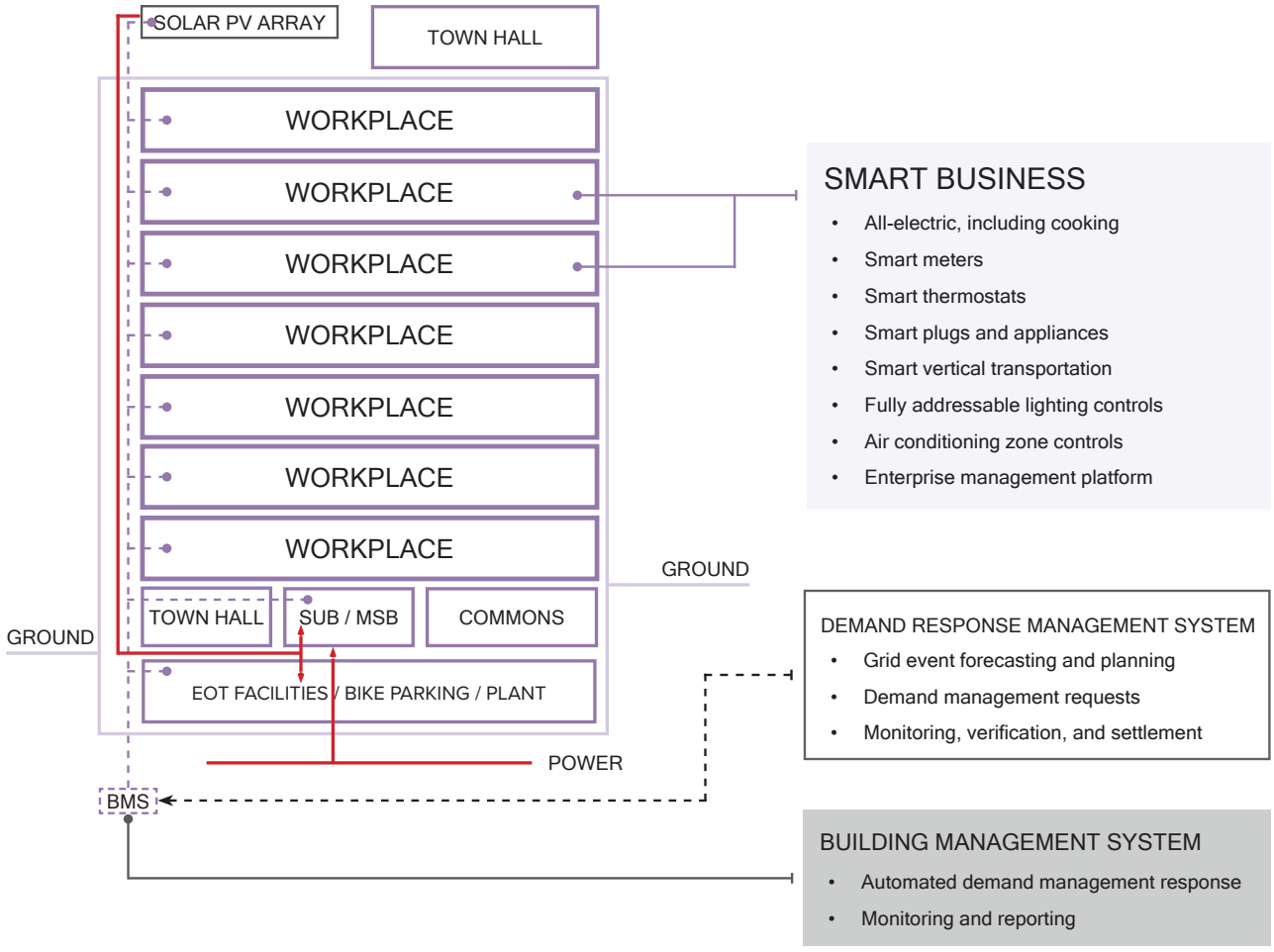
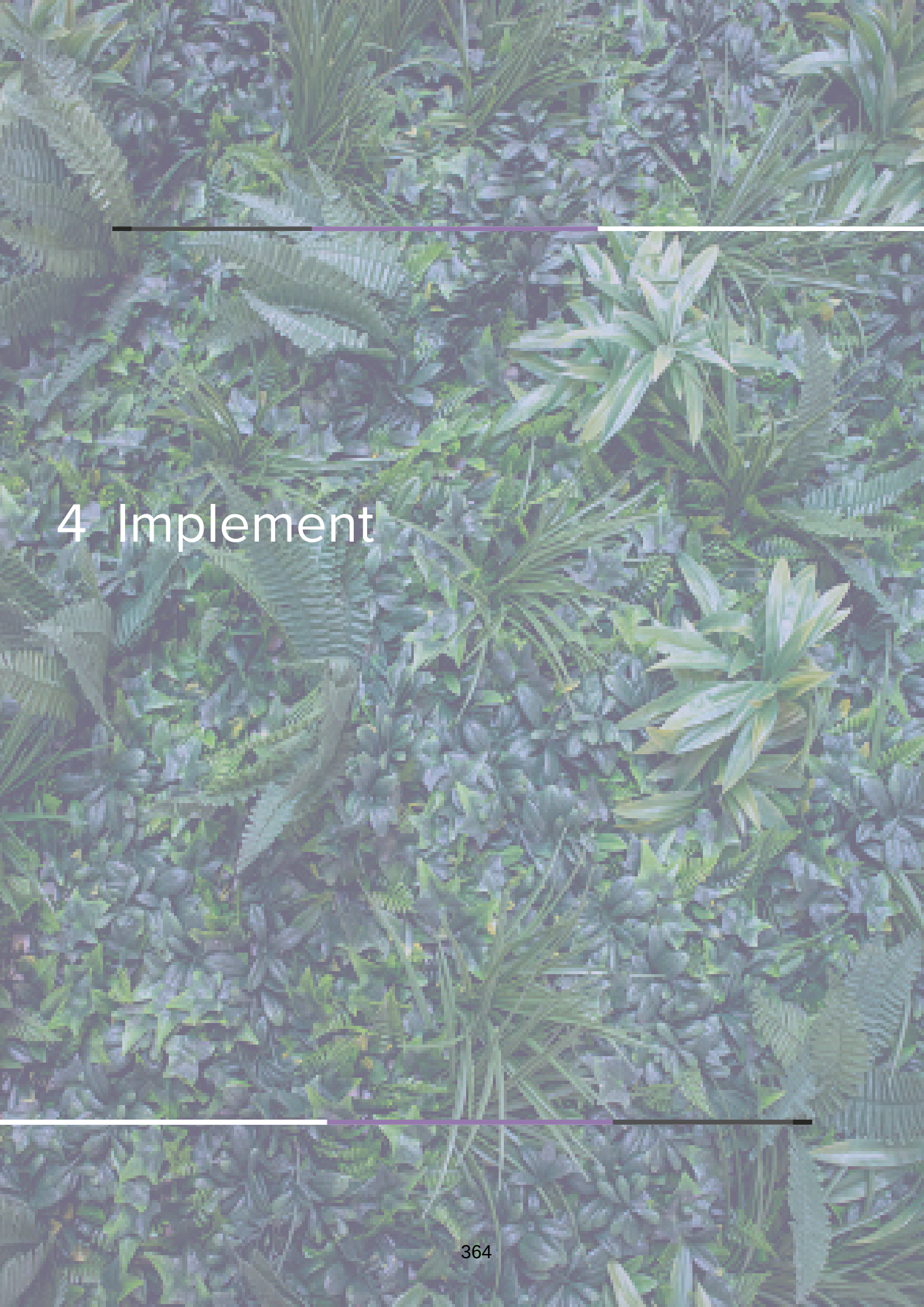


Figure 3.5 Smart building design configuration



4 Implement

4.1 Governance

4.1.1 Collective Impact

The concept of collective impact focuses on shaping the necessary leadership, collaboration, and decision-making governance to support effective action through all phases of the design and delivery, and operation of the Project to achieve social change.

This calls for a shared vision and common agenda, established targets, and investment.

The collective formation of a range of Project stakeholders is required. The Project stakeholders, and their roles and responsibilities are outlined in Figure 4.1.

Figure 4.1 Stakeholder roles and responsibilities

4.1.2 Assurance Framework

The built environment is and must rapidly transform and shift to a whole life net zero economy (see Figure 4.2).

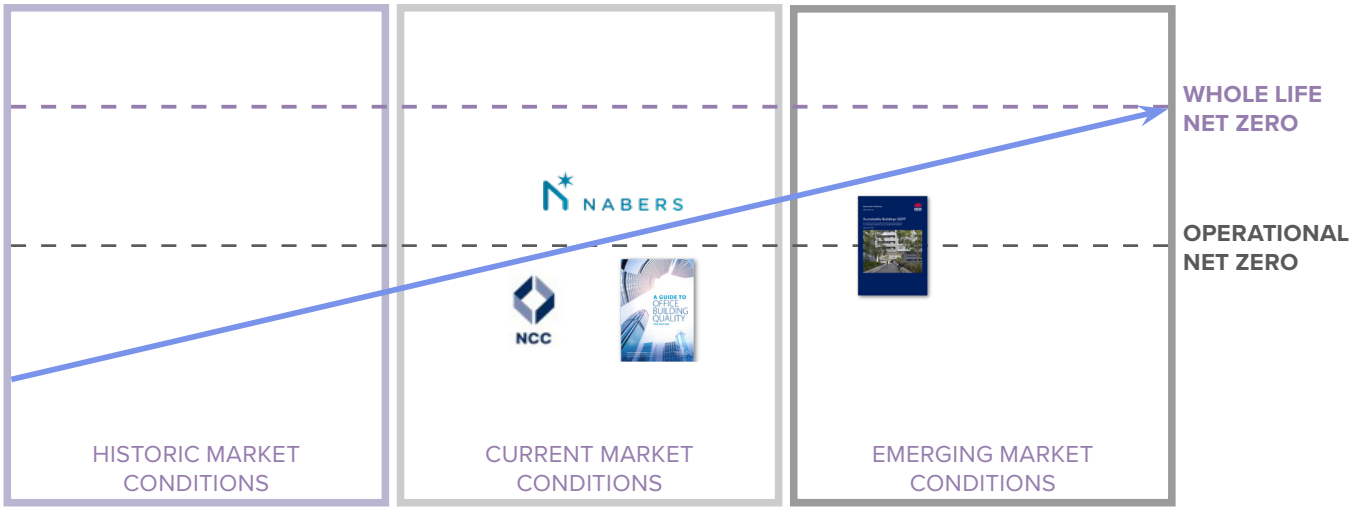


Figure 4.2 Market transformation

An assurance framework is required for the Project to present credible climate action in the design and delivery, and operation of the building. Table 4.1 sets out the assurance framework, and the alignment with inter-connected controls, policies, guidelines, and tools.

Ultimately, the assurance framework presented will ensure the market perceives the building as a high quality, high value asset.

Table 4.1 Assurance framework

Standard	Assurance Framework	Alignment
NABERS	• 5.5 star NABERS Energy for Offices (base building) (Commitment Agreement) (without GreenPower) • 3 star NABERS Water for Offices (Agreement to Rate) • NABERS Embodied Carbon* (equivalent to a benchmark performance of 600 kgCO2e/m^2)	• Sydney DCP 2012 • NSW Sustainable Buildings SEPP, Energy and Water Standard • Grade A office environmental parameter • NCC 2022 Section J, J1V1 NABERS
Climate Pledge	• Whole Life Net Zero Ready: - At least a 20% reduction in upfront carbon - At least a 20% reduction in energy use - All-electric, fossil fuel-free operations - 100% renewable electricity - Low impact refrigerant systems	• Climate Pledge

* An Agreement to Rate will be considered upon release of the tool in mid-2024

4.2 Climate Action

4.2.1 Passive Design Response

Urban Heat Island Effect

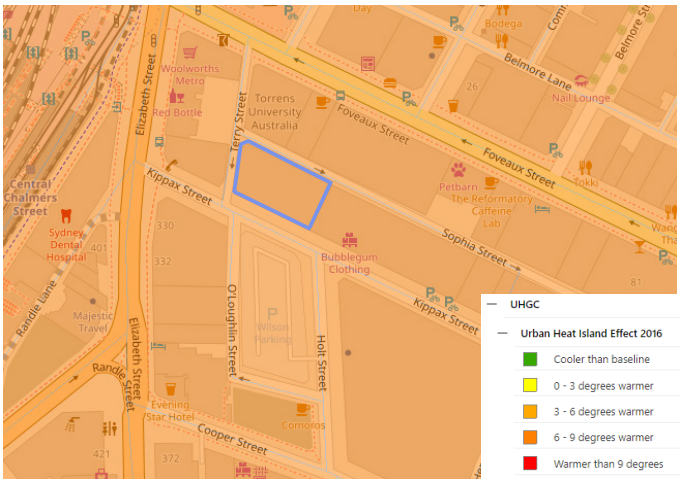


Figure 4.3 Project site UHIE

The urban heat island effect (UHIE) occurs when natural land cover is replaced with dense concentrations of pavement, buildings, and other surfaces that absorb and retain heat. Ambient temperatures in urban areas can be up to 10°C warmer than rural areas. This effect acts to increase energy costs, air pollution levels, and heat-related illness and mortality.

The site and surrounding Surry Hills community generally experience temperatures that are 3-6°C warmer than rural areas, exacerbated by the UHIE (see Figure 4.3; source: The SEED Initiative).

Mitigation measures to reduce the UHIE include:

- External shading (see Proposed Performance)
- External planter boxes for the wintergardens on Levels 1 to 9 to provide an evaporative cooling and shading effect (see Wintergarden Performance)
- A biosolar green roof, combining solar PV and green roof technology, extensive rooftop landscaping, and a solar canopy to the roof terrace (see Section 4.2.3) reduce the heat absorptance of the site

Sun Hours Analysis

A sun hours analysis has been conducted to quantify solar exposure to the building envelope (see Figure 4.4).

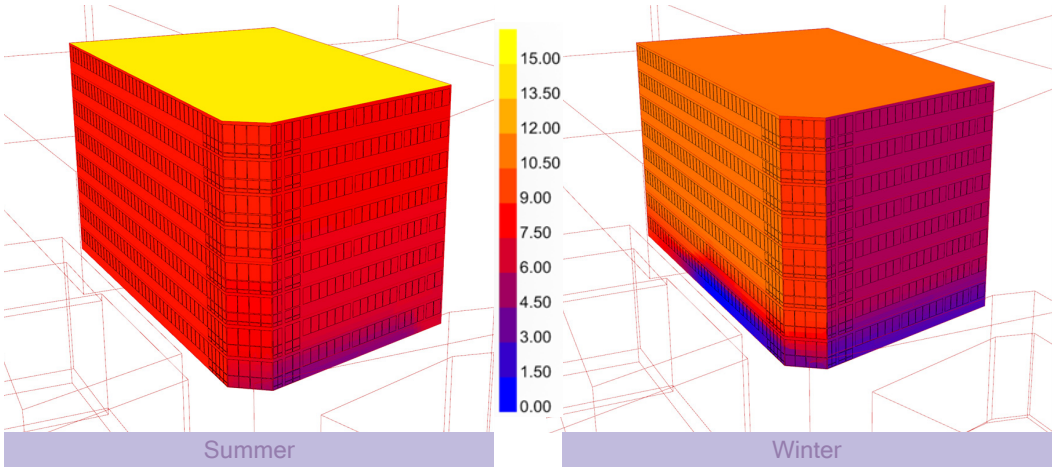


Figure 4.4 Sun hours analysis - NW perspective

The north and west façade from Level 1 and above see a consistent solar exposure in summer and winter, i.e., limited overshadowing is observed that would influence the façade design on the north and west façade at the typical workplace levels (Levels 2 to 9).

The façade design response at Lower Ground, Ground, and Level 1 to increase transparency and maximise activation is reinforced through good overshadowing being observed to the west façade in summer, and north and west façade in winter.

Parametric Design

A parametric design process was implemented to optimise the building fabric performance for the typical workplace levels (Levels 2 to 9). This included establishing baseline building fabric performance inputs, and evaluating indoor environment quality, load and energy use, and embodied carbon performance outputs for a range of alternative design scenarios.

Over 100 façade design scenarios were analysed and compared to the baseline performance, applying a multi-criteria analysis of modelled data (see Figure 4.5). This process facilitated stakeholder engagement that assisted in balancing architectural and aesthetic drivers with workplace function and sustainability performance requirements.

Baseline Performance

- Baseline building fabric inputs:
  - Window-to-wall ratio (WWR) - north (60%), south (50%), east (0%; party wall), and west (55%)
  - Glazing - triple silver clear DGU; system U 3.1 (DTS*); system SHGC 0.28 (DTS), system VLT 60%
  - Wall (incl. party wall) - system R 1.4 (DTS)
  - Spandrel - system R 0.6
  - Exposed slab edge; all elevations
  - Exposed column edge; west and south façade
  - Shading - none

- Performance outputs:
  - Indoor Environment Quality (IEQ) | Daylight availability [% floor area meeting the Green Star Buildings Daylight criteria]
  - IEQ | Visual comfort [% floor area exceeding good practice Annual Sunlight Exposure (ASE) criteria]
  - IEQ | Thermal comfort [% occupied hours meeting ASHRAE Standard 55]
  - Load | Peak cooling load [W/m²]
  - Energy use | Energy consumption [kWh/m²]
  - Embodied carbon | Area of shading [m²]

Figure 4.5 Baseline performance

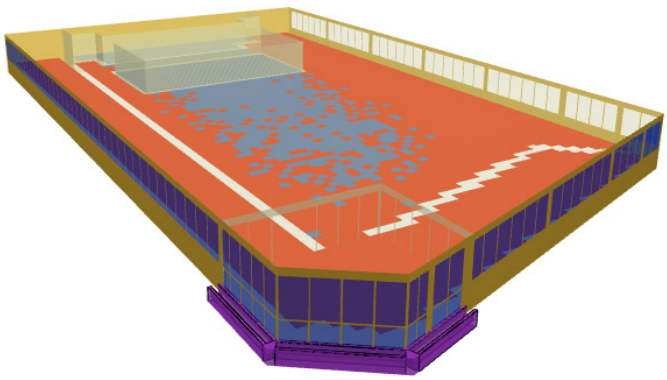


Figure 4.6 Baseline façade configuration

- Baseline performance (see Figures 4.5 and 4.6):
  - Low embodied carbon (no shading)
  - Good daylight availability; poor visual comfort performance
  - Poor energy use and cooling load performance
  - Good thermal comfort performance

* DTS = meets the deemed to satisfy provisions of NCC 2022 Section J Energy efficiency, Part J4D6 Walls and glazing

- Proposed building fabric inputs:
  - All parameters as per baseline, excluding glazing and shading
  - Shading - north
    1 x 450mm deep horizontal shade fixed at exposed slab edge
    1 x 450mm deep horizontal shade at 450mm separation
  - Shading - west
    1 x 450mm deep vertical shade fixed at column edge
  - Glazing - two (2) glazing selections were proposed
    1. Clear - As per baseline (see Figure 4.7)
    2. Neutral - Triple silver neutral DGU; U 3.1; SHGC 0.23; VLT 45% (see Figure 4.8)

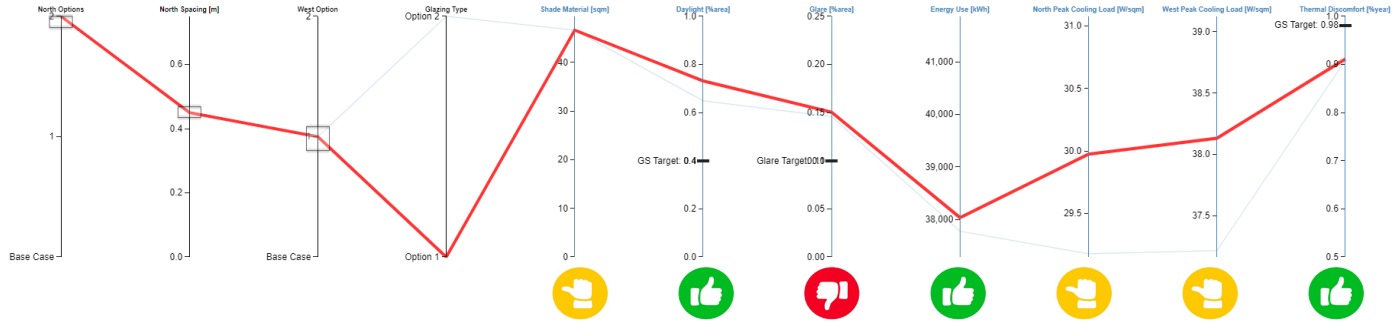


Figure 4.7 Proposed performance - Clear glazing

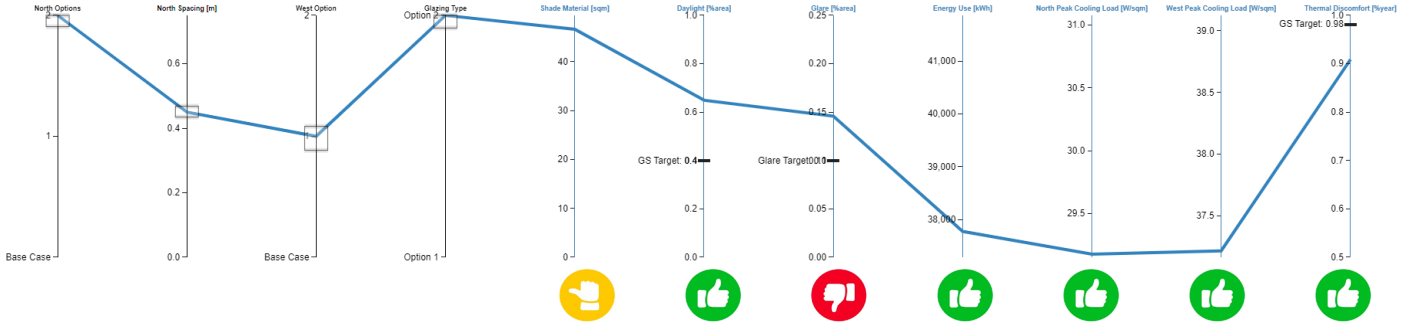


Figure 4.8 Proposed performance - Neutral glazing

- Shading design response (see Figure 4.9)
  - Improvement in the energy use and cooling load performance is observed when compared to the baseline performance (see Figures 4.5 and 4.7)
  - An embodied carbon impact is also observed due to the extent of shading
  - Detailed energy analysis undertaken to determine the predicted NABERS Energy performance (see Section 4.2.2) confirmed that the shading proposed to the west façade offered negligible improvement due to the horizontal separation distance (column-to-column). These shades have been omitted, reducing the embodied carbon impact.
- Glazing design response
  - When neutral glazing is applied, a further improvement in cooling load performance is observed (see Figure 4.8), driven by the high solar control characteristics of the glazing
  - Neutral glazing has been adopted to support reduced loads and improved energy use, and a high indoor environment quality

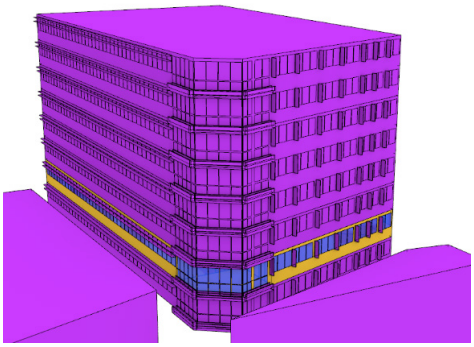


Figure 4.9 Proposed façade configuration

Wintergarden Performance

The wintergardens created in the north west corner of the building floor plate (Levels 1 to 9; see Figure 4.10) has been optimised for natural ventilation, informed by adaptive thermal comfort analysis.

Table 4.2 details the performance optimisation initiatives, including:

1. Manually operated glazed louvres (clear glazing); baseline performance
2. Actuated glazed louvres (clear glazing) that progressively open for optimal natural ventilation of the wintergardens
3. Actuated glazed louvres (neutral glazing) that progressively open for optimal natural ventilation of the wintergardens

Figure 4.10 Wintergarden concept

Table 4.2 Wintergarden thermal performance

	Configuration	Comfortable [days]	Hot Discomfort [days]	Cold Discomfort [days]
1.	Manually operated glazed louvres (clear glazing)	139	21	56
2.	Actuated glazed louvres (clear glazing)	189	25	2
3.	Actuated glazed louvres (neutral glazing)	193	21	2

The baseline glazing performance (clear glazing) is based on single laminated glazing (system U 4.5; system SHGC 0.65; system VLT 80%). The neutral glazing (light grey) performance is based on single laminated glazing (system U 4.5; system SHGC 0.5; system VLT 55%).

Additional performance optimisation initiatives include:

1. The adoption of external planter boxes to provide an evaporative cooling and shading effect
2. Providing 'spill air' to the wintergardens from the conditioned workplace to temper the space during hot and cold periods (glazed louvres are closed)

Through the progressive implementation of these performance optimisation initiatives, the number of comfortable days for the wintergardens increased from 139 to 193 days per year.

4.2.2 Active Design Response

Predicted Performance

In coordination with a leading passive design response established in Section 4.2.1, an advanced active design response has been developed that addresses the NABERS Energy for Offices performance target.

The following active design measures have been integrated:

1. All-electric; no residual fossil fuel-based systems
2. No car parking
3. A chilled beam system, including fan coil units (FCUs) to support workplace function
4. Automated internal blinds, in combination with the shading and glazing design response (see Figure 4.8), to dynamically manage glare and solar gain
5. Increased outdoor air supply to the west perimeter air conditioning zones to supplement the cooling capacity of the chilled beam system
6. Direct outdoor air handling systems with heat recovery and demand control ventilation
7. High efficiency water-cooled chillers and air-cooled heat pumps for space cooling, and space and hot water heating, respectively
8. Fully addressable LED lighting system with advanced controls
9. Metering all major energy uses to provide greater visibility on energy use trends and anomalies

A predicted NABERS Energy assessment has been undertaken. Table 4.3 details the energy use intensity (EUI) breakdown for the Project based on net lettable area (NLA).

The established passive and active design response collectively delivers a 5.5 star performance with a margin of 10%. This acts to verify that the Project is capable of meeting the 5.5 star NABERS Energy (base building) performance target.

Table 4.3 Energy use intensity breakdown

Energy Use		EUI [kWh/m^2.year NLA]
Base Building Air Conditioning	AHU fans	4.4
	FCU fans	1.9
	Chillers	9.2
	Heat pumps	1.0
	Heat rejection	2.8
	Ventilation fans	3.8
	Pumps	1.5
Supplementary Air Conditioning	Heat rejection	3.3
Base Building Lighting	Common areas	3.6
	External	2.4
Vertical Transportation	Passenger lifts	10.8
Hot Water	Heat pumps	2.3
	Pumps	3.0
Other	Miscellaneous	5.7
	TOTAL	55.8
	5.5 STAR NABERS ENERGY BUDGET	62.1
	MARGIN	10%

Advanced Building Services

To demonstrate credible climate action, the Project requires the integration of advanced building services to deliver a highly energy efficient building. However, the complexity of integrating these services as part of an adaptive reuse development poses major constraints and challenges for the Project. Any solution must also balance architectural and aesthetic drivers with workplace function and sustainability performance requirements.

The floor-to-floor height of the existing building doesn't reflect modern commercial office buildings, with inherent ceiling height constraints for reticulating building services and meeting office quality guidelines.

The workplace design concept embraces an exposed ceiling and chilled beam configuration to minimise services reticulation and finishes products. The design intent is to illuminate the exposed ceiling and spaces with high quality internal lighting so that building occupants perceive the space as 'open' and comfortable.

Spatially accommodating central cooling and heating plant and equipment, and ventilation systems required extensive and progressive design coordination to achieve the Project's functional and spatial requirements.

The Level 11 design response is directly driven by this plant spatial coordination process; accommodating cooling towers, air-source heat pumps, and air handling units, which all require adequate natural ventilation for efficient operations (see Figure 4.11).

The Project design principles (see Section 1.3) reinforce a design response that realises a well-resolved balance of architectural and aesthetic drivers with workplace function and sustainability performance requirements, and addresses the many constraints and challenges posed by an adaptive reuse development.

The Level 11 roof terrrace amenity realises significant co-benefits for the Canva Community by:

- Tuning the space mix needs, operations, and policies to achieve a common culture
- Creating an opportunity to address accessible design, and design for neurodiversity and sensory sensitivity in a workplace context
- Integrating nature-based solutions to create a connection to nature and visual interest in the workplace

Together, the solar canopy and biosolar green roof, and roof terrace landscaping offer an effective design response to reduce the urban heat island effect.

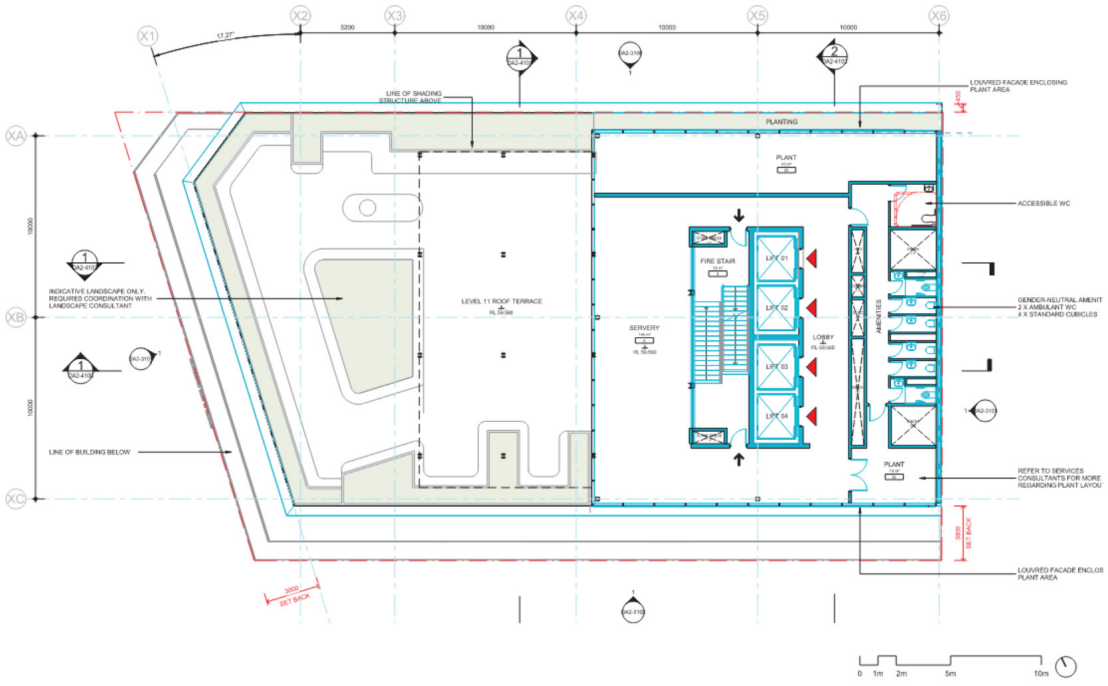


Figure 4.11 Level 11 Plan

4.2.3 On-Site Active Generation Systems

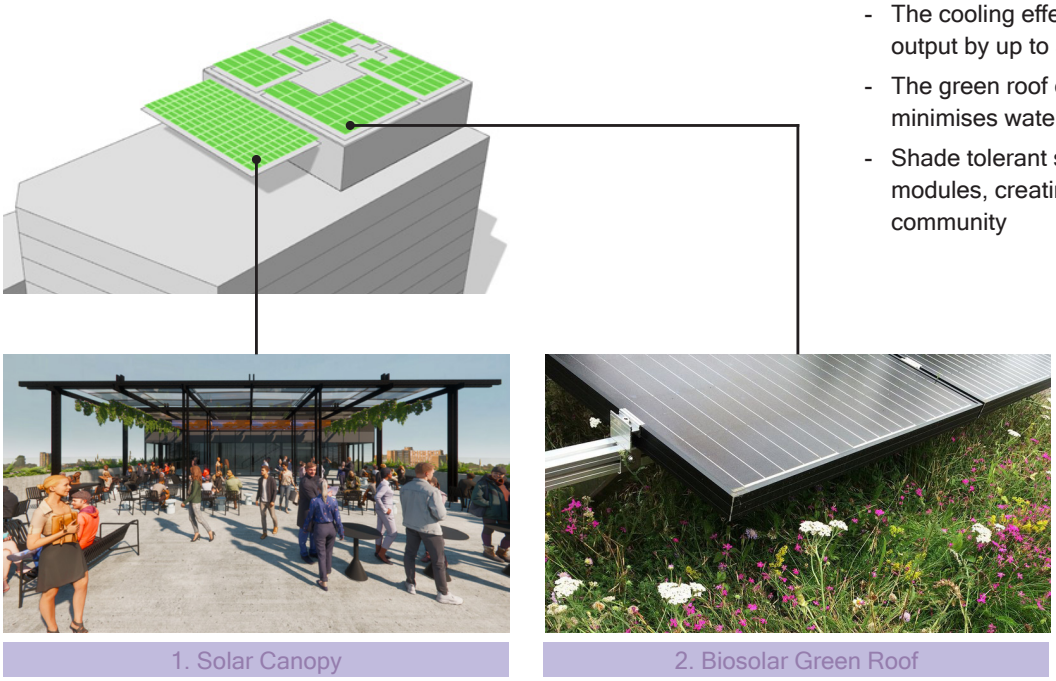
Innovative Technology Applications

The passive and active design response established in Sections 4.2.1 and 4.2.2 delivers an energy efficient outcome whilst balancing architectural and aesthetic drivers with workplace function and sustainability performance requirements. This outcome ensures that on-site active generation systems can be impactful in further reducing energy use.

To be credible, it is recognised that the Project must add 'new' renewable energy generation to collectively support replacing fossil fuel-based energy generation as quickly as possible in response to global heating.

The Project has integrated two (2) innovative solar photovoltaic (PV) system applications (see Figure 4.12):

1. Solar canopy
   - 10 kWp crystalline silicon PV glass
2. Biosolar green roof
   - Roof mounted 40 kWp monocrystalline PV array (flat module configuration)
   - Combines a green roof and PV array into one system
   - The cooling effect of vegetation increases solar output by up to 5%
   - The green roof element acts as ballast, which minimises waterproofing penetrations
   - Shade tolerant species thrive under the PV modules, creating a more diverse flora and fauna community



1. Solar Canopy

2. Biosolar Green Roof

Figure 4.12 Solar PV technology applications

Table 4.4 details the total installed solar PV capacity, annual yield, percentage of annual energy use met by the solar PV array, and margin gained against the 5.5 star NABERS Energy budget.

The established passive and active design response, and on-site active generation systems collectively delivers a 5.5 star performance with a margin of 25%. This acts to further verify that the Project is capable of meeting the 5.5 star NABERS Energy (base building) performance target.

Table 4.4 On-site active generation systems

Solar PV Array	
1. Solar Canopy - capacity [kWp]	10
2. Biosolar Green Roof - capacity [kWp]	40
TOTAL [kWp]	50
Estimated annual yield [kWh/year]	67,500
EUI reduction [kWh/m^2.year NLA]	9.0
Energy use met [%]	16%
Adjusted EUI [kWh/m^2.year NLA]	46.8
Adjusted margin [%]	25%

4.2.4 Upfront Carbon Emissions

Adaptive Reuse

The Project inherently responds to a whole life carbon shift in the built environment - minimising embodied carbon and capturing sequestered carbon through the adaptive reuse and relifing of existing buildings. This 'never demolish' mindset is a core tenet of the whole life net zero ready design response.

Through the sensitive integration of a modern workplace that reinforces the Canva Community, a high proportion of the structure and envelope has been retained in-situ where not impacted by fundamental functional adjustments, including:

- Double brick cavity upstands on Levels 1 - 9 on north, and Levels 2 - 9 on west and south (subject to strengthening and internally lined)
- Party wall on east (subject to strengthening and internally lined)
- Columns and beams
- Suspended floors
- Existing pad footings to be retained and strengthened for re-use, where practicable

New construction works include:

- Relocating the core to the east to maximise daylight access, and high quality external and internal views to the floor plates, and position rooftop plant and equipment to be less visible
- Infilling columns, beams, and suspended floors in the current core location
- Reinforcing the existing structure to accommodate a new core, rooftop terrace, and plant and equipment
- Relocating and upgrading the transformer chamber substation on Sophia Street
- Demolition and reinstatement of the basement ground slab to support infrastructure augmentation
- Introducing wintergardens to the north-west corner of the floor plates on Levels 1 to 9 to create a connection to nature

Target Setting

The scope of upfront carbon considers construction materials [A1-A3] and construction activities [A4-A5] is illustrated in Figure 4.13, which sets our the carbon life cycle of a building.

Research by the London Energy Transformation Initiative (LETI), a network of over 200 built environment professionals, shows that buildings must reduce embodied carbon if we are to achieve credible whole life net zero outcomes. LETI has proposed a 2020-2030 embodied carbon budget of 600 $kgCO2e/m^2$ for commercial office buildings (see Figure 4.14), which is a stringent target given that a typical commercial building can emit over 1,000 $kgCO2e/m^2$ in its construction. This represents a 40% upfront carbon reduction when compared to 'business as usual', which is in line with the Climate Positive Pathway established in the Green Star Buildings tool (see Section 3.3.1).

Figure 4.15 clearly shows how building emissions are front-loaded for new buildings. A deep refurbishment of an existing building that adaptively reuses and retains the structure offers an opportunity to sequester the embodied carbon present in the existing building, thus avoiding new upfront carbon emissions.

The Project will seek to achieve an upfront carbon emissions benchmark performance of not more than 600 $kgCO2e/m^2$ GFA. Upon the planned release of the NABERS Embodied Carbon tool in mid-2024, the Project will seek to target an appropriate rating level.

This assurance framework offers whole life carbon certification for the Project, i.e., certification under both NABERS Energy (operational carbon) + NABERS Embodied Carbon (upfront carbon) (see Table 4.1). In implementing a credible whole life carbon design response, the Project will be perceived by the market as a high quality, high value asset.

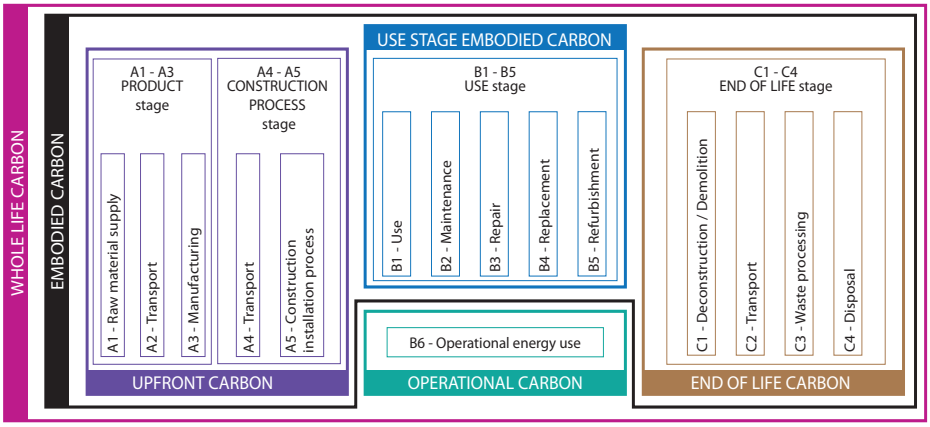


Figure 4.13 Carbon life cycle

Figure 4.14 LETI 2020 - 2030 target

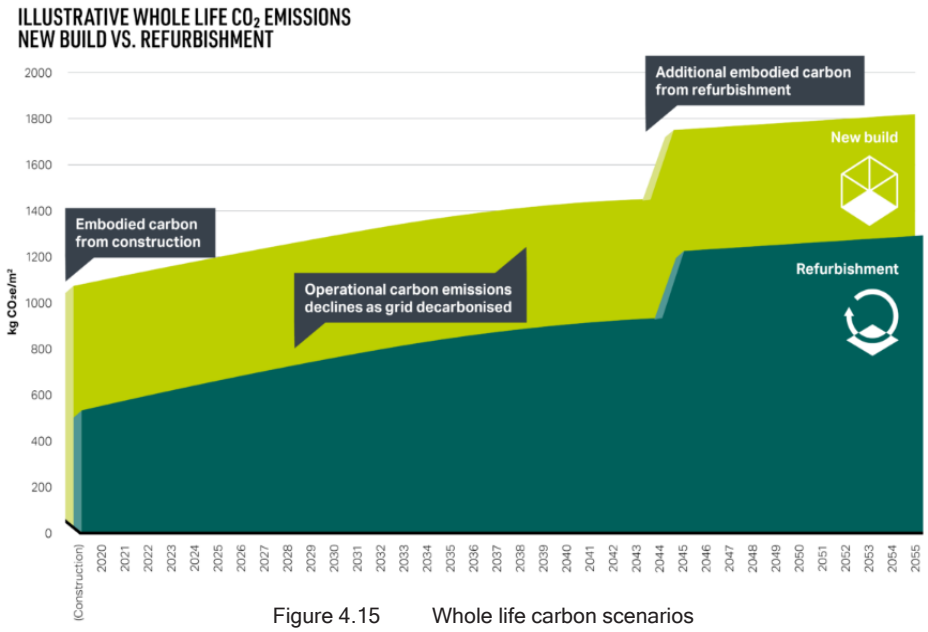


Figure 4.15 Whole life carbon scenarios

Design Response

Achieving credible reductions in upfront carbon when compared to 'business as usual' is a given for the Project.

Through the sensitive integration of a modern workplace that reinforces the Canva Community, a high proportion of the structure and envelope has been retained in-situ where not impacted by fundamental functional adjustments.

Materials substitutions are proposed, including achieving an average cement replacement of 30% across all new concrete and masonry products.

Dematerialisation principles have been adopted to minimise the quantity of construction materials, e.g., exposed ceilings (see Section 4.2.2).

Primary construction materials with product-specific (industry-specific, where not available) Environmental Product Declarations (EPDs) will be procured, where practicable

The supply chain will be engaged to demonstrate third-party certification schemes and independent verification methods for their products, and be pre-approved under the Responsible Products Framework developed by the GBCA, where practicable.

Products with a high recycled content (e.g., reinforcing and structural steel, aluminium, fibre cement sheet, etc.) will be sourced, where practicable.

The following initiatives will be adopted to drive upfront carbon reductions for construction-related activities.

- 20% of high emitting construction equipment will be fossil fuel-free
- Site offices will be all-electric and powered by 100% renewable electricity
- All electricity used by the construction site will be 100% renewable electricity

Predicted Performance

Drawing on the Embodied Emissions Materials Form (or bill of quantities - BOQ) prepared by the Quantity Surveyor in support of DA1 [NSW Sustainable Buildings SEPP], and applying the EPiC Database, Upfront Carbon Emissions calculation guide – interim (developed by the GBCA in coordination with NABERS), and leading embodied carbon research, the GWP [kgCO2e] of the Project has been determined.

Table 4.5 and Figure 4.16 detail the predicted upfront carbon emissions performance of the Project, broken down into typical building elements.

The predicted performance demonstrates a world leading embodied carbon benchmark performance. This acts to verify that the Project is capable of meeting an upfront carbon emissions benchmark performance of not more than 600 kgCO2e/m² GFA required under a credible whole life net zero ready strategy (see Table 4.7).

Table 4.5 Building element breakdown

Building Element	GWP [kgCO2e]
Structure	3,183,070
Envelope	570,631
Interior	143,258
External works	256,032
Building services	1,161,990
Construction	274,236
TOTAL	5,589,218
kgCO2e/m² GFA	432.90

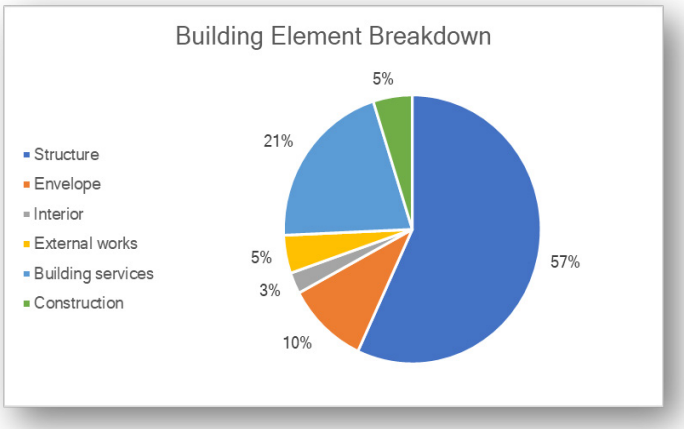


Figure 4.16 Building element breakdown

4.2.5 Whole Life Net Zero Ready

Operational Carbon Performance

The passive and active design response established in Sections 4.2.1 and 4.2.2, and the innovative application of on-site active generation systems outlined in Section 4.2.3, delivers highly enery efficient operations (see Figure 4.17).

With Canva's fossil fuel-free operational commitments (full building electrification; 100% renewable electricity supply), an operational net zero outcome is achievable for the Project (see Table 4.6).

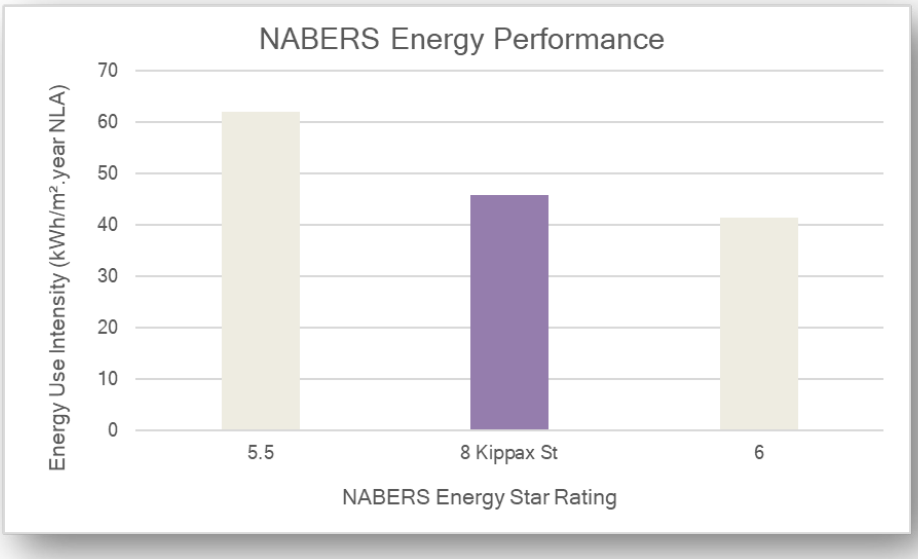


Figure 4.17 NABERS Energy benchmarking

Table 4.6 Summary - Operational Net Zero

Predicted Operational Performance

Estimated annual fossil fuel consumption* [kWh/year]	-
Estimated annual electricity consumption [kWh/year]	350,658
Total estimated annual energy consumption [kWh/m^2.year GFA]	33.0
Estimated annual direct (scope 1) GHG emissions [kgCO_2/year]	-
Estimated annual indirect (scope 2) GHG emissions** [kgCO_2/year]	-
Total estimated annual GHG emissions [kgCO_2/m^2.year GFA]	-

* Full building electrification; no residual fossil fuel-based systems

** 100% renewable electricity supply - Operational Net Zero

Upfront Carbon Performance

The predicted upfront carbon performance represents a world leading design response. This acts to verify that the Project is capable of meeting an upfront carbon emissions benchmark performance of not more than 600 kgCO2e/m^2 GFA required under a credible whole life net zero ready strategy.

Whole Life Carbon Performance

Table 4.7 summarises the design response to deliver a Whole Life Net Zero Ready outcome for the Project. This is aligned with the Climate Positive Pathway (see Section 3.3.1).

Table 4.7 Summary - Whole Life Net Zero Ready

Requirement		Met	Design Response
1.	Highly energy efficient - 20% reduction in energy use	Yes Sections 4.2.1 - 4.2.3	• Established passive and active design response, and on-site active generation systems • Predicted 5.5 star NABERS Energy performance with a margin of not less than 25% (see Figure 4.12) • Operational net zero
2.	Low environmental impact - 20% reduction in upfront carbon	Yes Section 4.2.4 Embodied Emissions Materials Form (by others)	• Established design response for primary construction materials and construction-related activities • NABERS Embodied Carbon performance (equivalent to a benchmark performance of 600 kgCO2e/m^2)
3.	Fossil fuel-free - all-electric + 100% renewable electricity	Yes Section 4.2.2	• Full building electrification, including commercial kitchen use; no natural gas connection • No residual fossil fuel-based systems; no diesel emergency standby generator plant and equipment • 100% renewable electricity supply to all Canva workplaces in Australia (existing and ongoing energy procurement commitment)
4.	Address high impact refrigerant systems	Chillers - Yes Heat pumps - Future ready Section 4.3.4	• HFO refrigerant-based chillers (zero ODP; GWP < 10) • HFC refrigerant-based heat pumps (zero ODP; GWP > 1,000) • HFC refrigerant volume is minimised through the selection of air-to-water heat pump systems, which do not circulate refrigerants • Future ready for phase out of HFC refrigerants by 2035

4.3 Sustainable Offices

Building Strong Communities

The Project utilises the existing nine-storey building façade + two (2) additional storeys incorporating a new function/meeting level and terrace access, with associated advanced building services plant and equipment. Both function/meeting level and roof terrace are for use by Canvanaughts and invited guests.

Ground, accessed from Kippax Street, will connect to Lower Ground, accessed from Sophia Street, visually linking the two streets.

The public domain around the site consists mainly of narrow streets with limited pedestrian access due to narrow footpaths.

A Shared Zone along Terry Street, between Foveaux and Kippax Streets, is proposed by the City of Sydney to address this poor street condition and create a more functional public realm (see Figure 4.18).

The Project offers opportunity to deliver a good working environment to Canva's employees and will encourage the use of public transport due to the site's prime location.

The addition of a function room level and terrace will provide opportunity to invigorate the currently underutilised rooftop space through outdoor, undercover seating areas, with iconic views towards the City and surrounds.

Figure 4.18 A functional public realm

Nutritional Support

Canva's hospitality program offers Canvanaughts breakfast and lunch daily. With fresh food sourced from farms that practice regenerative agriculture, and packaged food and amenities supplied by businesses that are either social enterprises or have a positive social impact, Canva ensures good healthy food availability and nutritional education is weaved into the fabric of the workplace.

Biophilic Design

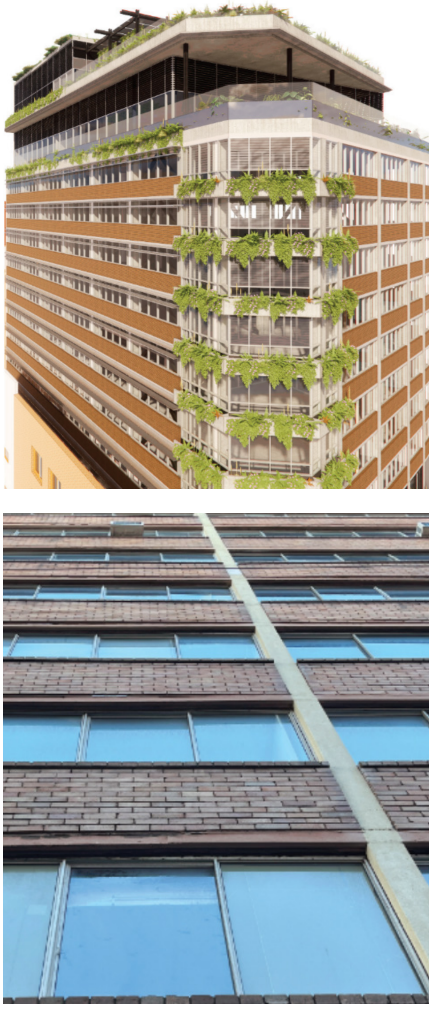


Figure 4.19 Nature-inspired design

A range of nature-inspired design interventions have been identified and fundamentally integrated within the workplace aesthetic and function, including:

- Adaptive reuse of the existing double brick cavity upstands on Levels 1 - 9 on north, and Levels 2 - 9 on west and south (see Figure 4.19). The natural material form and appearance of the brickwork offers a sensory experience that fits within the surrounding context.
- Combining a solar PV array and green roof, a biosolar green roof offers the following benefits:
  - The cooling effect of vegetation increases solar output by up to 5%
  - The green roof element acts as ballast, which minimises waterproofing penetrations
  - Shade tolerant species thrive under the PV modules, creating a more diverse flora and fauna community
- Extensive landscaping to the Level 11 roof terrace is provided to create a welcoming and engaging space that reinforces the Canva Community
- Wintergardens to the north-west corner of the floor plates on Levels 1 to 9 to create a connection to nature; reinforced with significant planters at each level (see Figure 4.19). These naturally ventilated and tempered spaces offers workplace choice and a range of workplace experiences for Canvanaughts.

Overall, through the integration of a solar canopy and biosolar green roof, extensive roof terrace landscaping and wintergardens, the Project offers a leading design response to reduce the urban heat island effect.

4.4 Beyond Net Zero

4.4.1 ESD Principles

The principles of ecologically sustainable development are detailed in Table 4.8. A design excellence response is presented to demonstrate how these ESD principles are incorporated in the design and delivery, and operation of the Project.

Table 4.8 ESD design excellence response

Principle	Design Excellence Response
The precautionary principle - The precautionary principle is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. (3) In applying the precautionary principle, public and private decisions should be guided by - (a) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and (b) an assessment of the risk-weighted consequences of various options.	• Predicted 5.5 star NABERS Energy performance with a margin of not less than 25% • NABERS Embodied Carbon performance (equivalent to a benchmark performance of 600 kgCO2e/m^2) • Full building electrification, including commercial kitchen use; no natural gas connection • No residual fossil fuel-based systems; no diesel emergency standby generator plant and equipment • 100% renewable electricity supply; operational net zero • HFO refrigerant-based chillers (zero ODP; GWP < 10) • HFC refrigerant-based heat pumps (zero ODP; GWP > 1,000) • HFC refrigerant volume is minimised through the selection of air-to-water heat pump systems, which do not circulate refrigerants • Future ready for phase out of HFC refrigerants by 2035
Intergenerational equity - The principle of intergenerational equity is that the present generation should ensure the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations.	• The Project will be a force for good → acting on climate change by going beyond net zero + building social cohesion through the Canva Community • The established passive and active design response, and on-site active generation systems collectively delivers a 5.5 star performance with a margin of 25%. This acts to verify that the Project is capable of meeting the 5.5 star NABERS Energy (base building) performance target. • The established water strategy is capable of meeting the minimum 3 star NABERS Water performance target. Where the commercial kitchen can be excluded (separate public access), the Project will seek to achieve a 4 star NABERS Water performance. • At least 80% of construction and demolition waste will be diverted from landfill. An estimated landfill diversion rate of 50-75% for operational waste will be pursued, based on implementing leading waste and circular practices in operation.

Principle	Design Excellence Response
Conservation of biological diversity and ecological integrity - The conservation of biological diversity and ecological integrity should be a fundamental consideration.	• Canva's aspirations of 'being a force for good", and the principle to "do more with less", have been embraced, with the proposed rooftop additions retaining as much of the existing building as possible and only making pragmatic interventions where it improves functional planning or sustainability initiatives • Biosolar green roof • Extensive landscaping to the Level 11 roof terrace • Wintergardens to the north-west corner of the floor plates on Levels 1 to 9 to create a connection to nature; reinforced with planters at each level • Solar canopy and biosolar green roof, and roof terrace landscaping, offer an effective design response to reduce the urban heat island effect • Integration of green roof and planter beds to re-introduce flora to site whilst providing habitat for insects, birds and other fauna.
Improved valuation, pricing and incentive mechanisms - The principle of improved valuation, pricing and incentive mechanisms is that environmental factors should be included in the valuation of assets and services, such as - (a) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, and (b) the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and (c) established environmental goals should be pursued in the most cost effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.	• A circular economy focus through avoided demolition and extending the lifespan of building components • Dematerialisation principles adopted to minimise the quantity of construction materials • Primary construction materials with product-specific (industry-specific, where not available) Environmental Product Declaration (EPD), where practicable • Manufacturers and suppliers that demonstrate third-party certification schemes and independent verification methods for their products, and are pre-approved under the Responsible Products Framework developed by the Green Building Council of Australia (GBCA), where practicable • Products with a high recycled content (e.g., reinforcing and structural steel, alumimium, etc.), where practicable

4.4.2 Water Use

Predicted Performance

A predicted NABERS Water (see Figure 4.21) assessment has been undertaken that utilised historic water consumption data for Canva's current workplace (110 Kippax St) and included a water balance analysis (see Figure 4.20) of the Project.

The Project will integrate the following water use reduction design response:

1. Reduce air conditioning loads to minimise heat rejection and cooling tower water use
2. Specify fixtures and fittings with the highest WELS star rating available at the time of development
3. Integrate high water efficiency commercial appliances (e.g., for use in the commercial kitchen)
4. Provide an innovative biosolar green roof to minimise landscape irrigation demand
5. Provide a 6 kL rainwater tank to serve the landscape irrigation demand
6. Install fire protection systems that do not expel water during testing
7. Meter all major water uses to provide greater visibility on water use trends and anomalies

The water reduction design response delivers a 3 star and 4 star NABERS Water performance with and without the inclusion of the food preparation water use, respectively. Food preparation water use increases the total water use by approximately 60%.

This acts to verify that the Project is capable of meeting the minimum 3 star NABERS Water performance target. Where the commercial kitchen can be excluded (separate public access), the Project will seek to achieve a 4 star NABERS Water performance.

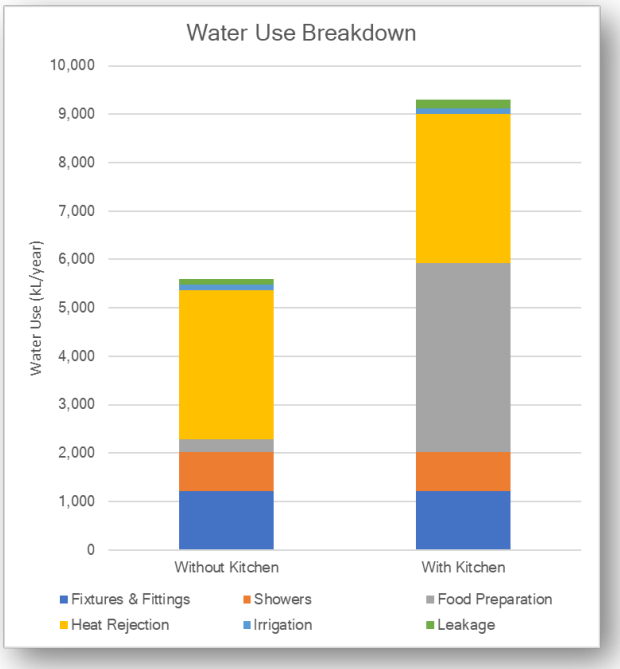


Figure 4.20 Annual water use breakdown

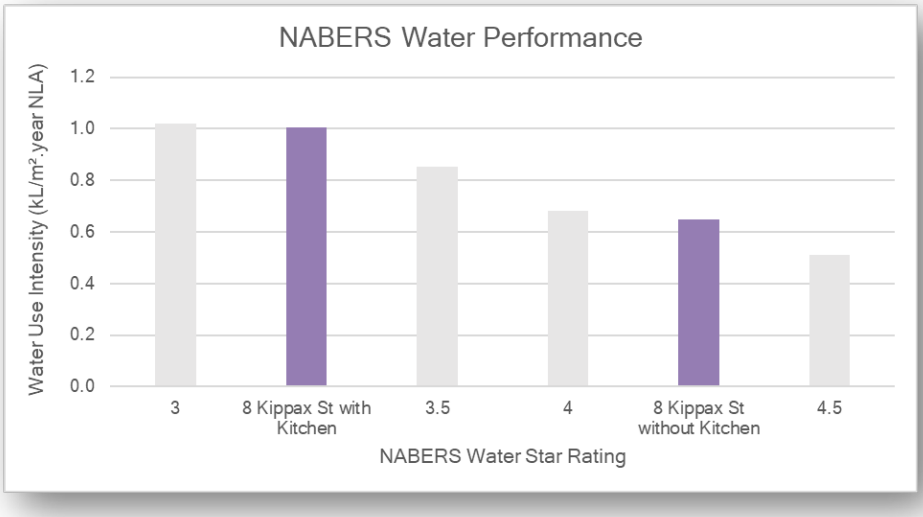


Figure 4.21 NABERS Water benchmarking

4.4.3 Waste Management

Responsible Construction

The Project will:

1. Actively seek to minimise demolition works, where practical
2. Put in place an environmental management system to manage environmental impacts on site during construction
3. Implement an environmental management plan to cover the scope of construction activities
4. Divert at least 80% of construction and demolition waste from landfill
5. Utilise certified waste contractors and certified waste processing facilities to handle construction and demolition waste
6. Implement a construction and demolition waste management plan for the Project

Responsible Operations

The Project will:

1. Be designed for the effective separation and collection of operational waste streams, including general waste, co-mingled recycling, cardboard and paper, and food organics (see Table 4.9)
2. Provide a dedicated and adequately sized waste and resource storage area based on the waste collection frequency
3. Ensure safe and efficient access to waste and resource storage areas for both occupants and waste and resource collection contractors
4. Evaluate a range carboard compactors, balers, or shredders, alongside composting or food macerators, where appropriate. Utilising on-site waste treatment methods can reduce the space required for waste storage, encourage resource separation, and mitigate the environmental impact from operation of the Project.
5. Implement sound building management practices to prevent pollution and reduce litter when handling waste
6. Apply leading commercial kitchen waste practices, including on-site food production/edible planting

Table 4.9 Operational waste streams

Operational Waste Generation

General Waste [L/day]	1,803
Co-mingled Recycling [L/day]	2,231
Cardboard & Paper [L/day]	2,231
Food Organics [L/day]	868
Total [L/day]	7,133
Estimated landfill diversion rate* [%]	75%

* Including food organics

4.4.4 Sustainable Transport

Active Mode Facilities

To encourage staff, workers, and visitors to use active, low carbon, and public transport options instead of private vehicles, the Project has implemented a range of sustainable transport initiatives that will leverage the high quality public transport infrastructure available.

This includes:

1. Based on an estimated 1,043 regular occupants, the end-of-trip (EOT) facilities have been sized to accommodate at least eight (8) showers and 131 lockers [meets and exceeds Sydney DCP 2012, 3.11.3(8)]
2. 65 bicycle parking spaces for regular occupants, and 24 bicycle parking spaces for visitors will be provided (a total of 89 bicycle parking spaces) [meets Sydney DCP 2012, 3.11 Transport & Parking, Table 3.5]
3. The EOT facilities and bicycle parking are accessible, inclusive, and safe [meets Sydney DCP 2012, 3.11.3(3) - (7)]
4. No car parking is provided

Private Vehicle Use Reduction

The Green Star Movement and Place calculator was applied to evaluate the private vehicle use reduction performance of the Project. A proposed mode share was developed in coordination with the Traffic Engineer and compared to a reference mode share [2011 Census data] (see Table 4.10).

Table 4.11 details the performance of the Project against a range of private vehicle use reduction metrics. The vehicle kilometres travelled (VKT) reduction performance significantly exceeds the Green Star reduction target (20%).

Table 4.10 Transport mode share

Mode	Reference	Proposed
Train (incl. metro)	34%	45%
Bus	14%	15%
Ferry	-	-
Tram*	-	5%
Car (driver)	30%	-
Car (passenger)	4%	10%
Motorbike	2%	7%
Bicycle	3%	5%
Walk	13%	13%
Total	100%	100%

* 100% renewable electricity

Table 4.11 Private vehicle use reduction

Private Vehicle Use Reduction	
Active Mode Encouragement [%]	11%
Emissions Reduction [%]	34%
VKT reduction [%]	100%

4.4.5 Materials

Refrigerant Plant & Equipment

The Project will:

1. Space cooling - Install HFO refrigerant-based chillers (zero ODP; GWP < 10)
2. Space and hot water heating - For HFC refrigerant-based heat pumps (zero ODP; GWP > 1,000), minimise the HFC refrigerant volume through the selection of air-to-water heat pump systems, which do not circulate refrigerants (e.g., a variable refrigerant flow - VRF - system)
3. The air conditioning plant selection facilitates any transition required to respond to the planned phase out of HFC refrigerants. Water-based systems can readily integrate alternative technology without having to replace pipework reticulation. This infrastructure has a longer design life than the air-to-water heat pumps.

Responsible Practices

The Project will:

1. Focus on circular economy principles through avoided demolition and extending the lifespan of building components
2. Select paints, carpets, adhesives, sealants, and floor coverings with low or ultra low volatile organic compounds (VOCs)
3. Select engineered wood products with low or no formaldehyde levels
4. Select best-practice PVC products for cables, pipes, flooring, blinds, etc.
5. Achieve an average cement replacement of 30% across all concrete and masonry products
6. Adopt dematerialisation principles to minimise the quantity of construction materials, e.g., exposed ceilings (see Section 4.2.2)
7. Procure primary construction materials with product-specific (industry-specific, where not available) Environmental Product Declaration (EPD), where practicable
8. Engage with manufacturers and suppliers that demonstrate third-party certification schemes and independent verification methods for their products, and are pre-approved under the Responsible Products Framework developed by the GBCA, where practicable
9. Source products with a high recycled content (e.g., reinforcing and structural steel, aluminium, fibre cement sheet, etc.), where practicable

5 Conclude

5.1 Design Response

Table 5.1 summarises the Project's design response to the statutory drivers and market context outlined in Section 2. The Project is capable of achieving:

- Design excellence in sustainable development, in line with the ESD principles of the Sydney LEP 2012
- ESD objectives and controls of the Sydney DCP 2012
- Energy and water standards, and net zero provisions (see Appendix A) of the NSW Sustainable Buildings SEPP
- Embodied emissions reporting requirements of the NSW Sustainable Buildings SEPP (by others)

Table 5.1 Design response

Driver	Requirements	Section	Design Response
Sydney LEP 2012, cl. 6.21C Sydney DCP 2012, Section 3.6 Ecologically Sustainability Development	• Reduce the need for active heating and cooling by incorporating passive design measures • Improve indoor environment quality	• Passive design response - see Section 4.2.1	• Glazing - triple silver neutral DGU; U 3.1; SHGC 0.23; VLT 45% • Shading on north - 1 x 450mm deep horizontal shade fixed at exposed slab edge + 1 x 450mm deep horizontal shade at 450mm separation • Automated internal blinds to dynamically manage glare and solar gain • Wintergardens - connection to nature; actuated glazed louvres to provide effective natural ventilation; 'spill air' provided from the conditioned workplace to temper the space during hot and cold periods (glazed louvres are closed)
Sydney LEP 2012, cl. 6.21C Sydney DCP 2012, Section 3.6 NSW Sustainable Buildings SEPP (Energy standard)	• Target 5.5 star (+25% margin) NABERS Energy (Commitment Agreement) • Reduce operational carbon emissions • Replace intensive carbon power sources with low carbon and renewable energy • Improve indoor environment quality	• NABERS Energy - see Sections 4.2.2 - 4.2.3 and 4.2.5	• 100% electric; no residual fossil fuel-based systems • No car parking • A chilled beam system, including fan coil units (FCUs) to support workplace function • Increased outdoor air supply to the west perimeter air conditioning zones to supplement the cooling capacity of the chilled beam system • Direct outdoor air handling systems with heat recovery and demand control ventilation • High efficiency water-cooled chillers and air-cooled heat pumps for space cooling, and space and hot water heating, respectively • Fully addressable LED lighting system with advanced controls • 50 kWp solar PV array integrated across a solar canopy on the Level 11 roof terrace, and a biosolar green roof above the rooftop plant and equipment • Capable of meeting the 5.5 star NABERS Energy (base building) performance target with a margin of not less than 25%
Sydney DCP 2012, Section 3.6	• Install adequate energy and water metering, and sub-metering to support monitoring and reporting for efficient building operations	• Metering - see Sections 4.2.2 and 4.4.2	• Metering of all major energy and water uses to provide greater visibility on energy and water use trends and anomalies
Sydney DCP 2012, Section 3.6	• Specify non-toxic interior finishes, including paints, adhesives, sealants, carpets, and engineered wood products	• Materials - see Section 4.4.5	• Paints, carpets, adhesives, sealants, and floor coverings with low or ultra low volatile organic compounds (VOCs) • Engineered wood products with low or no formaldehyde levels • Best-practice PVC products for cables, pipes, flooring, blinds, etc.

Driver	Requirements	Section	Design Response
Sydney LEP 2012, cl. 6.21C Sydney DCP 2012, Section 3.6 NSW Sustainable Buildings SEPP (Water standard)	• Develop a robust water strategy, including water efficient fixtures and fittings, and rainwater harvesting and reuse for landscape irrigation • Target minimum 3 star NABERS Water (Agreement to Rate)	• Water use - see Section 4.4.2	• Air conditioning loads reduced to minimise heat rejection and cooling tower water use • Radiant-based mechanical services that can operate at a wider comfort temperature band to reduce cooling water use • Fixtures and fittings with the highest WELS star rating available at the time of development • High water efficiency commercial appliances (e.g., for use in the commercial kitchen) • Innovative biosolar green roof to minimise landscape irrigation demand • 6 kL rainwater tank to serve the landscape irrigation demand • Fire protection systems do not expel water during testing • Capable of meeting the minimum 3 star NABERS Water performance target. Where the commercial kitchen can be excluded (separate public access), the Project will seek to achieve a 4 star NABERS Water performance.
Sydney LEP 2012, cl. 6.21C Sydney DCP 2012, Section 3.11	• Promote active movement and low carbon transport options • Address the pedestrian, cycle, vehicular, and service access and circulation requirements, including the permeability of any pedestrian network	• Sustainable transport - see Section 4.4.4	• EOT facilities sized to accommodate at least eight (8) showers and 131 lockers • 65 bicycle parking spaces for regular occupants, and 24 bicycle parking spaces for visitors (a total of 89 bicycle parking spaces) • EOT facilities and bicycle parking are accessible, inclusive, and safe • No car parking is provided • A VKT reduction of 100% is achieved based on the proposed transport mode share • A Shared Zone along Terry Street, between Foveaux and Kippax Streets, to address the poor street condition and create a more functional public realm • Ground, accessed from Kippax Street, will connect to Lower Ground, accessed from Sophia Street, visually linking the two streets
Sydney LEP 2012, cl. 6.21C Sydney DCP 2012, Section 3.6	• Improve biodiversity • Reduce the cause and impacts of the urban heat island effect • Integrate a high quality landscape design	• Heat resilience - see Sections 4.2.1, 4.2.3, and 4.3	• Biosolar green roof • Extensive landscaping to the Level 11 roof terrace • Wintergardens to the north-west corner of the floor plates on Levels 1 to 9 to create a connection to nature; reinforced with planters at each level • Solar canopy and biosolar green roof, and roof terrace landscaping, offer an effective design response to reduce the urban heat island effect

Driver	Requirements	Section	Design Response
Sydney DCP 2012, Section 3.6	• Procure responsible building materials and products to support a supply chain transformation • Increase the use of products from recycled sources	• Responsible materials practices - see Section 4.4.5	• Focus on circular economy principles through avoided demolition and extending the lifespan of building components • An average cement replacement of 30% across all concrete and masonry products will be targeted • Dematerialisation principles adopted to minimise the quantity of construction materials, e.g., exposed ceilings (see Section 4.2.2) • Procure primary construction materials with product-specific (industry-specific, where not available) Environmental Product Declaration (EPD), where practicable • Engage with manufacturers and suppliers that demonstrate third-party certification schemes and independent verification methods for their products, and are pre-approved under the Responsible Products Framework developed by the GBCA, where practicable • Source products with a high recycled content (e.g., reinforcing and structural steel, aluminium, fibre cement sheet, etc.), where practicable
Sydney DCP 2012, Section 3.6	• Reduce demolition and construction, and operational waste • Reduce the use of resources in development and by development over its effective life • Reduce the impacts from development on the environment	• Responsible construction and operations practices - see Section 4.4.3	• Demolition works minimsed through an adaptive reuse strategy • Environmental management system to manage environmental impacts on site during construction • Environmental management plan to cover the scope of construction activities • At least 80% of construction and demolition waste to be diverted from landfill • Certified waste contractors and certified waste processing facilities to handle construction and demolition waste • Construction and demolition waste management plan • Effective separation and collection of operational waste streams, including general waste, co-mingled recycling, cardboard and paper, and food organics • Dedicated and adequately sized waste and resource storage area based on the waste collection frequency • Safe and efficient access to waste and resource storage areas for both occupants and waste and resource collection contractors • Carboard compactors, balers, or shredders, alongside composting or food macerators, where appropriate • Building management practices to prevent pollution and reduce litter when handling waste • Apply leading commercial kitchen waste practices, including on-site food production/edible planting

Appendix A Net Zero Statement

Details and Overview

1. 8-24 Kippax Street, Surry Hills, comprises a basement, lower ground, ground, and nine (9) levels of commercial office space totalling approximately 8,500m² NLA
2. The Project will involve undertaking a comprehensive refurbishment (adaptive reuse) and fit out of the existing building

On-Site Fossil Fuel Usage

1. The Project has been designed to be fossil fuel-free and net zero in operations
2. Full building electrification, including commercial kitchen use; no natural gas connection
3. No residual fossil fuel-based systems; no diesel emergency standby generator plant and equipment
4. 100% renewable electricity supply to all Canva workplaces in Australia (existing and ongoing energy procurement commitment)
5. Operational net zero
6. Evidence includes:
   a. ESD Report (DA1), Sections 4.2.2 and 4.2.5

Energy Efficiency

1. The Project is highly energy efficient; establishing a passive and active design response that is capable of achieving a 5.5 star NABERS Energy performance with a margin of 10%.
2. Evidence includes:
   a. ESD Report (DA1), Sections 4.2.1 and 4.2.2

Renewable Energy Generation

1. The Project will integrate a 50 kWp solar PV array across a solar canopy on the Level 10 roof terrace, and a biosolar green roof above the Level 10 plant and equipment
2. The solar PV array will meet 16% of the annual energy use; the solar PV assists in demonstrating that the Project is capable of achieving a 5.5 star NABERS Energy performance with a margin of not less than 25%
3. Evidence includes:
   a. ESD Report (DA1), Section 4.2.2

Estimated Energy Use and Operational Carbon

Table A.1 Summary - Operational Net Zero

Predicted Operational Performance

Estimated annual fossil fuel consumption* [kWh/year]	-
Estimated annual electricity consumption [kWh/year]	350,658
Total estimated annual energy consumption [kWh/m².year GFA]	33.0
Estimated annual scope 1 and 2 GHG emissions** [$kgCO_2$/year]	-
Estimated annual scope 3 GHG emissions [$kgCO_2$/year]	21,105
Total estimated annual GHG emissions [$kgCO_2$/m².year GFA]	2.0

* Full building electrification; no residual fossil fuel-based systems

** 100% renewable electricity supply

This Net Zero Statement has prepared and certified by Alex Kobler, Director, Sustainability at E-LAB Consulting (CPEng) (NER) (RPEQ). With almost two decades of experience in driving sustainable engineering in the built environment, Alex has been successful in leading several of Sydney's most sustainable and recognisable building development projects, including WSU Bankstown, Younghusband Woolstore Redevelopment, and Liverpool City Centre.

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