

New Health Research Facility 100 Botany Road Alexandria

Ecologically Sustainable Design Report

Kurraba Group Pty Ltd

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Acknowledgement of Country

In the spirit of reconciliation, Cundall acknowledges the Traditional Owners and Custodians of the Country of all locations where we live and work.

We acknowledge and respect their stories, traditions, and living cultures, including the complex interconnections between human, spiritual and natural systems, custodianship of land, and managing resources to continue to meet the needs of future generations.

We pay our respects to the Elders past, present and future, and recognise their unique connection to lands, waters, sky, and winds. We would also like to extend that respect to all First Nations People.

Project title	New Health Research Facility 100 Botany Road Alexandria	Job Number
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Executive Summary

This Sustainability Report has been prepared on behalf of the Kurraba Group (the Proponent) by Cundall. It is submitted to the Department of Planning, Housing and Infrastructure (DPHI) in support of a State Significant Development Application (SSDA) SSD-63067458 for the construction of a new health research facility located at 74-108 Botany Road and 86-100 Wyndham Street, Alexandria (herein referred to as 100 Botany Road or the site).

This report provides an assessment of development-appropriate measures that the project will implement in design and operation to minimise its negative environmental impact.

A project-specific Sustainability Strategy has been developed which responds to the SEARS (dated 16/01/2024), the United Nations Sustainable Development Goals (UNSDGs), and world-leading life science exemplar projects.

The sustainability strategy provides an overarching framework for all sustainability aspects of the development and focuses on the following key themes:



Carbon & Energy



Circular Economy



Nature and Water



Healthy Environments



Community & Place



Resilience

The project will be designed and constructed to achieve the following sustainability outcomes:

- An energy-efficient facility, which avoids the use of fossil-fuels where possible, reduces upfront carbon, and sources 100% of its energy from renewable sources.
- Reduce potable water consumption and minimise water pollution through water sensitive urban design (WSUD).
- Support active and public transport networks and emerging alternatives to fossil-fuel powered transport.
- Improve biodiversity on-site, providing new green spaces comprised primarily of indigenous plantings which support native wildlife.
- Pursue more responsible materials, including those with third-party certifications or a proportion of recycled / reused content.
- Provide a healthy, collaborative workplace which is safe and equitable, and which encourages social engagement & inclusivity.
- Increase resilience to shocks and stresses in particular with regards to a changing climate.
- Nurture local identity and heritage and embed First Nations knowledge and experience.
- Reduce waste to landfill in construction and operation.

The project is targeting independent third-party certification using the Green Star Buildings v1 rating tool, which is widely recognised in Australia as benchmarking national excellence:

Progress against the proposed initiatives will be tracked throughout the design and construction of the project, and measurable outcomes reported.

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1.0 Introduction

1.1 Introduction

This Ecologically Sustainable Design Report has been prepared on behalf of the Kurraba Group (the Proponent) by Cundall. It is submitted to the Department of Planning, Housing and Infrastructure (DHPI) in support of a State Development Application (SSDA) SSD-63067458 for the construction of a new health research facility located at 74-108 Botany Road and 86-100 Wyndham Street, Alexandria (herein referred to as 100 Botany Road or the site).

The purpose of the report is to provide an assessment of development-appropriate measures and summarise the sustainability strategy, objectives and initiatives proposed for the project. Once approved, these initiatives will form the basis of the project's sustainability strategy to be incorporated into the design documentation for construction and operation.

1.2 About Kurraba Group

Kurraba Group (Kurraba) is the Proponent of the SSDA for the proposed new health research facility. Kurraba's sole aim is to be Australia and New Zealand's leading and trusted life science focussed developer. Kurraba's investment portfolio focuses on innovation, future focused real estate, as demanded by the health and life science sector.

1.3 Project Description

The site is located at 74-108 Botany Road and 86-100 Wyndham Street, Alexandria (commonly referred to as 100 Botany Road). The site is made up of six (6) different allotments and has a total approximate area of 5,350.6m². The following lots make up the site:

- Lot 2 DP 136012
- Lot 11 DP 219505
- Lot 11 DP 135914
- Lot 2 DP 659166
- Lot 1 DP 510091
- Lot 3 DP 1146614

The site has a frontage to Botany Road to the east and Wyndham Street to the west. Part of Wyndham Lane runs through the middle of the site.

The site forms part of the recently rezoned Botany Road Precinct, which will be transformed into a vibrant mixed-use precinct that will accommodate employment growth in the Redfern-Waterloo area. The site is opposite the Waterloo Metro Station and its future over station development which is currently under construction.

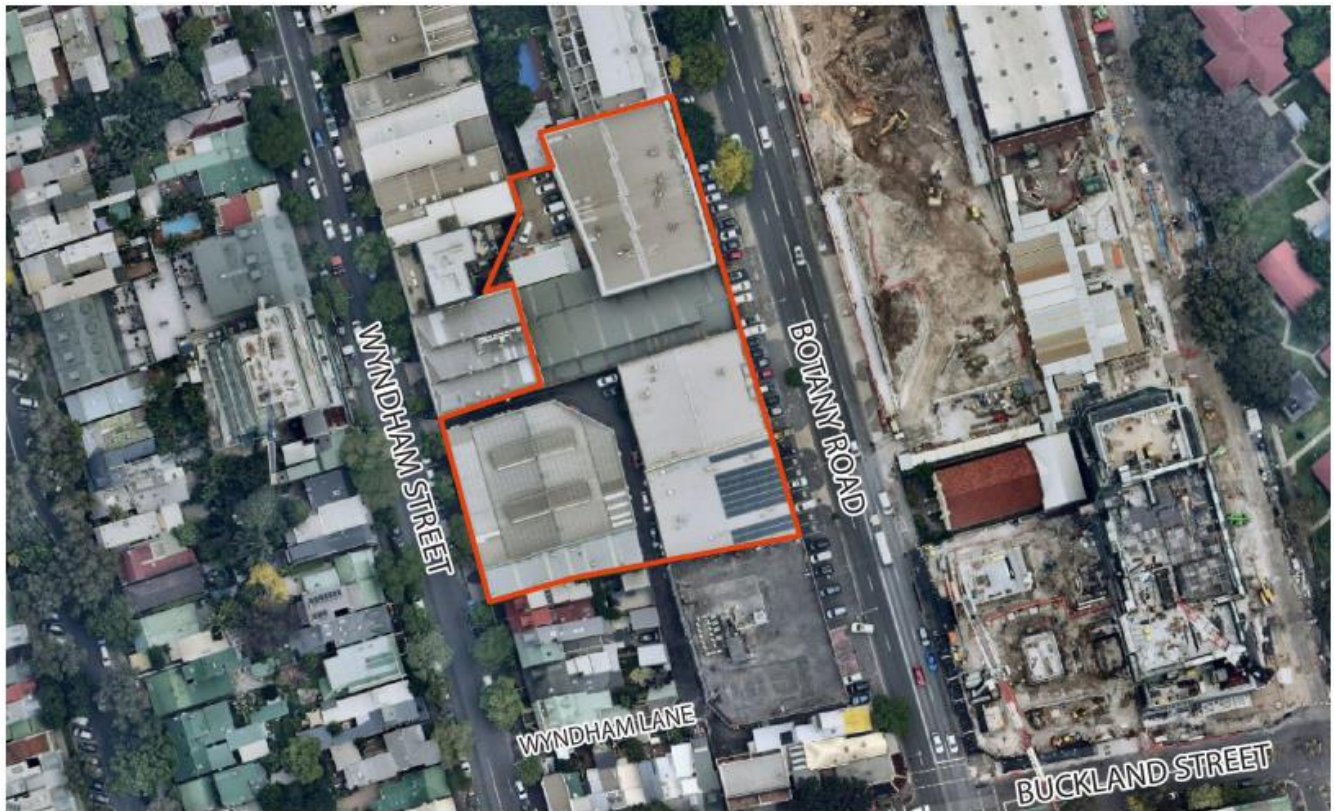


Figure 1: Aerial Photograph of Site, source: Neamap Ethos Urban

1.4 Proposed development

The proposed development will seek consent for the redevelopment of 100 Botany Road for a new health research facility. Specifically, the SSDA seek approval for:

- Demolition of all existing buildings, site preparation and remediation works.
- Bulk excavation to create two (2) levels of basement with access from Wyndham Street, including allowance for a below ground Proton Therapy Cancer Treatment Centre, car parking, loading and services.
- Construction and use of two (2) new health research buildings. One (1) building is proposed along Botany Road which has a stepped built form between seven (7) storeys to the south and eleven (11) storeys to the north. One (1) building is proposed along Wyndham Street which is five (5) storeys. The two (2) buildings will include the following:
 - Ground floor lobby and retail uses fronting Botany Road and Wyndham Street.
 - Proton Therapy patient lobby from Wyndham Street.
 - Various laboratories, write up areas and office spaces.
 - A series of outdoor landscaped terraces within the Botany Road building.
 - One (1) rooftop plant level on each building.
- Landscaping and public domain works including:
 - Construction and extension of Wyndham Lane as a shared laneway.
 - Construction of a pedestrian network including two (2) pathways from Botany Road and an east-west through-site link.
- Extension and augmentation of services and utilities to the development, as required.

Refer to the Environmental Impact Statement for a detailed description of the proposed development.

1.5 Secretary's Environmental Assessment Requirements (SEARs)

In accordance with Section 4.39 of the *Environmental Planning & Assessment & Assessment Act 1979* (EP&A Act), Secretary's Environmental Assessment Requirements (SEARs) for SSD-63067458 were issued on 16 January 2024. This report has been prepared to respond to the relevant issued SEARs, as set out in the table below.

Table 1: SEARs Requirements

SEARs Requirements	Response / Mitigation Measure
Identify how ESD principles (as defined in Clause 193 of the Environmental Planning and Assessment Regulations 2021) are incorporated in the design and ongoing operation of the development.	Refer Section 3 – Sustainability Strategy
Demonstrate how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards.	Refer Section 3.0 – Sustainability Strategy and Section 4.0 Certification
Demonstrate how the development minimises greenhouse gas emissions (reflecting the Government's goal of net zero emissions by 2050) and consumption of energy, water (including water sensitive urban design) and material resources.	Refer Section 3.0 – Sustainability Strategy and Appendix A: Net Zero Carbon Statement
- In Chapter 3 of SEPP (Sustainable Buildings) 2022 - Demonstrate how the development has been designed to address the provisions set out in Chapter 3.2(1) - Provide a NABERS Embodied Emissions Material Form to disclose the amount of embodied emissions attributed to the development in accordance with section 35B of the EP&A Regulations. - Provide a net zero statement (as defined in section 35C of the EP&A Regulations).	Refer Section 3.0 – Sustainability Strategy, Appendix A: Net Zero Carbon Statement, and Embodied Emissions Material Form

2.0 Regulatory Compliance

In addition to the Secretary's Environmental Assessment Requirements outlined in *Table 1*, this section outlines how the project will respond to other relevant regulatory requirements.

2.1 Ecologically Sustainable Development

Table 2 below details how Ecologically Sustainable Development (ESD) principles (as defined in Clause 193 of the Environmental Planning and Assessment Regulations 2021), have been addressed by the project:

Table 2: Incorporation of ESD principles in line with Clause 193 of the Environmental Planning and Assessment Regulations 2021

EP&A Regulation 2000 Clause	Response
5(a) Precautionary principle, namely, 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. In the application of the precautionary principle, public and private decisions should be guided by: - Careful evaluation to avoid, wherever practicable, serious, or irreversible damage to the environment, and - An assessment of the risk-weighted consequences of various options.	The project will incorporate a range of sustainability initiatives to minimise its ecological footprint and reduce resource use. A climate change risk assessment will be undertaken to determine the most appropriate response to predicted climate changes, and to maximise the resilience of the precinct for occupants and the local community. No significant impacts on biodiversity values are anticipated due to the site being located within an existing highly developed urban environment, and no vegetation clearing is proposed. Refer Section 3.0 – Sustainability Strategy for further details.
5(b) Inter-generational equity, namely, that the present generation should ensure that the health, diversity, and productivity of the environment are maintained or enhanced for the benefit of future generations.	As above.
5(c) Conservation of biological diversity and ecological integrity, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration.	Existing on-site biodiversity has been assessed and it has been determined that the development of the subject site will not adversely affect biodiversity at the site. Biodiversity at the subject site will be improved, with the incorporation of on-site landscaping with indigenous, low water use, drought resistant plant species. Water sensitive urban design strategies will be incorporated to manage peak runoff quantities and minimise stormwater pollution.

EP&A Regulation 2000 Clause	Response
5(d) Improved valuation, pricing, and incentive mechanisms, namely, that environmental factors should be included in the valuation of assets and services, such as: ▪ Polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance, or abatement. ▪ The users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste. ▪ Environmental goals, having been established, 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.	Sustainability initiatives have been evaluated in terms of value and cost-effectiveness. Industry recognised certification will enable benchmarking against best practice sustainable design.

2.2 City of Sydney Council DCP 2012 Section 3.6

2.2.1 General Objectives

The project will implement sustainable design principles in the design, construction, and operation of the buildings, following the general objectives and controls listed in the Table 3:

Table 3: City of Sydney Council DCP General Objectives and Response.

General Objectives	Response
(a) Apply principles and processes that contribute to ecologically sustainable development (ESD).	The project has incorporated a variety of ESD principles which are outlined in Section 3.0 – Sustainability Strategy and Section 4.0 Certification.
(b) Reduce the impacts from development on the environment.	Refer Section 3.0 – Sustainability Strategy and Appendix A Net Zero Carbon Statement.
(c) Reduce the use of resources in development and by development over its effective life.	Refer Section 3.1.2 – Circular Economy
(d) Reduce the cause and impacts of the urban heat island effect.	Refer Section 3.1.6 Resilience
(e) Increase the resilience of development to the effects of climate change.	Refer Section 3.1.1 Climate Action
(f) Ensure that greenhouse gas emissions will be reduced.	Refer Section 3.1.1 Climate Action and Appendix A: Net Zero Carbon Statement
(g) Replace intensive carbon power sources with low carbon and renewable energy.	Refer Section 3.1.1 Climate Action and Appendix A: Net Zero Carbon Statement
(h) Reduce the use of potable water.	Refer Section 3.1.3 Nature and Water
(i) Ensure that development can adapt to climate change.	Refer Section 3.1.6 Resilience
(j) Ensure that demolition, construction, and operational waste will be reduced.	Refer Section 3.1.2 Circular Economy
(k) Increase the use of products from recycled sources.	Refer Section 3.1.2 Circular Economy
(l) Improve indoor environmental quality.	Refer Section 3.1.4 Healthy Environments
(m) Reduce the environmental impact from building materials through reduction, re-use and recycling of materials, resources and building components.	Refer Section 3.1.2 Circular Economy
(n) Improve biodiversity.	Refer Section 3.1.3 Nature and Water

2.2.2 Energy efficiency in non-residential developments

The provisions shown in Table 4 outline the energy efficiency provisions the project will comply with.

Table 4: City of Sydney Council DCP energy efficiency objectives

General Objectives	Response
(1) Development is to be designed and constructed to reduce the need for active heating and cooling by incorporating passive design measures including design, location and thermal properties of glazing, natural ventilation, appropriate use of thermal mass and external shading, including vegetation.	Building envelope performance will meet requirements of NCC 2022 to minimise heating and cooling energy, and include insulation, shading, and performance glazing. Opportunities for natural ventilation will be investigated.
(2) Lighting for streets, parks and any other public domain spaces provided as part of a development should be energy efficient lighting such as LED lighting.	The proposed lighting power densities and efficiency measures will meet or exceed the requirements of NCC 2022.
(3) In multi-tenant or strata-subdivided developments, electricity sub-metering is to be provided for lighting, air-conditioning and power within each tenancy or strata unit. Locations are to be identified on the development plans.	Electrical submetering will be provided for major energy uses (>10,000 kWh/annum).
(4) Electricity sub-metering is to be provided for significant end uses that will consume more than 10,000 kWh/annum.	Electrical submetering will be provided for major energy uses (>10,000 kWh/annum).
(5) Car parking areas are to be designed and constructed so that electric vehicle charging points can be installed at a later time.	The proposed design will allow for provisions to install future electric vehicle charging ports.
(6) Where appropriate and possible, the development of the public domain should include electric vehicle charging points or the capacity for electric vehicle charging points to be installed at a later time.	Project scope does not include public domain car parking – not applicable.
(7) For the purposes of clause 7.33 'Sustainability requirements for certain large commercial development' in Sydney LEP, development must be designed to meet the relevant performance standards in Table 2.4. 'Energy performance standards' in order to optimise energy efficiency and the use of renewable energy generated on-site, and: a. applications are to include an Energy Assessment Report prepared by a suitably qualified person, who is also a NABERS accredited assessor, demonstrating that the building is capable of achieving the performance standards identified in Table 2.4: Energy performance standards. b. where development proposes to achieve the energy intensity performance standard (kWh/yr/m²), an assessor from the NABERS Independent Design Review Panel is to formally verify energy modelling. c. n/a	The development is targeting 'Credit Achievement' in the Green Star Buildings rating tool, Credit 22: Energy Use, in line with the City of Sydney DCP 2012 Section 3.6.1, Table 3.5 - Energy Performance Standards. An extract of this table is provided in Table 5 overleaf.

General Objectives	Response
For the purposes of clause 7.33 (2) (b) in Sydney LEP, development is considered to have net zero emissions from energy used on-site where:	
a. Development consumes no more total electricity other than is provided by: i. renewable energy generated on-site, and ii. renewable energy procured from off-site sources for a period of at least 5 years Fuels used for emergency back-up generation are excluded.	The project proposed initiatives include: ▪ Providing onsite energy generation through rooftop solar photovoltaics (PV), exact sizing to be determined during detailed design. ▪ Energy that is not generated on-site will be procured from 100% renewable energy sources. ▪ Backup diesel generators will be used for emergency power.
Note: For office premises and retail premises, relevant energy use is the base building.	
Note: Renewable energy procured from off-site sources may be demonstrated by GreenPower certified power plans, power purchase agreements with renewable energy generators or retiring large-scale generation certificates.	

Table 5: Extract from City of Sydney DCP 2012 Section 3.6 - Energy Performance Standards Table 3.5

Table 3.5: Energy performance standards

Proposed and use	Energy performance standards	
	Applications submitted between 1 October 2023 – 31 December 2025	Applications submitted from 1 January 2026 onwards
Office (base building)	- maximum 45 kWh/yr/m² of Gross Floor Area (GFA), or - 5.5 Star NABERS Energy Commitment Agreement (CA) + 25%, or - certified Green Star Buildings rating with a "credit achievement" in Credit 22: Energy Use, or - equivalent	- maximum 45 kWh/yr/m² of GFA, or - 5.5 Star NABERS Energy CA + 25%, or - certified Green Star Buildings rating with a "credit achievement" in Credit 22: Energy Use, or - equivalent and - renewable energy procurement equivalent to "net zero emissions from energy used on-site" or a maximum of 45 kWh/yr/m² of GFA

2.3 State Environmental Planning Policy (Sustainable Buildings) 2022

The State Environmental Planning Policy (SEPP) 2022, also known as the Sustainable Buildings SEPP, sets out targets and requirements for new development to deliver more positive environmental outcomes. Responses to the SEPP requirements are outlined in the following sections:

2.3.1 C.2 General Sustainability Requirements

Table 6: Response to Sustainable Buildings SEPP 2022 – General sustainability requirements

Criteria	Response
Minimise waste from associated demolition and construction, including choice and reuse of building materials	A Construction Waste Management Plan will be prepared including a minimum target of 80% of demolition / construction waste diverted from landfill (via reuse or recycling). Lower carbon construction materials will be investigated.
Reduce peak demand for electricity	Building services will be designed to be as efficient as possible, with controls and monitoring.
Generate and store renewable energy	Renewable energy will be generated on-site from a rooftop solar PV system. Space has been allowed in the design for future energy storage technologies.
Reduce reliance on artificial lighting and mechanical heating and cooling through passive design	The building will incorporate insulation and performance glazing to comply with Section J of the NCC 2022, reducing reliance on mechanical heating and cooling. Daylight availability will be maximised to reduce reliance on artificial lighting.
Meter and monitor energy consumption	Energy consumption will be metered and monitored.
Minimise consumption of potable water	Potable water consumption will be reduced through the specification of efficient fittings, fixtures, and landscaping, as well as harvesting of rainwater for use in non-potable demands. Major water uses will be separately metered and monitored.

Refer Section 3 for further details.

2.3.2 C.4 Net Zero Carbon Statement

A Net Zero Carbon Statement has been provided in Appendix A. Table 7 provides a summary of the project response.

Table 7: Response to Sustainable Buildings SEPP 2022- Net Zero Provisions

Criteria	Response
Estimate scope 1 and 2 emissions up to 2025	Scope 1 & 2 emissions have been estimated. Please refer Appendix A.
Where fossil-fuel dependant building systems are used, confirm provision of enough physical space, infrastructure, ventilation, and electrical capacity for the development to operate without fossil-fuel by 2035	The project will operate without fossil fuels by 2035. In base building operation, there are no fossil fuels used in the building from Day 1, with the exception of emergency back-up power systems. Emergency back-up power systems will transition to fossil-fuel free systems by 2035, either via fuel-

Criteria	Response
	switching or conversion to alternative technologies. Space has been allocated for future energy storage systems.
Provide information about on-site renewables, passive design, and other infrastructure (such as chilled beams) that improve energy performance	On-site renewable energy generation will be provided in the form of a PV energy generation system. This system will be sized based on suitable available roof space. Other energy efficiency initiatives include: ▪ The project has undertaken façade optimisation to optimise thermal and energy performance of the building. ▪ Building services will be designed to operate efficiently, including HVAC, lighting, DHW, and vertical transportation. ▪ Hot water heating will be via air-cooled heat pumps (gas boilers not used). ▪ Building 1 and Building 2 will incorporate HFO variable frequency drive centrifugal water-cooled chillers for central cooling (heat rejection shall be via cooling towers). ▪ Procurement of renewable electricity. Refer to 3.1.1 for details.

2.3.3 C.6 Embodied Emissions

Under the Sustainable Buildings SEPP, the project is required to disclose the quantities of key materials (super-structure, substructure, façade, etc.), and describe how embodied emissions have been minimised. Please refer Embodied Emissions Materials Form.

2.4 National Construction Code Section J

The project will comply with the National Construction Code (NCC) Section J requirements for energy efficiency. A preliminary assessment of the building fabric against the Deemed-To-Satisfy provisions of Section J has been undertaken to establish high-level performance requirements to be considered for the building envelope during detailed design.

The project's conditioned occupied spaces will comply with NCC 2022 Section J energy efficiency requirements including:

- Energy efficiency performance requirements (J1)
- Energy efficiency (J2)
- Building fabric (J4)
- Building sealing (J5)
- Air-conditioning and ventilation systems (J66)
- Artificial lighting and power (J7)
- Heated water supply (J8)
- Energy monitoring and on-site distributed energy resource(J9)

3.0 Sustainability Strategy

A broad range of initiatives are proposed to deliver the sustainability outcomes and create positive environmental and social benefits throughout design, delivery, and operation. The initiatives will be consistent with or exceed, best practice in Australia, and will contribute towards achieving the sustainability certification targets. To deliver on the sustainability outcomes for the project, the design, construction, and operation of the project will be guided by a Sustainability Strategy which will provide an overarching brief for all sustainability aspects of the development. The following section outlines the proposed initiatives for the project.



3.1.1 Climate Action

The following pathway to net zero carbon will be used to guide the project design:

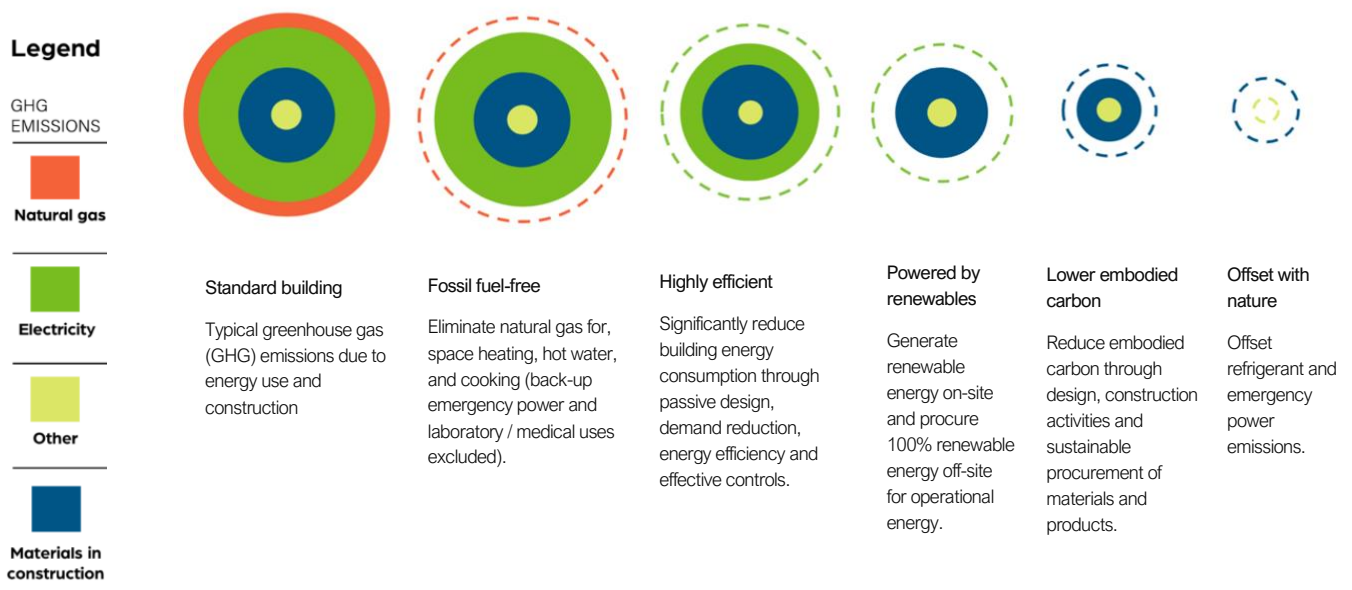


Figure 2: Pathway to net zero carbon

Initiatives to reduce energy use and greenhouse gas emissions from the project are outlined in Table 8 overleaf.

Table 8: Climate Action Initiatives

Strategy	Initiatives
Fossil fuel free	No gas to be supplied to the base building except for medical / laboratory use and backup emergency power systems.
Highly efficient: Passive Design	- Efficient façade design, including high-performance glazing, insulation, and sealing. - Opportunities for natural ventilation will be investigated during detailed design.
Highly efficient: Active Design	- Minimum operational energy reduction of 20%. - Zoning of spaces to capitalise on the ventilation, thermal needs, and usage of the building. - High-performance building services and controls strategy. - Submetering & monitoring of all major energy and water uses.
Powered by renewables	- Maximise on-site renewable energy generation (PV) on available rooftop locations. - Offsite electricity to be sourced from 100% renewable energy sources.
Lower embodied carbon	Reduce upfront carbon emissions through efficient design and procurement, including lower carbon concrete.
Offset with nature	Offset emissions from refrigerant use and back-up emergency power systems using approved nature-based offsets.
Transport	- Provide EV charging to 5% of car parking spaces. - Provide infrastructure for future installation of 20% EV charging points (Type 2 chargers)



3.1.2 Circular Economy

A circular economy keeps resources and materials in use for as long as possible at their highest value. It maximises their usability and then recovers, regenerates and/or repurposes them in a closed loop. The principles of a circular economy require a focus on responsible material procurement and waste minimisation in design, construction, operation, and end-of life. The following initiatives will be investigated:

Table 9: Circular Economy Initiatives

Strategy	Initiatives
Responsible Design	- Consider prefabricated and modular products methods to reduce material use and waste - Design for flexibility and disassembly. - Dematerialisation, including shell and core delivery and optimised structural design.
Use responsible products	- Pursue products with third-party certification such as Environmental Product Declarations (EPDs). - Pursue materials which are reused, recycled, rapidly renewable, non-toxic, durable, and vetted for modern slavery.

Strategy	Initiatives
Construction	Divert at least 80% of construction and demolition waste from landfill.
Fitout	Design for tenant flexibility and modularity.
Operation	Provide adequate space for separation and storage of different waste streams as appropriate.



3.1.3 Nature and Water

The project will improve biodiversity on-site, minimise stormwater runoff quantities and pollution, and implement strategies to minimise potable water usage.

Table 10: Nature & Water Initiatives

Strategy	Initiatives
Improve biodiversity on-site compared to pre-development conditions	- Landscaping Designed for Country. - Reintroduce native vegetation to the site, including landscaping species that nurture and attract local fauna where appropriate.
Minimise potable water demands	- Water-efficient fittings, fixtures & appliances. - Efficient HVAC systems to reduce demand from water-based heat rejection. - Harvest and reuse rainwater for non-potable purposes. - Metering and monitoring of major water uses and supplies. - Low water use, drought resistant, landscaping with sub-surface drip irrigation where appropriate.
Minimise stormwater pollution and peak runoff through Water sensitive urban design (WSUD)	- Adopt water sensitive urban design principles to reduce runoff quantities and limit stormwater pollution levels. - Incorporate pervious surfaces where practical, to maximise stormwater infiltration.



3.1.4 Healthy Environments

The project will deliver high-quality indoor environments for staff and visitors, while improving the amenity of the precinct and promoting healthy, connected, and active living.

Table 11: Healthy Environment Initiatives

Strategy	Initiatives
Provide excellent indoor environment quality	- Façade and building services designed to maximise visual, acoustic, and thermal comfort for occupants. - Specify less toxic finishes including low VOC paints and low formaldehyde engineered wood products. - Incorporate biophilic design principles including natural light, views, shapes, and materials. - Maximise daylight where appropriate, with suitable glare control. - Investigate opportunities for natural ventilation.
Promote healthy living, activity & amenity	- Design to promote activity, including end-of-trip facilities and prominent, attractive stairs. - Provide accessible amenity spaces with good air quality, daylight, views, and landscaping.



3.1.5 Community and Place

A key driver of the proposed development is to deliver a precinct which positively contributes to the local community, while celebrating heritage and inclusiveness.

Table 12: Community & Place Initiatives

Strategy	Initiatives
Country-led Design	- Country-led Design, led by a First Nations-Owned consultant. - Implement design decisions that are reflective of First Nations knowledge of the land. - Engage with First Nations stakeholder groups to understand the cultural values, landscape elements of significance and their interaction with each other and adjacent areas¹.
Work towards zero modern slavery in the supply chain	Pursue products/materials and labour with transparent, ethical supply chains.
Respect and develop local community during construction and operation	- Undertake rigorous community engagement and reporting. - Investigate partnerships with local educational institutions.
Reduced impact on local air quality or noise quality	Operate in line with approved Environmental Management Plans.
Design for Safety	Apply principles of Crime Prevention through Environmental Design (CPTED).
Inclusive design	Design for a diverse range of needs.



3.1.6 Resilience

The project will be designed to maximise resilience to acute shocks and adaptability to chronic stresses.

- A stress is a long-term pressure that reduces the ability of the building to operate in an ideal manner.
- A shock is a short-term, sudden, impact that causes the operations of the building to deviate significantly from its ideal.

Resilience will be considered from a building, precinct, operational, and community perspective.

Table 13: Resilience Initiatives

Strategy	Initiatives
Climate change risk resilience	▪ Consider impacts of climate change on the project, including acute shocks and chronic stresses. A Climate Change Adaptation Risk Assessment will be undertaken. ▪ Develop strategies to mitigate risks associated with an increase in extreme climate events related to rising temperatures, floods, and severe storm events. ▪ Allocate space for future energy storage technologies. ▪ Evaluate flood zones and areas impacted by extreme rainfall events and locate all critical equipment and services above Probable Maximum Flood (PMF) levels where possible. ▪ Evaluate ability of site infrastructure to withstand rising temperatures. ▪ Consider impacts of increased likelihood of bushfires on indoor air quality. High performance air filtration will be provided for indoor air supply. ▪ Reduce reliance on mains water and energy utilities through onsite rainwater harvesting and photovoltaic energy generation.
Heat resilience	▪ Develop and implement a landscape plan which mitigates urban heat island effect and improves urban comfort. ▪ Select roofing and hardscaping materials with a high SRI where practical.

4.0 Certification

4.1 Green Star

The project will target third party certification using the Green Building Council of Australia (GBCA) Green Star rating tool, a robust and independent assurance scheme which is widely recognised in Australia and globally.

A 5-star Green Star Buildings v1 rating is sought, which includes the following key requirements for the base building:

- 5-star rated projects must achieve the Climate Positive Pathway, which sets targets for the base building for upfront carbon reduction, operational carbon reduction, eliminating fossil fuels in operation, sourcing of 100% renewable energy, and offsetting of refrigerants.
- All Green Star rated projects must meet minimum expectations for commissioning, metering, acoustic & lighting comfort, end-of trip facilities, climate risk screening, and fresh air.

Additional initiatives under consideration include:

- Effective management of the building in operation, including best practice commissioning, submetering and monitoring, construction environmental management and operational waste management.
- Providing high quality indoor environments in terms of air quality, lighting, thermal, acoustic, and visual comfort.
- Reducing potable water use and flows to sewer through efficient fittings & fixtures, and rainwater harvesting for non-potable uses.
- Considering likely climate change scenarios and devising a response to serious risks.
- Improving quality of stormwater, minimising peak stormwater runoff quantities, and preserving natural waterways.
- Minimising natural resource consumption, waste, pollution, and toxicity, during construction and operation.
- Utilising responsible materials which have recycled content or third-party certifications.
- Minimising reliance on fossil fuels for transport through the provision of active transport facilities (including cycling racks, showers, lockers and change rooms), access to public transport, and proximity to many and varied local amenities.
- Engaging with and respecting the community and contributing where possible.

A preliminary 5-Star Green Buildings v1 pathway has been developed for the SSDA and is provided in Appendix B. The 5-Star strategy will be further developed during detailed design and is subject to change.

4.2 Energy Performance Standards

The proposed building is a health research facility; however, components of the building will function as office spaces. Therefore, a typical NABERS for Offices rating cannot readily be achieved due to the complexities of assessing energy use from the various non-office building space types. For example, NABERS allows only a limited portion of laboratory space to be excluded from the rating, which means that the office benchmark applied for energy use of the non-office spaces may not necessarily be the correct benchmark for this project, resulting in the project being penalised by the higher energy demands of health research activities. While the project team is investigating the eligibility of targeting a NABERS Energy for Offices rating (Base Building) for the office spaces, it is uncertain whether a Commitment Agreement will be practical or even possible under the NABERS Rating Scheme.

As per the City of Sydney DCP 2012 Section 3.6 - Energy Performance Standards (Table 3.5), the project is targeting 'Credit Achievement' in the Green Star Buildings rating tool, Credit 22: Energy Use, in line with the City of Sydney DCP 2012 Section 3.6.1, Table 3.5 - Energy Performance Standards.

Table 3.5: Energy performance standards

Proposed and use	Energy performance standards	
	Applications submitted between 1 October 2023 – 31 December 2025	Applications submitted from 1 January 2026 onwards
Office (base building)	- maximum 45 kWh/yr/m² of Gross Floor Area (GFA), or - 5.5 Star NABERS Energy Commitment Agreement (CA) + 25%, or - certified Green Star Buildings rating with a "credit achievement" in Credit 22: Energy Use, or - equivalent	- maximum 45 kWh/yr/m² of GFA, or - 5.5 Star NABERS Energy CA + 25%, or - certified Green Star Buildings rating with a "credit achievement" in Credit 22: Energy Use, or - equivalent and - renewable energy procurement equivalent to "net zero emissions from energy used on-site" or a maximum of 45 kWh/yr/m² of GFA

5.0 Conclusion

A project-specific Sustainability Strategy has been developed which responds to the SEARS (dated 16/01/2024), the United Nations Sustainable Development Goals (UNSDGs), and world-leading life science exemplar projects.

The sustainability strategy provides an overarching framework for all sustainability aspects of the development and focuses on the following key themes:



Carbon & Energy



Circular Economy



Nature and Water



Healthy Environments



Community & Place



Resilience

The project will be designed and constructed to achieve the following sustainability outcomes:

- An energy-efficient facility, which avoids the use of fossil-fuels where possible, reduces upfront carbon, and sources 100% of its energy from renewable sources.
- Reduce potable water consumption and minimise water pollution through water sensitive urban design (WSUD).
- Support active and public transport networks and emerging alternatives to fossil-fuel powered transport.
- Improve biodiversity on-site, providing new green spaces comprised primarily of indigenous plantings which support native wildlife.
- Pursue more responsible materials, including those with third-party certifications or a proportion of recycled content.
- Provide a healthy, collaborative workplace which is safe and equitable, and which encourages social engagement & inclusivity.
- Increased resilience to shocks and stresses in particular with regards to a changing climate.
- Nurture local identity and heritage and embed First Nations knowledge and experience.
- Reduced waste to landfill in construction and operation.

The project is targeting independent third-party certification using the Green Star Buildings v1 rating tool, which is widely recognised in Australia as benchmarking national excellence:

Progress against the proposed initiatives will be tracked throughout the design and construction of the project, and measurable outcomes reported.

Appendix A: Net Zero Carbon Statement

Consultant's Advice Notice

Project:	100 Botany Road, Alexandria	Job No:	1039704
Subject:	Net Zero Statement (SSDA)	Date:	17/09/2024
Attention:	Kurraba Group	Revision:	C

1.0 Introduction

This Net Zero Statement has been prepared by Cundall on behalf of Kurraba Group (the Proponent). It is submitted to the Department of Planning, Housing and Infrastructure (DPHI) in support of a State Significant Development Application (SSDA) SSD-63067458 for the construction of a new health research facility located at 74-108 Botany Road and 86-100 Wyndham Street, Alexandria (herein referred to as 100 Botany Road or the site).

This Net Zero Statement has been prepared to outline how the Botany Road Life Sciences Project will avoid dependence on fossil fuels and be capable of operating at net zero emissions by 2035.

It addresses the requirements under the NSW Sustainable Buildings SEPP 2022, as per clause 35C of the Environmental Planning and Assessment Act Regulation and provides an assessment of development-appropriate measures that the project will implement in design and operation.

Secretary's Environmental Assessment Requirements

In accordance with section 4.39 of the Environmental Planning & Assessment Act 1979 (EP&A Act), Secretary's Environmental Assessment Requirements (SEARs) for SSD-63067458 were issued on 16 January 2024. This report has been prepared to respond to the relevant issued SEARs, as set out in the table below.

Table 1: Relevant SEARS

SEAR	Response / Location in report
9. Ecologically Sustainable Development - In Chapter 3 of SEPP (Sustainable Buildings) 2022 - Provide a net zero statement (as defined in section 35C of the EP&A Regulations).	This Statement

2.0 Project Description

The proposed development will seek consent for the redevelopment of 100 Botany Road for a new health research facility. Specifically, the SSDA seek approval for:

- Demolition of all existing buildings, site preparation and remediation works.
- Bulk excavation to create two (2) levels of basement with access from Wyndham Street, including allowance for a below ground Proton Therapy Cancer Treatment Centre, car parking, loading and services.
- Construction and use of two (2) new health research buildings. One (1) building is proposed along Botany Road which has a stepped built form between seven (7) storeys to the south and eleven (11) storeys to the north. One (1) building is proposed along Wyndham Street which is five (5) storeys. The two (2) buildings will include the following:
 - Ground floor lobby and retail uses fronting Botany Road and Wyndham Street.
 - Proton Therapy patient lobby from Wyndham Street.
 - Various laboratories, write up areas and office spaces.
 - A series of outdoor landscaped terraces within the Botany Road building.
 - One (1) rooftop plant level on each building.
- Landscaping and public domain works including:
 - Construction and extension of Wyndham Lane as a shared laneway.
 - Construction of a pedestrian network including two (2) pathways from Botany Road and an east-west through-site link.
- Extension and augmentation of services and utilities to the development, as required.

Refer to the Environmental Impact Statement for a detailed description of the proposed development.

3.0 Net Zero Design Initiatives

The table below details how reasonable and feasible measures will be implemented on site to reduce the site’s greenhouse gas emissions to reach net zero emissions by 2035.

Table 2: Net zero design initiatives

Strategy	Proposed Initiatives / Mitigation Response
Eliminate fossil fuels	▪ No natural gas use for space heating or domestic hot water for buildings. Fossil fuels will only be used for back-up generation and potentially by tenants for medical research purposes
Upfront carbon	▪ Lower carbon materials will be investigated, including concrete with a supplementary cementitious materials (SCM) content

Strategy	Proposed Initiatives / Mitigation Response
Passive design features	▪ Building envelope will meet NCC Section J requirements for energy efficiency, including insulation and glazing performance requirements. Detailed Section J assessment will be undertaken during detailed design ▪ Material specifications to minimise heat island effect
Technical design features	▪ Efficient building services, systems, and equipment will be specified and installed, including: - Energy efficient heating, ventilation, and air conditioning HVAC systems - LED lighting - Lifts with regenerative braking - Zoned lighting and HVAC and controls to avoid energy consumption associated with unnecessary lighting and space conditioning ▪ Comprehensive Commissioning and Tuning will be undertaken for the nominated building systems ▪ Submetering and monitoring of major energy uses
Energy Generation and Storage	▪ Renewable energy will be generated on-site from rooftop photovoltaic solar panels (approx. 166m²) ▪ Energy not generated on-site will be procured from 100% Green Power ▪ Backup diesel generators will be used for emergency power
Reduce other emissions	▪ Minimise waste and wastewater ▪ Reduced global warming potential (GWP) refrigerants including HFO

4.0 Greenhouse Gas Emissions Estimate

4.1 Emissions Scope and Coverage

Under this assessment, the following emissions scope has been assessed:

- Scope 1 – Related to direct emissions from sources within the boundary of the Project.
- Scope 2 – Related to the emissions resulting from the consumption of imported electricity from the local electricity grid.
- Scope 3 – Related to the indirect emissions attributable to losses through the electricity transmissions and distribution network.

Sources of emissions estimated in this assessment include the following:

- Imported electricity consumed in the operation of the facility; and
- On-site diesel fuel consumption consumed in the monthly testing of backup diesel generators.

Emissions have been estimated on an annual basis under the assumption of full and ultimate operational capacity over a 50-year period from 2025 (i.e., conservatively ignoring phased fit out and load growth which are difficult to predict accurately).

4.1.1 GHG emissions within each scope category

Table 3: Emission Sources at Scopes 1,2, and 3

Scope	Inclusions
Scope 1	▪ Diesel (for backup electricity)
Scope 2	▪ Electricity consumption or purchase for building operations
Scope 3	▪ Indirect GHG emissions

Emissions for non-energy uses such as refrigerants, waste, water, transport, and other activities within the building have not been included in this assessment.

Any fossil fuels used by tenants within the laboratories for research has also not been included.

4.2 Input Data

Emissions factors used for the estimation of GHG emissions have been taken from the National Greenhouse Accounts Factors 2023 (published August 2023), published by the Australian Government Department of Climate Change, Energy, the Environment and Water. At the time of writing, this was the latest revision of these accounts' factors, and it is assumed that they are applicable to the estimates at commencement of operation.

Emissions factors associated with relevant sources for the Project are outlined in Table 4 below.

Table 4: Emissions taken from National Greenhouse Accounts Factors 2023 (published Aug 2023)

Fuel Source	Emissions Factors
NSW Grid Electricity	Scope 2: 0.68 kgCO ₂ -e/kWh Scope 3: 0.05 kgCO ₂ -e/kWh
Diesel Fuel	Scope 1: CO ₂ : 69.9 kgCO ₂ -e/GJ (2698.1 kgCO ₂ -e/kL) CH ₄ : 0.1 kgCO ₂ -e/GJ (3.9 kgCO ₂ -e/kL) N ₂ O: 0.2 kgCO ₂ -e/GJ (7.7 kgCO ₂ -e/kL) Total: 70.2 kgCO ₂ -e/GJ (2,709.7 kgCO ₂ -e/kL)
Biodiesel Fuel	Scope 1: CO ₂ : 0.0 kgCO ₂ -e/GJ CH ₄ : 0.08 kg CO ₂ -e/GJ

N2O: 0.2 kgCO₂-e/GJ
Total: 0.28 kgCO₂-e/GJ

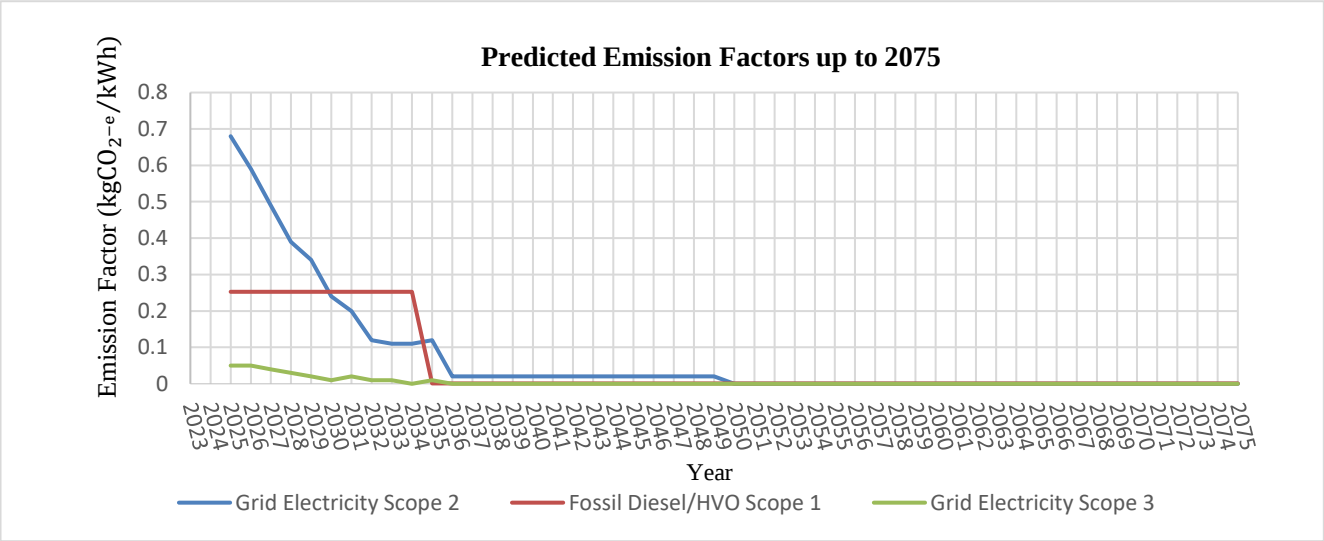


Figure 1: Projected emissions factor for diesel and grid electricity for the life of the asset

The decarbonisation of the electricity grid has been estimated based on linear interpolation and extrapolation of publicly announced government commitments related to renewable energy targets. Emissions for the generation of electricity are projected to decline with increased renewable energy supply while emissions for distribution losses are held constant (as a conservative assumption, although likely also to decline) up to the net zero carbon target of 2050. The proposed generator should be capable of conversion to biodiesel and we have assumed the changeover from diesel to biodiesel to be 2035. Figure 1 illustrates the assumed changes to these factors notionally between 2025 and 2075.

Note, as the generator models, fuel consumption, and testing load are currently unknown the total emissions from the site backup generator (1,800kVA) has been assumed to be tested monthly on full load for an hour. Therefore an allowance of 5,280L has been made for this assessment.

4.4 Estimated Energy Consumption

The Applicant has committed to attaining a suitable standard of energy use for the development. The building envelope will meet energy efficiency requirements from the building code. The building is designed to operate in a way that avoids the use of fossil fuels for heating and domestic hot water and will include efficient air conditioning systems and lighting. In addition, rooftop areas have been identified where solar photovoltaic panels can be installed.

Category	Consumption (kWh)
Estimated fossil fuel consumption per year (until 2035)	56,613
Estimated electricity consumption per year	8,878,000
Estimated electricity generated from on-site solar PV	33,000

Estimated total net grid electricity used on site	8,845,000
Estimated energy consumption per year kWh/m ² of NLA	402

4.5 Estimated GHG emissions for energy use

The estimated annual scope 1, 2 and 3 emissions (without GreenPower) are as follows:

Category	Emissions (kgCO ₂ -e)
Estimated direct (scope 1) GHG emissions per year	14,307
Estimated indirect (scope 2 and 3) GHG emissions per year	6,456,850
Total estimated GHG emissions per year	6,471,157

5.0 GHG Emissions Over Life of Asset

Figure 2 shows the total annual emissions for the predicted 50-year life of the asset, using the predicted emissions factors shown in Table 1. The electrical component of this will be offset through the purchase of GreenPower. And the remaining scope 1 emissions for diesel are expected to be reduced by 2035 through the use of HVO. Small offsets may then be required after 2035 for any net emissions.

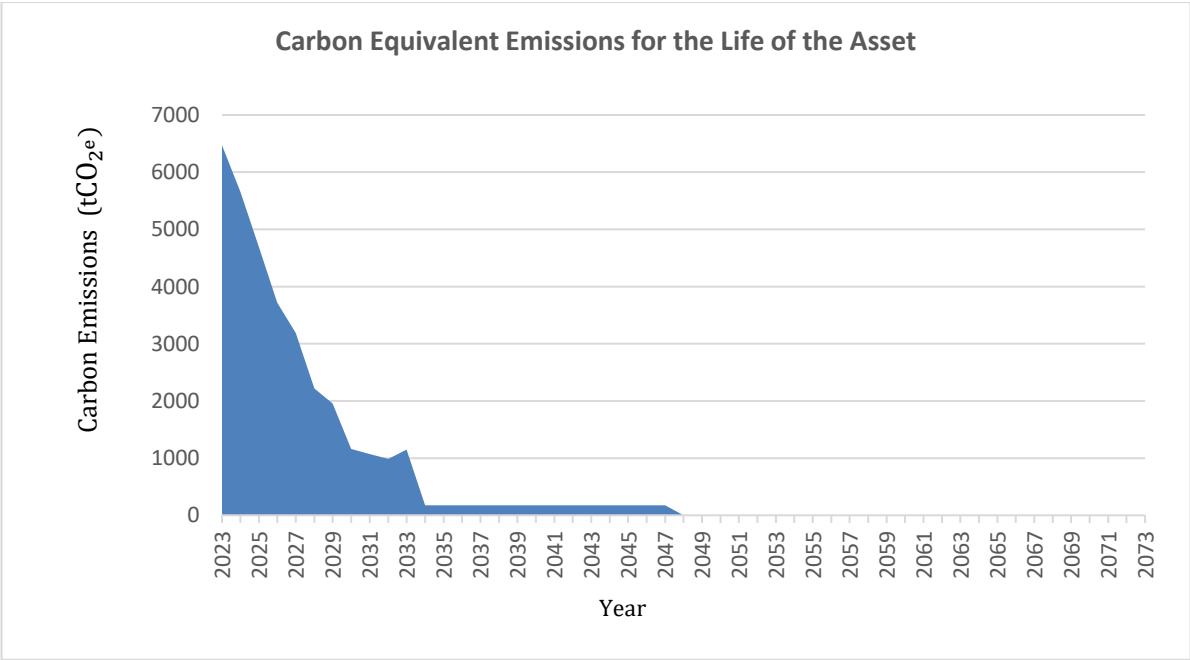


Figure 2: Annual CO₂ equivalent over the life of the asset.

The estimated GHG emissions over the life of asset (without GreenPower) are as follows:

Category	Predicted Total GHG Emissions (tCO ₂ -e)
Whole life of the asset	34,732
First year of operations	6,471
Last year of operations	0.057

Yours sincerely



Benny Cheah
Director – Building Services
CPEng, NER

For and on behalf of
Cundall Johnston and Partners Pty Ltd

Appendix B: Preliminary Green Star Strategy

Project: 100 Botany Road (1039704)

Revision: DRAFT (3/7/2024)

Credit	Minimum Expectation	Credit Achievement	Exceptional Performance	Total points available	Targeted	Minimum expectations met	Points targeted to be achieved	Additional points to be confirmed
Responsible	(3)	11	6	17		(3)	7	6
Industry Development - credit		1		1	Yes		1	-
Responsible Construction - minimum	•			•	Yes	✓		
Responsible Construction - credit		1		1	Yes		1	-
Verification and Handover - minimum	•			•	Yes	✓		
Verification and Handover - credit		1		1	Yes		1	-
Operational Waste - minimum	•			•	Yes	✓		
Responsible Procurement - credit		1		1	TBC		-	1
Responsible Structure - credit		3		3	Yes		3	-
Responsible Structure - exceptional			2	2	TBC		-	2
Responsible Envelope - credit		2		2	TBC		-	2
Responsible Envelope - exceptional			2	2	No		-	-
Responsible Systems - credit		1		1	No		-	-
Responsible Systems - exceptional			1	1	No		-	-
Responsible Finishes - credit		1		1	Yes		1	-
Responsible Finishes - exceptional			1	1	TBC		-	1
Healthy	(4)	11	3	14		(4)	3	7
Clean Air - minimum	•			•	Yes	✓		
Clean Air - credit		2		2	No		-	-
Light Quality - minimum	•			•	Yes	✓		
Light Quality - credit		2		2	TBC		-	2
Light Quality - exceptional			2	2	TBC		-	2
Acoustic Comfort - minimum	•			•	Yes	✓		
Acoustic Comfort - credit		2		2	TBC		-	2
Exposure to Toxins - minimum	•			•	Yes	✓		
Exposure to Toxins - credit		2		2	Yes		2	-
Amenity and Comfort - credit		2		2	No		-	-
Connection to Nature - credit		1		1	Yes		1	-
Connection to Nature - exceptional			1	1	TBC		-	1
Resilient	(1)	8	0	8		(1)	1	2
Climate Change Resilience - minimum	•			•	Yes	✓		
Climate Change Resilience - credit		1		1	Yes		1	-
Operations Resilience - credit		2		2	No		-	-
Community Resilience - credit		1		1	TBC		-	1
Heat Resilience - credit		1		1	TBC		-	1
Grid Resilience - credit		3		3	No		-	-

Project: 100 Botany Road (1039704)

Revision: DRAFT (3/7/2024)

Credit	Minimum Expectation	Credit Achievement	Exceptional Performance	Total points available	Targeted	Minimum expectations met	Points targeted to be achieved	Additional points to be confirmed
Positive	(4)	16	14	30		(4)	14	5
Upfront Carbon Emissions - minimum	•			•	Yes	✓		
Upfront Carbon Emissions - credit		3		3	Yes		3	-
Upfront Carbon Emissions - exceptional			3	3	No		-	-
Energy Use - minimum	•			•	Yes	✓		
Energy Use - credit		3		3	Yes		3	-
Energy Use - exceptional			3	3	No		-	-
Energy Source - minimum	•			•	Yes	✓		
Energy Source - credit		3		3	Yes		3	-
Energy Source - exceptional			3	3	Yes		3	-
Other Carbon Emissions - credit		2		2	Yes		2	-
Other Carbon Emissions - exceptional			2	2	No		-	-
Water Use - minimum	•			•	Yes	✓		
Water Use - credit		3		3	TBC		-	3
Water Use - exceptional			3	3	No		-	-
Life Cycle Impacts - credit	-	2		2	TBC		-	2
Places	(1)	8	0	8		(1)	5	3
Movement and Place - minimum	•			•	Yes	✓		
Movement and Place - credit		3		3	TBC		-	3
Enjoyable Places - credit		2		2	Yes		2	-
Contribution to Place - credit		2		2	Yes		2	-
Culture, Heritage and Identity - credit		1		1	Yes		1	-
People	(1)	7	2	9		(1)	3	5
Inclusive Construction Practices - minimum	•			•	Yes	✓		
Inclusive Construction Practices - credit		1		1	Yes		1	-
Indigenous Inclusion - credit		2		2	Yes		2	-
Procurement and Workforce Inclusion - credit		2		2	TBC		-	2
Procurement and Workforce Inclusion - exceptional			1	1	No		-	-
Design for Inclusion - credit		2		2	TBC		-	2
Design for Inclusion - exceptional			1	1	TBC		-	1
Nature	(1)	10	4	14		(1)	2	0
Impacts to Nature - minimum	•			•	Yes	✓		
Impacts to Nature - credit		2		2	No		-	-
Biodiversity Enhancement - credit		2		2	No		-	-
Biodiversity Enhancement - exceptional			2	2	No		-	-
Nature Connectivity - credit		2		2	No		-	-
Nature Stewardship - credit		2		2	No		-	-
Waterway Protection - credit		2		2	Yes		2	-
Waterway Protection - exceptional			2	2	No		-	-

Project: 100 Botany Road (1039704)						Revision: DRAFT (3/7/2024)		
Credit	Minimum Expectation	Credit Achievement	Exceptional Performance	Total points available	Targeted	Minimum expectations met	Points targeted to be achieved	Additional points to be confirmed
Leadership		11	1	12			0	2
Market Transformation - 1		1		1	TBC		-	1
Market Transformation - 2		1		1	TBC		-	1

