

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

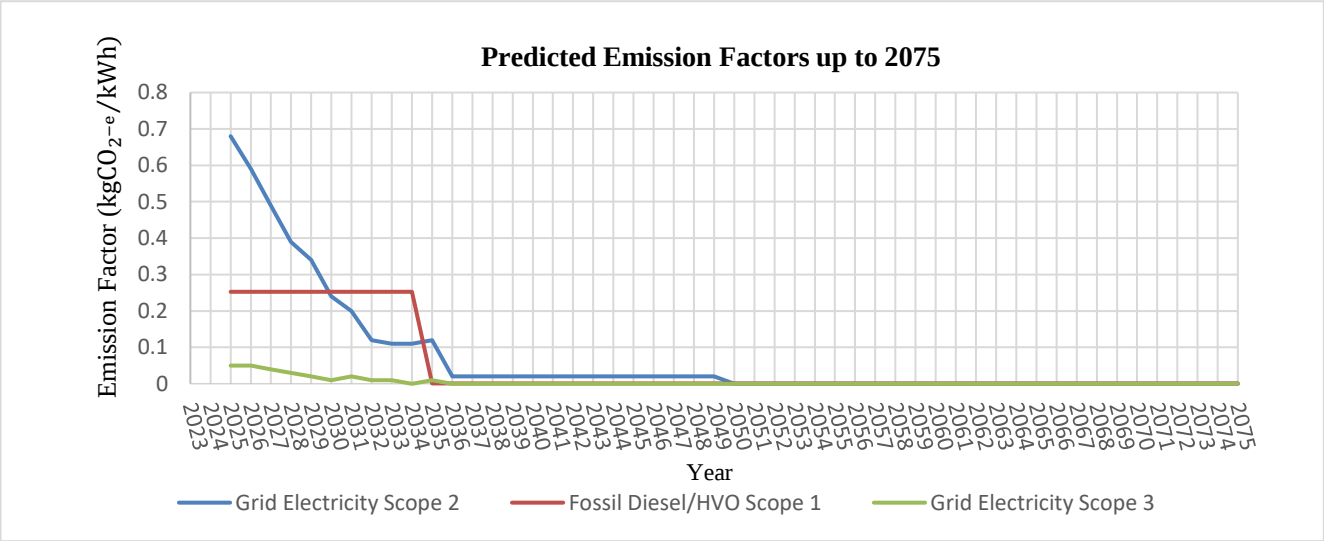


Figure 1: Projected emissions factor for diesel and grid electricity for the life of the asset

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.

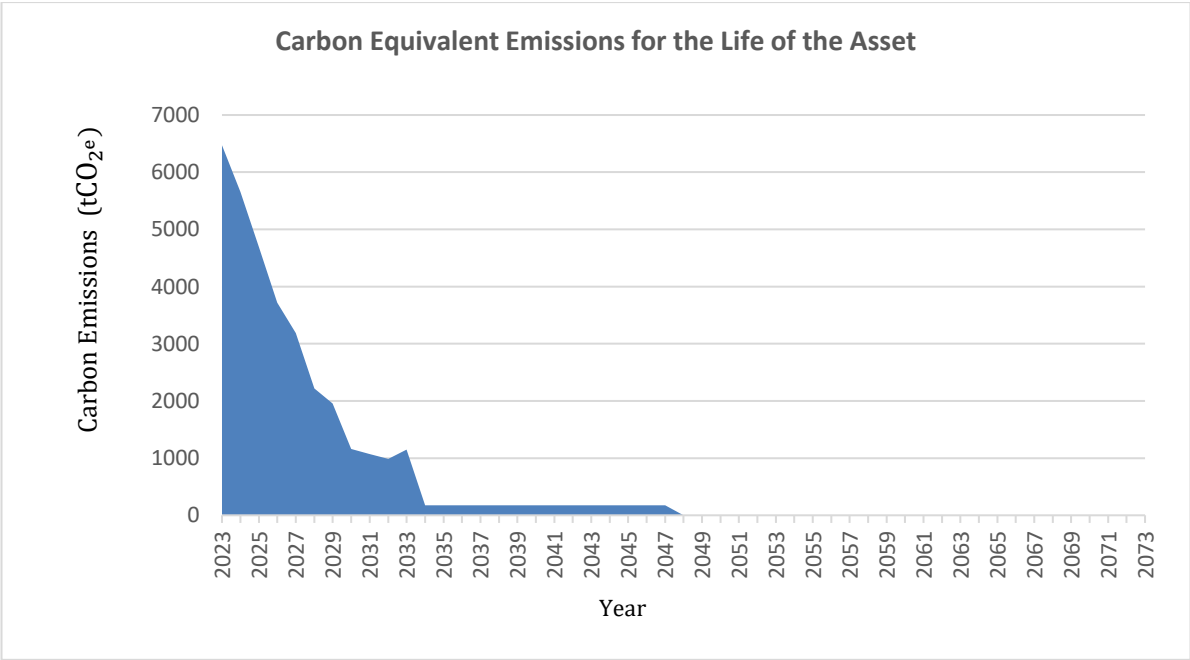


Figure 2: Annual CO₂ equivalent over the life of the asset.

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

