CONSULTANT ADVICE NOTICE

PROJECT:	**SINSW - KOGARAH PUBLIC SCHOOL UPGRADE**			**CAN NO:**	**G-005[1.1]**
Date:	**5 March 2025**	**Project No:**	**41155 - 001**	**Pages:**	**7**

SUSTAINABILITY – NET ZERO STATEMENT

1 NET ZERO STATEMENT

As per the *Department of Planning and Environment - Net Zero Statement Technical Note*, which outlines how to prepare a Net Zero Statement when one is required under the NSW Sustainable Buildings SEPP. A Net Zero Statement describes how a project will avoid dependence on fossil fuels and be capable of operating at net zero emissions by 2035.

1.1 INTRODUCTION

This Net Zero Statement has been prepared to accompany a Review of Environmental Factors (REF) prepared for the Department of Education (DoE) relating to upgrades to Kogarah Public School (the activity) under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act) and State Environmental Planning Policy (Transport and Infrastructure) 2021 (SEPP TI).

This document has been prepared in accordance with the Guidelines for Division 5.1 assessments (the Guidelines) by the Department of Planning, Housing and Infrastructure.

Under the Review of Environmental Factors (REF) planning pathway the Dalmeny Public School Upgrade project for SINSW qualifies to provide a Net Zero statement under SEPP requirements applicable since 1st October 2023.

Proposed Activity Description

Kogarah Public School is located at 24B Gladstone Street, Kogarah and contains a site area of 1.644ha per Detail Survey. The school is accommodated within the following allotments:

- Lots 1-3 DP 999122;
- Lot 1 DP 179779
- Lot 1 DP 667959
- Lot 2 DP 175247; and
- Lot A DP 391026.

The site is irregular in shape with existing vehicular access and the car park provided from Gladstone Street along the southwestern boundary. Pedestrian access is provided from Gladstone Street and Princes Highway. The site accommodates eight (8) permanent buildings and number of modular school buildings with play areas largely confined to the Centre and northeastern portions of the site.

An aerial photograph of the site detailing the development footprint is provided in Figure 1.

FIGURE 1 - AERIAL PHOTOGRAPH SOURCE: NEARMAP 2024

Activity Site

Kogarah Public School, a K-6 co-educational public school, is undergoing a major redevelopment as validated by the NBRS Feasibility Report. The project involves the removal of 11 existing demountable teaching spaces and the construction of 24 new permanent teaching spaces, increasing the total to 38 permanent teaching spaces. The school currently lacks a hall, and this redevelopment will include the construction of a new hall to address that need. The canteen area is excluded from the scope as the school already has a well-functioning canteen, allowing the space to be utilised for other functions. The project includes alterations and additions to existing school facilities, encompassing:

- Demolition of existing playground facilities and Covered Outdoor Learning Area (COLA) in addition to footings and services associated with former demountable buildings;
- Tree removal;
- Construction of a new three storey Classroom building and attached amenities facilities;
- Construction of a single storey Hall with attached Covered Outdoor Learning Area;
- New pedestrian pathway connections providing access throughout the site;
- Service upgrades; and
- Site landscaping works.

The new facilities will be constructed using a combination of conventional and modern construction methods, ensuring the designs follow SINSW's standard 'Hub Layouts' and pattern book.

1.2 NET ZERO PATHWAY

The *Net Zero Statement Technical Note* outlines two different pathways to comply with new SEPP requirements for a Net Zero project. These are described as follows:

- **Net Zero Ready**: The building is designed to operate fully on fossil fuel-free systems immediately upon occupation and use.
- **Transition Strategy**: Confirm how the development will operate as fossil fuel-free by 2035, where fossil fuel-dependent building systems are used.

The Kogarah Public School Upgrade is designed to be fully electric at practical completion, with no gas-powered plant used to meet space heating and domestic hot water (DHW) demand. In addition, Kogarah Public School Upgrade is currently designed with a 92kW solar PV system (limited by the 99kW system limit and existing solar). This is achieved through strategies addressing the following areas, with additional detail provided on each within this document:

- On-Site Fossil Fuel Usage;
- Renewable Energy Generation;
- Energy-efficient design;
- Energy consumption and emissions calculations.

1.3 DOCUMENTATION

The drawings and specifications that evidence the project's Net Zero approach accompany the REF submission and are listed below:

TABLE 1 - DOCUMENT REFERENCE

DOCUMENT REFERENCE	TITLE	DATE	REVISION
Kogarah PS -NDY Schematic Design Report	Electrical and Mechanical Services Schematic Design Report	06/12/2024	1

The remainder of this document provides additional details on the strategies incorporated into the design and operation of the building to achieve Net Zero.

This report has been endorsed by:

Jarrad Underwood MIEAust CPEng (Electrical): 5359514

2 NET ZERO STRATEGY

2.1 NET ZERO STRATEGY

Figure 2 illustrates at a high level the strategies that are typically considered at different stages of a project (design, construction, and operation), in order to achieve its Net Zero ambitions.

The stage with most potential to reduce operational energy is the Concept and Schematic Design stage when there are many opportunities and significantly more flexibility to reduce emissions through building design. This ranges from high performing building fabric and passive design, efficient and fossil fuel free HVAC systems and other building services, effective controls strategies, as well on-site energy production, typically provided by roof top or building integrated PV. Specification of low embodied carbon materials also typically occurs during the design stage, however the actual products used will ultimately by chosen by the builder during construction.

By the time the project reaches Procurement stage, during construction and then on to operation, the procurement of green power for operational energy demands, and, as a last resort, offsetting residual emissions can take place.

The graph circles the components that are captured through SEPP requirements (red) and will be committed to as part of this development.

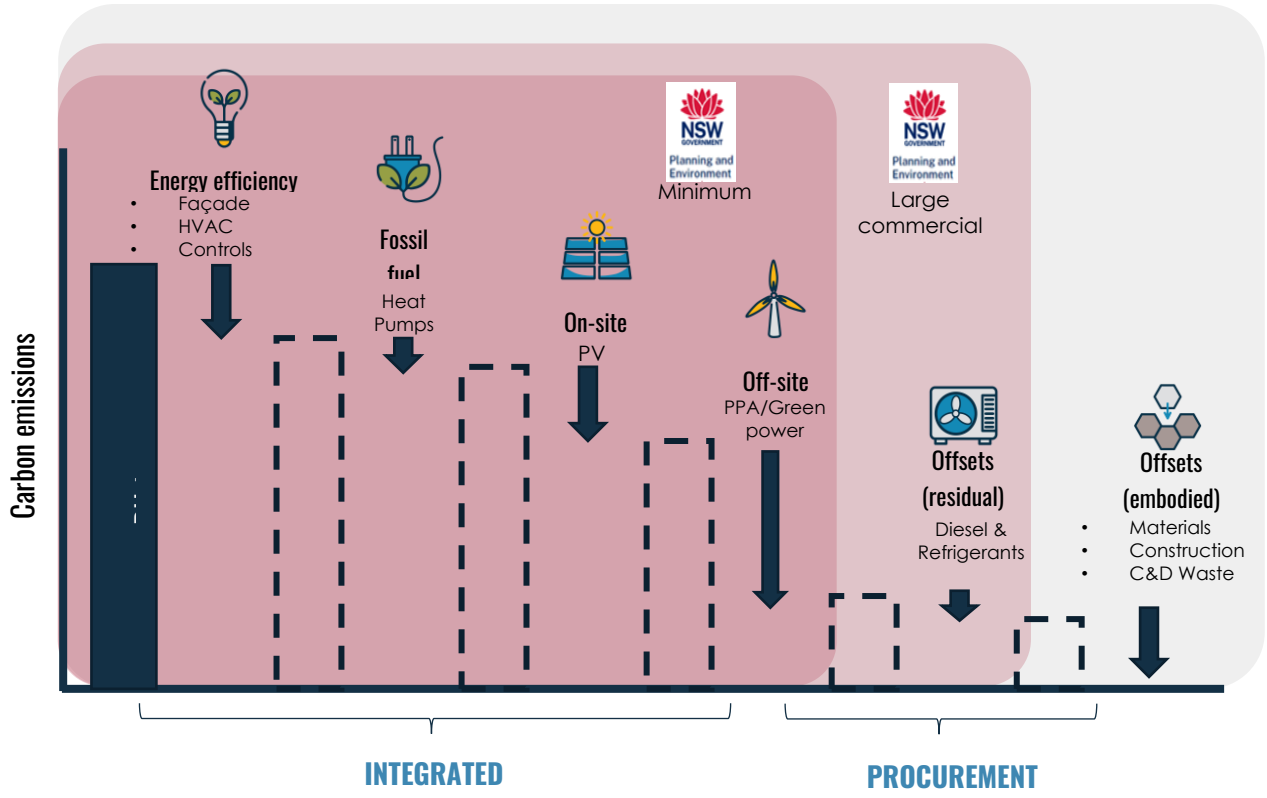

FIGURE 2 - NET ZERO STRATEGY

2.2 ON-SITE FOSSIL FUEL USAGE

The development will not use on-site fossil fuels for building services, as the project has been designed to operate using alternative energy sources and technologies to replace fossil fuel consumption.

As per evidence in Table 1, all services including space heating will be fully electric, with no allowance for systems reliant on fossil fuels.

2.3 RENEWABLE ENERGY GENERATION AND STORAGE

The project's renewable energy generation considers both on-site and off-site generation.

Onsite renewable energy

Concept Design studies show the project will support a targeted PV system in the order of 92 kW. This system is estimated to generate approximately 130,000 kWh per year.

Offsite energy generation

SINSW's electricity procurement falls under the responsibility of the NSW government. We understand that their renewables procurement targets are currently under review, and the exact details of the offsite electricity to be procured is not yet known.

Storage infrastructure

Energy Storage Infrastructure has been noted as unfeasible at this stage.

2.4 ENERGY-EFFICIENT DESIGN

The project has implemented strong passive design principles alongside efficient active HVAC systems to reduce the demand when compared to a "code-compliant" alternative.

Shading

The façade incorporates eaves and other shading devices to reduce the energy demand of the building.

Natural ventilation

A mixed mode natural ventilation system is currently designed when outdoor conditions are favourable. Whilst active air conditioning will also be provided, this will only need to operate during hotter and colder months, taking advantage of the Eastern Sydney climate, and consuming less energy as a result.

Airtightness

An airtightness consultant will be engaged during detailed design to nominate an appropriate airtightness target for the building. Given the function of the building, minimising air leakage through the façade is an important consideration.

Building fabric

As per the EFSG and Green Star requirements, the project will exceed the minimum requirements of Section J of the National Construction Code (NCC) 2022, by at least 20%. The project team are currently refining the specification of the glazing and insulation thermal performance by using a Verification Method of compliance (J1V2) which utilises an energy model to compare the performance and allow a bespoke solution that is relevant to the project to be developed.

Efficient lighting

The project incorporates the following initiatives:

- To AS/NZS 1680, AS/NZS 1158 and BCA Part J7
- Luminaire utilising LEDs to be used throughout

In addition, the following are being considered:

- Inclusion of Digital Addressable lighting with Dimmable luminaires.
- Inclusion of intelligent lighting control system with daylight and occupancy sensing on internal lighting.
- Self-contained emergency luminaires will be provided with lithium battery and long-life LED luminaires.

HVAC systems

The school is designed to be fully electric at practical completion, with no gas-powered plant used to meet space heating demand. As per NDY's Schematic Design Drawings, the followings are provided:

- In-ceiling ducted reverse-cycle Variable Refrigerant Flow (VRF) fan coil units (FCUs) serving learning spaces. Condensers are located in a dedicated plant area.
- Outside air in learning spaces is ducted directly to FCUs, intake is via louvre on façade.
- Excess air in learning spaces are relieved via louvre on façade, complete with non-return damper.
- A mixed-mode natural ventilation control strategy is provided to all learning spaces, complete with SINSW's standard "Traffic Light" HVAC controls.
- BCR is to be provided with wall-mounted split A/C and outside air via in-line duct-mounted fan. Intake to the fan is via louvre on façade. Relief of excess air is via door grille. Condenser is located externally in a dedicated plant area.

2.5 ENERGY CONSUMPTION AND EMISSIONS CALCULATIONS

Operational energy consumption of the building has been estimated based on benchmarking of other similar SINSW projects. The values provided are high level estimates and will be further refined in future design stages.

TABLE 2 - ENERGY CONSUMPTION AND GHG EMISSIONS

ITEM	WITHOUT SOLAR PV		WITH SOLAR PV	
Fossil fuel consumption (MJ/annum)	0			
Energy - Electricity (kWh/annum)	190,000	50.0/m^2	60,000	15.8/m^2
Direct Emissions (Scope 1) (kgCO2eq/annum)	0			
Indirect Emissions (Scope 2-3) (kgCO2eq/annum) *	133,000	35.0/m^2	42,000	11.1/m^2

**Emissions factors are derived from DCEEW National Greenhouse Account Factors 2024 for NSW and Act, and include Scope 2 (electricity production) and Scope 3 (electricity transmission) Emission Factors*

2.6 NET ZERO STATEMENT CHECKLIST

A completed Net Zero statement checklist is provided in Annex 1.

NDY, A Tetra Tech Company

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ANNEX 1 – NET ZERO STATEMENT CHECKLIST

Department of Planning and Environment

Net Zero Statement Technical Note

Net Zero Statement Checklist

Cover Letter	
Project details and overview	☑
Confirm if development is fossil fuel-free or requires a transition strategy.	☑
Certified and signed by a mechanical or electrical engineer	☑
On-Site Fossil Fuel Usage	
If development is fossil fuel-free:	
Provide evidence of fossil fuel-free operations	☑
~~**If development is fossil fuel dependent:**~~	
~~Provide details of each fossil fuel system used and electrification transition strategy.~~	☐
~~**Provide evidence the development will operate without fossil fuel by 2035 by confirming it -**~~	
~~Incorporates infrastructure or space for necessary infrastructure to transition – plant, equipment, ventilation etc~~	☐
Energy Efficiency	
Have energy reduction initiatives been described for the following? -	
Passive design features – building orientation, natural ventilation, insulation, glazing performance, air tightness etc.	☑
Technical design features – energy efficient HVAC and lighting systems, smart controls and occupancy sensors etc.	☑
Renewable Energy Generation and Storage	
Have renewable energy or storage initiatives been described? – solar panels, photovoltaics, wind turbines etc.	☑
Estimated Energy Consumption if available	
Estimated fossil fuel consumption per year	☑
Estimated electricity consumption per year	☑
Total estimated energy consumption per year kWh/y/m² of GFA	☑
Estimated GHG emissions for energy use if available	
Estimated direct (scope 1) GHG emissions per year	☑
Estimated indirect (scope 2 and 3) GHG emissions per year	☑
Total estimated GHG emissions per year	☑

Abbreviations & Glossary

DHW – Domestic hot water

GFA – Gross floor area

GHG – Greenhouse gas emissions

HHW – Heating hot water

HVAC – Heating, ventilation and air conditioning

PV – Photovoltaic

SB SEPP – State Environmental Planning Policy (Sustainable Buildings) 2022

Emission scopes – A mechanism for classifying different sources of GHG emissions used in carbon accounting. There are three 'scopes'

- **Scope 1** covers direct emissions from on-site fuel combustion (e.g. diesel, natural gas and LPG).
- **Scope 2** covers indirect emissions from the consumption of purchased electricity, steam, heating and cooling.
- **Scope 3** covers indirect emissions from activities not owned or controlled by the reporting organisation, including production of fuels, electricity transmission losses, embodied carbon in construction and maintenance (including materials and products) tenant energy consumption, waste treatment, water treatment and travel to/from the building.

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