

Department of Education (DoE)

New High School for Googong

Net Zero Statement

Reference: ESD-GHS-REP-005

3 | 5 February 2025

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 303786-00

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Document Verification

Project title New High School for Googong
Document title Net Zero Statement
Job number 303786-00
Document ref ESD-GHS-REP-005
File reference

Revision	Date	Filename	Net Zero Statement		
1	29/11/2024	Description	Net Zero Statement		
			Prepared by	Checked by	Approved by
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		Signature			
2	20/01/2025	Filename			
		Description	REF update based on comments received.		
			Prepared by	Checked by	Approved by
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		Signature			
3	5/2/2025	Filename			
		Description	Updates to referencing of activity and document reference number.		
			Prepared by	Checked by	Approved by
		Name	Enda Seyama-Heneghan	Alex Rosenthal	Edward Caine
		Signature			

Issue Document Verification with Document



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Cover Note and Certification


This Net Zero statement has been prepared by Arup on behalf of the Department of Education (DoE) to support a Review of Environmental Factors (REF) for the proposed New High School in Googong (the activity). The purpose of the REF is to assess the potential environmental impacts of the activity prescribed by State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) as “development permitted without consent” on land carried out by or on behalf of a public authority under Part 5 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

The activity will be carried out at 200 Wellsvale Drive, Googong (the site). The purpose of this report is to demonstrate how the development minimises the use of on-site fossil fuels, as part of the goal of achieving net zero emissions in New South Wales by 2050.

The building is being designed to minimise the use of fossil fuels upon occupation, and to allow for future transition to fossil-fuel free operations.

Certification

I am a qualified electrical engineer familiar with the project. I hereby certify that all evidence and information within this statement is correct to the best of my knowledge.

Name	Ed Caine
Qualification	C Eng
Signature	

1. Introduction

This Net Zero Statement has been prepared by Arup on behalf of the NSW Department of Education (DoE) to inform a Review of Environment Factors (REF) for the proposed construction of a new high school for Googong (the activity) located at 200 Wellsville Drive, Googong, NSW (the site).

The activity relates to the construction and operation of a new educational establishment to serve the needs of the growing Googong township by accommodating up to 700 students from years 7 – 12. Specifically, the activity includes the following:

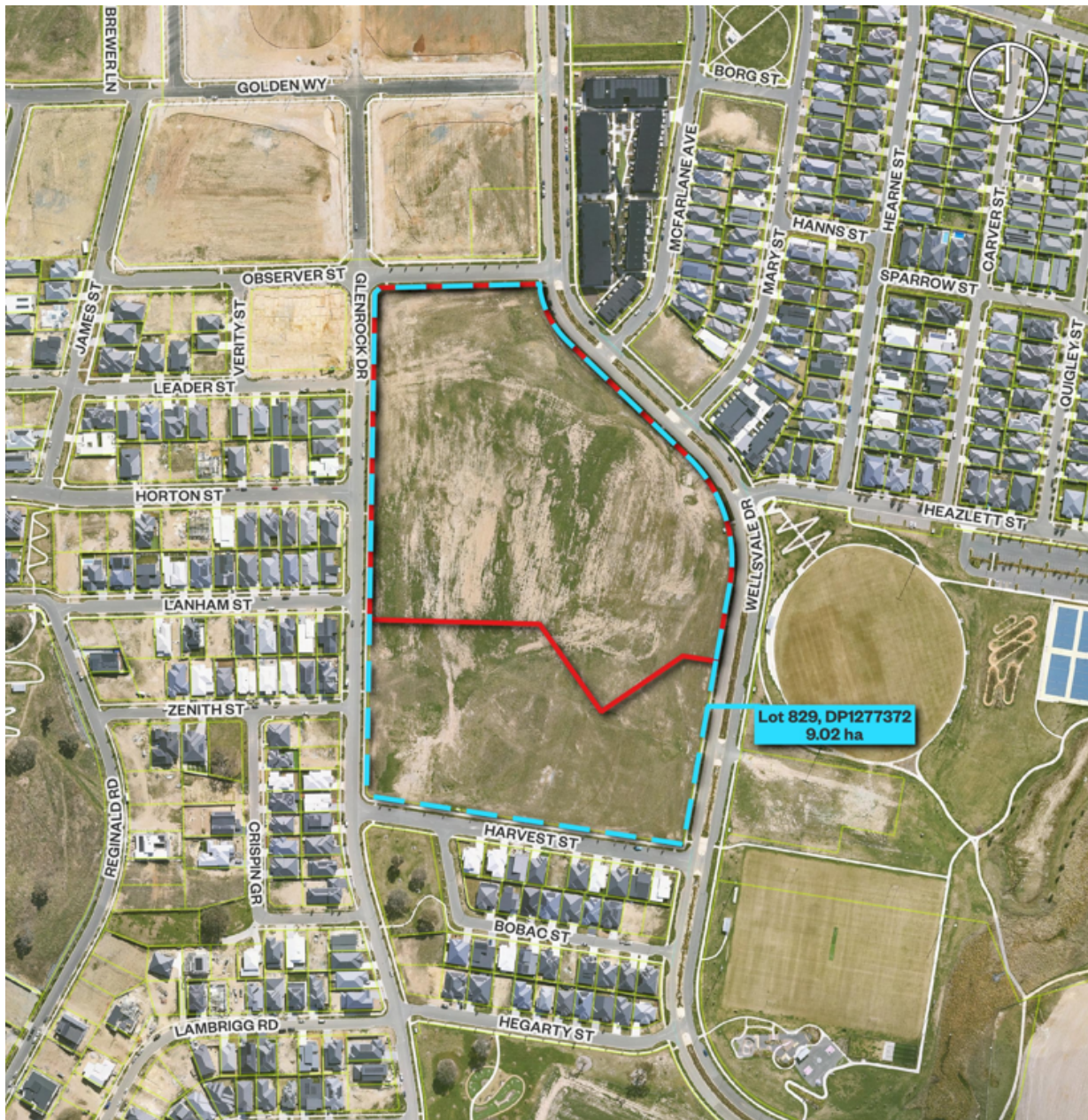
- Building A, a three to four-storey building in the northern portion of the site, fronting Glenrock Drive, which will accommodate learning spaces and administrative functions of the school.
- Building B, a three-storey building in the north-west portion of the site, fronting Observer Street, which will accommodate learning spaces and administrative functions of the school.
- Building C, fronting Glenrock Drive, which will accommodate a school hall / gymnasium and canteen.
- Outdoor recreation areas, cricket nets, playing court and playing field.
- Main pedestrian entry established from Glenrock Drive.
- Car park and accessible pedestrian entry from Wellsville Drive.
- Service entry from Observer Street.
- Associated civil works, earthworks, servicing and landscaping.
- Associated off-site works such as the construction of pedestrian crossings, drop off and pick up bays and a bus stop.
- School identification and wayfinding signage.

The REF describes the activity, documents the examination and consideration of all matters affecting, or are likely to affect, the environment, and details safeguards to be implemented to mitigate impacts.

The Department of Education is the determining authority for the project under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

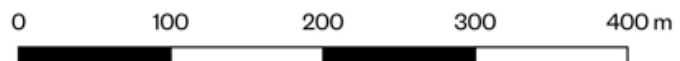
1.1 Site Description

The site is identified in Figure 1 and the activity is shown in Figure 2.



Legend

- School Boundary
- Lot Boundary
- Other Cadastral Boundaries



1. Figure 1– Site Location Plan

Source: Mecone

The site is surrounded by low-density residential development, recreational areas and a future local centre adjoining the site to the north.

The site is currently vacant with no existing structures and has been cleared of all trees and native vegetation. The site has an approximately 12 metre fall from the southwest corner of the site at RL ~763.550m Australian Height Datum AHD to the northeast at RL ~751.570m AHD.

2. Purpose

This Net Zero statement has been prepared to support a Review of Environmental Factors (REF) for the New High School for Googong.

This report has been prepared to satisfy Section 3.3 (1) of the NSW State Environmental Planning Policy (Sustainable Buildings) 2022 (Sustainable Buildings SEPP), which “considers whether the development minimises the use of on-site fossil fuels, as part of the goal of achieving net zero emissions in New South Wales by 2050.”

3. On-site fossil fuel usage

The activity is being designed to minimise operated fossil fuels upon occupation, and to allow for future transition to fossil-fuel free operations. This includes:

- Heating using heat pumps, underfloor radiant heating, and radiant panel heaters
- Domestic hot water from instantaneous electric hot water units

The project is fully electric sourcing renewable electricity for all electrical energy use. There is a small component of fossil fuel use in the project. Uses of fossil fuels from Day One are as below:

Table 3.1 Operations using fossil fuels from Day One

Item	Day One Energy Source	Reason
Science lab Bunsen burners	Bottled LPG gas	DoE requirement for gas Bunsen burners as there are two experiments within the currently curriculum calling for their use. It is expected that the use of gas for Bunsen burners will typically contribute to a small percentage of a building’s operational energy greenhouse gas (GHG) emissions. The annual emissions of these equipment will be quantified by the Contractor in the next project stage.
50% of Vocational Education and Training (VET) kitchen cooktops	Bottled LPG gas	DoE requirement for 50% of VET kitchen cooktops to be gas powered as it is part of the current curriculum.
Emergency backup power generators	Diesel fuel	Based on generators and fuel readily available in market currently. It is noted that regular maintenance and testing of diesel generators typically contribute to a small percentage (in the order of 1%) of a building’s operational energy greenhouse gas (GHG) emissions.

Gas used in the science labs and VET kitchens are designed to be provided by bottled LPG gas in order to allow for future transition toward fossil fuel-free operations, to align with the goal of achieving net zero emissions in New South Wales by 2050. The DoE has set a goal of having net zero emissions in operations by 2030. The DoE acknowledges the current gap to electrifying science labs and workshops, and are developing a number of schools to act as precedents to others, in which electric Bunsen burners, etc. are used. In the short-term, the DoE plans to engage with the relevant educational stakeholders to transition the cooking curriculum away from gas use and support teaching staff being trained on electric cooking alternatives. Generators will be considered which will allow alternative types of fuel when available.

Evidence of the above-described design to minimise fossil fuel use in operations or to allow for future transition towards fossil fuel-free operations are within the following services design documentation:

- ME-GHS-SPC-001 Mechanical Specification
- EL-GHS-SPC-001 Electrical Specification
- 8334 HS Hydraulic Specification

4. Renewable Energy Generation and Storage

The activity is being designed to generate renewable energy on site with the following initiatives:

- Solar photovoltaic (PV) generation to rooftop areas – total capacity 70 kWp, with future expansion capabilities to 99kWp. Refer to EL-GHS-SPC-001 Electrical Specification.

5. Energy-efficient design

As a DoE development, the project has minimum energy efficiency targets as noted in the Education Facilities Standards and Guidelines (EFSG) 2.0. The project is designed to meet these requirements, which include:

- 4 Star Green Star Buildings v1 rating target
- NCC Section J building system and façade to comply with deemed-to-satisfy requirements, with total energy consumption to be at least 10% lower than compared to code compliant baseline. Total building's energy consumption reduction must be achieved without including renewable energy generation in the calculation.
- Passive design elements should be maximised to minimise energy consumption, with consideration for air tightness, thermal insulation, thermal bridge free envelopes, high performance windows, and energy efficient mechanical plant.
- Energy efficient LED lighting.
- Maximised natural daylight.
- Natural ventilation to all classrooms.
- All new lighting and HVAC systems to have timed or sensor feedback functionality for energy conservation.
- All new electrical equipment to be at least 0.5 stars above the market average star rating or be recognised as high efficiency under relevant accreditations.

6. Energy Consumption

Calculations of the energy consumption of the building are not yet available. Energy modelling simulation will be carried out during Design Development stage by the Contractor.

The project is registered with the Green Building Council (GBCA) under the Green Star Buildings v1 rating tool as GS-13028B and is committed to achieving a minimum Green Star 4-Star rating. It is a minimum requirement under this rating level for buildings that operational energy use must be at least 10% less than a reference building, and the project is targeting a 20% reduction against a reference building (Credit 22 Energy Use – Credit Achievement).

7. Conclusion

In conclusion, the New High School for Googong is being designed to minimise the use of fossil fuels upon occupation, and to allow for future transition to fossil-fuel free operations. It complies with the Sustainable Buildings SEPP Section 3.3 (1), as it minimises the use of on-site fossil fuels, as part of the goal of achieving net zero emissions in New South Wales by 2050.