ARUP

Department of Education (DoE)

New High School for Googong

ESD Report

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Contents

1. Introduction

This ESD REF Report 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 Wellsvale 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 Wellsvale 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.

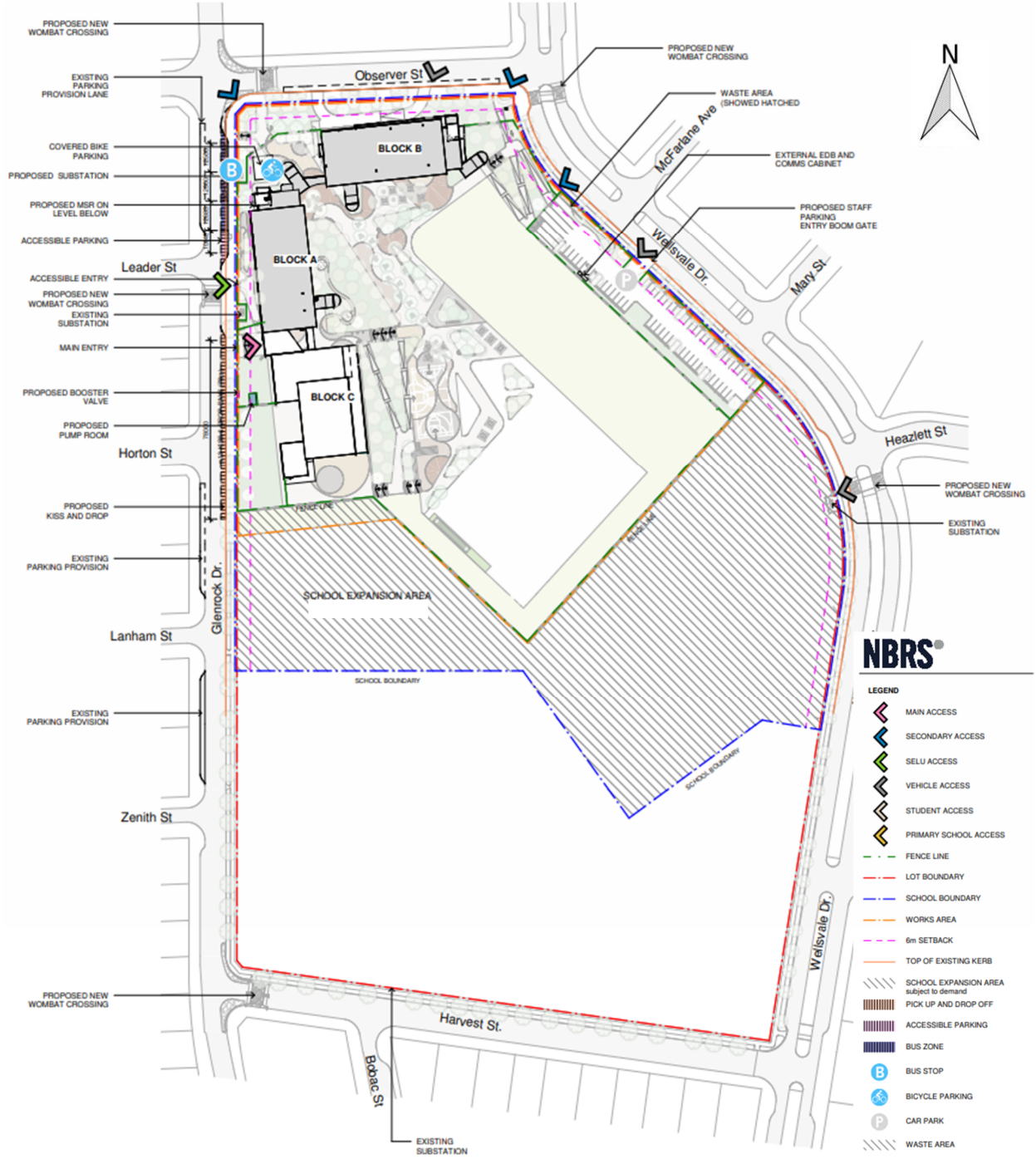
The Department of Education is the determining authority for the project under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1 Site Description

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

1. Figure 1– Site Location Plan

Source: Mecone



2. Figure 2 – New High School for Googong – indicative only, subject to detailed design

Source: NBRS, 29/011/2024

Googong is a new release area within the Queanbeyan-Palerang Local Government Area (LGA), located approximately eight kilometres south of Queanbeyan and 17 kilometres southeast of the Canberra Central Business District (CBD). Googong Reservoir, a significant waterbody, is located approximately 3 kilometres east of the subject site. Canberra Airport is located approximately 12 kilometres north of the subject site.

The site is legally described as Lot 829 in Deposited Plan 1277372. The proposed new high school site within this Lot has an area of approximately 5.84 hectares.

The site is currently zoned as R1 General Residential in the Queanbeyan Palerang Local Environmental Plan (LEP) 2022 and is located within Neighbourhood 2 of the Googong Masterplan, within the Googong DCP 2010.

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 ESD Report has been prepared to describe how the proposal will incorporate the principles of ecologically sustainable development in the design, construction and ongoing operation of the development.

3. Sustainability and ESD Strategy

The activity has developed a comprehensive ESD strategy to address the minimum requirements set out in the following:

- Clause 193 of Part 9 of the Environmental Planning and Assessment Regulation 2021
- DoE Education Facilities Standard and Guidelines (EFSG)
- Government Architect NSW (GANSW) Design Guide for Schools and Environmental Design in Schools Manual
- NSW Government Resource Efficiency Policy (GREP)
- NSW State Environmental Planning Policy (Sustainable Buildings) 2022 (Sustainable Buildings SEPP)
- National Construction Code (NCC) 2022 Section J Part J4 and J5

The strategy is reflected in a registration for a Green Star Buildings third-party certification, with a minimum rating target of 4 Stars. This target performance is considered “Best Practice” level by the Green Building Council of Australia (GBCA). The Green Star rating is currently pursued for the proposed activity.

This document outlines the ESD initiatives that are included within the building’s design to achieve the above aims and targets.

3.1 Sustainable Buildings SEPP Requirements

The following requirements apply to non-residential developments under Section 3.2 of the Sustainable Buildings SEPP:

Table 1 Sustainable Buildings SEPP requirements

Issue and Assessment Requirements		Addressed within section of this ESD report
Consideration of whether the design enables…	The minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials	Section 3.4.
	A reduction in peak demand for electricity, including through the use of energy efficient technology	Section 3.7.
	A reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design	Sections 3.5, 3.7.
	The generation and storage of renewable energy	Section 3.7.
	The metering and monitoring of energy consumption	Section 3.4.
	The minimisation of the consumption of potable water	Section 3.7.

Quantification of the embodied emissions attributable to the development	Quantities of key construction materials reported by separate submission of NABERS Materials reporting template

3.2 NCC 2022 Section J Compliance

The activity is committing to exceed the Deemed-to-Satisfy (DTS) requirements of NCC 2022 Section J. In line with the EFSG requirements, the activity is targeting a 10% reduction in energy consumption, in comparison to a minimum NCC 2022 DTS compliant building, excluding any contribution from renewable energy (e.g. rooftop solar PV). A Section J Part J4 minimum DTS compliance assessment was conducted in Schematic Design stage, which sets out the minimum required fabric performance in order to meet a 10% improvement above DTS provisions.

3.3 Green Star Rating

The project is registered with the GBCA under the Green Star Buildings v1 rating tool and is being designed to a minimum Green Star 4 Star rating. It is registered as:

- GS-13028B New High School in Googong Stage 1.

The following sections detail best practice sustainability initiatives currently integrated in the design, based on the credits currently targeted within the Green Star Buildings framework. As the design is further developed, the targeted credits may be removed or substituted, or new credits added. Green Star Buildings framework categories presented in the following sections also encompass the requirements of the EFSG.

3.4 Responsible

The following initiatives are currently included in the sustainability strategy:

- Green Star accredited professional has been contractually engaged to provide advice, support and information.
- Environmental targets for the activity and a system in place to measure results:
    - 20% reduction in energy use compared to reference building
    - Water efficient fixtures and water-using appliances
    - 10% reduction in upfront carbon emissions compared to reference building
    - Airtightness target of 4 $m^3/h.m^2$ (AP50) based on ATTMA TSL2
- Design for optimum ongoing management through appropriate metering and monitoring systems. Services and maintainability reviews to be conducted, and commissioning and tuning of building systems to ensure systems are operating as intended.
- Provision of building information to facilitate operator and user understanding of all building systems, and their specific operation and maintenance requirements and/or environmental targets.
- Responsible construction practices to be put in place by the Contractor, including development of project-specific best-practice environmental management plan (EMP). Implementation of a formalised approach to planning, implementing and auditing during construction to ensure conformance with the EMP.
- Minimum of 90% of waste generated from construction and demolition to be reused or recycled, to limit the amount of waste going to landfill. Waste management plans to be developed by the Contractor for demolition, construction and operation of the site.
- Specialist waste consultant to develop an operational waste management plan (OWMP). OWMP principles to be incorporated into the design in future project phases, including separation of waste streams (general, recycling, and organics or other) and design of adequate waste storage area.

3.5 Healthy

The following initiatives are currently included in the sustainability strategy:

- Pollutants entering the building are minimised and a high level of outdoor air (50% improvement above AS1668.2) is provided to the regularly occupied spaces.
- Best-practice lighting is provided to improve lighting comfort via flicker-free, high-quality lighting that accuracy addresses the perception of colour within the space, and glare from light sources is limited.
- High levels of daylight and external views are provided to regularly occupied learning and administration areas, to support high levels of visual comfort for building occupants. Detailed daylight modelling will be undertaken in future project phases.
- The building's acoustic design aims to deliver acoustic comfort through achieving maximum internal noise levels, providing acoustic separation, and controlling reverberation.
- Internal air pollutants have been reduced via selection of materials with low or no volatile organic compound (VOC) levels and low formaldehyde concentrations.

3.6 Resilient

The following initiatives are currently included in the sustainability strategy:

- Design to respond to future climate impacts identified by a climate change risk assessment. A climate adaptation risk register has been developed for the building to address specific climate risks of the design and how they might be mitigated to reduce risk. Adaptation responses to address high and extreme risks have been proposed within the project's Climate Resilience Plan.
- Strategies to minimise the urban heat island effect including light-coloured roofing and external finishes, as well as maximising the extent of landscaping elements.

3.7 Positive

The following initiatives are currently included in the sustainability strategy:

- The project is to align with the SINSW Commitment to Sustainability Goals for 2030 (net zero emissions in operations) and the Sustainable Buildings SEPP requirements (fossil fuel free by 2035). The design team's current inclusions are as follows:
    - 100% electric services including heat pumps for heating and domestic hot water
    - No piped gas connection; only gas bottles provision for science laboratory and 50% of VET cooking stovetops. Bottled gas use intended to allow future transition away from gas.
    - Refer to ESD-GHS-REP-005 Net Zero Statement prepared to support REF
- Passive design principles, including high-performance building envelope, effective shading and building orientation, and natural ventilation openings to support comfortable and low-energy indoor environment quality.
- Exceeding NCC 2022 Section J minimum DTS requirements. The EFSG Section DG02.03 requires the development to target a 10% reduction in energy consumption, in comparison to a minimum NCC 2019 DTS compliant building, excluding any contribution from renewable energy (e.g. rooftop solar PV). The project proposes to verify this via NCC 2022 Section J DTS calculations. No energy or thermal modelling has been scoped.
- Effective shading devices which reduce solar heat gains to conditioned spaces.
- Energy-efficient lighting (typically LED) will be provided throughout, and high efficiency heating and cooling.

- Fully electric building services.
- 70 kW Roof mounted solar photovoltaic (PV) system.
- Enhance the water efficiency of the proposed development and reduce potable water consumption associated with major uses:
    - Selection of water-efficient sanitary fittings and fixtures in line the Green Star and EFSG requirements;
    - Connection to utility recycled water mains and non-potable water use for irrigation and toilet flushing;
    - No water-based heat rejection systems for air conditioning (no cooling towers).
- Reduction of Portland cement content and aggregates in all structural concrete.

3.8 Places

The following initiatives are currently included in the sustainability strategy:

- End-of-trip facilities for staff to encourage active transport modes of commuting. Facilities are designed to be safe and protected.
- Traffic engineer to carry out a transport assessment in line with the SINSW requirements.
- School infrastructure designed to encourage access by public transport and site walkability, in alignment with the School Transport Plan.
- Provision of bicycle parking facilities: 140 bicycle parking spaces for students (5% mode share of 700 students) and 5 bicycle parking spaces for adults.

3.9 People

The following initiatives are currently included in the sustainability strategy:

- Contractor's construction practices to promote diversity and reduce physical and mental health impacts.
- Through collaboration with the Connecting with Country consultant, incorporate Indigenous design elements into the project design, addressing each of the principles from the Australian Indigenous Design Charter (AIDC). Aboriginal and Torres Strait Islander communities to be engaged throughout. The school is to be designed in such a manner as to acknowledge and recognise the Indigenous culture of the site, and information on the reconciliation and cultural values made available to the public visitors and users of the building.
- Universal design principles implemented to provide safe, equitable and dignified access for persons with disabilities.
- The activity implements a social procurement plan and generates employment opportunities for disadvantaged and under-represented groups.

3.10 Nature

The following initiatives are currently included in the sustainability strategy:

- Appropriate internal and external lighting design to reduce light pollution. External lighting to be designed such that the Upward Light output Ratio (ULOR) <5%.
- Incorporate an appropriate landscape area that includes a diversity of species and prioritises the use of climate-resilient and Indigenous plants. A site-specific Biodiversity Management Plan will be developed during detailed design stage.

4. Conclusion

This report identifies the sustainability measures being pursued by the project team, in alignment with the frameworks and requirements applicable to this development. In particular, the activity is being coordinated to target a 4 Star Green Star Buildings v1 rating. The sustainability strategy includes holistic design and operational initiatives, to encourage best practice design towards energy, water, and waste reduction; as well as providing improved indoor environmental quality and a positive impact on nature and the community.

4.1 Mitigation Measures

Table 2 Mitigation Measures

Mitigation Number/Name	Aspect/Section	Mitigation Measure	Reason for Mitigation Measure
Green Star Strategy	Prior to commencement of any construction work	Finalisation and demonstration of all Green Star strategy targeted credits, through the award of a Green Star Design Review certification.	The credits forming the Green Star strategy aim to enhance sustainability of the project and minimise impact on the locality, community and/or the environment.
Sustainability Strategy	Prior to commencement of any construction work	If any departures from the sustainability strategy described in this report arise, a review of the strategy is required.	Ensure the proposed activity still meets the ESD initiatives and targets.
Section 2.3 Responsible – Metering and Monitoring	During design finalisation	Services and maintainability reviews to be conducted.	Design for optimum ongoing management and operations.
Section 2.3 Responsible – Contractor EMP	Prior to commencement of any construction work	Responsible construction practices to be put in place by the Contractor, including development of project-specific best-practice environmental management plan (EMP).	Construction practices to reduce impacts and promote opportunities for improved environmental and social outcomes.
Section 2.3 Responsible – Construction and Demolition Waste Management	Prior to commencement of any construction work	Waste management plans to be developed by the Contractor for demolition, construction and operation of the site.	Construction practices to reduce impacts and promote opportunities for improved environmental and social outcomes.
Section 2.3 Responsible – OWMP	During design finalisation	Specialist waste consultant to develop an operational waste management plan (OWMP).	Management of operational waste in a safe and efficient manner.
Section 2.8 People – Contractor inclusive policies	Prior to commencement of any construction work	Demonstration of Contractor policies that promote diversity and reduce physical and mental health impacts.	Construction practices to promote diversity and reduce physical and mental health impacts.
Section 2.9 Nature – Biodiversity Management Plan	During design finalisation	Develop a site-specific Biodiversity Management Plan.	Ensure biodiversity is maintained during operations.

4.2 Evaluation of Environmental Impacts

1. The extent and nature of potential impacts are low and will not have significant impact on the environment.
2. Potential impacts can be appropriately mitigated or managed to ensure that there is minimal impact on the environment.