Aurecon Australasia Pty Ltd
ABN 54 005 139 873
Ground Floor, 25 King Street
Bowen Hills QLD 4006
Locked Bag 331
Brisbane QLD 4001
Australia

T +61 7 3173 8000
F +61 7 3173 8001
E brisbane@aurecongroup.com
W aurecongroup.com

2023-12-20

Carl Alderson
Project Director
CWPM

Dear Carl

Young High School – ESD Statement of Compliance

Aurecon were engaged to provide an independent ESD review of the design and construction of Young High School, Campbell Street, Yong, NSW.

Attached is the EFSG ESD Schedule summary compliance document noting relevant documents referenced and requirements.

The following is a summary* of the documents that were provided for the review:

- EFSG ESD Schedule
- Green Star Schedule
- As-Built Drawings:
  - Architectural
  - Mechanical
  - Electrical
  - Landscape
- Reports:
  - Acoustics
  - Lighting
  - Energy and Thermal Comfort
- Other:
  - FF&E Schedules
  - Discipline Specifications
  - Materials Certificates

** please note a comprehensive set of documentation was provided to Aurecon, a full detailed list can be provided if required*

The above documents have demonstrated that the project is compliant with the requirements of the EFSG ESD Schedule for this project.

For and on behalf of Aurecon,

Quentin Jackson
Principal, Sustainability Buildings QLD

PROJECT:	Young High School															
										Actual evidence proposed This evidence needs to show that the requirement from column C has been met			Is the project compliant at this stage? Y or N		
Theme	Indicator	Initiative Name	Sustainability initiatives / requirements from the EFSG This is an extract only from the relevant EFSG. For full requirements refer to https://efsg.det.nsw.edu.au/welcome	Folder	EFSG	EFSG type	Crossover with Green Star	Standard evidence to demonstrate compliance	Has this been implemented in the project? Y or N	Narrative	Reports	Drawings	As-built check	Independent ESD consultant comments	Aurecon Review 2023
Energy & carbon	EC1: Energy efficiency	Improvement over NCC	**Improvement over NCC** All new facilities must be designed and built so that energy consumption is predicted to be at least 10% lower than if build to minimum compliance with National Construction Code requirements.The energy consumption reduction must be achieved without including renewable energy generation in the calculation.	Emissions Reduction	DG02.03	Mandatory	DAB c15E.0 GHG Emissions Reduction - Conditional Requirement	1. Energy modelling report / Predictive energy modelling and thermal comfort assessment. Report needs to show at least 10% improvement of building over minimum NCC requirements; and 2. As-built evidence that model is an accurate representation of the building, e.g. drawings; and 3. Specifications / calculations supporting modelling inputs, e.g. window energy rating scheme certificates, calculated R-values of walls, roofs, etc. 4. As an alternative to 2 and 3 above, a Statement by energy modeller confirming that the moel accurately represents the building.	Y		WSP modelling report: YOUNG HIGH SCHOOL - BLOCK NN & EE GREEN STAR DESIGN & AS BUILT V1.3 ENERGY REPORT		Y	Documents supplied/reviewed: *- Design Statement (word doc undated)* *- Block NN & EE GS May 2021* - minior non-compliance 9.7% fabric however intent has been fully met to acheve building envelope requirements *- Thermal Comfort Block NN May 2021* *- Envelope drawings Block EE and Block NN*	✓ WSP report indicates achievement of credit 15E
Energy & carbon	EC1: Energy efficiency	Energy conservation	**Energy conservation** Design and construct all school buildings within the parameters specified in the: - NSW Public Works Energy Manual for Buildings - Building Code of Australia (BCA) Section J for Energy Efficiency The NSW Public Energy Manual for Buildings provides an energy-saving strategy by identifying aspects of the building and services where reductions in operating and maintenance costs can be made through proper selection of: - Building fabric - Insulation materials - Shading and ventilation - Services and control It also requires the formulation of an energy impact statement.	Emissions Reduction	DG65.02	Mandatory	DAB c15 GHG Emissions Reduction	1) Section J report 2) Energy impact statement	Y		WSP Section J Report - updated version from WSP to be available v soon		Y	Documents supplied/reviewed:as per DG02.03. Note: no formal Energy impact statement provided, Section J modelling considered appropriate evidence	✓ Energy report indicates achievement of credit 15E
Energy & carbon	EC1: Energy efficiency	Daylighting	**Daylighting** - Designers must seek to maximise natural daylight in all learning and administration spaces to reduce energy usage through windows and skylights - Including daylight sensors in rooms to reduce light output or turn off light when sufficient daylight is provided within the space - When the space is large and perimeter lighting is adjacent to windows, perimeter lighting is on a separate zone to make maximum use of daylight	Lighting	DG2.3.1 DG12	Mandatory	DAB c15 GHG Emissions Reduction	1. Daylight modelling report demonstrating how natural daylight has been maximised in all habitable spaces; and 2. As built drawings demonstrating that the model accurately represents the building (i.e. window size and location; skylights installed, etc.); and 3. Specifications supporting inputs used in modelling (e.g. skylights and glass specs)	Y		WSP modelling report: GREEN STAR CREDIT 12.1 - DAYLIGHT REPORT	Architectural drawings block NN: A.02.01, A.02.02, A.02.03, A.06.01, A.06.02, A.08.05, A.08.06, A.20.11, A.20.12, MW-0.A51.01 Architectural drawings block EE: A.02.01, A06.03, A.06.04, A.07.02, A.20.01, MW-0.A51.01	Y	Final compliance dependent on as built drawings Documents reviewed: *- WSP modelling report: Green Star credit 12.1 - Daylight Report* - Architectural drawings (various, as outlined in column N) - Modelling report confirms that >40% of primary occupied floor space (across Block NN & EE) have access to high levels of daylight. As built drawings will be required to demonstrate compliance with this initiative.	✓ Daylight report indicates achievement of Daylight credit
Energy & carbon	EC1: Energy efficiency	Shading devices	**Shading devices** On exposed facades subject to direct sunlight, external window shading has been considered as part of the building design	Lighting	DG2.3.1	Mandatory	DAB c15 GHG Emissions Reduction	1. As built drawings	Y			Architectural drawings: A.07.01, A.07.02, A.07.03, A.07.04, A.07.05, A.07.07 architectural drawings block EE: A.06.03, A.06.04, A.07.02	Y	Final compliance dependent on as built drawings Documents Reviewed: *- Architectural drawings (various, as outlined in column N)* Drawings indicate facade shading options included in design. As built drawings will be required to demonstrate compliance for this inititiative.	✓ Drawings and daylight & energy reports indicate compliance
Energy & carbon	EC1: Energy efficiency	Lighting energy conservation	**Lighting energy conservation** Lighting system must have timed or sensor feedback functionality for energy conservation	Lighting	DG2.3.2	Mandatory	DAB c15 GHG Emissions Reduction	1. As built mechanical drawings / statement from head contractor	Y			As built lighting drawings and specifications	Y	Final compliance dependent on as built drawings Noted comment provided by contractor in column O. As built drawings to be completed/provided to demonstrate compliance with this initiative.	✓ Drawings and daylight & energy reports indicate compliance
Energy & carbon	EC1: Energy efficiency	Energy efficient lighting	**Energy efficient lighting** - LED lighting must be installed - The design of the lighting systems and the selection of fittings is to be undertaken based on a Whole of Life approach - System must support sustainable design principles including reducing energy consumption - Use light sources, lamps and control gear with a long life	Lighting	DG2.3.1 SG63.01	Mandatory	DAB c15 GHG Emissions Reduction	1. As built electrical drawings	Y	All lighting assumed to be LED type. Fluorescent/incandescent/HID / other lighting not considered in design, therfore WOL analysis deemed not necessary		As built lighting drawings and specifications	Y	Final compliance dependent on as built drawings Noted comment in column O that all lighting included in schematic design are LEDs. As-built drawings to be completed/provided to demonstrate complaince with this initiative.	✓ Drawings and daylight & energy reports indicate compliance
Energy & carbon	EC1: Energy efficiency	Maximum illumination power densities	**Maximum illumination power densities** Section J part 6 of the National Construction Code provides tables that define the maximum illumination power density that is acceptable in various locations. This, and all other elements of Section J part 6 should be applied appropriately.	Lighting	DG63.05.01	Mandatory	DAB c15 GHG Emissions Reduction	1) Lighting drawings 2) Lighting specifications / schedules 3) Lighting modelling report showing compliant power densities	Y		Lighting modelling incldued in WSP report: YOUNG HIGH SCHOOL - BLOCK NN & EE GREEN STAR DESIGN & AS BUILT V1.3 ENERGY REPORT	As built lighting drawings and specifications	Y	Final compliance dependent on as built drawings Documents Reviewed: *- Young High School - Block NN & EE Green Star Design & As Built V1.3 Energy Report* Information within appendix D-1 of the report referenced above demonstrates that proposed maximum lumination power densities are compliant with section J part 6 of the NCC. As-built lighting drawings are required to round out compliance with this initiative.	✓ Drawings and report indicate compliance
Energy & carbon	EC1: Energy efficiency	Lighting control	**Lighting control** The required communication protocol for the luminaires is DALI. The following systems for the control of luminaires fitted with DALI control gear are considered acceptable: - Diginet Rapix suite of products. - Clipsal C-bus suite of products - Philips Dynalite suite of products - KNX based systems Systems must be designed to be as simple as possible. This simplicity must extend from the topography to ease of use. It is a specific requirement that programming of any control system must be relatively simple and not limited to costly specialist consultants. Allowances should be made in system design specifications for user group training of control systems and for the programming of the system as part of the commissioning and hand over process. All equipment and manuals necessary to operate and maintain the system must be provided to the school and Asset Management	Lighting	DG63.06.01	Mandatory	DAB c15 GHG Emissions Reduction DAB c4 Building Information	1) Commissioning report 2) Confirmation from AMU that all relevant manuals have been handed over	Y		Commissioning report	As built lighting drawings and specifications	Y	Noted comment from contractor in column O that DALI control gear have been included in schematic design. Commissioning report to be completed by the contractor to demonstrate compliance with this initiative.	✓ Drawings indicate compliance

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Energy & carbon	EC1: Energy efficiency	Constant light output / Daylighting	**Constant light output / Daylighting** -Constant Light Output (CLO) systems consisting of dimming luminaires and light level sensors are highly recommended as they are effective in maintaining the required illuminance values. CLO systems ensure that the lit environment remains compliant at the lowest possible Watts per square metre for the reasonable operating life of the luminaires. Maintained illuminance values required for design compliance will result in areas being over-lit for a large proportion of their operating life without a CLO system. - Sensors can be fitted to each luminaire or by utilising sensors that control groups of luminaires. - Once in operation a CLO system delivers compliant light levels over the life of a system by reducing the light through dimming and ramping the levels up over the lifespan of the luminaire. These systems should be seamless and invisible in operation to users of the locations. - Daylight Harvesting can be delivered as a component of a CLO system and requires no additional hardware above and beyond that required for a CLO to operate. - Daylight harvesting is recommended in areas where there is a rapid transition from natural day light to a dark environment, such as when entering a multi deck or underground car park from a street in full daylight, or in a classroom where daylight from windows is within the field of view.	Lighting	DG63.06.02 DG63.06.03	Mandatory	DAB c15 GHG Emissions Reduction	1) Lighting drawings 2) Lighting modelling report showing compliant power densities	Y		WSP modelling report: GREEN STAR CREDIT 12.1 - DAYLIGHT REPORT	As built lighting drawings lighting specification - control systems	Y	Documents Reviewed: - *Young High School - Block NN & EE Green Star Design & As Built V1.3 Energy Report* - *Young High School - Block NN & EE Green Star Credit 1.2 - Daylighting Report* - *Lighting drawings* Information provided demonstrates intent inline with credit criteria, however narrative to complete compliance and as built drawings / commissioning to confirm compliance is recommended	✓ Drawings and calculations indicate compliance
Energy & carbon	EC1: Energy efficiency	Switching strategy	**Switching strategy** - Local switching should be provided where it is identified that the users can benefit from manual operation of the lighting and other lighting automation technology is considered cost prohibitive. The switching should be clearly marked and robust. - Achieve energy efficient switching in Schools by: The use of multiple switching groups Automatic control of these groups to operate as follows: Controlled luminaires are to automatically turn-off nominally 3 minutes after the bell sounds. Turn-off is to be in two steps other than in small rooms, one step after 3 minutes and the second group 2 minutes later (5 min). If the lighting is required for the next period, occupants of that room can prevent the lights turning off by pressing the ON switch/es after the bell sounds. The luminaires in each room can be turned off at any time by pressing the OFF switch/es. The off signal is to be capable of transmission at the end of normal school hours or at other selected times without the bells sounding, with the lighting turning off in two steps (other than in small rooms).	Lighting	DG63.07 DG65.03.01	Negotiable / TBC	DAB c15 GHG Emissions Reduction	1) Electrical & lighting drawings showing switching groups and automatic controls	Y			As built lighting drawings and specifications	Y	Documents Reviewed: - *Young High School - Block NN & EE Green Star Design & As Built V1.3 Energy Report* - *Young High School - Block NN & EE Green Star Credit 1.2 - Daylighting Report* - *Lighting drawings* Information provided demonstrates intent inline with credit criteria, however narrative to complete compliance and as built drawings by architect or similar / commissioning to confirm compliance is recommended	✓ Energy report indicates compliance
Energy & carbon	EC1: Energy efficiency	Energy efficient HVAC system	**Energy efficient HVAC system** HVAC system must have timed or sensor feedback functionality for energy conservation Systems shall be designed to minimise energy consumption. System design / equipment selection is to be based on whole of life cost analysis. Specifically air conditioning equipment should: - support sustainable design principles including reducing energy consumption; and - be easily accessible and serviceable – easy to maintain with minimal impact on school operations / activities when maintenance is being performed. All new school buildings are to be designed to meet or exceed the requirements of building regulations for conditioned spaces	HVAC	DG2.3.2 DG55 DG16.09	Mandatory	DAB c15 GHG Emissions Reduction	1. As built mechanical drawings / statement from head contractor; 2. Whole of life cost analysis demonstrating systems were selected based on WOL performance.	Y	WOL assessment not undertaken, however mechanical engineer have provided a statement describing the design and selection process to match the project budget and technical requirements	statement from WSP that VRF likely to be most efficient based on project budget and scope	as built mech drawings and specifications	Y	Final compliance dependent on as built drawings Noted narrative in column L to determine WOL assessment Document reviewed - *WOL Assessment from Northrop dated 21/7/21* *Subject YHS_Green Star* email provided has been reviewed As-built mechanical drawings will be required to demonstrate compliance with this initiative.	✓ Energy report and drawings indicate compliance
Energy & carbon	EC1: Energy efficiency	Energy efficient appliances & equipment	**Energy efficient appliances & equipment** Electrical equipment must be at least 0.5 stars above the market average star rating or comply with high efficiency standards specified in the GREP	HVAC	DG2.3.3	Mandatory	DAB c15 GHG Emissions Reduction	1. Schedule of appliances and equipment with their star ratings or performance standards, signed by head contractor or architect. All appliances and equipment required in the GREP must be listed, incl air conditioning equipment, electric motors, transformers, etc.	Y			architectural fixtures schedule A.56.00	Y	Documents Reviewed: - *Interior Fittings Fixtures & Equipment Schedule* (block NN & EE) Not compliant with this initiative at this stage. Schedule references several items that are either non-compliant (e.g., CHiQ 125L Bar Fridge) or do not include/mention their energy rating. Schedules also need to be signed by the head contractor or architect as per requirement listed in column J.	✓ Updated energy ratings in schedule.
Energy & carbon	EC1: Energy efficiency	Heat loss/gain	**Heat loss/gain** Building/HVAC design must consider: - Climate/ micro-climate: This data must come from the current AIRAH handbook and where a specific area is not referenced in the handbook, the Bureau of Meteorology statistics must be utilised. - Orientation: exposure to sun(solar) and wind - Natural Ventilation and cross ventilation - Insulation, thermal capacity and time lag of building fabric. - Energy and Resources Cost: Initial and on-going, of heating and cooling. Reduced energy consumption provides future cost savings and a reduced carbon footprint. - Activities / Equipment that may produce excess heat. Energy modelling software must be used to determine heating and cooling loads as part of the Whole of Life analysis that must be undertaken. (i.e. Camel or Carrier).	HVAC	DG04.01	Mandatory	DAB c15 GHG Emissions Reduction	1. Thermal modelling report 2. As built evidence demonstrating that model is an accurate representation of the building 3. Specifications/ calculations supporting modelling inputs	Y		WSP modelling report: YOUNG HIGH SCHOOL - BLOCK NN & EE GREEN STAR DESIGN & AS BUILT V1.3 ENERGY REPORT	As built architectural, mechanical, electrical drawings referenced in report	Y	Final compliance dependent on as built drawings Documents Reviewed: - *WSP modelling report - Block NN & EE Green Star Design & As Built V1.3 Energy Report* Report adequately addresses climate, building orientation, ventilation, insulation, energy cost, and equipment in determining AC equipment sizing. As built architectural, mechanical and electrical drawings will be required to fully demonstrate compliance with this initiative.	✓ Energy report and drawings indicate compliance
Energy & carbon	EC1: Energy efficiency	Passive design	**Passive design** The need for active cooling and heating shall be minimised by employing passive / sustainable design principles. Windows: The size and proportions of windows need to be carefully considered in the design to provide maximum efficiency and a balance between the ESD factors such as; maximising daylight in rooms but avoiding unnecessary solar heat gain and thermal loss etc. Roofing: The colour selected will have an impact on the thermal performance. Light colours will reflect more of the sun's heat and darker colours absorb more of the sun's heat, which will be transferred into the roof structure. Unless prevented by glare issues to surrounding development, light colours must be selected to reduce the thermal load from solar heating and contribute to heat island effect mitigation. Orientation (as close to True North as possible). With appropriate shading, this will provide a balanced approach to reducing summer heat ingress and encouraging solar warmth during winter. Appropriate glazing/ shading strategy (related to orientation and local environment), Depending on the climate, windows would be minimised on southern, eastern & western elevations with external shading on western and eastern facades). Use of thermal mass (to stabilise internal temperatures). Insulation: maximise insulation in line with	Emissions Reduction	DG55 DG06.02 DG27.12	Mandatory / Recommended	DAB c15 GHG Emissions Reduction	1. Thermal modelling report 2. As built evidence demonstrating measures implemented to reduce need for active cooling / heating 3. Passive design report by Architect listing all passive design initiatives implemented	Y		WSP modelling report: YOUNG HIGH SCHOOL - BLOCK NN & EE GREEN STAR DESIGN & AS BUILT V1.3 ENERGY REPORT Passive design statement	Architectural drawings - plans, elevations, sections, window and insulation specifications	Y	Final compliance dependent on as built drawings Documents Reviewed: - *WSP modelling report - Block NN & EE Green Star Design & As Built V1.3 Energy Report* - *Passive Design Statement* Modelling report adequately references window glazing, shading, building orientation and insulation in calculating the site's thermal load. As built architectural drawings will be required to demonstrate compliance with this initiative.	✓ Energy report and drawings indicate compliance

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Energy & carbon	EC1: Energy efficiency	Ventilation strategy	**Ventilation strategy** A ventilation strategy must be developed to ensure that sufficient ventilation is provided to all spaces to meet the requirements of the BCA/NCC and associated standards. Specifically ventilation equipment must be designed from a whole-of-life perspective and: - Enable healthy learning environments with indoor air quality (IAQ) that supports learning and teaching (i.e. IAQ that is fit for purpose for schools) - Support sustainable design principles including reducing energy consumption - Be accessible and serviceable - easy to maintain with minimal impact on school use when maintenance is being performed	Ventilation	DG57.01	Mandatory	DAB c15 GHG Emissions Reduction	1) Cooling system strategy including WOL analysis 2) Concept plans 3) Construction drawings 4) Trade-based specification 5) As built drawings	Y	WOL assessment not undertaken, however mechanical engineer has provided a statement covering, heating, cooling and ventilation describing the design and selection process to match the project budget and technical requirements	copy of email from Northrop outlining selection process for HVAC system	As built mechanical drawings mechanical services specification	Y	Final compliance dependent on as built drawings Noted narrative in column L to determine WOL assessment Document reviewed - *WOL Assessment from Northrop dated 21/7/21* *Subject YHS_Green Star* email provided has been reviewed As-built mechanical drawings will be required to demonstrate compliance with this initiative.	✓ Energy report and drawings indicate compliance
Energy & carbon	EC1: Energy efficiency	Natural ventilation	**Natural ventilation** - Is required to all classrooms for comfort in summer and to maintain a healthy indoor environment. - Where cross ventilation may be restricted (i.e. where rooms are located on each side of a corridor, at least one whole wall of operable windows plus ceiling fans are required, to provide air movement. - Some windows need to be operable in driving rain and so must be protected with appropriately designed weather hoods, eaves overhang or other method of protection.	Ventilation	DG05.01	Mandatory	DAB c15 GHG Emissions Reduction	As built drawings demonstrating windows have been installed as required.	Y			As built mechanical drawings mechanical services specification	Y	Documents Reviewed: - *Mechanical drawings* (various) & *Mechanical Services Specification* Drawings reference natural ventilation or mechanically assisted natural ventilation in almost all areas. As-built mechanical drawings will be required to demonstrate compliance with this initiative. Noted that SINSW accepted EFSG Departure Schedule is required to confirm this initiative	✓ Mechanical drawings indicate compliance
Energy & carbon	EC1: Energy efficiency	Mechanically assisted cross-ventilation	**Mechanically assisted cross-ventilation** In two storey blocks where cross flow ventilation is not possible to the lower floor, mechanically assisted cross ventilation is to be provided to the lower floor learning spaces nominated in the EFSG. The ventilation system is to be sized to provide at least 7 air changes per hour. The system is to be thermostatically controlled to activate when room temperature exceeds 28 deg C and is to run continuously until the room temperature drops below 27 deg C. Additionally the system is not to be activated unless the outdoor temperature is lower than the indoor temperature and is to be immediately de-activated as soon as the outdoor temperature exceeds indoor air temperature. Provide programmable seven-day time clock and 0-2 hrs adjustable after-hour timer to control each mechanically assisted exhaust ventilation system.	Ventilation	DG57.18	Mandatory	DAB c15 GHG Emissions Reduction	As built mechanical drawings and specifications Extracts from commissioning report	Y		Mechanical services commissioning report	As built mechanical drawings mechanical services specification	Y	Documents Reviewed: - *Mechanical drawings* (various) & *Mechanical Services Specification* Drawings reference natural ventilation or mechanically assisted natural ventilation in almost all areas. As-built mechanical drawings will be required to demonstrate compliance with this initiative. Noted that SINSW accepted EFSG Departure Schedule is required to confirm this initiative Similarly, Commissioning and As-built documents required to confirm compliance with this credit	✓ Mechanical drawings indicate compliance
Energy & carbon	EC1: Energy efficiency	Ceiling void ventilation	**Ceiling void ventilation** Provide ventilation so as to remove hot air build-up in large enclosed roof spaces. Roof mounted turbo ventilators are an approved method. - The size and number of ventilators to be included will depend upon the volume and use of the individual rooms and the local climatic conditions to provide suitable air changes and room cross ventilation. - Provide a minimum of two roof ventilators to each Secondary General Learning Space or a Primary Home Base unless otherwise directed, or other number recommended by the manufacturer for the size of the space (whichever is the greater). - Ventilator throat diameter to be no less than 400mm.	Ventilation	DG05.02 DG37	Mandatory	DAB c15 GHG Emissions Reduction	As built mechanical drawings demonstrating ventilation has been installed as required.	Y			As built mechanical drawings	Y	Final compliance dependent on as built drawings As-built mechanical drawings are required to demonstrate compliance with this initiative.	✓ Ventilators on as-built drawings
Energy & carbon	EC1: Energy efficiency	Roof ventilator control	**Roof ventilator control** Provide controls for the operation of the motorised dampers on the roof ventilators. Generally one switch is required for each space within the school where roof ventilators are installed	Ventilation	DG65.16	Mandatory	DAB c15 GHG Emissions Reduction	Mechanical / electrical drawings showing controls	Y			As built mechanical drawings	Y	Final compliance dependent on as built drawings As-built mechanical drawings are required to demonstrate compliance with this initiative.	✓ Ventilators on as-built drawings
Energy & carbon	EC1: Energy efficiency	Wind powered roof ventilators	**Wind powered roof ventilators** School buildings can use wind powered roof ventilators with dampers to provide effective summer ventilation. Design to suit local ambient climatic conditions to ensure correct sizes, locations and numbers are provided for each particular application. Co-ordinate the locations of ventilators with the ceiling fans to achieve effective air movement. Fan assisted ventilators should also be considered on days of low wind Provide a wall mounted switch to open /close the damper.	Ventilation	DG57.14	Mandatory	DAB c15 GHG Emissions Reduction	As built mechanical drawings showing location of roof ventilators if installed	Y			N/A	Y	Noted comment in column O that only mechanically-assisted ventilation has been proposed/used. Suggested removal of this initiative form Column K - implementation on this project as an alternative	✓ Ventilators on as-built drawings. Ecopower ventilators can operator in natural or mechanical assist mode.
Energy & carbon	EC1: Energy efficiency	Ventilation in sanitary spaces	**Ventilation in sanitary spaces** - Greater air circulation than that required by building regulations is required, with sufficient natural ventilation or mechanical ventilation, to disperse odours and /or humidity. - Cross ventilation is to be used where possible. - Provide mechanical ventilation to all Disabled Toilets. - Operate the system by time control equipment (time switches or run-on timers as appropriate).	Ventilation	DG05.04 DG57.16	Mandatory	DAB c15 GHG Emissions Reduction	As built mechanical drawings demonstrating ventilation has been installed as required.	Y			As built mechanical drawings	Y	Final compliance dependent on as built drawings As-built mechanical drawings are required to demonstrate compliance with this initiative.	✓ Ventilators on as-built drawings. Ecopower ventilators can operator in natural or mechanical assist mode.
Energy & carbon	EC1: Energy efficiency	Ventilation in storage spaces	**Ventilation in storage spaces** - Permanent air ventilation openings are to be provided (without compromising security), to prevent concentration of odours.	Ventilation	DG05.05	Mandatory	DAB c15 GHG Emissions Reduction	As built mechanical drawings demonstrating ventilation has been installed as required.	Y			As built mechanical drawings	Y	Final compliance dependent on as built drawings As-built mechanical drawings are required to demonstrate compliance with this initiative.	✓ Ventilators on as-built drawings
Energy & carbon	EC1: Energy efficiency	Ventilation in permanent learning spaces and libraries	**Ventilation in permanent learning spaces and libraries** Where feasible / practical: - Ceiling fans shall be installed where ceiling height is equal to or greater than 2,700mm. - Wall fans shall be installed where ceiling heights are less than 2,700mm	Ventilation	DG55	Mandatory	DAB c15 GHG Emissions Reduction	As built drawings demonstrating ceiling/wall fans have been installed as required.	Y			As built mechanical drawings as built electrical drawings - Lighting plans	Y	Final compliance dependent on as built drawings As-built mechanical and lighting drawings are required to demonstrate compliance with this initiative.	✓ Ventilators on as-built drawings
Energy & carbon	EC1: Energy efficiency	Indoor environment controls	**Indoor environment controls** - Both the thermal comfort and indoor air quality shall be controlled automatically within specified parameters. - Controls shall be simple and intuitive to use. - A prominent green light shall highlight to occupants when conditions are suited to opening windows and doors to utilise natural ventilation. - A prominent blue light shall highlight to occupants when the air conditioning is operating. - The lights shall be clearly labelled with trafolyte labels as follows: + Green light – "External conditions are suited to opening windows and doors" + Blue light – "Air conditioning is operating. Windows and doors should be closed" - Temperature and CO2 sensors are to be installed within the space and be readily accessible for maintenance. - Sensors must be located so as to accurately record the actual room temperature and indoor air quality (CO2). - Controls shall be designed to minimise energy consumption – e.g.: by minimising over cooling and heating and automatically switching off when the space is unoccupied. - Controls shall be designed so that the system/s will shut down automatically if a room is unoccupied for greater than 10 minutes (except in specific cases such as designated computer rooms). - Controls shall be properly labelled and suitably located in the space (preferably near the light switch) and incorporate: + a key operated auto / manual / off switch; and + a push on / push off adjustable hour run timer. The run timer shall be adjustable from 1 to 4 hours and initially be set at 2 hours	Maintenance, Controls and Services	DG55	Mandatory	DAB c15 GHG Emissions Reduction	1) As built evidence demonstrating controls have been installed as required. 2) Commissioning report / statement by head contractor confirming controls have been set as required	Y		mechanical services commissioning report	As built mechanical drawings	Y	Mechanical services commission report & as built mechanical drawings will be required to demonstrate compliance with this initiative.	✓ Operation described in Building User's Guide

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Energy & carbon	EC1: Energy efficiency	Access for maintenance Communication Services Building User's Guide	**Access for maintenance** All systems and equipment that is installed within a school is to be provided with suitable access to ensure that this equipment is safely and efficiently maintainable. In order to ensure that maintenance is available, on the completion of all buildings, drawings are to be provided showing the completed (As Built) building including all equipment and equipment access arrangements. **Communication services** DoE requires a 4 hour on-site training session for up to four persons on the use of the SCS. Training is to be accompanied by appropriate documentation and a video that demonstrates operation of the system and its components, including patching, cable management for voice, video and data of the SCS installed on site. Include explanation of detailed drawings left on site. The video / CD ROM may be generated from the on-site training for future use by DoE school staff. The Project Manager will, in consultation with the School Principal, nominate the timing of this session together with the number of attendees. Manuals are to be handed to the school during the training session. Include in copies of all cabling test reports and the (minimum) 20-year warranty certificate the manual. As built documentation and manufacturers warranty and test results are required **Building user's guide** Produce a Building User's Guide to enable the client to understand the building systems and operate systems to maximise efficiency. This must: - Clearly and concisely describe the operation of building and its services - Detail a reasonable maintenance program - Advise the user of the most suitable replacements for consumables	Maintenance, Controls and Services	DG16.10 DG64.10 DG65.02	Mandatory	DAB c4 Building Information	1) As built drawings including all equipment access arrangements for maintenance 2) Training records 3) Operation manuals 4) Manufacturers warranties and cabling test reports 5) Building user's guide	Y		Operations manuals for communications equipment	as built electrical drawings training records building users guide cable test reports & manufacturers warranty documents	Y	Evidence referenced in columns M & N will need to be developed and provided to demonstrate compliance with this initiative.	✓ Operation described in Building User's Guide
Energy & carbon	EC2: Scope 1 & 2 emissions	Renewable energy	**Renewable energy** A grid connected solar PV system must be installed in line with DG66 requirements Where feasible, PV systems shall be installed to offset as much of the electricity consumed by the school as is practicable	Renewable Energy	DG2.3.4 DG55	Mandatory	DAB c15 GHG Emissions Reduction; DAB c16 Peak Electricity Demand Reduction	1) As installed drawings of PV system 2) Energy modelling report showing renewable energy generation	Y		PV report (appendix) from WSP energy modelling report	as built electrical drawings / spec	Y	Final compliance dependent on as built drawings As-built electrical drawings are required to demonstrate compliance with this initiative.	✓ Energy report and drawings indicate compliance
Energy & carbon	EC2: Scope 1 & 2 emissions	Energy storage	**Energy storage** Battery used as energy storage of grid or solar energy may be used for grid forming, grid support, peak-demand management and load shifting, and self-consumption of renewable electricity. Energy storage is substantiated when: - there is historical evidence of grid outages and a need for backup power; - there are critical loads which require an uninterruptible power supply or backup power supply; - It is economical for energy storage systems to supplement or replace an existing backup generator (financial assessment required); - the DNSP requires that the energy storage be implemented; - The financial benefit of the system outweighs the cost of the system. This can be demonstrated by calculating and showing that the Levelised Cost of Electricity (LCOE) from a battery energy system with a certain operation regime is less than the retail tariff rate experienced at the site, or by showing that the BESS can reduce energy cost at the site and achieve a payback period of 8 years or less.	Renewable Energy	DG66.8.3	Mandatory	DAB c15 GHG Emissions Reduction; DAB c16 Peak Electricity Demand Reduction	1) As installed drawings of battery storage system	N	N/A	N/A	N/A	N/A	NA	NA
Energy & carbon	EC2: Scope 1 & 2 emissions	Heaters	**Heaters** Electric heating must be preferred over gas heating. Where gas heating is considered, it must be approved by SINSW Sustainability Heating equipment must be designed from a whole-of life perspective and: - Support sustainable design principles including reducing energy consumption and carbon emissions - Be accessible and serviceable - easy to maintain with minimal impact on school use when maintenance is being performed	Off-Site Fuel Use	DG56	Mandatory	DAB c15 GHG Emissions Reduction	1) If reverse cycle air conditioning is installed, confirmation that gas heaters are not installed, OR 2) Evidence that the gas heaters installed are energy efficient	Y			as built mechanical drawings	Y	Noted comment in column O that heating and cooling systems are all electric. Final compliance dependent on as built drawings As built mechanical drawings are required to demonstrate compliance with this initiative.	✓ Energy report and drawings indicate compliance
Energy & carbon	EC2: Scope 1 & 2 emissions	Water heaters	**Water heaters** - Hot water and tempered water generation for schools must be carefully considered to ensure that a Whole of Life assessment is undertaken to minimise life cycle costs and carbon emissions - Environmentally friendly options such as solar heating (if vandal resistant) and heat pumps are preferred energy sources to minimise energy consumption.	Off-Site Fuel Use	DG53.09	Mandatory	DAB c15 GHG Emissions Reduction	1. WOL cost assessment for hot water systems 2. Hydraulic drawings/schematics showing installed DHW systems	Y	Hydraulic engineer advised that there is insufficient electrical capacity in block EE for anything other than a gas fired DHW system. No DHW systems in block NN other than boiling water units, no WOL undertaken	Email from Hydraulic Engineer	as built hydraulic drawings	Y	Noted comments that a WOL cost assessment has not been provided and narrative outlines constraints for alternatives. Final compliance dependent on as built drawings As built hydraulic drawings are required to demonstrate compliance with this initiative.	✓ Energy report and drawings indicate compliance
Energy & carbon	EC3: Scope 3 emissions	Transport Plan	Transport plan	Transportation	N/A	N/A	DAB c17 Sustainable Transport		N				N/A	NA	NA
Energy & carbon	EC3: Scope 3 emissions	Bicycle storage	**Bicycle storage** Provide 1 space for every 20 students to AS2890.3 standard	Transportation	SG552 4.36	TBC	DAB c17 Sustainable Transport		N	21 existing racks, 14 more proposed total 35. Requirements 1:20, school population = 560, so min 28 required		architectural site plan / landscape drawings showing bicycle racks	Y	Architectural site plan / landscape drawings indicate the existence of bike racks within the site boundary, however total number of installed spaces not provided. Noted that 35 spaces are ultimately proposed, however no direct evidence to confirm at least 28 spaces have been provided (assuming a student population of 560 remains the same.).	✓ Drawings indicate compliance
Water	W1: Water use efficiency	Potable water conservation	**Potable water conservation** WATER CONSERVATION STRATEGIES must be implemented on school sites, including: Manual Flush Urinal Systems: New and replacement urinals must use manual in lieu of automatic flushing mechanisms. A microwave-activated urinal flushing system may be used as an alternative. Water Conserving Taps: Use metal flow control valves and /or push down taps with pre set flow limits. All new water-using appliances must be at least 0.5 stars above the average Water Efficiency Labelling and Standards (WELS) star rating by product type, except toilets and urinals, which must be purchased at the average WELS star rating. Refer to DG53.02 for specific rating requirements. Harvest Rainwater: Where practical, harvest roof water and connect to a pumped rainwater supply system to authorities' requirements for landscaped areas and toilet flushing	Water Use Efficiency	DG53	Mandatory	DAB c18 Potable Water	1. Schedule of fixtures and fittings showing type of urinals and taps installed are as required	Y	taps showerheads all meet EFSG & Green Star requirements		hydraulic drawings, arch specifications for - fittings and fixtures	Y	Documents Reviewed: - *Interior Fittings Fixtures & Equipment Schedule* (block NN & EE) Single item referenced in the equipment schedule for block NN & EE that does not appear to be compliant - 'Shower Rose with 900mm Grab Rail'. This item references a 3 Star WELS rating, whereas DG53.02 stipulates that showerheads must be at least 4 stars.	✓ Schedule indicates compliance

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Theme	Indicator	Initiative Name	Sustainability initiatives / requirements from the EFSG This is an extract only from the relevant EFSG. For full requirements refer to https://efsg.det.nsw.edu.au/welcome	Folder	EFSG	EFSG type	Crossover with Green Star	Standard evidence to demonstrate compliance	Has this been implemented in the project? Y or N	Narrative	Reports	Drawings	As-built check	Independent ESD consultant comments	Aurecon Review 2023
Water	W1: Water use efficiency	Fixture efficiency	**Fixture efficiency** All products must be rated to AS 6400 to the following minimum WELS ratings: - Tapware to 5 star flow rating requirements - Showers to have 3 star flow rating requirements - Water Closet Pans to 4 star flow rating requirements - Flow restrictors can be used to minimise water usage and wastage for staff amenities - Taps with timed flow can be used to minimise water usage and wastage in student amenities. In any case, all new water-using appliances must be at least 0.5 stars above the average WELS star rating by product type, except toilets and urinals, which must be purchased at the average WELS star rating. Where WELS rating is not available, use the alternative WaterMark rating scheme.	Water Use Efficiency	DG53.02 DG2.4.1	Mandatory	DAB c18B.1 Potable Water - Sanitary Fixture Efficiency	1. Schedules of materials, fixtures, fittings and equipment with WELS/WaterMark ratings, demonstrating compliance and identifying those with flow restrictors and timed flow.	Y			hydraulic drawings, arch specifications for - fittings and fixtures	Y	Documents Reviewed: *- Interior Fittings Fixtures & Equipment Schedule* (block NN & EE) Single item referenced in the equipment schedule for block NN & EE that does not appear to be compliant - 'Shower Rose with 900mm Grab Rail'. This item references a 3 Star WELS rating, whereas DG53.02 stipulates that showerheads must be at least 4 stars.	✓ Schedule indicates compliance
Water	W1: Water use efficiency	Hydraulic services	**Hydraulic services** Hydraulic services should: - Support sustainable design principles including reducing water consumption and waste production. - Appropriately treat any trade waste to ensure minimal environmental impact - Be accessible and serviceable - easy to maintain with minimal impact on school use when maintenance is being performed - Use products with a long life span – many hydraulic services are concealed so durability is essential	Water Use Efficiency	DG51.01	Mandatory	DAB c18 Potable Water	1) Hydraulic report showing sustainability initiatives implemented to reduce potable water consumption 2) As built drawings showing trade waste arrestors	Y	The project does not have a high water demand due to minimal showers, kithcens and only small areas of landscape requiring irrigation. The site has a 5KL underground tank located on the north side of the library building with 1500m2 of roof connected to it. The captured rainwater is used for toilet flushing and landscape irrigation. Fittings and fixtures all mee the SINSW requirement to be at least 0.5 star above average to reduce demand on potable water. Building heat rejection is not water based.		Green Star potable water calculator and as built hydraulic drawings	Y	Narrative in column L appears adequate. Final compliance dependent on as built drawings As built hydraulic drawings will be required to demonstrate compliance with this initiative.	✓ Drawings indicate compliance
Water	W1: Water use efficiency	Water sub-metering	**Water sub-metering** In addition to the main water meter for the site provide sub meters for the following: - Mixed irrigation systems - Laboratory buildings - Amenities blocks - Canteens - Any other major water use on the site	Water Use Efficiency	DG53.04	Mandatory		1) As built hydraulic drawings	Y	There are 2 x existing water meters on iste, 1 connected to block NN and the other block EE, no sub metering is provided for irrigation or rainwater reuse due to lack of site BMS and these will both be minor water uses as a portion of the whole school's water usage		as built hydraulic drawings	Y	Final compliance dependent on as built drawings As built hydraulic drawings will be required to demonstrate compliance with this initiative.	✓ Drawings indicate compliance
Water	W2 – Proportion of potable vs non-potable water	Rainwater collection	**Rainwater collection** It is DoE policy to include roof water harvesting and tank storage in new schools and to encourage it where practical in existing schools, to reduce the demand on drinking water supplies. Tank water can connect to drip irrigation systems for adjacent landscape/gardens with the major preference being for gravity fed supply to minimise ongoing maintenance.	Alternative Water Sources	DG53.14 DG2.4.2 DG53.01	Mandatory	DAB c18B.2 Rainwater Reuse	1) As built hydraulic drawings showing tank connection to end uses and capacity	Y			as built hydraulic drawings & GS potable water calculator	Y	Final compliance dependent on as built drawings As built hydraulic drawings will be required to demonstrate compliance with this initiative.	✓ Drawings indicate compliance
Water	W2 – Proportion of potable vs non-potable water	Fire system water reuse	**Fire system water reuse** Where schools are required to install a sprinkler system for fire safety, it is recommended to install a closed loop system must be installed to capture and reuse fire systems testing and maintenance water, or by useing an alternative non-potable water source.	Alternative Water Sources	DG2.4.2	Optional	DAB c18B.5 Fire System Test Water	Fire engineering report	N				N/A	NA	NA
Water	W2 – Proportion of potable vs non-potable water	Ground water	**Ground water** Where ground water is available for use for irrigation purposes in drought affected locations, enquiries must be undertaken with the Department of Planning, Industry and Environment to determine the suitability of a ground water system.	Alternative Water Sources	DG53.03	Mandatory	DAB c18 Potable Water	1. Relevant due diligence report / investigation	N				N/A	NA	NA
Water	W3 – Responsible water discharge	Stormwater management	**Stormwater management** Must aim to minimise the transportation of toxicants to waterways and other offsite environments, and maintain the existing hydrological regimes. Due diligence for flooding must be done early to inform building and landscaping design	Responsible Water Discharge	DG2.4.3	Mandatory	DAB c26 Stormwater	Stormwater modelling report showing stormwater pollution and flows. Civil / Hydraulic drawings showing management measures. Water sensitive urban design report (if WSUD was used)	Y		Stormwater modelling report email from hydraulics engineer confirming compliance with Green Star points claimed	As built civil drawings, stormwater management plan & report	Y	Final compliance dependent on as built drawings Documents Reviewed: - Stormwater Management Report Report appears adequate to demonstrate compliance with this initiative. As built drawings will also be required to demonstrate compliance with this initiative.	✓ Drawings indicate compliance
Water	W3 – Responsible water discharge	Trade waste	**Trade waste** Arrestors for acid, grease, plaster and clay of adequate capacity must be installed to treat wastewater from science laboratories, kitchens, art rooms and canteens as required in DG52.	Responsible Water Discharge	DG52	Mandatory	Not covered in Green Star	1) As built drawings showing trade waste arrestors or 2) Letter by Hydraulic Engineer confirming arrestor have been installed as required	Y			as built hydraulic drawings letter from hydraulic eng re grease arrestor at completion	Y	Final compliance dependent on as built drawings As built drawings are required to demonstrate compliance with this initiative.	✓ Drawings indicate compliance
Waste & materials	WM1: Materials selection and use	Life cycle assessment (environmental)	**Life cycle assessment (environmental)** Environmental impacts of products and materials has been assessed and inform material selection	Materials Selection and Use	DG01.03	Recommended	DAB c19A - Life cycle assessment	Life cycle assessment report	N				N/A	NA	NA
Waste & materials	WM1: Materials selection and use	Whole of life costing (WOL)	**Whole of life costing (WOL)** Total cost of ownership (TCO) assessment / Analysis of direct and indirect costs and benefits / Life cycle costing analysis When calculating the whole of life cost for the different materials / building elements or systems, the following must be considered: - the total initial capital cost of the system/s – including design, project management, builder and building services works in connections etc. - resources (energy and where applicable water) consumption. - Maintenance. - the replacement of component parts. - disposal costs - ecological sustainable options - durability - vandalism - safety The whole of life cost shall be calculated over the estimated life of the asset/s.	Materials Selection and Use	DG01 All design guides for selection of materials and building systems	Recommended	GSC c20 - Return on Investment	Life cycle costing report for relevant system	N				N/A	NA	NA
Waste & materials	WM1: Materials selection and use	Sustainable materials	**Sustainable materials** Construction materials must be selected based on the following: - Adequately and economically perform their intended functions, and also have lower adverse environmental impacts throughout their life cycle (refer to DG 3) - Contain reduced or no hazardous substances (e.g. low VOC) to ensure effective indoor environmental quality. Reduce the demand for rare or non-renewable resources. - Have low embodied energy and water. - Are made from or contain recycled materials or can be reused or recycled at the end of their useful life.	Materials Selection and Use	DG02.05	Optional	DAB c21 Sustainable Products	Environmental Product Declarations of products / materials used; Product certificates (like GECA, FSC, etc.) Suppliers' declarations confirming recycled contents in products Bill of quantities	Y	For paints, adhesives etc architectural specification notes maximum VOC levels in accordance with Green Star requirements.		arch specs and schedules certificates for timber products GECA or similar certificates for FFE where applicable	Y	Documents Reviewed: *- Architectural Specifications, Construction Issue* While architectural specifications reference intended TVOC limits for products & materials, we would expect to also see product certificates/supplier declarations (as per comments in column P).	✓ Supporting documents indicate compliance

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Waste & materials	WM1: Materials selection and use	Sustainable timber	**Sustainable timber** - No rainforest timbers, or timbers from high conservation forests, are to be used unless plantation grown. Use only recycled timber, engineered and glued timber composite products, or timber from plantations or from sustainably managed regrowth forests that is FSC, AFS or PEFC certified - All timber used is to be termite (white ant) resistant or treated to be termite resistant to the appropriate hazard level.	Materials Selection and Use	DG2.5.1 DG21.05.01	Mandatory	DAB c20.2 Responsible Building Materials - Timber	1. Evidence of chain of custody 2. Bill of quantities	Y	All timber products used in base building confirmed to be either PEFC or FSC timber		architectural specifications supporting documents from suppliers	Y	Documents Reviewed: *- Supporting documentation from suppliers* All cited timber products have either PEFC or FSC (including COC) timber certification.	✓ Supporting documents indicate compliance
Waste & materials	WM1: Materials selection and use	Built for disassembly	**Built for disassembly** Consider the use of building materials which are able to be disassembled for re-use, in conjuction with considerations for the addition and removal of accommodation over time.	Materials Selection and Use	DG02.07	Mandatory			N				N/A	NA	NA
Waste & materials	WM1: Materials selection and use	Concrete	**Concrete** - Use materials complying with AS based on the Whole of Life approach to materials selection. - Do not use breccia or dolerite in concrete mixes. - Fly ash is a manufacturing bi-product that can be used as a cement replacement but should limited to a maximum of 20% by weight of cement content.	Materials Selection and Use	DG21.02	Mandatory	DAB c19B.1	Structural specifications and drawings Structural Engineer's report showing %cement replacement	Y	Northrop concrete specification includes specific exclusions for breccia and dolerite, also 20% fly ash included in all concrete mix designs. Local availability confirmed		structural specifications	Y	Per the requirements referenced in column J and comment in column P, would expect to see a structural engineers report showing expected/confirmed % cement replacement. Noted that structural specifications will include exclusions for breccia and dolerite.	✓ Supporting documents indicate compliance
Waste & materials	WM2 – Resource efficient school operations	Operational waste	**Operational waste** A waste storage area must be included in all new school sites. The provision of space must include source separation including bin stations and appropriate signage of waste and receptacles for multiple waste streams, including: - Organics - Comingled containers - Paper & cardboard - Container deposit scheme - Soft plastic - General waste Designers must refer to AS 4123.7 Mobile waste containers - Colours, markings, and designation requirements for further guidance on bin colour, waste stream and waste type. Safe methods for vehicle access and the transfer of waste must also be considered. For new and refurbished schools, an operational waste management plan (OWMP) must be developed to establish operational waste targets, identify opportunities for reuse and recycling in the operation of the facilities and make adequate provision for the facilities to accommodate for the OWMP. The OWMP must address all requirements from DG 2.7.2	Resource Efficiency	DG02.07	Mandatory	DAB c8 Operational Waste	Operational waste management plan Operational waste reports showing diversion rates	Y			operational waste management plan, as built architectural drawings	Y	Final compliance dependent on as built drawings Document Reviewed: *- Operational Waste Management Plan* As built architectural drawings assumed to be required to verify waste infrastructure (bins, collection locations, etc.) aligns with specifications provided in the OWMP.	✓ Drawings indicate compliance
Waste & materials	WM2 – Resource efficient school operations	Building flexibility	**Building flexibility** Position structural members considering the future flexibility of the structure. Avoid ad hoc placing of columns internally, giving preference to uniformity in layout. Design all internal walls as non-load bearing to enable future flexibility.	Resource Efficiency	DG21.1.16	Mandatory	Not covered in Green Star	As built drawings or statement by relevant professional	Y	Structural support grid has been made as regular as the Architecture allows. Confirming that all internal walls (excluding core walls to lift and stairs) are non-loadbearing. It is noted that load bearing steel columns are placed within internal walls on Level 1. - meets GS requirements		as built architectural drawings	Y	Final compliance dependent on as built drawings	✓ Drawings indicate compliance
Waste & materials	WM3 – Responsible management of waste	Construction waste	**Construction waste** Consider opportunities for re-use and recycling of materials in the construction phase	Waste Management	DG02.07	Mandatory	DAB c22 Construction and Demolition Waste	Construction waste reports showing percentage of waste re-used and recycled (diverted from landfill)	Y		Joss waste management plan		Y	Document Reviewed: *- Construction Waste Management Plan* Report demonstrates adequate consideration of waste diversion during the construction phase. Construction waste that is reused, recycled and disposed of have been estimated.	✓ Report indicates compliance
Waste & materials	WM3 – Responsible management of waste	Operational waste	**Operational waste** A waste storage area must be included in all new school sites, with the provision of space for the separation of waste and receptacles for multiple waste streams, including: - general rubbish, - co-mingled recycling, - paper and cardboard, - secure waste, and - green waste. Safe methods for vehicle access and the transfer of waste must also be considered.	Waste Management	DG02.07	Mandatory	DAB c8 Operational Waste	As-built drawings showing location of waste storage area	Y		Waste management report	as built architectural drawngs	Y	Final compliance dependent on as built drawings Document Reviewed: *- Operational Waste Management Plan* An appropriate waste storage area has been referenced in the above document. As built architectural drawings will be required to demonstrate compliance with this initiative.	✓ Drawings indicate compliance
Place	P1 – Green infrastructure	Environmental conservation education	**Environmental conservation education** The design of the facilities provide unique and valuable environmental conservation learning opportunities and effective environmental modelling to the wider community.	Green Infrastructure	DG02.06	Mandatory		Statement / Report by qualified ecologist	N/A	Site is not ecologically significant, so no further ecological reporting was required. No education programs have been undertaken	flora and fauna assessment		N/A	NA	NA
Place	P1 – Green infrastructure	Productive landscape	**Productive landscape** Consider including opportunities for development of community garden within the site and relationships with community groups for this to occur.	Green Infrastructure	DG02.06	Optional	GSC c14.2 Local Food Production	Site plan demonstrating location and size of community garden	N				N/A	NA	NA
Place	P1 – Green infrastructure	Drinking water catchment protection	**Drinking water catchment protection** For developments within drinking water catchment areas, a water cycle management study is to be included with the Development Application for Education Facility developments involving: - Agriculture facilities - Biosolids and effluent re-use schemes - Sewerage systems or works (including package sewerage treatment plants) - Stormwater or works involving the disposal of untreated runoff	Green Infrastructure	DG51.07	Mandatory	GSC c24 Integrated Water Cycle	1. Water cycle management study 2. Evidence that recommendations in the study have been followed / implemented	N/A				N/A	NA	NA
Place	P2 – Community & heritage connections	Site investigations for place making / community connections	**Site investigations for place making / community connections** The following detailed reports/ surveys/ information should be considered in developing the business case: - Local environment/ character - Climate and microclimate - Heritage significance / impact - Appraisal of physical and visual factors affecting site development - Available transport/ road infrastructure servicing the site - Geo-technical and Soil reports will be required for each site to investigate the suitability of the topsoil and anticipated sub-grade materials for horticultural purposes. - Testing for toxic residues must be undertaken in all areas identified as being a possible risk - i.e. filled or dumped ground.	Community & Heritage Connections	DG03.02	Negotiable	GSC c12 Culture, Heritage and Identity DAB 24.2 Contamination and Hazardous Materials	1) Relevant reports/surveys developed (these ideally include recommendations for further development stages) 2) Evidence demonstrating recommendations / best practice solutions have been implemented/addressed.	Y		Schematic design report		Y	Documents Reviewed: *- Functional Design Brief and Concept Design Report* Document appears to adequately reference the requirements under this initiative. Would recommend updating column M to include reference to the Functional Design Brief in addition to the Schematic Design Report.	✓ Report indicates compliance

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Place	P2 – Community & heritage connections	Sense of place	**Sense of place** The following design principles to every landscape zone of the school. - A healthy and safe landscape - A sense of place - A sustainable landscape - A low maintenance landscape	Community & Heritage Connections	DG90.04	TBC	Not covered in Green Star	1) Landscape design report 2) Landscape drawings	Y			as built landscape drawings	Y	Final compliance dependent on as built drawings As indicated by comment in column P, a high-level narrative may also ultimately be required to satisfy this initiative.	✓ As-Built drawings not provided but For Construction drawings indicate compliance
Place	P2 – Community & heritage connections	Community use of facilities	**Community use of facilities** Some school facilities are used out of hours for activities such as weekend church groups, sport events and public meetings. Liaise with the Project Director to gain an understanding of any shared use, or community use arrangements that are being considered for the site. New schools should be designed so that direct access to the open play space, fields , hall and gym can be achieved without the public gaining access to the buildings.	Community & Heritage Connections	DG16.08	TBC	DAB c30B Community Benefits	1. Confirmation by the Architect that direct access has been provided to open space and any other facilities that could be shared with the community. 2) A list of community engagement activities undertaken to develop a community benefits strategy. 3) Plans clearly outlining how the outcomes from the community benefits strategy have been implemented in the project 4) Joint-use or lease agreements where already in place	Y		Schematic design report	as built architectural drawings	Y	Documents Reviewed: - *Schematic Design Report* - *Functional Design Brief / Concept Design Repor* t May want to also reference the Functional Design Brief / Concept Design Report in column M as it directly references the site's opportunities for community use as well as the contractor's intentions concerning community and stakeholder engagement.	✓ As-Built drawings not provided but For Construction drawings indicate compliance
Place	P2 – Community & heritage connections	Reconciliation Action Plan	Reconciliation action plan	Community & Heritage Connections	N/A	N/A	DAB c30D Reconciliation Action Plan	1) DoE's Reconciliation Action Plan 2) Evidence of the project's relationship with the RAP, e.g. actions implemented in line with RAP, etc.	N/A				N/A	NA	NA
Place	P3 – Welcoming learning spaces	Daylighting	**Daylighting** Maximise natural daylight in all habitable spaces to improve indoor amenity and create a pleasant environment.	IEQ - Daylighting and Lighting Comfort	DG2.3.1	Mandatory	DAB c12 Visual Comfort	1. Daylight modelling report demonstrating how natural daylight has been maximised in all habitable spaces; and 2. As built drawings demonstrating that the model accurately represents the building (i.e. window size and location; skylights installed, etc.); and 3. Specifications supporting inputs used in modelling (e.g. skylights and glass specs)	Y		WSP modelling report: GREEN STAR CREDIT 12.1 - DAYLIGHT REPORT	as built architectural drawings	Y	Final compliance dependent on as built drawings Document Reviewed: - *WSP modelling report: Green Star Credit 12.1 - Daylight Report* Report adequately addresses requirements stipulated in column E. As built architectural drawings will be required to verify the inputs used in WSP modelling report.	✓ Drawings and daylight & energy reports indicate compliance
Place	P3 – Welcoming learning spaces	Daylight glare control	**Daylight glare control** Discomforting glare and brightness contrasts must be avoided. Designers must seek to: - Exclude direct sunlight from all learning spaces, libraries, administrative offices and staff studies for the period of 9.00am to 3.30pm including Eastern Daylight Saving Time between 21st September to 21st March (equinoxes). - Exclude direct sunlight from desk level in all learning spaces between 9am and 3:30pm. Sun exclusion and glare control can be achieved by the use of elements such as; Sun shades, eave extensions, vertical blades and the like. Glare must only be controlled by blinds as a last resort. Designers must prepare sun diagrams in the design phase as a minimum requirement.	IEQ - Daylighting and Lighting Comfort	DG12 DG07.01	Mandatory	DAB c12.0 Glare Reduction	1. Daylight glare modelling report / sun diagrams showing direct sunlight has been excluded as required. 2. Drawings supporting inputs of model, showing location of blinds and any other glare control device	Y	Shading provided to external windows to reduce glare. Studies provided as part of schematic submission to SINSW. Minor non compliances noted in EFSG departures schedule. No glare modelling was undertaken, however internal blinds are provided for occupant use	WSP modelling report: GREEN STAR CREDIT 12.1 - DAYLIGHT REPORT schematic design report	as built architectural drawings	Y	Final compliance dependent on as built drawings Document Reviewed: - *WSP modelling report: Green Star Credit 12.1 - Daylight Report* Report adequately addresses requirements stipulated in column E. As built architectural drawings will be required to verify the inputs used in WSP modelling report.	✓ Drawings and daylight & energy reports indicate compliance
Place	P3 – Welcoming learning spaces	Lighting comfort	**Lighting comfort** - Consider the furniture layouts to determine the orientation of luminaires. Especially when positioning luminaires in Materials Technology spaces to ensure adequate illumination on machines and work surfaces; - avoid potential stroboscopic effects and avoid shadows from ductwork - Mount luminaires as high as possible, but generally no higher than 4000mm AFFL (excluding Gymnasiums and Halls), to improve luminance uniformity and reduce direct glare in the direction of normal view - The standard lamp colour temperature is 4,000°K, except in certain toilet areas where the Design Guide requires the use of blue colours - Compliance with the uniformity requirements of the applicable standard should be demonstrated by the presentation of the output from lighting design software. - Unified Glare Rating (UGR) must be calculated using design software and compliant with the maximum recommended in AS/NZS 1680.1:2006	IEQ - Daylighting and Lighting Comfort	DG63.03 DG63.03.05	Mandatory	DAB c11 Lighting Comfort	1) Lighting drawings 2) Architectural drawings 3) Lighting specifications / schedules 4) Product data sheets 5) Isolux plot drawings 6) Lighting modelling report showing compliant uniformity and UGRs	Y	lighting design and layout considers these requirements, no Isolux plots completed	WSP modelling report: GREEN STAR CREDIT 12.1 - DAYLIGHT REPORT	electrical drawings and lighting specs	Y	Documents Reviewed: - *Young High School - Block NN & EE Green Star Design & As Built V1.3 Energy Report* - *Young High School - Block NN & EE Green Star Credit 1.2 - Daylighting Report* - *Lighting drawings* - - *SY181054-01-EL-RP01-3- Electrical Lighting Report* Information provided demonstrates intent inline with credit criteria, however narrative to complete compliance following documentation to be provided: - Product data sheets - Isolux plot drawings - Lighting modelling report showing compliant uniformity and UGRs	✓ Statement of compliance indicates compliance.
Place	P3 – Welcoming learning spaces	Lighting modelling	**Lighting modelling** Lighting designs should be carried out utilising industry standard lighting design software such as AGI32, Dialux or Relux. Modelling must provide output that clearly demonstrates that the proposed design is compliant with the standards including but not limited to the following parameters: - Maintained illuminance values (average, maximum and minimum) on horizontal surfaces such as floors or working planes as required, broken down to identify the parameters defined in AS/NZS1680.4 or AS/NZS1158 as applicable - Maintained illuminance values (average, maximum and minimum) on vertical surfaces such as walls, shelves or racks as required, broken down to identify the parameters defined in AS/NZS1680.4 or AS/NZS1158 as applicable - Unified Glare Rating (UGR) as defined by AS/NZS1680, - Uniformity as defined by the applicable standard for indoor or outdoor illumination, - Lighting power density in System Watts/m2	IEQ - Daylighting and Lighting Comfort	DG63.03.02	Mandatory	DAB c11.1 General Illuminance and Glare Reduction	Lighting modelling report confirming compliance with required standards and parameters	Y		lighting designers statement of compliance		Y	Documents Reviewed: - *Young High School - Block NN & EE Green Star Design & As Built V1.3 Energy Report* - *Young High School - Block NN & EE Green Star Credit 1.2 - Daylighting Report* - *Lighting drawings* - *SY181054-01-EL-RP01-3- Electrical Lighting Report* Information provided demonstrates intent inline with credit criteria, however narrative to complete compliance following documentation to be provided: - lighting designers statement of compliance	✓ Statement of compliance indicates compliance.
Place	P3 – Welcoming learning spaces	External access lighting	**External access lighting** External Access Lighting shall be provided to illuminate building entrances, footpaths, sheltered walkways, roadways and car park. External Access Lighting must: - Be minimal and designed to prevent glare to pedestrians, nearby residents and to motorists. Evidence of compliance with AS4282, AS/NZS 1158 and other applicable Australian Standards must be provided by the designer. - Be located so as to link various sources of illumination such as street lighting (for carpark and roadways) and internal security lighting (for footpaths, walkways and entrances). - Illuminate building entry doors. - Highlight 'accident-prone' areas such as changes in level, stairs and ramps. - Provide vertical illumination.	IEQ - Daylighting and Lighting Comfort	DG63.08.01	Mandatory	DAB c27.0 Light Pollution to Neighbouring Bodies	1) As built drawings indicating the location of all external luminaires 2) Letter by lighting designer describing glare prevention measures	Y		lighting designers statement of compliance	as built electrical drawings and specifications	Y	Documents Reviewed: - *Young High School - Block NN & EE Green Star Design & As Built V1.3 Energy Report* - *Lighting drawings* Information provided demonstrates intent inline with credit criteria, however narrative to complete compliance following documentation to be provided: - lighting designers statement of compliance	✓ Statement indicates compliance with AS 4282:2019

PROJECT:			Young High School														
											Actual evidence proposed This evidence needs to show that the requirement from column C has been met			Is the project compliant at this stage? Y or N			
Theme	Indicator	Initiative Name	Sustainability initiatives / requirements from the EFSG This is an extract only from the relevant EFSG. For full requirements refer to https://efsg.det.nsw.edu.au/welcome	Folder	EFSG	EFSG type	Crossover with Green Star	Standard evidence to demonstrate compliance	Has this been implemented in the project? Y or N	Narrative	Reports	Drawings	As-built check	Independent ESD consultant comments	Aurecon Review 2023
Place	P3 – Welcoming learning spaces	Thermal comfort	**Thermal comfort** The inclusion of active cooling within school facilities is directed by the Department's Air Cooling policy: 2.1 Schools with a long term average mean maximum January temperature of 33 oC and above: Generally, air conditioning is to be provided to all school buildings. 2.2 Schools with a long term average mean maximum January temperature of below 33oC: Air conditioning is to be installed in all permanent learning spaces and libraries forming part of each projects scope. - Thermal modelling is undertaken to demonstrate that learning spaces and libraries have been designed to achieve a predicted mean vote (PMV) of +/- 0.5 for 95% of occupied hours	IEQ - Thermal Comfort	DG06.03 DG55.01 DG55.02	Mandatory	DAB c14 Thermal Comfort	1) Mechanical drawings showing HVAC systems installed, or 2) Confirmation from sub-contractors that services have been installed and commissioned as required; and 3) Modelling report showing required PMV is achieved. Modelling report to be done in line with methodology described in Draft thermal comfort and indoor air quality interim performance brief for DG55	Y		WSP thermal comfort modelling report mechanical services commissioning report	as built mechanical drawings	Y	Final compliance documentation through commissioning required Documents Reviewed: *- Thermal Comfort Report* Thermal modelling from WSP indicates that the site achieves a +1<PMV<-1 for ar least 99% of occupied hours over 1 year across 100% of the nominated area. This exceeds the applicable compliance requires (pg. 5), which state that applicable spaces must be designed to achieve a PMV of +/- 1 for 95% of the floor area for no less than 98% of the occupied hours. A mechanical services commissioning report will also be required, however, to confirm compliance as per stipulations referenced in column J.	✓ Drawings and Thermal Comfort report indicate compliance
Place	P3 – Welcoming learning spaces	Background noise levels	**Background noise levels** - HVAC systems shall be designed in accordance with the recommended internal noise levels noted in table 1 of DG55.02. The noise levels are the result from the cumulative contribution of traffic noise (via the façade) PLUS the building air-conditioning /ventilation systems. The noise measurement and documentation must be provided by a qualified acoustic consultant and in accordance with AS/NZS 2107. Noise measurement must account for all internal and external noise including noise arising from building services equipment, noise emission from outdoor sources such as traffic, and (where known) noise from industrial process. Occupancy noise is excluded. Compliance shall be demonstrated through measurement, and the measurements shall be conducted in at least 10% of the spaces in the nominated area. The selection of representative spaces must be justified and must consider how the spaces are considered to be the most conservative with respect to both internal, and external noise sources. The range of measurement locations shall be representative of all spaces available within the nominated area. All relevant building systems must be in operation at the time of measurement. Projects less than 500m2 Gross Floor Area (GFA) must account for measurements conducted in at least 95% of spaces within the nominated area. - Enclosed circulation areas should be acoustically absorptive	IEQ - Acoustics	DG55.02 DG08.06	Mandatory	DAB c10.1 Internal Noise Levels	1. Road, rail, aircraft, industrial and rain noise assessment as per DG11.02 2. Report by qualified acoustics consultant demonstrating noise measurements are compliant.	Y		Marshall day - Mechanical acoustic assessment	mechanical drawings	Y	Documents reviewed: *- DA003_1_Da_003_20180592_ - _Young_High_School_Library_ - _Block_NN_Detailed_Design_Acoustic_Review* *- 15_T_Young_Appendix_04_M_Noise_and_Vibration_Assessment* *SY181054-AUL06-2 Young HS and Hilltops Council Library and Community Facility - Acoustic Measurement Report*	✓ Drawings and Acoustic report indicate compliance
Place	P3 – Welcoming learning spaces	Room-to-room noise control	**Room-to-room noise control** The following elements have prescriptive acoustic performance or construction requirements: - Operable walls (between general learning areas, all schools): Rw 45 - Entry doors to occupied teaching, music, drama and sports spaces: Solid core, minimum 35 mm thick with acoustic weather (where external) seals on all rebated closing faces. Gap at floor to be minimized. - Internal glazed sections in walls and vision panels in or adjacent to internal doors: minimum 10.38 mm laminated glass. In some situations acoustic windows may be needed for satisfactory noise separation. - Construction separating wastewater pipework from occupied spaces: Rw 40 - Where adjacent to an occupied space (and not serving that space), hydraulic supply pipework and wastewater pipework shall be separated from the adjacent occupied space. Construction between the adjacent spaces in this instance shall be a 'staggered stud' arrangement or otherwise discontinuous.	IEQ - Acoustics	DG11.05	Mandatory	DAB c10.3 Acoustic Separation	1. Detailed drawings including the acoustic design specification of operable walls, entry doors, internal glazed sections, etc. OR 2. Statement by a qualified acoustics consultant confirming compliance	Y		Acoustic report	as built architectural drawings	Y	Documents reviewed: *- DA003_1_Da_003_20180592_ - _Young_High_School_Library_ - _Block_NN_Detailed_Design_Acoustic_Review* *- 15_T_Young_Appendix_04_M_Noise_and_Vibration_Assessment* *_Photos and videso of installation* Per comment in column O, there are several deviations from the EFSG that are detailed in the acoustic report. Documentation implies intent of credit has been met, however design detail appears pending to meet required acoustic performance as per the acoustic specialist advice. As built documentation or acoustic statement of compliance and narrative of acoustic construction is needed for compliance	✓ Drawings, report, video and photo indicate compliance
Place	P3 – Welcoming learning spaces	Noise emissions	**Noise emissions** Generally noise emission to the environment from mechanical services noise sources (such as air conditioners) are the subject of a development consent conditions. In NSW the development consent conditions will refer to the Industrial Noise Policy (INP) or Local Council requirement. Where no condition regarding noise sources exists for a school development, noise emission from such sources should be designed, in-principle, to satisfy the requirements of the Industrial Noise Policy.	IEQ - Acoustics	DG11.04	Optional	Not covered in Green Star		N		Marshall day - Mechanical acoustic assessment	Marshall day report - mech services acoustics	N/A	NA	NA
Place	P3 – Welcoming learning spaces	Acoustic post-occupancy evaluation	**Acoustic post-occupancy evaluation** Post Occupancy evaluations are often undertaken to assess the performance of recently completed or existing facilities. Where a Post Occupancy Evaluation is to be undertaken it should be conducted by the project team or acoustic engineer and should be undertaken of selected acoustic parameters only. Evaluation may include: - Internal noise levels, - Room acoustics, - Noise emission, - Room-to-room acoustics performance	IEQ - Acoustics	DG11.07	Optional	GSP c13 Internal Noise Levels	1. Commitment by SI to conduct acoustic post-occupancy evaluation	N				N/A	NA	NA
Place	P3 – Welcoming learning spaces	Low VOC-emitting materials	**Low VOC-emitting materials** All surface coatings, and other volatile organic compound (VOC) emitting products including adhesives, sealants, carpets, carpet tiles, and carpet underlays, must be made from low-VOC emission materials. Paints must meet the limits stipulated in the Australian Paint Approval Scheme's (APAS) VOC limits for low VOC paints. Adhesives and sealants must not exceed the maximum VOC limits stipulated in Table 13.1.1B of the Green Star – Design & As Built v1.3 tool. Carpets must not exceed the total VOC limits stipulated in Table 13.1.2B of the Green Star – Design & As Built v1.3 tool.	IEQ - Pollutants	DG2.5.2	Mandatory	DAB c13 Indoor Pollutants	Product specifications, certificates, safety datasheets that demonstrate low-VOC contents Bill of quantities	Y			arch specs and schedules	Y	Documents Reviewed: *- Specification Construction Issue 1 (08/04/2021)* While specifications do reference product VOC requirements, data sheets (or similar) should be compiled once products are selected to demonstrate compliance (as per comments in column P).	✓ Supporting documents indicate compliance
Place	P3 – Welcoming learning spaces	Low formaldehyde-emitting materials	**Low formaldehyde-emitting materials** Only low formaldehyde-emitting engineered wood products should be used, such as those that meet the Australian Standards for formaldehyde emission limit E1 (NICNAS classification) or lower.	IEQ - Pollutants	DG2.5.2	Mandatory	DAB c13 Indoor Pollutants	Product specifications, certificates, safety datasheets that demonstrate low-formaldehyde contents Bill of quantities	Y			arch specs and schedules	Y	Documents Reviewed: - Specification Construction Issue 1 (08/04/2021) While specifications do reference product formaldehyde requirements, data sheets (or similar) should be compiled once products are selected to demonstrate compliance (as per comments in column P).	✓ Data sheets indicate compliance

PROJECT:			Young High School														
										Actual evidence proposed This evidence needs to show that the requirement from column C has been met			Is the project compliant at this stage? Y or N		
Theme	Indicator	Initiative Name	Sustainability initiatives / requirements from the EFSG This is an extract only from the relevant EFSG. For full requirements refer to https://efsg.det.nsw.edu.au/welcome	Folder	EFSG	EFSG type	Crossover with Green Star	Standard evidence to demonstrate compliance	Has this been implemented in the project? Y or N	Narrative	Reports	Drawings	As-built check	Independent ESD consultant comments	Aurecon Review 2023
Place	P3 – Welcoming learning spaces	Ventilation in printing rooms	**Ventilation in printing rooms** The ventilation system is to be designed to serve the whole room and is not intended to provide localised exhaust at equipment. - Discharge air from the ventilation unit to the outside of the building via a vermin proofed louvre. - Draw make-up air from inside the building through wall or door grilles. - Locate the inlet/s and exhaust to achieve good airflow across the room in plan and elevation to pick up all machine emissions. -Ensure the airflow doesn't draw equipment emissions across operator's face. -Note that the room door in many schools may be left open in normal daily operation. Allow for this when locating the exhaust fan so that cross ventilation is achieved with make-up air drawn through the door opening. - Required speed range: minimum of 6 air changes per hour and maximum of 15 air changes per hour.	IEQ - Pollutants	DG57.07	Mandatory	DAB c9.3 Exhaust or Elimination of Pollutants	1. Mechanical drawings and specifications showing compliant printing room ventilation	Y	**NORTHROP MECHANICAL:** Local exhaust provided to print room above printer. Due to size of room being relatively small, horizontal duct runs not necessary in this space and a single exhaust point provided. Makeup air via entry door and is designed in accordance with EFSG.		as built mechanical drawings	Y	Noted and agree with comments from Northrop Mechanical engineers as per column L.	✓ Drawings indicate compliance
Place	P3 – Welcoming learning spaces	Chemical store ventilation	**Chemical store ventilation** - Provide mechanical exhaust system with high and low level exhaust points to all chemical stores, with a minimum of 15 air changes per hour flow rate. - Discharge air according to the requirements of BCA. The discharge outlet is to be fitted with bird wire mesh. - Provide make up air to all chemical stores, (to replace exhausted air) through openings in an external wall, fitted with weatherproof louvres. All grilles and louvres are to be fitted with vandal proof bars and be fitted with vermin mesh. - For security and fire rating reasons do not use windows/doors or door grilles for air intake. - The chemical stores ventilation systems are to run continuously.	IEQ - Pollutants	DG57.09	Mandatory	Not covered in Green Star		N/A				N/A	NA	NA
Place	P3 – Welcoming learning spaces	Pesticide free environments	**Pesticide free environments** Schools must be designed, constructed and maintained, without using chemicals for termite and other pest control. No chemical pesticides and termicide to be used. Preventive treatments to be by physical means and careful design to minimise risk	IEQ - Pollutants	DG2.5.3	Mandatory	Not covered in Green Star	Statement by head contractor that no pesticides or termites have been used.	Y			Landscape specifications arch specifications Head contractor / landscape contractor / AMU / YHS GA to confirm at handover	Y	Documents Reviewed: *- Landscape Works Specification* Proposed evidence appears suitable. While references to termicide appear to have been removed from landscape specs, will still need to provide a statement from the applicable head contractor in accordance with wording in column J.	✓ Letter indicates compliance
Place	P3 – Welcoming learning spaces	Green Cleaning	**Green cleaning**	IEQ - Pollutants	N/A	N/A	GSP c6 Green Cleaning	1) WEB Clean School User Guide 2) Green Cleaning specifications	Y		confirmation email from GHD project manager		Y	Email correspondence from GHD confirms compliance with this initiative.	✓ Letter indicates compliance
Place	P3 – Welcoming learning spaces	Fly free indoors	**Fly free indoors** Fly screening must be provided in all schools to the doors, windows and other openings in food preparation, biology, and non-water-closet toilet spaces or where specifically nominated in the EFSG. Schools in localities where fly incidence constitutes a health hazard (especially trachoma or other nuisance) will require fly screens to all opening sashes.	IEQ - Pollutants	DG31.01	Mandatory	Not covered in Green Star	As-built drawings showing fly screening has been provided as required	Y	fixed windows only except for external doors, mechanically assisted natural ventilation		arch drawings and specs, as built mechanical drawings	Y	Final compliance dependent on as built drawings As built mechanical drawings will be required to demonstrate compliance with this initiative.	✓ Drawings indicate compliance.
Place	P3 – Welcoming learning spaces	Indoor CO2 levels	**Indoor CO2 levels** For mechanically ventilated spaces: 1. Outdoor air ventilation rates are in accordance with requirements of AS 1668.2. 2. Mechanical ventilation systems shall be linked to CO2 sensors to provide demand-controlled ventilation within each space to ensure that CO2 levels are maintained below the required CO2 threshold. 3. Mechanical ventilation systems shall be designed to provide adequate access for maintenance and cleaning. 4. Ventilation systems are designed to maintain an average daily CO2 concentration as per the latest NCC code, and so that the maximum concentration does not exceed 1,500ppm for more than 20 consecutive minutes in each day. 5. The required outdoor air ventilation rates and CO2 concentrations shall be maintained without the need for any human intervention e.g. the opening of windows or external louvres. 6. Ventilation systems shall be designed minimise the entry of outdoor pollutants through ensuring that the ventilation system design is in accordance with the relevant parts of AS 1668.2. and ASHRAE Standard 62.1. 7. Where local sources of pollutants are present e.g. photocopiers, minimum exhaust ventilation flow rates should be provided in accordance with AS1668.2: Table B1.	IEQ - Pollutants	DG55.02	Mandatory	DAB c9 Indoor Air Quality	Mechanical drawings and specifications Extracts from commissioning report	Y	mech systems designed to operate on CO2 control - meets green star requirements		as built mechanical drawings and specifications	Y	Documents Reviewed: - Mechanical Services Specification - *Mechanical drawings* (various) Documents reference systems and equipment that are compliant with the requirements of this initiative (CO2 sensors, mitigating the entry of outdoor pollutants, etc.).	✓ Drawings indicate compliance
Place	P3 – Welcoming learning spaces	Ecological conservation	**Ecological conservation** Schools sites must conserve for future generations, the biological diversity of genetic materials, species and ecosystems on that site and consider the surrounding natural environment. The design of the facilities must provide unique and valuable environmental conservation learning opportunities and effective environmental modelling to the wider community. Schools must model best practice design, material use, systems and operational methodology, demonstrating human's connections to nature and the operation of natural cycles of sun, wind, rain and the four seasons. Schools must connect with nature and incorporate biophilic design principles. Open space must allow for exploration, and biodiversity and earth education to enhance the site's outdoor learning potential. New and refurbished schools must: Preserve or re-establish native flora (unless it poses a safety risk or cannot be designed around) and create new landscapes through liaising with local government authorities, Landcare and environmental groups, and the use of native low water use plants. Consider opportunities for development of community garden within the site and relationships with community groups for this to occur. Adequate due diligence must be conducted where biodiversity or high ecological value is identified on the site. For more details see DG90 Landscape Design	Ecology	DG02.06	Mandatory	DAB c23 Ecological Value GSC c29 Ecological Value (incl Biodiversity Enhancement)	1) Biodiversity or ecological assessment / local flora and fauna survey 2) Biodiversity management plan describing measures for the conservation and protection of threatened species or communities, biodiversity enhancement, tree protection, etc. 3) Evidence demonstrating measures have been implemented to protect and enhance endangered species / ecological communities identified; to preserve or re-establish native flora; etc.	Y			landscape drawings	Y	Documents Reviewed: *- Flora and Fauna Assessment* *- Environmental Impact Statement* *- Landscape Drawings* Available documents suggest that the project team have adequately considered ecological conservation in their design (open space that allows for exploration, native flora has been proposed as part of landscape design, etc). Would assume that the 'Flora and Fauna Assessment' and/or 'Environmental Impact Statement' will need to form part of the compliance evidence for this item, rather than simply landscape drawings.	✓ Assessment indicates compliance
Place	P3 – Welcoming learning spaces	Accessibility	**Accessibility** -All new facilities must meet current DTS provisions of the NCC and the associated standards. Generally AS 1428.1 is the minimum design standard for access and mobility. However, it is DoE's policy that any enhanced requirements noted in AS 1428.2 be incorporated in any new design. -Additionally, DoE have enhanced circulation requirements as noted in DG / CIRCULATION - Provide hearing augmentation system for areas that have amplification, generally within Gymnasium, libraries, movement studios and Communal Halls, provide a system to assist the aurally challenged to hear music and speech within the main auditorium and on the stage - Provide the International Symbol for Deafness to indicate that an assistive hearing device is installed.	Space Planning	DG19.01 DG65.14	Mandatory	DAB 30D Universal design	1) Accessibility plan 2) As-built drawings or other evidence demonstrating that minimum and enhanced accessibility requirements have been provided for walkways, corridors, ramps, etc. 3) Photographic or other evidence of signage installed	Y	**HAYBALL:** Design has been completed in accordance with AS 1428.1. Refer to accessability report for item to be addressed in DD stage. EFSG circulation requirements have been incorporated in schematic design.		accessibility report	Y	Documents Reviewed: *- Access Review Design Development v.2*. There are several non-compliance issues (pg. 5-8) that will need to be addressed in future stages.	✓ Access consultant letter indicates compliance

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										Actual evidence proposed This evidence needs to show that the requirement from column C has been met			Is the project compliant at this stage? Y or N		
Theme	Indicator	Initiative Name	Sustainability initiatives / requirements from the EFSG This is an extract only from the relevant EFSG. For full requirements refer to https://efsg.det.nsw.edu.au/welcome	Folder	EFSG	EFSG type	Crossover with Green Star	Standard evidence to demonstrate compliance	Has this been implemented in the project? Y or N	Narrative	Reports	Drawings	As-built check	Independent ESD consultant comments	Aurecon Review 2023
Place	P3 – Welcoming learning spaces	Weather protection	**Weather protection** Circulation areas provided between administrative, staff and all student spaces (except Agriculture), should be protected from sun, rain and unfavourable winds.	Space Planning	DG08.05	Mandatory	Not covered in Green Star	As built drawings showing circulation areas are protected as required	N				N/A	NA	NA
Place	P3 – Welcoming learning spaces	Open play space	**Open play space** Open play space must be provided for students to access during recess, lunch breaks and for outdoor learning. Open play space can be comprised of - Paved and grassed areas - Rooftops and terraces - Covered outdoor areas The designated open play space must be easily monitored and managed by school staff. Where a joint use agreement can be negotiated with a local council or land owner, the required play space can be located off-site, providing the facilities are - In close proximity to the school - Easily accessible - Safe and secure Designs must aim to achieve a minimum of 10m2 per student. Where this figure is not achievable the proposed m2 per student of the completed project must not be less than the existing m2 per student currently on the site.	Space Planning	DG10.03	Mandatory	Not covered in Green Star	Plan view drawings showing provision of open space	Y			site plan / landscape drawings	Y	Documents Reviewed: - Provided site plan indicates that play areas (as defined in column E) will exceed 10m^2 per student.	✓ Assessment indicates compliance
Place	P3 – Welcoming learning spaces	Staff Room	**Staff room**	Space Planning	N/A	N/A	GSI c Amenity Space	1) Extracts from the EFSG requirements for staff rooms 2) Evidence of staff room delivered accordingly	Y			arch drawings	Y	Documents Reviewed: - Architectural drawings of block EE, which indicates a staff room area of 40.4 m^2	✓ Assessment indicates compliance
Place	P3 – Welcoming learning spaces	Healthy Canteen Policy	**Healthy canteen policy**	Health & Safety	N/A	N/A	DAB c30D Integrating Healthy Environments	1) Research report behind Healthy Canteen Policy 2) Evidence that policy initiative has been incorporated into the school under assessment.	N/A			N/A	N/A	N/A	NA
Place	P3 – Welcoming learning spaces	Safety by design	**Safety by design** - The Work Health and Safety Act and the Department of Education principles of student safety and welfare mandate the avoidance of accidents through careful design of facilities - The designer must ensure, so far as is reasonably practicable, that the plant, substance or structure is designed to minimise risks to the health and safety of all parties who will work on a site connected with its design as well as the end users of the facility. - An important part of the Safety by Design principle is recording the risk assessments that are conducted during the design and providing to the client, owners, any users/occupiers of the facilities and those who will be building or maintaining the facilities, details of risks and hazards identified. - The design of facilities should not only be inherently safe but visually and pragmatically safe and not tempt students or the general public into unsafe practice. Examples: <u>Glazing</u>: The safety of occupants is paramount where glass is being used, especially in areas subject to human impact. All glazing types and thickness are to comply with the relevant AS a minimum. <u>Hot water</u>: To minimise scalding risk all hand basins, showers and the kitchen sink in practical activities areas serving IO/IS classes, require "warm" rather than "hot" water provided at a specified temperature, by mixing hot and cold water through a Thermostatic Mixing Valve. (Note: Tempering Valves are not permitted in schools) <u>Drinking water tanks</u>: Ensure rainwater is not collected from areas containing lead materials. All coating materials used inside the reservoir must be suitable for drinking water and guaranteed against liner leakage for a period of 20 years. A filtering and UV system to be provided where drinking water tanks are	Health & Safety	DG14.02 DG31.03 DG53.11 DG53.16 DG53.17	Mandatory	Not covered in Green Star	1. Safety risk assessments 2. Short report identifying safety-by-design principles incorporated / Sign off by head contractor confirming all mandatory requirements in DG14 have been addressed. 3. Manufacturer's certificate to AS/NZS 4020 for tanks	Y		final SiD report statement by Joss that all mandatory requirements have been met		Y	Final compliance dependent on final DSA Document Reviewed: - *Design Safety Assessment (DSA)* *Report* references the possible hazards associated with the project/site and provides suggested controls. Report/statement referenced in column M will be required to demonstrate compliance with this credit.	✓ Assessment indicates compliance.
Place	P3 – Welcoming learning spaces	Microbial control	**Microbial control** As a measure to prevent legionella, heated water to hand basins, showers etc. shall be stored at temperature above 65 C. Thermostatic mixing valves are to be used for tempered water generation at each point of use. Valves need to comply with microbe disinfection requirements - "Code of Practice for Thermostatic Mixing Valves NSW" as approved by the NSW Health Department.	Health & Safety	DG51.09 DG53.11	Mandatory	DAB c28 Microbial Control	1. Letter by hydraulic engineer confirming hot water is stored above 65 deg and that valves comply with code of practice.	Y			hydraulic specification	Y	Documents Reviewed: - *Northrop Hydraulic Services Specificatio*n, which specifies that products (including sealants) conform to the relevant Aus & NZ standards concerning microbial control.	✓ Specification indicates compliance. Note could not find as-built confirmation that these products were used.
Place	P3 – Welcoming learning spaces	Security	**Security** Safety in Design and Crime Prevention Through Environmental Design (CPTED) principles are to be implemented in project planning stage. Advice on the electronic surveillance systems can be sought early in the design phase. CCTV systems are required in several locations where indicated in the Rooms and Spaces Technical Data table, including: - Secondary clinic - Primary sick bay - Library	Health & Safety	DG14.10 DG65.08 DG65.10	TBC	GSC c15 Safe Places	1) Crime risk assessment or equivalent 2) Evidence of designing out crime principles implemented 3) Security services plans, schedules and forms by School Security Unit (SSU) 4) SSU specification and evidence of input on project specification	Y		final CPTED report		Y	Documents Reviewed: - *Crime Risk and Crime Prevention Through Environmental Design (CPTED)*, which confirms that the project adequately meets relevant standards.	✓ CPTED Report indicates compliance.
Place	P3 – Welcoming learning spaces	Hazardous materials	**Hazardous materials** Where a new school is to be developed a Hazardous materials study is to be conducted, including: - Asbestos Containing Materials (ACM) - Synthetic Mineral Fibres (SMF) - Polychlorinated Biphenyl's (PCB) - Lead Paint - Ozone Depleting Substances Any existing structures and all parts of the site should be examined in order to determine the presence of hazardous materials before commencement of any renovation or demolition. Inspection should be conducted by organisations with the National Association of Testing Authorities (NATA) accreditation complying with the requirements of AS/NZS ISO.IEC 17020 for the inspection of hazardous materials (HazMat) including asbestos. Hazardous Materials inspection reports should be produced in accordance with the requirements of the various Safe Work Australia "Codes of Practice" for the management and control of hazardous substances. Where hazardous materials are found a Hazardous Materials Management Plan should be prepared	Health & Safety	DG48.01	Mandatory	DAB 24.2 Contamination and Hazardous Materials	1. Hazardous materials study / site inspection report / survey 2. Management plans for hazardous materials identified 3. Remediation strategies implemented 4. Environmental auditor certificates / clearance certificates	Y		hazmat report		Y	Documents Reviewed: - *Hazardous Materials Survey*, which has appropriately identified hazardous materials and provided remediation strategies for their removal.	✓ Survey indicates compliance.
Place	P3 – Welcoming learning spaces	Digital infrastructure	**Digital infrastructure** New buildings and refurbishments are required to provide a common wireless solution compatible across the school, providing a consistent user experience and support mechanism. This involves the replacement of existing legacy wireless equipment, such as wireless access points and site switches	Digital & Benchmarking	DG64.12.02	Mandatory	GSC c22.2 Digital Infrastructure	1) Contracts describing the network infrastructure specification and operational requirements	Y			as built electrical drawings and specifications	Y	Final compliance dependent on as built drawings Documents Reviewed: - *Northrop Electrical Services Specification* - describes network infrastructure specifications and operational requirements. As built electrical drawings will need to be provided to demonstrate compliance with this initiative.	✓ Drawings indicate compliance.

PROJECT:	Young High School																
											Actual evidence proposed This evidence needs to show that the requirement from column C has been met			Is the project compliant at this stage? Y or N		
Theme	Indicator	Initiative Name	Sustainability initiatives / requirements from the EFSG This is an extract only from the relevant EFSG. For full requirements refer to https://efsg.det.nsw.edu.au/welcome	Folder	EFSG	EFSG type	Crossover with Green Star	Standard evidence to demonstrate compliance	Has this been implemented in the project? Y or N	Narrative	Reports	Drawings	As-built check	Independent ESD consultant comments	Aurecon Review 2023
Place	P3 – Welcoming learning spaces	Sustainability benchmarking	**Sustainability benchmarking** Ecologically Sustainable Development principles must be included in any new school buildings to a level that the building could be benchmarked to achieve a 5 Star Green Star rating if located in Sydney, Newcastle, or Wollongong metropolitan areas or a 4 star Green Star rating if located elsewhere in NSW. Benchmarking must be undertaken against the Green Star credits using the edition of the Green Star scorecard current at the time of the assessment. The filled out scorecard must demonstrate the project can achieve enough points for the required rating. Formal Green Star certification is not mandatory	Digital & Benchmarking	DG02.09	Mandatory	All credits	1) Green Star scorecard demonstrating the final design is benchmarked to the required rating (by a Green Star Accredited Professional)	Y		Green star points checklist		Y	Green Star points checklist has been developed and shows that the project can achieve enough points for the required 4-Star rating.	✓ Points checklist indicates compliance.
Resilience	R1 – Preparation for shocks	Site investigations for resilience	**Site investigations for resilience** The following detailed reports/ surveys/ information should be considered in developing the business case: - Slope, drainage and erosion issues including flood risks (if any) - Geotechnical and soil conditions - Airborne pollutants - Bushfire risks - Appraisal of available services infrastructure - Climate change risk assessment must be undertaken considering at least two different climate change scenarios An environmental risk report will be required for developments proposed within sensitive natural environments or sites subject to natural risks (i.e. flood prone sites, bush fire areas).	Preparation for Shocks	DG03.02	Negotiable	DAB c3 Adaptation and Resilience	1) Detailed reports or surveys developed 2) Environmental risk report 3) Evidence demonstrating recommendations have been implemented and risks addressed through design responses.	Y		functional design brief and concept design report		Y	Documents Reviewed: - *Functional Design Brief and Concept Design Brief* , and, *Environmental Impact Statement* . Documentation indicates that due consideration has been shown during the design phase for thorough site investigations, environmental risk reporting, and strategies for addressing those risks.	✓ Design brief indicates compliance.
Resilience	R1 – Preparation for shocks	Bushfire protection	**Bushfire protection** Development applications on bush fire prone land must be accompanied by a Bush Fire Assessment Report demonstrating compliance with the aim and objectives of Planning for Bush Fire Protection and the specific objectives and performance criteria for the land use proposed. Local Authorities and the Rural Fire Service can provide advice on the design of buildings in bush fire prone areas. The Building Code of Australia and AS3959 "Construction of buildings in bushfire-prone areas" set out the requirements for buildings which are within close proximity to a defined bush fire zone. Mandatory landscape management strategies: - Keep the amount of fuel (leaves, twigs, logs, dead grass) in the vicinity of buildings to a minimum. - Ensure trees are located at away from buildings to avoid branches overhanging and leaves collecting on roofs. - Do not plant shrubs against buildings. - The crowns of trees planted on the hazard side of the development should not be contiguous. - Plant fire resistant trees and shrubs on the hazard side of the development to reduce the potential impact of wind, fire intensity, radiant heat, and rate of spread as well as intercepting burning embers. - Avoid combustible fencing materials. - Provide irrigation and garden sprinklers to water areas near the buildings (subject to water authority approval).	Preparation for Shocks	DG13.01	Mandatory	DAB c3 Adaptation and Resilience	1) Bush fire assessment report 2) Statement by Architect / fire consultant outlining building strategies implemented in line with BCA and AS3959. 3) Bush fire management plan outlining management strategies implemented 4) Landscape plans detailing bush fire management measures implemented	N/A				N/A	NA	NA
Resilience	R2 – Preparation for stresses	Climate change adaptation	**Climate change adaptation** Sites and school communities must be able to withstand natural and urban hazards and adaptively respond to climate change over time, especially for projects involving vulnerable communities e.g. climate generating exacerbated flood, storm surge, inundation, heatwaves, bush fires, extreme storm and other weather events. School facilities must be able to withstand natural hazards and adapt to shocks and stresses to avoid social and economic costs of interrupted operation and repairing or replacing damaged assets. To achieve this, increasing resilience to natural hazards must be considered in the business case development so that associated costs are budgeted. An initial assessment of natural hazards and project vulnerability must be carried out, in consultation with resilience experts, to inform the business case and identify hazards where further analysis is required. Where significant risks are identified in the initial assessment, a comprehensive climate change risk assessment must be undertaken. Any high or extreme risks identified must be addressed through design measures.	Climate Change	DG02.08	Mandatory	DAB c3 Adaptation and Resilience	1) Climate risk assessment, and 2) Climate adaptation plan 3) Emergency management plan	N/A				N/A	NA	NA

Young High School Green Star - Design & As Built v1.3

Targeted Rating:	4 Star - Best Practice
Points required for 4 star Green Star rating	45
Points achievable from Green Star - Design & As Built v1.3	46
Points achievable from Green Star - Communities v1.1	0
Safety Margin	1

Green Star scheme						SINSW's approach, standards and points achievable				
Category/Credit	**Code**	**Credit Criteria**	**Points Available**	**Aim**	**Compliance requirements**	**Aim**	**Approach to achieve best practice outcome**	**Governance**	**Project specific evidence required**	**Points Targeted**
Management			**14**							**9**
Green Star Accredited Professional (GSAP)	1.0	Accredited Professional	1	Recognises projects that engage a GSAP to support the Green Star certification process.	Appoint GSAP at all stages of the project, leading to certification	Ensure an ESD consultant is appointed to provide ESD advice, integration and verification	ESD consultant is engaged at early design and throughout development process to coordinate ESD input in building design	● Sustainability Practice Note ● ESD consultant scope of services	● ESD consultant procurement documentation ● ESD consultant outputs (e.g. letters of advice, reports, etc.)	1
Commissioning and Tuning	2.1	Services and Maintainability Review	1	Recognises commissioning, handover and tuning initiatives for building services to operate at their full potential and as designed.	Conduct a services and maintainability review during design and prior to construction and develop a 'Service and Maintainability Report'	Ensure building systems operate efficiently and that staff are trained on efficient use of building systems and facilities.	The EFSG require all systems are installed with suitable access or maintenance. Independent design review is undertaken at key design milestones by a technical stakeholder group and/or an expert reference group to ensure adherence to EFSG requirements including maintainability, safety, etc.	● DG 16.10 - Access for Maintenance Project Governance Framework ● Technical Stakeholder Group Practice Note	● Expert review group and technical stakeholder group (TSG) meeting minutes ● TSG sign off certificates ● Design Advisory Reports	1
	2.2	Building Commissioning	1		● Prepare commissioning plan and specification ● Conduct air permeability testing		SINSW's Commissioning & Handover Procedure goes above and beyond Green Star requirements. It requires that a Commissioning & Handover Plan is developed including all key systems in the scope.	● Commissioning & Handover Procedure	● Commissioning & Handover Plan ● PV installation checklist	1
	2.3	Building Systems Tuning	1		Commit to a tuning process for all nominated building systems including: ● quarterly adjustments ● measured first 12 months after occupation ● review of manufacture warranties		SINSW monitor optimum performance of building systems over the project life time through asset management units.	● Asset Management Units (AMU)	● Maintenance reports ● FMWeb online portal	1
Building Information	4.0	Building Information	1	Recognises projects that make available building information that facilitates understanding of building systems operation and maintenance requirements, and their environmental targets for optimised performance	● Provide operations and maintenance (O&M) information and log book to facilities management team and stakeholders, and ● Provide building user information to all relevant stakeholders	Ensure all building information, manuals, plans, warranties, BIM, etc., are handed over and staff are trained on how to operate building systems.	The EFSG require a building user's guide is developed and the Commissioning & Handover Procedure requires on-site training is provided to staff as well as handover of manuals, as builts and warranties.	● DG 64.10 - Manuals and Training ● DG 65.02 - Energy Conservation ● DG 16.10 - Access for Maintenance ● Commissioning & Handover Procedure	● Project specific manuals, as-builts, warranties, etc. ● Signage and posters ● Training records ● AMS online portal	1
Commitment to Performance	5.1	Environmental Building Performance	1	Encourage building owners, building occupants and facilities management teams to set targets and monitor environmental performance.	Set, measure and report for at least 2 building performance metrics i.e. energy, water, waste and IEQ	Encourage operational energy and water efficiency and reduce waste in schools.	SINSW monitor energy and water performance of schools and report annually for GREP. Energy efficiency programs are developed based on this monitoring.	● SINSW Environmental Performance Plan	● ERM Power customer online portal ● Principal's Dashboard ● GREP annual reports	1
	5.2	End of Life Waste Performance	1		Commitment to extend the life of the interior fitout or finishes to at least ten years.		Life of interiors in schools extend further than 10 years. The EFSG specify materials and systems that have proven durability.	● EFSG multiple specifications ● DG 40 - Materials and Finishes		1
Metering and Monitoring	6.0	Metering	Mandatory for this Credit	Recognises the implementation of effective energy and water metering and monitoring systems	Install accessible meters to monitor building energy and water consumption. Meters must comply with the current National Measurement Regulations and NABERS rating protocol	Identify promptly water leaks and enable water efficiency.	The EFSG require all main water end uses are to be separately submetered but contains no provisions for energy submetering.	● DG 53.04 - Metering Supplies	● As built hydraulic drawings	0
Responsible Building Practices	7.1	Formalised Environmental Management	1	Rewards responsible construction practices that manage environmental impacts, enhance staff health and wellbeing, and improve sustainability knowledge on site	A responsible party for the site has a formalised approach to planning, implementing and auditing is in place during construction, to ensure conformance with the EMP	Ensure responsible building practices	ISO accredited EMS contractors required	● GC21 provisions	● Head contractor's ISO certificate	1
Operational Waste	8B	Prescriptive Pathway	1	Recognises projects that implement waste management plans that facilitate the re-use, upcycling, or conversion of waste into energy, and stewardship of items to reduce the quantity of outgoing waste.	Project team to comply with the following: ● separation of waste streams ● dedicated waste storage area ● access to waste storage areas must adhere to best practice	Minimise operational waste generation	EFSGs require waste storage areas are included, with the provision of space for the separation of waste and receptacles for multiple waste streams. Safe methods for vehicle access and the transfer of waste must also be considered.	● DG 02.07 - Waste Management	● As built architectural drawings ● Schedule of accommodation	1
Indoor Environment Quality			**17**							**11**
Indoor Air Quality	9.2	Provision of Outdoor Air	2	Recognises projects that provide high indoor air quality to occupants.	● 1 point - Outdoor air is provided at a rate 50% greater than min required by AS 1668.2:2012 or maintain CO_2 concentrations below 800ppm ● 2 points - Outdoor air is provided at a rate 100% greater than min required by AS 1668.2:2012 or maintain CO_2 concentrations below 700ppm ● Naturally ventilated spaces must meet the requirements of AS 1668.4-2012	Ensure good indoor air quality that supports teaching and learning	Schools are naturally ventilated most of the time and only when climate is not appropriate mechanical systems are operated (a traffic light system is used to control this). Provision of outdoor air required in the EFSG is in accordance with requirements of AS 1668.2.	● DG 55.02 - Thermal Comfort and Indoor Air Quality Performance Brief	● As built mechanical drawings ● Commissioning report	0
	9.3	Exhaust or Elimination of Pollutants	1		Sources of pollutants (printing, photocopying, cooking and vehicle) compliant with minimum emissions standards or be exhausted directly to outside		The EFSG contain provisions for exhaust or elimination of pollutants for multiple spaces, incl printing rooms and kitchens	● DG 57.07 - Duplicating / Printing Room Ventilation ● DG 57.08 - Fume Cupboard - Single Side or Double Side ● DG 57.09 - Chemical Store Ventilation ● DG 57.16 - Toilet and Change Room Ventilation ● DG 57.17 - Laundry	● As built mechanical drawings	1
Acoustic Comfort	10.1	Internal Noise Levels	1	Rewards projects that provide appropriate and comfortable acoustic conditions for occupants.	● Internal ambient noise levels no more than 5db(A) above lower figure in table 1 of AS/NZA 2107:2016 ● Compliance shall be demonstrated through measurement provided by a qualified acoustic consultant	Ensure good acoustics that supports teaching and learning	The EFSG set acoustic performance requirements for the different spaces, including noise levels, reverberation and acoustic separation. These requirements are best practice for schools.	● DG 55.02 - Thermal Comfort and Indoor Air Quality Performance Brief (noise levels from HVAC) ● DG 11.07 - Acoustic post occupancy evaluation	● Detailed drawings ● Acoustic report ● Commissioning report ● Acoustic post occupancy evaluation	1
	10.2	Reverberation	1		● Reverberation time below max stated in table 1 of AS/NZS 2107:2016 ● Compliance shall be demonstrated through measurement			As above		1
	10.3	Acoustic Separation	1		Reduce noise transmission between enclosed spaces Rw of at least 35 for partitions with doors and at least 45 for partitions without a			● DG 11.05 - Room to Room Noise Control		0

Lighting Comfort	11.0	Minimum Lighting Comfort	Mandatory for this Credit	Recognises well-lit spaces that provide a high degree of comfort to users	Lights in the nominated area (all primary and secondary spaces) are Flicker-free lights and min Colour Rendering Index (CRI) of 80	Ensure good indoor lighting that supports teaching and learning	The EFSG include best practice provisions for lighting comfort, illuminance levels, glare reduction, surface illuminance and lighting controls. Modelling is required to inform design and demonstrate outcomes.	● DG 63.03 - Lighting Design	● Lighting drawings ● Architectural drawings ● Lighting specifications / schedules ● Isolux drawings	1
	11.1	General Illuminance and Glare Reduction	1		● Lighting levels and quality comply with the GBCA best practice guidelines and ● Glare is reduced					1
	11.2	Surface Illuminance	1		Combination of lighting and surfaces improve uniformity of lighting					0
	11.3	Localised Lighting Control	1		Occupants are be able to control the lighting in their immediate environment Example of immediate environment: ● open-plan office - light shone on the workstation ● residential unit - light hitting the work surface in the kitchen where food is prepared					-
Visual Comfort	12.1	Daylight	2	Recognises well-lit spaces that provide high levels of visual comfort to building occupants.	● 1 point - 40% of the nominated area (all primary spaces) receives high levels of daylight ● 2 points - 60% of the nominated area (all primary spaces) receives high levels of daylight	Maximise daylight indoors and and enable visual connection to outdoors for biophilic effects to support teaching and learning	The EFSG require to maximise natural daylight in all habitable spaces to improve indoor amenity and create a pleasant environment.	● DG 2.3.1 - Lighting ● DG 12 - Light - Natural	● Daylight modelling report	2
	12.2	Views	1		60% of the nominated area (all primary spaces) has a clear line of sight to a high quality internal or external view ● <u>External View</u> – A high quality external view must extend to the outside towards natural elements such as large bodies of vegetation, a body of water, frequent movement of (people, vehicles, or animals) or sky ● <u>Internal View</u> - A high quality internal view is defined as a view towards an area that is landscaped or contains a water feature, or an atrium		This is not explicitly required in the EFSG but 100% achievable based on typical room design, window location and quality landscaping in new schools.	● DG 90 - Landscape Design	● Landscape design report ● Architectural drawings	1
Indoor Pollutants	13.1	Paints, Adhesives, Sealants and Carpets	1	Recognises projects that safeguard occupant health through the reduction of internal air pollutant levels.	● No paints, adhesives, sealants or carpets are used in the building; or ● 95% of all internal paints, adhesives, sealants and carpets meet	Ensure pollutant-free environments	The EFSG require low VOC and formaldehyde content in line with Green Star requirements.	● DG 2.5.2 - Low VOC	● Materials specifications	1
	13.2	Engineered Wood Products	1		● No new engineered wood products are used in the building; or ● At least 95% of all engineered wood products meet formaldehyde emission limits			As above	As above	1
Thermal Comfort	14.1	Thermal Comfort	1	Recognises projects that achieve high levels of thermal comfort.	80% of occupants satisfied - equivalent to PMV between -1 and +1		Schools are naturally ventilated except when outside climate is not adequate. Inclusion of active cooling is directed by DoE's thermal comfort policy. The EFSG require thermal comfort is automatically controlled within specified parameters. Thermal modelling is undertaken to demonstrate that learning spaces and libraries have been designed to achieve a predicted mean vote (PMV) of +/- 0.5 for 95% of occupied hours	● DG 06.03 - Cooling ● DG 55 - Cooling Policy	● Drawings ● Thermal comfort modelling report	1
	14.2	Advanced Thermal Comfort	1		90% of occupants satisfied - equivalent to PMV between -0.5 and +0.5					0
Energy			**22**							**10**
Greenhouse Gas Emissions	15E.0	Conditional Requirement: Reference Building Pathway	Mandatory for this Credit and Certification	Encourages energy efficient buildings and the reduction of greenhouse gas (GHG) emissions associated with the use of energy in building operations.	<u>Projects targeting:</u> ● 4 Star - Proposed building must achieve 10% improvement on NCC Section J reference building. Equivalent to GBCA Benchmark Building ● 5 Star - Minimum points threshold = 3 points ● 6 Star - Minimum points threshold = 6 points	Minimise energy consumption and associated GHG emissions from school operation	The EFSG require 'energy consumption is predicted to be at least 10% lower than if build to minimum compliance with National Construction Code requirements'.	● DG 02.03 - Energy Conservation	● Section J modelling report	-
	15E.1	Reference Building Pathway	20		<u>Points awarded for emissions reduction:</u> ● Building fabric relative to NCC Section J to Reference Building - 1 point for 5%, 2 point for 10%, 3 point for 15%, max. 4 point for 20% ● Proposed building relative to GBCA Benchmark Building - 1.6 point for 10%, 3.2 point for 20%, 4.8 point for 30%, 6.4 point for 40% etc.		The EFSG require a number of measures for reduced energy consumption including: - Passive design (building envelope, orientation, daylighting, insulation, etc.) - Energy efficient air conditioning, ventilation and lighting systems - Solar PV (large systems up to 100 kW) Six points are conservatively estimated based on the above and Green Star benchmarking done for SINSW projects	● DG66 - Photovoltaic Solar Power Generator ● DG 02.03 - Energy Conservation ● DG 65.02 - Energy Conservation (special electrical systems) ● DG 12 - Light - Natural ● DG 07 - Sun Control ● DG 63 - Lighting ● DG 65.03 - Automatic Lighting Control ● DG 55 - Cooling Policy (energy efficient AC) ● DG 16.09 - Energy Efficiency ● DG 04 - Heat loss / gain ● DG 06.02 - Principles of Energy Efficient Design ● DG 27.12 - Coloured Roof Sheeting ● DG 57 - Ventilation ● DG 05 - Air Movement ● DG 37 - Roof mounted turbo ventilators ● DG 53.09 - Hot Water Heaters for Schools ● DG 56 - Heating	● Energy modelling report	10
Transport			**10**							**3**
Sustainable Transport	17A	Performance Pathway	10	Rewards projects that implement design and operational measures that reduce the carbon emissions arising from occupant travel to and from the project, when compared to a reference building. This also promotes the health and fitness of commuters, and the increased liveability of the location.	● The Travel Plan or Transport Plan must be developed by a suitably qualified transport professional ● Completion of the Sustainable Transport Calculator ● Most appropriate for suburban or regional projects	Encourage uptake of active transport modes for staff and students	A Green Travel Plan is developed for SINSW projects including targets for cycling and walking and adequate provision of bicycle parking and end of trip facilities for staff. A Rapid Transport Assessment is completed during the Master Planning phase.	● SEARs	● Green Travel Plan ● Architectural drawings	3
Water			**12**							**3**

Potable Water	18A	Performance Pathway	12	Encourages building design that minimises potable water consumption in operations.	Completion of the Green Star Potable Water Calculator that awards points based on water saving in comparison with a reference building	Reduce water consumption in schools	EFSGs require a number of initiatives to reduce potable water consumption. This includes rainwater harvesting, water efficient fixtures and fittings, drought tolerant vegetation for landscaping, etc.	● DG 53 - Water ● DG 2.4.1 - Water Conservation ● DG 51.01 - Hydraulics	● Hydraulic drawings ● Potable water calculations	3
Materials			**18**							**0**
Life Cycle Assessment (LCA)	19A.1	Comparative Life Cycle Assessment (LCA)	6	Rewards projects that undertake conduct LCA and inform the design process or as-built outcome.	Whole building LCA is conducted and points are awarded based on reduction of environmental impact compared to reference building		The EFSG recommend whole of life cost assessment is done for material and building system selection including assessment of environmental products and materials.	● DG 01.03 - Whole of life - General Design Considerations		N/A
	19A.2	Additional Life Cycle Impact Reporting	4		LCA is used to inform improvements such as material selection and construction process improvement					N/A
Projects that choose to use the 'Life Cycle Assessment' credit may not use the 'Life Cycle Impacts' credit and vice-versa										
Life Cycle Impacts	19B.1	Concrete	3		Requires reduced use of Portland cement content, potable water and aggregates in concrete mixes.		EFSG recommend fly ash can be used in concrete mixes	● DG 21.02 - Concrete		-
	19B.2	Steel	1		Requires reduced use of steel in building frame		Not required in EFSG			-
	19B.3	Building Reuse	4		Requires a percentage of the building façade or structure is retained.		Not required in the EFSG but typically facades and structure are retained in refurbished buildings.			-
	19B.4	Structural Timber	3		Requires a percentage of the building structure is made of timber		Not required in EFSG			-
Responsible Building Materials	20.1	Structural and Reinforcing Steel	1	Rewards projects that include building materials that are responsibly sourced or have a sustainable supply chain.	Requires a percentage of the steel is sourced from a responsible steel maker		Not required in EFSG but typically steel from responsible manufacturers is procured.			-
	20.2	Timber Products	1		95% (by cost) of all timber used is certified or reused	Ensure only sustainable timber is used in schools	The EFSG require that only sustainable timber is procured	● DG 2.5.1 - Sustainable Materials (timber)		0
	20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1		Requires that only sustainably produced PVC is used		Not required in EFSG			-
Sustainable Products	21.0	Product Transparency and Sustainability	3	Encourages sustainability and transparency in product specification.	Requires a proportion of all materials used in the project to meet transparency and sustainability requirements.		The EFSG encourage the use of sustainable materials.	● DG 02.05 - Sustainable Materials		-
Construction and Demolition Waste	22.0	Reporting Accuracy	Mandatory for this Credit	Rewards projects that reduce construction waste going to landfill by reusing or recycling building materials.	All waste contractors and waste processing facilities that provide waste management and reporting services must demonstrate compliance with *Green Star Construction and Demolition Waste Reporting Criteria*	Reduce construction and demolition waste that goes to landfill	GC21 construction contract contains provisions to minimise construction and demolition waste.	● GC21 ● DG 02.07 Waste Management		-
	22A	Fixed Benchmark			90% of construction and demolition waste generated to be diverted from landfill or Less than 10kg/m^2 of GFA goes to landfill					-
	22B	Percentage Benchmark	1							0
Land Use & Ecology			**6**							**3**
Sustainable Sites	24.0	Conditional Requirement	Mandatory for this Credit and	Rewards projects that choose to develop sites that have limited ecological value, that reuse previously developed land, and that remediate contaminated land.	Site did not include old growth forest, prime agricultural land, wetland of high national importance or impact on matters of national significance	Ensure projects do not negatively impact ecosystems or lands of high ecological value and that adequate remediation is undertaken when contamination is identified.	The EFSG require comprehensive due diligence studies are undertaken to inform site selection when a new school is developed.	● DG03 - Site Selection	● Service Need Report ● Business case report	1
	24.1	Reuse of Land	1		Requires that 75% of the site was previously developed land at the date of site purchase		Most of SINSW projects are refurbishments of existing schools i.e. previously developed land. SINSW preferred approach is to avoid the need for new development	As above	As above	1
	24.2	Contamination and Hazardous Materials	1		Environmental site assessment concludes site is contaminated and is to be remediated prior to development		The EFSG require investigation of presence of contamination and hazardous materials and appropriate remediation measures.	● DG48 Hazardous materials	● Hazardous materials surveys ● Decontamination reports	1
Emissions			**5**							**3**
Stormwater	26.1	Stormwater Peak Discharge	1	Rewards projects that minimise peak storm water outflows from the site and reduce pollutants entering the public sewer infrastructure or other water bodies.	Post-development peak average recurrence interval (ARI) event discharge from site does not exceed pre-development	Ensure responsible stormwater management in school sites	EFSGs require stormwater system to be integrated with relevant authority requirements, especially the local council and water authority.	● DG 2.4.3 - Stormwater Management	● Civil drawings and specifications ● Water sensitive urban design report	1
	26.2	Stormwater Pollution Targets	1		Additional point awarded for stormwater site discharge to meet GBCA pollution reduction targets		EFSGs require stormwater treatment to minimise the transportation of toxicants to waterways and other offsite environments, and maintain the existing hydrological regimes.			0
Light Pollution	27.0	Light Pollution to Neighbouring Bodies	Mandatory for this Credit	Rewards projects that minimise light pollution.	Requires that external luminaires meet Australian Standard to avoid light pollution to neighbouring development	Ensure external lighting is designed to standard and avoid nuisance to neighbours and pedestrians.	EFSGs require external lights to be designed to prevent glare to nearby residents	● DG 63.08.01 - External Access Lighting	● As built drawings ● Confirmation by lighting designer	1
	27.1	Light Pollution to Night Sky	1		Requires that external luminaires do not emit light pollution to the night sky above a given benchmark		Not an EFSG requirement, however external lighting is minimal and luminaires typically meet the benchmark required.			-
Microbial Control	28.0	Legionella Impacts from Cooling Systems	1	Minimise the impacts associated with harmful microbes in building cooling systems.	● Building naturally ventilated, or ● Has waterless heat rejection system, or ● Has water-based heat rejection systems that includes measures for Legionella control and Risk Management	Prevent microbial growth in warm water systems in schools	Typically waterless air conditioning systems are installed.	● DG 51.09 - Microbial Control	● Mechanical system specifications	1
Innovation			**7**							**4**
Innovation Challenge	30D	Community Benefits	1	Encourages investment in infrastructure for use by the broader community, such as the incorporation of spaces that are publically accessible.	Requires a needs analysis of the surrounding community and a strategy for how the project will provide social/community benefits and consult with the broader community on the proposed plan.	Maximise use of school facilities for community uses	The GBCA have accepted the Department of Education's policy 'Community Use of School Facilities' and 'Share Our Spaces' program guide in lieu of the Needs Analysis Report.	● Community Use of School Facilities Policy ● Share Our Spaces program ● DC16.08 Community Use	● Confirmation of spaces accessible for community uses	1
	30D	Universal Design	1	Encourages projects to provide safe, equitable and dignified access for persons with disabilities.	Require to develop and implement an accessibility plan based on a needs analysis	Ensure schools are accessible	The EFSG contain extensive provisions to ensure universal design. The GBCA have accepted the EFSG provisions for universal design in lieu of needs analysis.	● DG19 Access for People With Disabilities ● DG 65.14 - Hearing Augmentation System	● As built drawings ● DDA compliance reports	1
	30D	Amenity Space	1	Recognises the provision of high quality amenities for fitout occupants' use.	Require provision of high quality amenity space intended for use by staff or regular occupants suitable for their enjoyment. The size and qualities of the space are determined via a needs analysis.	Provide high level of amenity that supports teaching and learning, and occupant health and wellbeing.	Compliance demonstrated using staff room amenities has been accepted by the GBCA.	● PS602.01 Staff Room	● Architectural drawings	1
Global Sustainability	30E	Digital Infrastructure	1	Recognises projects that use digital infrastructure to create greater efficiencies in the connection of individuals with other people, goods, services, and information.	Require FTTP and Fixed wireless connectivity to be provided	Ensure technology supports teaching and learning	SINSW projects go above and beyond this credit requirements and this has been accepted by the GBCA in a technical question.	● DG 64 Communications	● Confirmation by head contractor	1
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