If a building becomes architecture, then it is art. Clearly, if a building is not functionally and technically in order, then it isn't architecture either – it's just a building.
Arne Jacobsen

Mechanical Engineering
Lighting Design
Sustainable Design
Electrical Engineering

Copenhagen
London
Sydney
Canberra
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SUSTAINABLE DESIGN

STEENSEN VARMING

Samuel Gilbert Public School
Independent ESD Consultant Statement

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STEENSEN VARMING

Document Revision and Status

Date	Rev	Issue	Notes	Checked	Approved
04/04/22	01	ESD Statement of Compliance		NS	NS
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Sydney April 13th, 2022
Ref. No. 207103

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Table of Contents

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1.0 Independent ESD Statement of Compliance

Steensen Varming was engaged as Independent ESD Consultant to undertake ESD verification of Building N and P at Samuel Gilbert Public School (SGPS), located on Ridgecrop Drive, Castle Hill, NSW.

The engagement is only relevant to state significant development projects in later stages of design or construction stage. As such, Samuel Gilbert Public School (SSD 9274) has obtained approval from DPIE (Department of Planning, Industry and Environment) to meet condition B9 Ecologically Sustainable Development of SSD 9274 through an alternative ESD certification method, aligning with the ESD requirements in School Infrastructure New South Wales' (SINSW) Educational Facilities Standards and Guidelines (EFSG).
The alternative ESD certification pathway aims to demonstrate the project achieves the same level of ESD as a 4 Star Green Star benchmark, independently verified by the Independent ESD Consultant. The project is however not certified with Green Star.

The role of the Independent ESD Consultant is to verify the project has been delivered according to best practice sustainability design by reviewing the Contractor ESD Consultant's final documentation and confirm the design is in line with SINSW's ESD requirements.

The review was based on the following documentation submitted by the Head Contractor and Contractor ESD Consultant (Hutchinson Builders):
- SINSW ESD Equivalency Report
- ESD schedules
- Supporting documentary evidence

This report summarises the review of this documentation and constitutes the Independent ESD Statement of Compliance for Samuel Gilbert Public School.

1.1 Alternative ESD Review Process

Preliminary ESD Schedules were completed by the Contractor ESD Consultant and submitted to the Independent ESD Consultant for review. A list of documentary evidence was then agreed between both parties, identifying the documentation that will be submitted to show ESD compliance.

The Contractor ESD Consultant then proceeded to complete the ESD schedules, including:
- Confirmation of implementation of ESFG requirement in project and noted departures from EFSG
- Alternative ESD certification process point score and confirmation of additional documentary evidence provided to meet point score requirements
- Confirmation that agreed documentary evidence has been collected
- A brief description of compliance against each requirement

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The Contractor ESD Consultant also provided:
- An SINSW ESD Equivalency Report confirming that the project's design and construction complies with the ESD requirements as described in the completed ESD Schedules.
- Supporting evidence documentation referenced in the ESD Schedules.

The Independent ESD Consultant reviewed the ESD Schedules and supporting evidence and provided comments to the Contractor ESD Consultant on behalf of SINSW regarding compliance.

Once all outstanding issues were discussed and closed out, the ESD Schedules and supporting evidence were then updated as required by the Contractor ESD Consultant and issued to the Independent ESD Consultant for final review and inclusion in the ESD Statement of Compliance.

1.2 Summary of Documents Reviewed

The following documents were provided for the ESD compliance review.

- SINSW ESD Equivalency Report – Rev A (Hutchinson Builders, 08/20)
- SINSW ESD Equivalency Report – Rev E (Hutchinson Builders, 04/22)

As-Built Drawings prepared by or on behalf of Head Contractor (Hutchinson Builders), including from:
- Architectural (Fulton Trotter Architects)
- Electrical (David Power Electrical)
- Hydraulic (Morrell Plumbing & Maintenance)
- Mechanical (Eagle Air Conditioning Services)
- Civil (Birzulis Associates)
- Security (Boston Security Services)

Other documentation prepared by or on behalf of Head Contractor (Hutchinson Builders):
Round 1 Submission, including:
- ESD/EFSG Specification (Hutchinson Builders, 10/18)
- Commissioning & Handover Plan (Hutchinson Builders, 10/20)
- Mechanical O&Ms (Eagle Air Conditioning Services)
- Electrical O&Ms (David Power Electrical)
- Hydraulic O&Ms (Morrell Plumbing & Maintenance)
- Security O&Ms (Boston Security Services, 10/21)
- Training and Operators Instructions (Morrell Plumbing & Maintenance)
- Climate Adaptation Plan (Renyi, 12/21)
- Bushfire Emergency Management and Evacuation Plan (Peterson Bushfire, 07/21)
- Construction Environmental Management Plan (Hutchinson Builders, 04/21)
- Independent Environmental Audit (SNC-Lavalin Atkins, 09/21)
- Operational Waste Management Plan (TTM, 10/18)
- Internal Acoustics Assessment (Day Design, 06/20)
- Noise Compliance Certificate (Day Design, 10/21)
- Thermal Comfort Report (Renyi, 08/20)
- Energy Consumption Report (Renyi, 06/21)
- Concrete Supplier confirmation (Gunlake Concrete, 06/21)

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- Monthly Waste Breakdown Report (Aussie Skips)
- Healthy School Canteens (NSW Department of Education, 2016)
- Reconciliation Action Plan (NSW Department of Education, 2020)
- Aboriginal participation in construction (Hutchinson Builders, 10/21)
- Universal Design Report (Morris Goding Access Consulting, 05/20)
- Access Final Occupancy Certification (Morris Goding Access Consulting, 10/21)
- Crime Prevention Through Environmental Design Principals (CPTED) Statement (Fulton Trotter Architects, 06/20)

Round 2 Submission, including:
- Lighting Data Sheets
- Internal Acoustics Assessment (Day Design, 09/20)
- Passive Design Statement, inc. Sun Shading Diagrams (Fulton Architects, 06/20)
- Solar PV Layout (Solas Solar, 01/22)
- Safety in Design Register (Fulton Trotter Architects, 01/22)

1.3 Summary of Review Activities

The ESD Schedules and the ESD evidence documents provided by the Head Contractor and Contractor ESD Consultant (Hutchinson Builders) confirm that the design and construction of the project meets all the ESD requirements set out in the EFSG with no material departures, are complete and comply with the agreed ESD compliance reporting requirements for the project.

The ESD Schedule identifies some departures from the EFSG requirements in the ESFG Design Guides and notes the reason for departure.

The Independent ESD Consultant (Steensen Varming) reviewed the referenced evidence documentation provided. No material deviations from the ESD Schedule were found.

1.4 Point Score Table

Steensen Varming has undertaken a review of the ESD performance of the project based on the information provided by the Contractor ESD Consultant and in accordance with the agreed alternative ESD certification method.

The methodology uses the Green Star Design & As-built rating tool to establish a benchmark against which the project response is compared. Using the alternative ESD certification process a minimum of 45 points is required. The breakdown of points achieved on the project based on the independent review is shown in the table below.

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Category/Credit	Points Available	Points Achieved
Management	14	12
Indoor Environment Quality	17	7
Energy	22	12.3
Transport	10	3
Water	12	3
Materials	14	2
Land Use & Ecology	6	0
Emissions	5	1
Innovation	10	8
Communities	22	1
Total	**132**	**52.3**

1.5 Limitations

Steensen Varming's review is based on documentation and statements prepared by the Contractor ESD Consultant. Steensen Varming have not undertaken independent design calculations, analysis or modelling to confirm that the design complies with the EFSG, Building Code of Australia, Australian Standards or another relevant codes, regulations or client requirements.

Steensen Varming did not witness the construction or installation of any items listed in the ESD schedule and was not present for any site inspections.

1.6 Conclusion

An ESD performance benchmark for the design and construction of the project was established by comparing the EFSG ESD requirements to the credit compliance and points requirements of a 4 Star Green Star Design & As-Built v1.2 rating.

Based on this review the project's ESD performance meets the required benchmark using the alternative ESD certification method.

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1.7 ESD Schedules

Category/Credit	Code	Credit Criteria	Points Available	Aim	Approach to achieve best practice outcome	Governance	Project specific evidence (example)	Issues to demonstrate Green Star compliance	Equivalence to Green Star outcome	Compliance Pathway	Points Targeted	Independent ESD consultant comments ROUND 1 - 05/01/22	HB Response ROUND 1 - 14/02/22	Independent ESD consultant comments ROUND 2 - 09/03/22	Independent ESD consultant comments ROUND 3 - 23/03/22
Management			**14**								**12**				
Green Star Accredited Professional (GSAP)	1.0	Accredited Professional	1	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.)	Green Star requires GSAP engagement from project inception. SINSW engages ESD consultant at SSDA stage typically	High	EFSG	1				
Commissioning and Tuning	2.1	Services and Maintainability Review	1	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	Green Star requires a Services and Maintainability Review Report. SINSW documents this differently through a review and sign off process.	High	EFSG	1				
	2.2	Building Commissioning	1		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	Green Star requires air permeability testing which is not conducted for SINSW projects as it is not appropriate for school building typology.	High	EFSG	1				
	2.3	Building Systems Tuning	1		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	Green Star requires a tuning plan is developed. SINSW uses AMUs to ensure optimum building performance following commissioning and handover.	High	EFSG	1				
Adaptation and Resilience	3.0	Implementation of a Climate Adaptation Plan	2	Deliver development that is resilient to natural and urban hazard risks.	Site selection is informed by Eagle Eye which is an in-house tool that identifies bushfire, landslide, flooding and drought risks. The EFSG require consideration to how school communities will be able to adaptively respond to climate change over time, especially flood, storm surge, inundation, heatwaves, bush fires and extreme weather events.	• DG 03.02 - Site Investigations • DG 13 - Bushfire Protection • DG 02.08 - Climate Change Adaptation	• Service Need Report • Site investigation reports (e.g. flooding, geotechnical, air pollution) • Master plan report • Concept design report • Business case report • Climate change risk assessment (if conducted) • Bushfire assessment report	Green Star requires different climate change scenarios are considered in the risk assessment studies. SINSW conducts extensive due diligence but rarely under climate changed scenarios.	High	Green Star	2	CAP report confirms recommendations have been implemented in design.			
Building Information	4.0	Building Information	1	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		High	EFSG	1				
Commitment to Performance	5.1	Environmental Building Performance	1	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	Green Star requires targets to be project-specific. SINSW has targets that are general for each school type.	High	EFSG	1	Complies through EFSG.			
	5.2	End of Life Waste Performance	1		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		This credit seems to be more relevant to building owner / tenant schemes.	High	EFSG	1	Complies through EFSG.			
Responsible Building Practices	7.1	Formalised Environmental Management System	1	Ensure responsible building practices	ISO accredited EMS contractors required	• GC21 provisions	• Head contractor's ISO certificate		High	Green Star	1				
	7.2	High Quality Staff Support	1		No EFSG requirement but usually the head contractor has programs in place that address the credit requirements. Also, SINSW is investigating 5-day work weeks for construction workers to prevent suicide.				High	Green Star	1				
Operational Waste	8B	Prescriptive Pathway	1	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		High	EFSG	1				
Indoor Environment Quality			**17**								**7**				
Indoor Air Quality	9.1	Ventilation System Attributes	1	Ensure good indoor air quality that supports teaching and learning	The EFSG require ventilation systems are designed for ease of maintenance and to 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 62.1. Cleaning is a commissioning requirement.	• DG 55.02 - Thermal Comfort and Indoor Air Quality Performance Brief • Commissioning and Handover Procedure	• As built mechanical drawings • Confirmation of cleaning by contractor	Green Star requires access to both sides for maintenance which is typically difficult to achieve.	High	EFSG	1				
	9.3	Exhaust or Elimination of Pollutants	1		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		High	EFSG	1	Print rooms ventilated. No kitchen/laundry rooms in project. Accessible WCs mechanically ventilated. Please confirm strategy for other WCs, especially internal WCs.	All toilets in question have grills with natural ventilation via high level louvres (see attached markup)		
Acoustic Comfort	10.1	Internal Noise Levels	1	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 08.05 - Finishes - Walls, Floor, Ceilings • DG 11.07 - Acoustic post occupancy evaluation	• Detailed drawings • Acoustic report • Commissioning report • Acoustic post occupancy evaluation		High	EFSG	1	Internal Acoustics Assessment report is noted as 'Draft - not for submission'. Confirm recommendations have been implemented in design or provide post occupancy evaluation assessment.	Updated acoustic report for 3 September 2021	Acoustic report dates 3 Sept 2020. Per EFSG DG 11.07, an acoustic post occupation evaluation shoul be carried out. Has this occurred? Looking to verify acoustic recommendations from report have been implemented in design and construction.	Noise Compliance Certificate provided (15/10/21), by acoustic consultant.
	10.2	Reverberation	1			As above			High	EFSG	1	As above 10.1	As above	As Above	As Above
	10.3	Acoustic Separation	1			• DG 11.05 - Room to Room Noise Control			High	EFSG	1	As above 10.1	As above	As Above	As Above

Category/Credit	Code	Credit Criteria	Points Available	Aim	Approach to achieve best practice outcome	Governance	Project specific evidence (example)	Issues to demonstrate Green Star compliance	Equivalence to Green Star outcome	Compliance Pathway	Points Targeted	Independent ESD consultant comments ROUND 1 - 05/01/22	HB Response ROUND 1 - 14/02/22	Independent ESD consultant comments ROUND 2 - 09/03/22	Independent ESD consultant comments ROUND 3 - 23/03/22
Visual Comfort	12.2	Views	1	Maximise daylight indoors and and enable visual connection to outdoors for biophilic effects to support teaching and learning	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		High	EFSG	1				
Thermal Comfort	14.1	Thermal Comfort	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.	• DG 06.03 - Cooling • DG 55 - Cooling Policy	• Drawings • Thermal comfort modelling report		High	Green Star	1				
Energy			**22**								**12.3**				
	15E.1	Reference Building Pathway	20		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	SINSW projects able to achieve more points but 6 points is considered a conservative estimation.	High	Green Star	10.3	Energy modelling report confirms 10.3 points awarded for whole campus (including new buildings A, E, N, P, Q and existing buildings C, F, G, H, I, J, K, M area pro-rated based on new buildings). Results for Buildings N & P only not provided. Buildings N & P constitute the greatest extent of new development, so reasonable to assume point score lead by these buildings and individual scores would be in this range. Please confirm final SHGC for glazing is per energy report: 0.41max for glazing to air-conditioned spaces, 0.75max for all other glazing. It is understood that the solar PV array is to be installed as part of the Stage 2 works, with proof of installation to be provided once complete. Please provide design drawings for PV installation.	Glazing performance values and ESD consultant (same company as the energy modelling) email signoff attached. Solar PV design attached.	In meeting with Hutchies 02/02/22, Hutchies confirm JV3 model/energy model/installation certificate carried out by energy consultant.	
Peak Electricity Demand Reduction	16A	Prescriptive Pathway - On-site Energy Generation	2		The EFSG require installation of PV systems. Batteries may be installed if substantiated	As above	As above		High	Green Star	2	As above 15E.1	As above		
Transport			**10**								**3**				
Sustainable Transport	17A.1	Performance Pathway	10	Encourage uptake of active transport modes for staff and students	A Green Travel Plan is typically developed for SINSW projects including targets for cycling and walking and adequate provision of bicycle parking and end of trip facilities for staff.	• SEARs	• Green Travel Plan • Architectural drawings	SINSW projects able to achieve more points but 6 points is considered a conservative estimation.	High	Green Star	3	Green Travel Plan not provided. Evidence of local amenities and end of trip facilities on campus provided. For Access to Public Transport: location achieves Transit score of 43, meaning 'Ridgecrop Drive has some transit which means a few nearby public transportation options.' 1 point is reasonable.			
Water			**12**								**3**				
Potable Water	18A.1	Performance Pathway	12	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	SINSW projects able to achieve more points but 5 points is considered a conservative estimation.	High	Green Star	3	Sanitary fixture efficiency, heat rejection and rainwater reuse (new tank located on campus, however not collecting from Buildings N & P).			
Materials			**18**								**2**				
Life Cycle Impacts	19B.1	Concrete	3	Reduce construction and demolition waste that goes to landfill	EFSG recommend fly ash can be used in concrete mixes	• DG 21.02 - Concrete		This is a procurement decision that varies across projects.	High	Green Star	1				
Construction and Demolition Waste	22A	Fixed Benchmark	1		GC21 construction contract contains provisions to minimise construction and demolition waste.	• GC21 • DG 02.07 Waste Management	• Environmental Management Plan • C&D waste report		High	Green Star	1	22B - Percentage Benchmark met (at least 90% of construction waste diverted from landfill).			
Emissions			**5**								**4**				
Stormwater	26.1	Stormwater Peak Discharge	1	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		High	Green Star	1				
	26.2	Stormwater Pollution Targets	1		EFSGs require stormwater treatment to minimise the transportation of toxicants to waterways and other offsite environments, and maintain the existing hydrological regimes.				High	Green Star	1	Hutchies ESD report states: No MUSIC modelling available although significant filtration of stormwater in OSD. Drawings provided give reasonable assumption for 1 point.			
Light Pollution	27.1	Light Pollution to Night Sky	1	Ensure external lighting is designed to standard and avoid nuisance to neighbours and pedestrians.	Not an EFSG requirement, however external lighting is minimal and luminaires typically meet the benchmark required.	• DG 63.08.01 - +B80:I81External Access Lighting	• As built drawings • Confirmation by lighting designer		High	Green Star	1				
Microbial Control	28.0	Legionella Impacts from Cooling Systems	1	Prevent microbial growth in warm water systems in schools	Typically waterless air conditioning systems are installed. In addition, the EFSG require heated water to hand basins, showers etc. to be stored at temperature above 65 C.	• DG 51.09 - Microbial Control	• Mechanical system specifications		High	Green Star	1				
Innovation			**8**								**8**				
	30D	Integrating Healthy Environments	1	Promote childhood health through healthy food habits	The GBCA have commended the Department of Education for encouraging healthy dietary options in an effort to help reduce childhood obesity through the healthy canteen policy which has been approved for this innovation challenge.	• Healthy Canteen Strategy	• Healthy Canteen Strategy		High	EFSG	1				
	30D	RAP	1		The Department of Education has a RAP in place which has been accepted by the GBCA in a technical question.	• Reconciliation Action Plan	• Aboriginal community engagement or measures implemented in project		High	Green Star	1				
	30D	Universal Design	1	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		High	EFSG	1				
	30D	Amenity Space	1	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		High	EFSG	1				

Category/Credit	Code	Credit Criteria	Points Available	Aim	Approach to achieve best practice outcome	Governance	Project specific evidence (example)	Issues to demonstrate Green Star compliance	Equivalence to Green Star outcome	Compliance Pathway	Points Targeted	Independent ESD consultant comments ROUND 1- 05/01/22	HB Response ROUND 1 - 14/02/22	Independent ESD consultant comments ROUND 2 - 09/03/22	Independent ESD consultant comments ROUND 3 - 23/03/22
	30D	On-Site Renewable Energy	1						High	Green Star	2	Energy Report states a 37% contribution from renewable sources to whole campus. It is understood that the solar PV array is to be installed as part of the Stage 2 works, with proof of installation to be provided once complete. Please provide design drawings for PV installation.	As above		
Global Sustainability	30E	Digital Infrastructure	1	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		High	EFSG	1				
	30E	Green Cleaning	1	Ensure sustainable, non-toxic cleaning products are used	Whole of Government Facilities Management Services (Asset Maintenance and Cleaning) contract contains Green Cleaning provisions that have been accepted by the GBCA for this credit.	• General Cleaning Specifications (Part F2) • WEBClean School User Guide	• Confirmation by school principal		High	EFSG	1				
Green Star - Communities v1.1			**22**								**1**				
Safe Places	15.1	Design for Safety	2	Ensure safety and security within school grounds.	The EFSG contain provisions to guarantee occupant safety and security. Safety in Design and Crime Prevention Through Environmental Design (CPTED) principles are to be implemented in project planning stage.	• DG14 - Safety - Accident Avoidance • DG65.08 - Electronic Surveillance • DG65.10 - CCTV Installations • DG31.03 - Safety Glass	• CPTED assessment • Safety by design report • CCTV drawings		High	EFSG	1	Safety in Design report provided is for Lidcombe Public School, not Samuel Gilbert PS. CPTED report and CCTV drawings provided, therefore point awarded. Correct Safety by design report/risk assessment would be beneficial.	Attached		

	PROJECT: Samuel Gilbert Public School									
Ref.	Theme & objective from SINSW's Sustainable School Infrastructure Strategy	Indicator	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	EFSG	EFSG type	Crossover with Green Star	Standard evidence to demonstrate compliance	Has this been implemented in the project? Y or N	Contractor's ESD consultant comments	Actual evidence proposed This evidence needs to show that the requirement from column C has been met
E1	Energy & carbon	EC1: Energy efficiency	**Improvement over NCC** Building is designed and built so that energy consumption is predicted to be at least 10% lower than if build to minimum compliance with NCC requirements.	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	Refer to Green Star equivalency	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.
E2	Energy & carbon	EC1: Energy efficiency	**Energy conservation** Design and construct all school buildings within the parameters specified in the: - Government Energy Management Program (GEMP) - NSW Public Works Energy Manual for Buildings - Building Code of Australia (BCA) Section J for Energy Efficiency The GEMP recognises that savings must be made in energy usage and maintenance to maintain the program of capital works. 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	DG65.02	Mandatory	DAB c15 GHG Emissions Reduction	1) Energy impact statement	Y	Refer to Green Star equivalency	1) Energy impact statement
E3	Energy & carbon	EC1: Energy efficiency	**Daylighting** - Maximise natural daylight in all habitable 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	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	Daylight modelling has been completed and indicates that the following percentage of the working plane in each building will achieve a Daylight Factor (DF) greater than 2%: •Building N – 33.15% •Building P – 36% Please note that the EFSG does not place any limits on acceptable levels of daylight. The above daylight levels were therefore deemed acceptable for the development by SINSW. Lighting control and zoning has not considered daylight levels due to the small size of the rooms/individual lighting zones. Individual control of perimeter lighting zones through switching or daylight sensors would only become feasible in a larger open plan arrangement which is not applicable in this instance. This approach has been deemed acceptable by SINSW.	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)
E4	Energy & carbon	EC1: Energy efficiency	**Shading devices** On exposed facades subject to direct sunlight, external window shading has been considered as part of the building design	DG2.3.1	Mandatory	DAB c15 GHG Emissions Reduction	1. As built drawings	Y	A sun shading report has been completed for each level of the buildings during the summer and winter solstice between 9am, midday and 3pm. Results indicate an effective reduction in the levels of direct sun exposure during the summer while allowing sun to enter the building during the winter months.	1. As built drawings
E5	Energy & carbon	EC1: Energy efficiency	**Lighting energy conservation** Lighting system must have timed or sensor feedback functionality for energy conservation	DG2.3.2	Mandatory	DAB c15 GHG Emissions Reduction	1. As built mechanical drawings / statement from head contractor	Y	As per ESD/EFSG criteria	1. As built mechanical drawings / statement from head contractor
E6	Energy & carbon	EC1: Energy efficiency	**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	DG2.3.1 SG63.01	Mandatory	DAB c15 GHG Emissions Reduction	1. As built electrical drawings	Y	As per ESD/EFSG criteria	1. As built electrical drawings
E7	Energy & carbon	EC1: Energy efficiency	**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.	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	As per ESD/EFSG criteria	1) Lighting drawings 2) Lighting specifications / schedules 3) Lighting modelling report showing compliant power densities
E8	Energy & carbon	EC1: Energy efficiency	**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	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	As per ESD/EFSG criteria	1) Commissioning report 2) Confirmation from AMU that all relevant manuals have been handed over
E9	Energy & carbon	EC1: Energy efficiency	-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.	DG63.06.02 DG63.06.03	Mandatory	DAB c15 GHG Emissions Reduction	1) Lighting drawings 2) Lighting modelling report showing compliant power densities	Y	As per ESD/EFSG criteria	1) Lighting drawings 2) Lighting modelling report showing compliant power densities
E10	Energy & carbon	EC1: Energy efficiency	**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:	DG63.07 DG65.03.01	Negotiable / TBC	DAB c15 GHG Emissions Reduction	1) Electrical & lighting drawings showing switching groups and automatic controls	Y	The proposed lighting control strategy utilises PIR occupancy sensors with a pre-set run time in lieu of lighting interconnected with the school bell. This approach is deemed more versatile than the EFSG requirements and has been confirmed with SINSW as an acceptable alternative.	1) Electrical & lighting drawings showing switching groups and automatic controls
E11	Energy & carbon	EC1: Energy efficiency	**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 /	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	The design complies with the EFSG/ESD requirements. A push on / push off adjustable hour run timer for air conditioning system will be installed with the run timer adjustable from 1 to 4 hours (initially to be set at 2 hours).	1. As built mechanical drawings / statement from head contractor; 2. Whole of life cost analysis demonstrating systems were selected based on WOL performance.
E12	Energy & carbon	EC1: Energy efficiency	**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	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	All proposed appliances and equipment have been reviewed. All equipment was either deemed not applicable to the energy star rating scheme (microwaves, rangehoods etc) or within the standards specified in the GREP.	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.
E13	Energy & carbon	EC1: Energy efficiency	Building/HVAC design must consider: - Climate/ micro-climate: This data shall come from the current AIRAH handbook and where a specific area is not referenced in the handbook, the Bureau of Meteorology statistics shall be utilised. - Orientation; exposure to sun(solar) and wind	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	As per ESD/EFSG criteria	1. Thermal modelling report 2. As built evidence demonstrating that model is an accurate representation of the building 3. Specifications/ calculations supporting modelling inputs
E14	Energy & carbon	EC1: Energy efficiency	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.	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	A passive design statement has been completed which outlines the buildings design response to environmental conditions through the use of effective orientation, solar exposure, glazing, insulation and thermal mass. See P14 - Thermal Comfort for further details on the Thermal Comfort results for the development.	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
E15	Energy & carbon	EC1: Energy efficiency	**Ventilation strategy** A ventilation strategy is to 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 should: - 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	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	As per ESD/EFSG criteria	1) Cooling system strategy including WOL analysis 2) Concept plans 3) Construction drawings 4) Trade-based specification 5) As built drawings

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E16	Energy & carbon	EC1: Energy efficiency	**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.	DG05.01	Mandatory	DAB c15 GHG Emissions Reduction	As built drawings demonstrating windows have been installed as required.	Y	As per ESD/EFSG criteria	As built drawings demonstrating windows have been installed as required.
E17	Energy & carbon	EC1: Energy efficiency	**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.	DG57.18	Mandatory	DAB c15 GHG Emissions Reduction	As built mechanical drawings and specifications Extracts from commissioning report	Y	Enthalpy measurement shall be used to determine favourable ambient conditions to turn off the air conditioning and open windows or activate mechanically assisted cross ventilation. A Local Control Panels (LCP) shall be installed which clearly labels a start/stop push button mechanically assisted ventilation fans button.	As built mechanical drawings and specifications Extracts from commissioning report
E18	Energy & carbon	EC1: Energy efficiency	**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.	DG05.02 DG37	Mandatory	DAB c15 GHG Emissions Reduction	As built mechanical drawings demonstrating ventilation has been installed as required.	Y	The proposed ceiling design is currently under review to determine if a perforated or solid ceiling is to be installed in the development. The choice of ceiling system will impact whether ceiling void ventilators are required to remove heat from the space.	As built mechanical drawings demonstrating ventilation has been installed as required.
E19	Energy & carbon	EC1: Energy efficiency	**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	DG65.16	Mandatory	DAB c15 GHG Emissions Reduction	Mechanical / electrical drawings showing controls	Y	As per ESD/EFSG criteria	Mechanical / electrical drawings showing controls
E20	Energy & carbon	EC1: Energy efficiency	**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.	DG57.14	Mandatory	DAB c15 GHG Emissions Reduction	As built mechanical drawings showing location of roof ventilators if installed	Y	As per ESD/EFSG criteria	As built mechanical drawings showing location of roof ventilators if installed
E21	Energy & carbon	EC1: Energy efficiency	**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).	DG05.04 DG57.16	Mandatory	DAB c15 GHG Emissions Reduction	As built mechanical drawings demonstrating ventilation has been installed as required.	Y	The design complies with the EFSG/ESD requirements. SINSW have agreed that any ventilation greater than AS1668.2 is deemed acceptable.	As built mechanical drawings demonstrating ventilation has been installed as required.
E22	Energy & carbon	EC1: Energy efficiency	**Ventilation in storage spaces** - Permanent air ventilation openings are to be provided (without compromising security), to prevent concentration of odours.	DG05.05	Mandatory	DAB c15 GHG Emissions Reduction	As built mechanical drawings demonstrating ventilation has been installed as required.	Y	As per ESD/EFSG criteria	As built mechanical drawings demonstrating ventilation has been installed as required.
E23	Energy & carbon	EC1: Energy efficiency	**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	DG55	Mandatory	DAB c15 GHG Emissions Reduction	As built drawings demonstrating ceiling/wall fans have been installed as required.	Y	As per ESD/EFSG criteria	As built drawings demonstrating ceiling/wall fans have been installed as required.
E24	Energy & carbon	EC1: Energy efficiency	- 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"	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	As per ESD/EFSG criteria	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
E25	Energy & carbon	EC1: Energy efficiency	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	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	Operation and Maintenance (O&M) manuals will be provided at as built stage.	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
E26	Energy & carbon	EC2: Scope 1 & 2 emissions	**Renewable energy** A grid connected solar PV system must be installed Where feasible, PV systems shall be installed to offset as much of the electricity consumed by the school as is practicable	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	As per ESD/EFSG criteria	1) As installed drawings of PV system 2) Energy modelling report showing renewable energy generation
~~E27~~	Energy & carbon	EC2: Scope 1 & 2 emissions	**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;	DG66.8.3	Mandatory	DAB c15 GHG Emissions Reduction; DAB c16 Peak Electricity Demand Reduction	1) As installed drawings of battery storage system	N	Not applicable	Not applicable
E28	Energy & carbon	EC2: Scope 1 & 2 emissions	**Heaters** In rooms where reverse cycle air conditioning is installed gas heaters shall not be provided. The only exception to this may be in the coldest parts of the state where reverse cycle air conditioning may be unable to provide effective heating. Heating equipment should: - 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	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	The design complies with the EFSG/ESD requirements. The staff room is the only space within Buildings N or P which includes gas heaters. This space is not currently designed to include air conditioning.	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
E29	Energy & carbon	EC2: Scope 1 & 2 emissions	**Water heaters** - Hot water and tempered water generation for schools should be carefully considered to ensure that a Whole of Life assessment is undertaken to minimise life cycle costs - Environmentally friendly options such as solar heating (if vandal resistant), high efficiency instantaneous gas and heat pumps are preferred energy sources to minimise energy consumption.	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	A transport plan will be provided as part of the as built documentation.	1. WOL cost assessment for hot water systems 2. Hydraulic drawings/schematics showing installed DHW systems
E30	Energy & carbon	EC3: Scope 3 emissions	Transport plan	N/A	N/A	DAB c17 Sustainable Transport		Y	Occupant numbers are expected to increase from 780 to 1,000 students and 45 to 58 staff. A total of 60 bicycle racks are proposed for the development which meets ESD/EFSG criteria.	0

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E31	Energy & carbon	EC3: Scope 3 emissions	**Bicycle storage** Provide 1 space for every 20 students to AS2890.3 standard	SG552 4.36	TBC	DAB c17 Sustainable Transport		Y	Not applicable	Not applicable
W1	Water	W1: Water use efficiency	**Potable water conservation** The following are to be implemented on school sites where possible: Manual flush urinal systems: New and replacement urinals shall use manual in lieu of automatic flushing mechanisms. A microwave-activated urinal flushing system may be used as an alternative. Water conserving taps: Wherever possible and practical, use metal flow control valves and /or push down taps with pre set flow limits.	DGS3.01	Mandatory	DAB c18 Potable Water	1. Schedule of fixtures and fittings showing type of urinals and taps installed are as required	Y	As per ESD/EFSG criteria	1. Schedule of fixtures and fittings showing type of urinals and taps installed are as required
W2	Water	W1: Water use 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 fixtures and fittings must be at least the average WELS star rating by product type. Where WELS rating is not available, use the alternative WaterMark rating scheme.	DGS3.02 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	This criteria will be confirmed at as built stage once all fixtures and fittings have been nominated and data sheets can be provided.	1. Schedules of materials, fixtures, fittings and equipment with WELS/WaterMark ratings, demonstrating compliance and identifying those with flow restrictors and timed flow.
W3	Water	W1: Water use efficiency	**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	DGS1.01	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	A hydraulic report detailing the water efficient measure implemented in the project will be provided at as built stage.	1) Hydraulic report showing sustainability initiatives implemented to reduce potable water consumption 2) As built drawings showing trade waste arrestors
W4	Water	W1: Water use efficiency	**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	DGS3.04	Mandatory		1) As built hydraulic drawings	Y	Hutchinson Builders have confirmed that both Buildings N and P will have a water sub-meter included. The main water consuming activities in these buildings are the amenities, which are deemed to be accurately metered with the building specific meter.	1) As built hydraulic drawings
W5	Water	W2 – Proportion of potable vs non-potable water	**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.	DGS3.14 DG2.4.2 DGS3.01	Mandatory	DAB c18B.2 Rainwater Reuse	1) As built hydraulic drawings showing tank connection to end uses and capacity	Y	Alternative approach proposedThe design includes a rainwater tank catching water from Building Q with a hose cock for future use for hand watering of landscape areas. This is technically contrary to the ESD matrix design criteria for as the captured rainwater is from a building outside the scope of the ESD matrix (Buildings N and P) and the irrigation system is not in-ground drip irrigation. SINSW have confirmed that the above approach is deemed to meet the intended operation of the development and the intent of the criteria.	1) As built hydraulic drawings showing tank connection to end uses and capacity
~~W6~~	Water	W2 – Proportion of potable vs non-potable water	**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 to capture and reuse fire systems testing and maintenance water, or by using an alternative non-potable water source.	DG2.4.2	Optional	DAB c18B.5 Fire System Test Water	Fire engineering report	N	Not applicable	Not applicable
~~W7~~	Water	W2 – Proportion of potable vs non-potable water	**Ground water** Where ground water is available for use for irrigation purposes, enquiries should be undertaken with DPIE to determine the suitability of a ground water system.	DGS3.03	Mandatory	DAB c18 Potable Water	1. Relevant due diligence report / investigation	N	Not applicable	Not applicable
W8	Water	W3 – Responsible water discharge	**Stormwater management** Aim to minimise the transportation of toxicants to waterways and other offsite environments, and maintain the existing hydrological regimes.	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 use4)	Y	The civil design includes 6 x 690mm Ocean Protect stormwater filters located within the Onsite Detection Tank (OSD).	Stormwater modelling report showing stormwater pollution and flows. Civil / Hydraulic drawings showing management measures. Water sensitive urban design report (if WSUD was use4)
~~W8~~	Water	W3 – Responsible water discharge	**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 DGS2.	DGS2	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	N	Not applicable	Not applicable
~~M1~~	Waste & materials	WM1: Materials selection and use	**Life cycle assessment (environmental)** Environmental impacts of products and materials has been assessed and inform material selection	DG01.03	Recommended	DAB c19A - Life cycle assessment	Life cycle assessment report	N	Not applicable	Not applicable
M2	Waste & materials	WM1: Materials selection and use	**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	DG01 All design guides for selection of materials and building systems	Recommended	GSC c20 - Return on Investment	Life cycle costing report for relevant system	Y	A whole of life cycle analysis for the building services has been completed during the initial design stages.	Life cycle costing report for relevant system
M3	Waste & materials	WM1: Materials selection and use	**Sustainable materials** The use of the following materials in construction is encouraged: - Materials that have lower adverse environmental impacts throughout their life cycle; - 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 recycled at the end of their useful life.	DG02.05	Optional	DAB c21 Sustainable Products	Environmental Product Declarations of products / materials used; Product certificates (like GECA, FSC, et3) Suppliers' declarations confirming recycled contents in products Bill of quantities	Y	Hutchinson Builders aim to assess the extent of sustainable products during construction and provide a final report on the percentage achieved. It is noted that generally 3-6% of compliant products by cost (equivalent to 1-2 Green Star points) is generally achievable without direct focus or additional costs. Note that the ESD/EFSG requirements do not set any limits on the extent of sustainable materials which need to comply.	Environmental Product Declarations of products / materials used; Product certificates (like GECA, FSC, et3) Suppliers' declarations confirming recycled contents in products Bill of quantities
M4	Waste & materials	WM1: Materials selection and use	**Sustainable timber** - Use only recycled timber, engineered and glued timber composite products, timber from plantations or from sustainably managed regrowth forests. - All timber used is to be termite (white ant) resistant or treated to be termite resistant to the appropriate hazard level.	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	Hutchinson Builders will review all material product data sheets for compliance with the EFSG requirements before use on site.	1. Evidence of chain of custody 2. Bill of quantities
M5	Waste & materials	WM1: Materials selection and use	**Built for disassembly** Consider the use of building materials which are able to be disassembled for re-use, in conjunction with considerations for the addition and removal of accommodation over time.	DG02.07	Mandatory			Y	Hutchinson Builders will provide a summary report confirming the ESD/EFSG criteria at as built stage.	0
M6	Waste & materials	WM1: Materials selection and use	**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.	DG21.02	Mandatory	DAB c19B.1	Structural specifications and drawings Structural Engineer's report showing %cement replacement	Y	Hutchinson Builders will procure concrete in line with the lesser of 20% fly-ash replacement or Green Star Credit 19B.1.1 Portland Cement Reduction.	Structural specifications and drawings Structural Engineer's report showing %cement replacement
M7	Waste & materials	WM2 – Resource efficient school operations	**Operational waste** Consider opportunities for re-use and recycling of materials in the operation of the facilities	DG02.07	Mandatory	DAB c8 Operational Waste	Operational waste management plan Operational waste reports showing diversion rates	Y	An Operational Waste Management Plan (OWMP) has been developed for the project.	Operational waste management plan Operational waste reports showing diversion rates

	PROJECT: Samuel Gilbert Public School									
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M8	**Waste & materials**	WM2 – Resource efficient school operations	**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.	DG21.1.16	Mandatory	Not covered in Green Star	As built drawings or statement by relevant professional	Y	Hutchinson Builders will provide a summary report confirming the ESD/EFSG criteria at as built stage.	As built drawings or statement by relevant professional
M9	**Waste & materials**	WM3 – Responsible management of waste	**Construction waste** Consider opportunities for re-use and recycling of materials in the construction phase	DG02.07	Mandatory	DAB c22 Construction and Demolition Waste	Construction waste reports showing percentage of waste re-used and recycled (diverted from landfill)	Y	Hutchinson Builders aim to meet an 90% aspirational reduction in construction waste to landfill target in line with Green Star Credit 22.0 Construction and Demolition Waste. A summary report confirming this will be provided at as built stage.	Construction waste reports showing percentage of waste re-used and recycled (diverted from landfill)
M10	**Waste & materials**	WM3 – Responsible management of 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.	DG02.07	Mandatory	DAB c8 Operational Waste	As-built drawings showing location of waste storage area	Y	Waste storage areas will be provided as per the project specific Operational Waste Management Plan (OWMP).	As-built drawings showing location of waste storage area
P1	**Place**	P1 – Green infrastructure	**Environmental conservation education** The design of the facilities provide unique and valuable environmental conservation learning opportunities and effective environmental modelling to the wider community.	DG02.06	Mandatory		Statement / Report by qualified ecologist	Y	A summary report by a qualified ecologist will be provided at as built stage.	Statement / Report by qualified ecologist
~~P2~~	**Place**	P1 – Green infrastructure	**Productive landscape** Consider including opportunities for development of community garden within the site and relationships with community groups for this to occur.	DG02.06	Optional	GSC c14.2 Local Food Production	Site plan demonstrating location and size of community garden	N	Not applicable	Not applicable
~~P3~~	**Place**	P1 – Green infrastructure	**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	DGS1.07	Mandatory	GSC c24 Integrated Water Cycle	1. Water cycle management study 2. Evidence that recommendations in the study have been followed / implemented	N	Not applicable	Not applicable
~~P4~~	**Place**	P2 – Community & heritage 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.	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.	N	Not applicable	Not applicable
P5	**Place**	P2 – Community & heritage connections	**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	DG90.04	TBC	Not covered in Green Star	1) Landscape design report 2) Landscape drawings	Y	The design complies with the EFSG/ESD requirements. All sharp edges of materials are to be chamfered. Main paths of travel are of appropriate slip rating and material as per the EFSG guidelines. Balustrades are provided where necessary. The sense of place of Samuel Gilbert Public School is enhanced through the landscape with the local flora and fauna used as inspiration. Natural materials and colours have been incorporated to achieve a sense of identity for the school and give precedence to its bush context. Planting (once established) becomes low maintenance whilst providing amenity to the school.	1) Landscape design report 2) Landscape drawings
~~P6~~	**Place**	P2 – Community & heritage connections	**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.	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	N	Not applicable	Not applicable
~~P7~~	**Place**	P2 – Community & heritage connections	Reconciliation action plan	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	Not applicable	Not applicable
P8	**Place**	P3 – Welcoming learning spaces	**Daylighting** Maximise natural daylight in all habitable spaces to improve indoor amenity and create a pleasant environment.	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	See E3 – Daylighting for more details on the daylight modelling results for the development.	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)
P9	**Place**	P3 – Welcoming learning spaces	**Daylight glare control** Discomforting glare and brightness contrasts must be avoided. It is recommended 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). Elimination of direct sunlight into the spaces will also reduce unwanted heat gain in summer. - 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 should only be controlled by blinds as a last resort. Prepare sun diagrams in the design phase as a minimum requirement.	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	See E4 – Shading Devices for more details on the direct sun modelling results for the development.	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
P10	**Place**	P3 – Welcoming learning spaces	**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	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	The design complies with the EFSG/ESD requirements. Lighting modelling will be provided as part of as built documentation.	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

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P11	**Place**	P3 – Welcoming learning spaces	**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	DG63.03.02	Mandatory	DAB c11.1 General Illuminance and Glare Reduction	Lighting modelling report confirming compliance with required standards and parameters	Y	The design complies with the EFSG/ESD requirements. Lighting modelling will be provided as part of as built documentation.	Lighting modelling report confirming compliance with required standards and parameters
P12	**Place**	P3 – Welcoming learning spaces	**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	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	The design complies with the EFSG/ESD requirements.	1) As built drawings indicating the location of all external luminaires 2) Letter by lighting designer describing glare prevention measures
P13	**Place**	P3 – Welcoming learning spaces	**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	DG06.03 DGS5.01 DGS5.02	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	Thermal comfort modelling has been completed and indicates that the following percentage of area achieved the nominated Predicted Mean Vote (PMV) for greater than 95% of the year: •PM ± 0.5 – 84% •PM ± 1.0 – 100% Note that while the EFSG requirements dictate compliance to a PMV limit of ± 0.5 for 95% of time, the spaces were able to achieve the PM ± 0.5 limit for 94% of the time. Given the quite stringent PMV targets for a building of this nature and the narrow 1% difference to noncompliance, SINSW have deemed the above values to meet the intent of the criteria. It is also worth noting that ESFG DGS5 which covers the thermal comfort criteria is likely to be amended to better reflect realistic PMV targets.	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
P14	**Place**	P3 – Welcoming learning spaces	**Road, rail, aircraft, industrial and rain noise** - HVAC systems shall be designed in accordance with the recommended internal noise levels noted in table 1 of DGS5.02. 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.	DGS5.02 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	The current Acoustic Assessment Design Report details recommendations to comply with DG 11/55 which forms the basis for this criteria. Post occupancy acoustic testing to be completed prior to as built.	1. Road, rail, aircraft, industrial and rain noise assessment as per DG11.02 2. Report by qualified acoustics consultant demonstrating noise measurements are compliant.
P15	**Place**	P3 – Welcoming learning spaces	**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.	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	The current Acoustic Assessment Design Report details recommendations to comply with DG 11 which forms the bases for this criteria.	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
P16	**Place**	P3 – Welcoming learning spaces	**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.	DG11.04	Optional	Not covered in Green Star		Y	The current Acoustic Assessment Design Report contains a detailed assessment of noise emission from the mechanical plant associated with the relevant guidelines.	0
P17	**Place**	P3 – Welcoming learning spaces	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,	DG11.07	Optional	GSP c13 Internal Noise Levels	1. Commitment by SI to conduct acoustic post-occupancy evaluation	Y	Post occupancy acoustic testing to be completed prior to as built.	1. Commitment by SI to conduct acoustic post-occupancy evaluation
P18	**Place**	P3 – Welcoming learning spaces	**Low VOC-emitting materials** All surface coatings, and other Volatile Organic Compound (VOC) emitting products including adhesives, sealants, carpets and carpet underlays, must be made from Low-VOC emission materials. In terms of surface coatings, the Australian Paint Approval Scheme's (APAS) VOC limits for Low VOC paints or lower are to be used	DG2.5.2	Mandatory	DAB c13 Indoor Pollutants	Product specifications, certificates, safety datasheets that demonstrate low-VOC contents Bill of quantities	Y	Hutchinson Builders will review all material product data sheets for compliance with the EFSG requirements before use on site.	Product specifications, certificates, safety datasheets that demonstrate low-VOC contents Bill of quantities
P19	**Place**	P3 – Welcoming learning spaces	**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.	DG2.5.2	Mandatory	DAB c13 Indoor Pollutants	Product specifications, certificates, safety datasheets that demonstrate low-formaldehyde contents Bill of quantities	Y	Hutchinson Builders will review all material product data sheets for compliance with the EFSG requirements before use on site.	Product specifications, certificates, safety datasheets that demonstrate low-formaldehyde contents Bill of quantities
P20	**Place**	P3 – Welcoming learning spaces	**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.	DGS7.07	Mandatory	DAB c9.3 Exhaust or Elimination of Pollutants	1. Mechanical drawings and specifications showing compliant printing room ventilation	Y	The design complies with the EFSG/ESD requirements.	1. Mechanical drawings and specifications showing compliant printing room ventilation
~~P21~~	**Place**	P3 – Welcoming learning spaces	**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.	dgS7.09	Mandatory	Not covered in Green Star		N	Not applicable	Not applicable
P22	**Place**	P3 – Welcoming learning spaces	**Pesticide free environments** Schools are 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	DG2.5.3	Mandatory	Not covered in Green Star	Statement by head contractor that no pesticides or termites have been used.	Y	All timber element and play equipment treatments will be protected with natural sealants and products that are not considered pesticides or termicides. All reused timber from harvested trees on site will not be treated with pesticides or termicides.	Statement by head contractor that no pesticides or termites have been used.

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~~P23~~	**Place**	P3 – Welcoming learning spaces	**Green cleaning**	N/A	N/A	GSP c6 Green Cleaning	1) WEB Clean School User Guide 2) Green Cleaning specifications	N	Not applicable	Not applicable
P24	**Place**	P3 – Welcoming learning spaces	**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.	DG31.01	Mandatory	Not covered in Green Star	As-built drawings showing fly screening has been provided as required	Y	The design complies with the EFSG/ESD requirements. The only applicable area for this assessment is the staff room kitchenette in Building N which will be covered by flyscreen.	As-built drawings showing fly screening has been provided as required
P25	**Place**	P3 – Welcoming learning spaces	**Natural ventilation** 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.	DG55.02	Mandatory	DAB c9 Indoor Air Quality	Mechanical drawings and specifications Extracts from commissioning report	Y	When the air conditioning system is operating, motorised dampers shall modulate to automatically maintain a maximum CO2 concentration level of 800ppm in the space. Air conditioning systems shall maintain an average daily CO2 concentration as per NCC, and so that the maximum concentration does not exceed 1,500ppm for more than 20 consecutive minutes in each day. Hutchinson Builders have allowed to comply with ventilation rates as per AS1668.2 and have allowed for adequate access for maintenance and cleaning. We have not allowed to access both sides of coils, dampers and filters as per Green Star Credit 9.1 Ventilation System Attributes due to the difficulty in complying with Fan Coil Units (FCUs). This approach has been confirmed as acceptable by SINSW.	Mechanical drawings and specifications Extracts from commissioning report
P26	**Place**	P3 – Welcoming learning spaces	**Ecological conservation** School sites must conserve for future generations, the biological diversity of genetic materials, species and ecosystems on that site - Consider including opportunities to preserve or re-establish native flora and create new landscapes through liaising with local government authorities, Landcare and environmental groups, and the use of native low water use plants. - Where practicable, retain both existing native and exotic trees and flora, plus under storey native vegetation, in accordance with any 'Fauna and Flora' study, Environmental Impact Statement recommendations and local authority (Council) tree preservation orders.	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	The project is set to meet and exceed the minimum requirement for tree, shrub and groundcover planting in Samuel Gilbert Public School whilst adhering to the Bushfire conditions in the Peterson Bushfire Report. Revegetation of the endemic flora will occur north of the site near the playing fields. Fencing and protection of the existing vegetation communities will preserve the flora and fauna on the school grounds and ensure its survival for future. Trees have been retained where possible to preserve the biological diversity of genetic materials, species and ecosystems on site.	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.
P27	**Place**	P3 – Welcoming learning spaces	-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	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	The design complies with the EFSG/ESD requirements.	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
P28	**Place**	P3 – Welcoming learning spaces	**Weather protection** Circulation areas provided between administrative, staff and all student spaces (except Agriculture), should be protected from sun, rain and unfavourable winds.	DG08.05	Mandatory	Not covered in Green Star	As built drawings showing circulation areas are protected as required	Y	The design complies with the EFSG/ESD requirements. Both Buildings N and P include a covered verandah link.	As built drawings showing circulation areas are protected as required
P29	**Place**	P3 – Welcoming learning spaces	**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	DG10.03	Mandatory	Not covered in Green Star	Plan view drawings showing provision of open space	Y	The design complies with the EFSG/ESD requirements.	Plan view drawings showing provision of open space
P30	**Place**	P3 – Welcoming learning spaces	**Staff room**	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	The design complies with the EFSG/ESD requirements.	1) Extracts from the EFSG requirements for staff rooms 2) Evidence of staff room delivered accordingly
~~P31~~	**Place**	P3 – Welcoming learning spaces	**Healthy canteen policy**	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	Not applicable	Not applicable
P32	**Place**	P3 – Welcoming learning spaces	**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	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	The design complies with the EFSG/ESD requirements.	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
P33	**Place**	P3 – Welcoming learning spaces	**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.	DGS1.09 DGS3.11	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	The design complies with the EFSG/ESD requirements.	1. Letter by hydraulic engineer confirming hot water is stored above 65 deg and that valves comply with code of practice.
P34	**Place**	P3 – Welcoming learning spaces	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:	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	A Crime Prevention Through Environmental Design (CPTED) has been completed for the development.	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
P35	**Place**	P3 – Welcoming learning spaces	**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.	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	Hutchinson Builders will comply with the site specific hazardous building materials survey.	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
P36	**Place**	P3 – Welcoming learning spaces	**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	DG64.12.02	Mandatory	GSC c22.2 Digital Infrastructure	1) Contracts describing the network infrastructure specification and operational requirements	Y	Wireless Access Points (WAPs) to be identified on the as built drawings.	1) Contracts describing the network infrastructure specification and operational requirements
R1	**Resilience**	R1 – Preparation for shocks	**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	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	A Climate Adaptation Plan (CAP) has been developed for the development outlining the current and future climate risks associated with the site location and design. High and Extreme risks have been mitigated and the report will be updated accordingly for the as built submission.	1) Detailed reports or surveys developed 2) Environmental risk report 3) Evidence demonstrating recommendations have been implemented and risks addressed through design responses.

	PROJECT: Samuel Gilbert Public School									
Ref.	Theme & objective from SINSW's Sustainable School Infrastructure Strategy	Indicator	Sustainability initiatives / requirements from the EFSG This is an extract only from the relevant EFSG. For full requirements refer to https://efsc.det.nsw.edu.au/welcome	EPSG	EFSG type	Crossover with Green Star	Standard evidence to demonstrate compliance	Has this been implemented in the project? Y or N	Contractor's ESD consultant comments	Actual evidence proposed This evidence needs to show that the requirement from column C has been met
R2	**Resilience**	R1 – Preparation for shocks	**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.	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	Y	A bushfire assessment report, bushfire protection assessment and bushfire emergency response sub-plan has been completed for the development.	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
R3	**Resilience**	R2 – Preparation for stresses	**Response to climate risks** Consideration to be given to how sites and school communities will be able to 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 weather events.	DG02.08	Mandatory	DAB c3 Adaptation and Resilience	1) Climate risk assessment, and 2) Climate adaptation plan 3) Emergency management plan	Y	See R1 – Site Investigations for Resilience for further details on the response to climate risks for the development.	1) Climate risk assessment, and 2) Climate adaptation plan 3) Emergency management plan