Sustainable Development Plan (SDP)

Hunter River High School (HRHS)

ESD SERVICES

JHA

CONSULTING ENGINEERS

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DOCUMENT CONTROL SHEET

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Key Contact	Lawrence Yu

Prepared By

Company	JHA
Address	Level 23, 101 Miller Street, North Sydney NSW 2060
Phone	61-2-9437 1000
Email	Lawrence.yu@jhaengineers.com.au
Website	www.jhaservices.com
Author	Lawrence Yu
Checked	Roger Sam
Authorised	Lawrence Yu

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1 EXECUTIVE SUMMARY

This Sustainable Development Plan (SDP) has been prepared by JHA for the proposed Hunter River High School (HRHS) development.

This report states the proposed ESD initiatives to achieve compliance with Educational Facilities Standard Guidelines (EFSG) DG02 requirements and 4 Star Green Star Design & As-Built (GS DAB) v1.3 certification. This report should be read in conjunction with the Architectural drawings, EFSG DG02, GS DAB v1.3 Submission Guidelines and other consultant reports submitted as part of the application.

The ESD objectives is to encourage a balanced approach to designing new facilities for the public school project; to be resource efficient, cost-effective in construction and operation; and to deliver enhanced sustainability benefits with respect to impacts on the environment and on the health and well-being of students, staff and visitors whilst providing the best possible facilities for a constructive student learning experience.

Some of the key ESD commitments for the proposed development are listed below:

- Good access to natural daylight
- Well-designed openings to promote natural ventilation
- Appropriate construction and glazing selection
- Energy efficient air-conditioning systems
- LED luminaires
- Rainwater recycle tank
- Efficient water fixtures
- Water-wise Landscaping

2 INTRODUCTION

This report has been prepared in relation to the proposed development of Hunter River High School located at 36 Elkin Avenue, Heatherbrae. This report has been prepared to support:

- A development application for the construction of a Construction of gymnasium (Block Y), consisting of a basketball court, equipment storage, canteen kitchen, staff room, first aid room and change room amenities, construction of hardstand civic space north of the gymnasium, construction of full-size rugby field, the construction of new carpark consisting of sixty-five (65) parking spaces (including 6 accessible parking spaces) and the construction and connection of a reticulated sewer pipe.
- A Part 5 Activity Approval, development permitted without consent, for the construction of a new administration building, student learning hub and provision of essential services.
- A Part 5 Activity Approval, development permitted without consent, for the construction of a new linking road and kiss and drop bay between Adelaide Street and Elkin Avenue.

2.1 PROPOSED DEVELOPMENT

The proposed development involves the upgrade of Hunter River High School. The school needs to be upgraded and updated to meet relevant standards. It is proposed for the school to cater for a steady future increase in the number of students, totalling 857.

Hunter River High School was established in 1956 and in March 2020 had an enrolment of 816 students. The school focuses its strategic direction on learning, teaching and leadership. There are 20 permanent buildings that are in a variety of forms including buildings from original classrooms and those built more recently and 1 demountable building throughout the school. The permanent buildings accommodate a range of spaces including administration, staff study, staff amenities, library, multipurpose learning spaces, canteen, student amenities, multipurpose hall, library and specialised teaching spaces including arts, music, science, agricultural science, technology and applied studies (TAS), computer, seminar and performance. Teaching spaces are mainly separated depending on discipline. The demountable teaching space is a learning support building.

The changes to the school will include the following:

- Construction of new Support Learning Hub, Gymnasium, Administration Unit and new car parking area with approximately 60 spaces;
- Refurbishment of a number of facilities including Buildings A, C, & H; and
- Repurpose and reorientate open space areas and sporting fields.

This report covers the ESD requirements of EFSG (applicable to the whole project) and the requirements to achieve a 4 Star Green Star Design & As-Built certification of the proposed New Buildings (Blocks X, Y and Z).

2.2 SITE LOCATION

The School is located on the north side of Heatherbrae, just south of Raymond Terrace. Main access to the School is off Elkin Avenue, with a secondary access provided from the Pacific Highway.

Figure 1 – Aerial photo of site

The surrounding locality supports low density residential development and rural land to the north, public recreation land and Hunter River to the west, and large lot residential development and rural land to the south. Surrounding residential development generally comprises single dwelling design. The Pacific Highway adjoins the sites eastern boundary.

The site is generally flat with the western portion having a significant change in levels from 7.5m AHD across the site to 2.0m AHD. Vegetation is scattered around the permanent school buildings and perimeter of the site, particularly near the bus bay and Building R which is positioned toward the north eastern boundary. The site contains a large oval within the eastern portion. The permanent school buildings are located within the mid-section with agricultural plots in the western flood-prone portion of the site that slopes down toward the Hunter River.

3 EFSG SUSTAINABILITY TARGETS

3.1 OVERVIEW

The Educational Facilities Standards and Guidelines (EFSG) have been developed by the NSW Department of Education, to assist the management, planning, design, construction and maintenance of new and refurbished school facilities. The EFSG is to be treated as a reference guide that provides a starting point to allow for a consistent standard of delivery across various types of school developments.

The proceeding sections outline how the project addresses each of the requirements of the EFSG DG02 Design guideline.

3.2 SCOPE

All school projects in Planning phases must develop a Sustainable Development Plan including sustainability targets, initiatives and an ESD schedule detailing the relevant Green Star/EFSG pathway adopted by the project. The NSW Government Resource Efficiency Policy's (GREP) is a mandatory NSW Government policy to reduce the NSW Government's operating costs and lead by example in increasing resource efficiency through ESD principles. The GREP requires all new projects above 1,000m^2 and project costs over $10 million to be designed to the following standard:

- 5 Stars Green Star for projects located in metropolitan Sydney, Wollongong, and Newcastle,
- 4 Stars Green Star for projects located in other areas of NSW

The new buildings in the proposed development are targeting 4 Star GS DAB v1.3 certification in accordance with above requirements.

3.3 NSW GOVERNMENT RESOURCE EFFICIENCY POLICY

The purpose of the GREP is to reduce NSW government agency operating costs by implementing resource efficiency measures, and its implementation is mandatory for all NSW Government agencies, including the Department of Education. The policy includes measures, targets and minimum standards to drive efficiency in energy and water use and waste and also improving air quality.

3.4 ENERGY CONSERVATION

In accordance with the NSW Government Resource Efficiency Policy all new facilities must be designed and built so that energy consumption is predicted to be at least 10% lower than if build to minimum compliance with National Construction Code requirements. The energy consumption reduction must be achieved without including renewable energy generation in the calculation.

3.5 CLIMATE CHANGE

In accordance with EFSG DG02.08 Climate Change Adaptation, an initial assessment of natural hazards and project vulnerability has been carried out in the previous phase of the project. The design measures that are to be undertaken by the project team to address the risks identified are provided in Section 4 Climate Change Adaptations.

4 GREEN STAR DESIGN & AS-BUILT

The proposed development is targeting a 4 Star GS DAB v1.3 certification for all new buildings under the SINSW Campus Approach.

4.1 OVERVIEW

The Green star rating system is a comprehensive tool for assessing environmental performance of Australian buildings.

The Green Star framework incorporates ESD principles that are categorized into nine categories. Points are awarded across each category for ESD initiatives that are incorporated into the project. The Design and As-built documentation is then verified through two rounds of independent assessments by the Green Building Council of Australia (GBCA). This section outlines the pathway for Hunter River High School to achieve a 4 Star certified rating under the GS DAB v1.3.

4.2 THE GREEN STAR RATING SCALE

The Green Star rating is determined by comparing the percentage of available points achieved out for the total available points. The rating scale shown below details the percentage thresholds for the star ratings awarded.

% of available points	Rating	Outcome
Less than 10	Zero Star	Assessed
10 – 19	One Star	Minimum Practice
20 – 29	Two Star	Average Practice
30 – 44	Three Star	Good Practice
45 – 59	**Four Star**	**Australian Best Practice**
60 – 74	Five Star	Australian Excellence
75+	Six Star	World Leadership

Credit points available:

Category	Total Points Available
Management	14
Indoor Environment Quality	17
Energy	22
Transport	10
Water	12
Materials	14
Land Use & Ecology	6
Emissions	5
Total	100 points + 10 innovation

4.3 SINSW UMBRELLA GREEN STAR CREDIT RECOMMENDATIONS

To support the large volume of new schools that will be certified by the GBCA using the Green Star Tool, SINSW has partnered with the GBCA to streamline the documentation and assessment process for schools.

The SINSW Green Star Credit Recommendations spreadsheet has been developed to consider how each credit in Green Star may be applied to SINSW schools. The spreadsheet also details SINSW's preferred approach for projects to achieve each credit, including any pre-approved alternate approaches agreed to by the GBCA in response to a Technical Question. It provides references to relevant sections of the EFSG or other policies or guidelines, and examples of standard project documentation that could be used as supporting evidence in claiming a credit.

4.4 DESIGN POINTS FOR THIS PROJECT

In accordance with GREP requirements, compliance with EFSG, and under SINSW Green Star umbrella, the Green Star points that can be targeted for this project are tabled as below.

Category	Points Targeted	Points TBC
Management	8	0
Indoor Environment Quality	12	0
Energy	5	2
Transport	10	0
Water	5	0
Materials	1	3
Land Use & Ecology	1	1
Emissions	4	0
Innovation	8	2*
Total	**54** (46 points + 8 innovation)	**8**
Buffer in Achieving 4 Star	9 Points	-

* Note: 3 additional TBC Innovations points identified but total limited to a maximum of 10 points awardable under the Innovation Category.

5 CLIMATE CHANGE ADAPTATIONS

High level climate change interventions were set out for the project during Phase 2 Concept Design. Note a comprehensive Climate Adaptation Plan has not been developed and as such Green Star Credit 3 Adaptation and Resilience has not been targeted for this project.

As per instructions by SINSW Sustainability, to mitigate the adverse impacts of climate change on the future of the school, the following responsible parties need to ensure the appropriate adaptation strategies to the identified Climate Risks are considered and implemented within the project design.

Climate Risks	Climate Risk Interventions	Responsible Parties
Sea Level Rise Long term changes to coastal processes (e.g. erosion / accretion)	Floor levels located above 1:100 year flooding event and general levels at 7m AHD.	Architect
Atmospheric salt (salt spray) Long term increases of atmospheric salt due to changes in wind direction and speed	The site is located more than 12km from breaking surf, but 1km from the Hunter River which is an estuarine river. Selection of exterior materials to address the risk of salt spray & wind speed.	Architect
Average annual rainfall Long term changes to frequency, intensity, and duration	Installation of water harvest equipment e.g. rainwater tanks - to capture a portion of rainwater for reuse, limiting spill across the site.	Hydraulics/Civil
Extreme rainfall events (flooding) Includes frequency and intensity, leads to changes in the intensity and frequency of flooding and to landslides and erosion, and to intensity of electrical storms	Prepare flood management plan to manage evacuation procedures. Identify max. flood levels to direct detailed design of power & other services.	SINSW Architect/Services Consultants
Drought Changes to frequency, intensity, and duration	Installation of water storage equipment e.g. rainwater tanks - to capture rainfall for reuse during drought periods and to conserve water. Installation of water flow equipment to minimise water usage and wastage e.g. flow restrictors, installation of taps with timed flow, use of non-portable water sources for irrigation & toilet flushing and the installation of water efficient appliances within the project. Recommend native and drought tolerant planting.	Hydraulics/Civil Architect Landscape Architect
Gales and extreme wind Winds in excess of 8 on the Beaufort scale	Selection of materials, fixtures, and fittings to address extreme wind speeds and reduce the amounts of enclosed exterior corridors to minimise wind tunnels through the site.	Architect SINSW

	Regularly inspect established trees to minimise risk of falling branches and trees during high wind and storm surges. Remove any branches and/or trees that pose a risk.	
Storms Increased frequency and intensity of snow, hail, dust, and lightning storms, storm surges, and storm tides	Utilise stormwater management practices to reduce stormwater pollution and erosion during rainfall & storm surges. Strategies includes incorporating water sensitive design practices into the project to promote filtration, utilising stormwater retention units, overflow pipes and swales to control water flow and capturing overflow to be utilised for irrigation. Regularly inspect established trees to minimise risk of falling branches and tree during high wind and storm surges. Remove any branches and/or trees that propose a risk. Provide external gutters and leaf guards that overflow away from the building in the event of being blocked and cross falls to walkways.	Civil/Landscape Architect SINSW Architect
Bush fire risk Changes to Fire Danger Index	Selection of non-combustible materials. Maintain vegetation on site to limit fuel	Architect Landscape Architect/SINSW
Average temperatures Long term changes to average annual temperatures, including extreme temperature events and solar radiation	Selection of materials with reduced solar absorbency and good thermal performance to regulate room temperatures. Provisions for adequate insulation in walls and roofing. Undercover walkways to limit sun exposure Retain trees to provide shade to buildings and student areas.	Architect Landscape Architect

Source: SHAC. (2020). Sustainability in Design Report – Hunter River High School Upgrade Project, Revision A; 20 July 2020. Page 5. Project no.: 4314.

Confirmation/Status of above climate risk interventions are attached as Appendix C.

APPENDIX A – EFSG SCHEDULE

PROJECT:	Hunter River High School
REVISION	Phase 3 (Schematic Design) - Rev C
AUTHOR	Lawrence Yu

Sustainability Strategy Priority	Sustainability initiatives / requirements Where application, this is an extract only from the relevant EFSG. For full requirements refer to https://efsg.det.nsw.edu.au/	Project stage	Basis for Initiative	Crossover with Green Star	Recommended evidence to demonstrate compliance	Are these achievable to the project? Y or N or NA	ESD consultant comments	Example evidence This evidence needs to show that the requirement from column C has been met	Responsibility: (identify party responsible to provide evidence)	Consultant Comments
Act on climate change	**Improvement over NCC** All new facilities must be designed and built so that energy consumption is predicted to be at least 10% lower than if build to minimum compliance with National Construction Code requirements. Each building's system and façade must comply with the corresponding Section J requirements in the National Construction Code. That is, the building cannot show that their façade, or any system, performs worse than the reference building. The energy consumption reduction must be achieved without including renewable energy generation in the calculation.	Ph 2-5: Architectural Design	DG02.03 GREP	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 model accurately represents the building.	Y	Included in design. Project is targeting 4 Star Green Star certification which will achieve this as a mandatory requirement.	Energy Modelling Report	ESD	JHA ESD: Energy Modelling Report to be completed as part of Green Star submission deliverables.
Act on climate change	**Passive design** The need for active cooling and heating shall be minimised by employing passive / sustainable design principles listed in DG 55, DG 06.02 and DG 27.12 as well as the GA NSW Environmental Design in Schools Guidelines. This includes: - Window size and shading to prioritise passive cooling in summer and heating in winter - Orientation - Thermal mass - building fabric colour and performance - shading	Ph 2-5: Architectural Design	DG55 DG06.02 DG27.12 GA NSW Environmental Design in Schools	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	Building fabric designed to comply with NCC Section J Part J1 Building Fabric requirements. Energy modelling report to demonstrate compliance.	Project Energy Modelling report	Head Contractor Architect Electrical Mechanical ESD	JHA Elec: Ventilation to electrical system - subject to final equipment selection to be coordinated with Mech
Act on climate change	**Energy efficient lighting design and modelling** - 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, such as diodes and control gear with a long life - Section J part 6 maximum illumination power density provisions must be adhered to, along with all other elements of part 6 - System must support sustainable design principles including reducing energy consumption, such as timed or sensor feedback functionality - Lighting designs should be carried out utilising industry standard lighting design software such as AGI32, Dialux or Relux.	Ph 2-5: Services Design	DG2.3.1 DG63.01 DG63.04 DC63.05 DG63.03.02	DAB c15 GHG Emissions Reduction	**1.** Lighting drawings **2.** Lighting specifications / schedules **3**. Lighting modelling report showing compliant power densities	Y	Targeting minimum 10% improvement in energy efficiency compared to NCC requirements. Electrical drawing to demonstrate energy efficient lighting has been installed	Lighting Schedule	Electrical	JHA Elec: JHA Electrical has reviewed this item and have no specific concerns at this stage. Targeted credit will be incorporated within detailed design.
Act on climate change	**Lighting control and switching** - The use of lighting controls will assist in substantially improving energy efficiency on sites, and should be considered for all new lighting systems, in new build or site refurbishments. - Lighting control should be simple to operate and adhere to all requirements of DG 63.06 - Constant Light Output and Daylight Harvesting systems are recommended given their ability to reduce lighting energy whilst maintaining comfortably lit spaces. Consideration should be given to these strategies as stipulated in DG 63.06 - 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 - 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. Provisions for energy efficient switching in Schools are outlined within DG63 and DG65.	Ph 2-5: Services Design	DG63.06 DG63.07 DG65.03.01	DAB c15 GHG Emissions Reduction DAB c4 Building Information	**1.** Electrical & lighting drawings showing switching groups and automatic controls **2.** Lighting modelling report showing compliant power densities **3.** Lighting operations and maintenance manual	Y	Electrical & lighting drawings to show compliance.	Electrical to incorporate into design	Electrical	JHA Elec: JHA Electrical has reviewed this item and have no specific concerns at this stage. Targeted credit will be incorporated within detailed design.
Act on climate change	**Energy efficient appliances & equipment** Electrical equipment must be at least 0.5 stars above the market average star rating or comply with high efficiency standards specified in the GREP HVAC 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. Specific requirement are outlined in the EFSG.	Ph 2-5: Services Design	DG2.3.3 DG55	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. **2.** As built mechanical drawings / statement from head contractor; **3.** Whole of life cost analysis demonstrating systems were selected based on WOL performance.	Y	FFE Schedule to demonstrate compliance	FFE Schedule to show compliance	Head Contractor Architect	APP: All new buildings are to be Electric Appliances, no Gas. Existing Buildings (Refurb Scope) with existing Gas Provisions are to be half gas and half electric (ie: for 6 stations, allow for 3x gas and 3x electric upright stoves/ovens with 4-burner cooktops for the gas uprights). Existing Buildings (Refurb Scope) without existing gas are to be electric – no new gas provisions.
Act on climate change	**Heat loss/gain** The design must take steps to control heat loss from the building during cooler winter months and heat gain during the warmer months. Refer to HVAC Design considerations in DG04.01	Ph 2-5: Services Design	DG04.01	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	Energy model to demonstrate compliance	Energy Modelling report	Mechanical/ESD	JHA ESD: Energy Modelling Report to be completed as part of Green Star submission deliverables.
Act on climate change	**Indoor environment controls** - Both the thermal comfort and indoor air quality shall be controlled automatically within specified parameters. - Controls shall be simple and intuitive to use. - A "traffic light" light system (described in DG 55.01 Thermal Comfort and Indoor Air Quality Policy) should be used to inform users of the suitability of outdoor conditions to utilise natural ventilation.	Ph 2-5: Services Design	DG55 DG 55.01 Thermal Comfort and Indoor Air Quality Policy	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	Project mechanical design to demonstrate controls and as built evidence to show compliance	Mechanical to demonstrate compliance	Mechanical	JHA Mech: JHA Mechanical has reviewed this item and have no specific concerns at this stage. Targeted credit will be incorporated within detailed design.
Act on climate change	**Renewable energy** A grid connected solar PV system must be installed in line with DG66 requirements Where feasible, PV systems shall be installed to offset as much of the electricity consumed by the school as is practicable	Ph 2-5: Services Design	DG2.3.4 DG55	DAB c15 GHG Emissions Reduction; DAB c16 Peak Electricity Demand Reduction	**1.** As installed drawings of PV system **2.** Energy modelling report showing renewable energy generation	Y	PV system proposed.	Electrical drawings for the PV system design, Energy Modelling report to include within modelling	Electrical	JHA Elec: JHA Electrical has reviewed this item and have no specific concerns at this stage. Targeted credit will be incorporated within detailed design.

Act on climate change	**Battery Energy Storage System** A battery energy storage system shall only be designed in consultation with SINSW Sustainability sustainability.enquiries@det.nsw.edu.au	Ph 2-5: Services Design	DG66.8.3	DAB c15 GHG Emissions Reduction; DAB c16 Peak Electricity Demand Reduction	As installed drawings of battery storage system		Not confirmed. TBC on Smart Energy Schools Pilot Project discussion outcomes.		Electrical	
Act on climate change	**Heaters** Electric heating must be preferred over gas heating. Where gas heating is considered, it must be approved by SINSW Sustainability Heating equipment must be designed from a whole-of life perspective and: - Support sustainable design principles including reducing energy consumption and carbon emissions - Be accessible and serviceable - easy to maintain with minimal impact on school use when maintenance is being performed	Ph 2-5: Services Design	DG56	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	No gas heaters. SINSW does not endorse gas heating (even as an alternative). Use electric radiant heating instead.	Mechanical to demonstrate compliance	Mechanical	JHA Mech: Reverse cycle AC to provide heating likely to be final option. The gas heaters were removed from the Gymnasium at the 95% Schematic Design. If the school pushes for heating, AC will be required.
Act on climate change	**Water heaters** - Hot water and tempered water generation for schools must be carefully considered to ensure that a Whole of Life assessment is undertaken to minimise life cycle costs and carbon emissions - Environmentally friendly options such as solar heating (if vandal resistant) and heat pumps are preferred energy sources to minimise energy consumption.	Ph 2-5: Services Design	DG53.09	DAB c15 GHG Emissions Reduction	1. WOL cost assessment for hot water systems 2. Hydraulic drawings/schematics showing installed DHW systems	Y	Hydraulic drawings/schematics showing installed DHW system	Hydraulic drawings	Hydraulic	
Build resilience	**Site investigations for resilience** The following detailed reports/ surveys/ information should be considered in developing the business case: - Slope, drainage and erosion issues including flood risks (if any) - Geotechnical and soil conditions - Airborne pollutants - Bushfire risks - Appraisal of available services infrastructure - Climate change risk assessment must be undertaken considering at least two different climate change scenarios An environmental risk report will be required for developments proposed within sensitive natural environments or sites subject to natural risks (i.e. flood prone sites, bush fire areas).	Ph 1: Site Selection and Masterplan	DG03.02	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	Head contractor to provide reports or site survey to demonstrate compliance	detailed reports or surveys	Head Contractor	
Build resilience	**Bushfire protection** Development applications on bush fire prone land must be accompanied by a Bush Fire Assessment Report demonstrating compliance with the aim and objectives of Planning for Bush Fire Protection and the specific objectives and performance criteria for the land use proposed. Local Authorities and the Rural Fire Service can provide advice on the design of buildings in bush fire prone areas. The Building Code of Australia and AS3959 "Construction of buildings in bushfire-prone areas" set out the requirements for buildings which are within close proximity to a defined bush fire zone. Mandatory landscape management strategies: - Keep the amount of fuel (leaves, twigs, logs, dead grass) in the vicinity of buildings to a minimum. - Ensure trees are located at away from buildings to avoid branches overhanging and leaves collecting on roofs. - Do not plant shrubs against buildings. - The crowns of trees planted on the hazard side of the development should not be contiguous. - Plant fire resistant trees and shrubs on the hazard side of the development to reduce the potential impact of wind, fire intensity, radiant heat, and rate of spread as well as intercepting burning embers. - Avoid combustible fencing materials. - Provide irrigation and garden sprinklers to water areas near the buildings (subject to water authority approval).	Ph 1: Site Selection and Masterplan	DG13.01	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	Landscape consultant or relative consultant to provide drawing/reports to demonstrate compliance	Bushfire assessment report or plans	Landscape	
Build resilience	**Climate change adaptation** Sites and school communities must be able to withstand natural and urban hazards and adaptively respond to climate change over time, especially for projects involving vulnerable communities e.g. climate generating exacerbated flood, storm surge, inundation, heatwaves, bush fires, extreme storm and other weather events. School facilities must be able to withstand natural hazards and adapt to shocks and stresses to avoid social and economic costs of interrupted operation and repairing or replacing damaged assets. To achieve this, increasing resilience to natural hazards must be considered in the business case development so that associated costs are budgeted. An initial assessment of natural hazards and project vulnerability must be carried out, in consultation with resilience experts, to inform the business case and identify hazards where further analysis is required. The assessment must report on at least two different timescales (2050 and 2070) and consider high emissions scenarios consistent with 2C and 4C for each timescale. The Intergovernmental Panel on Climate Change (IPCC) endorsed emissions scenarios should be used to dictate the assessed scenarios Where significant risks are identified in the initial assessment, a comprehensive climate change risk assessment must be undertaken. Any high or extreme risks identified must be addressed through design measures.	Ph 1: Site Selection and Masterplan	DG02.08	DAB c3 Adaptation and Resilience	**1.** Climate risk assessment, and **2.** Climate adaptation plan **3.** Emergency management plan	Y	Part of Green Star requirement, assessment and reports to demonstrate compliance	Climate Adaptation Plan and/or Emergency Management Plan	Head Contractor	
Build resilience	**Weather protection** Circulation areas provided between administrative, staff and all student spaces (except Agriculture), should be protected from sun, rain and unfavourable winds.	Ph 2-5: Architectural Design	DG08.05	Not covered in Green Star	As built drawings showing circulation areas are protected as required	Y	Designed to have covered walkways and verandah that demonstrate compliance to this requirement	As built drawing to show compliance	Architect	
Build resilience	**Urban Heat Island Mitigation - Roof Colour** The roof colour will also have an impact on the thermal performance of the roof, therefore the product's Solar Reflectance Index (SRI) should be considered to mitigate the heat island effect. The product selected must meet the following three-year Solar Reflectance Index (SRI) requirements: For roof pitch < 15, minimum SRI of 64 For roof pitch > 15, minimum SRI of 34 Where a three-year SRI is not available, the following requirements must be met: For roof pitch < 15, minimum SRI of 82 For roof pitch > 15, minimum SRI of 39'	Ph 3-4: Product and Material Selection	DG20 Fabric	DAB c25 Heat Island Effect	**1.** Site Plan highlighting all relevant areas as referenced within the area schedule; **2.** Area Schedule listing the areas of each of the relevant site elements and where relevant, the SRI values and referencing plan drawings for the site; and **3.** Supplier Documentation material data sheet for compliant roofing and hardscape materials.	Y	Part of Green Star requirement, architectural plans to demonstrate compliance	Architectural plans to demonstrate compliance	Architect	
Consume responsibly	**Building User's Guide** Produce a Building User's Guide to enable the client to understand the building systems and operate systems to maximise efficiency. This must: - Clearly and concisely describe the operation of building and its services - Detail a reasonable maintenance program - Advise the user of the most suitable replacements for consumables	Ph 7-9: Construction, Commissioning Post Occupancy and Operation		DAS c4 Building Information	**1**. Building user's guide	Y	Head contractor to provide Building User's Guide	Building User's guide	Head Contractor	
Consume responsibly	**Stormwater management** Must aim to minimise the transportation of toxicants to waterways and other offsite environments, and maintain the existing hydrological regimes. Due diligence for flooding must be done early to inform building and landscaping design	Ph 1: Site Selection and Masterplan	DG2.4.3	DAB c26 Stormwater	**1.** Stormwater modelling report showing stormwater pollution and flows. **2**. Civil / Hydraulic drawings showing management measures. **3.** Water sensitive urban design report (if WSUD was use4)	Y	Civil to demonstrate compliance	Civil drawings showing management measures	Civil/Hydraulic	

Consume responsibly	**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	Ph 1: Site Selection and Masterplan	DG51.07	GSC c24 Integrated Water Cycle	**1.** Water cycle management study **2.** Evidence that recommendations in the study have been followed / implemented	NA	Not applicable.		Civil/Hydraulic	
Consume responsibly	**Hazardous materials** Where a new school is to be developed a Hazardous materials study is to be conducted, including: - Asbestos Containing Materials (ACM) - Synthetic Mineral Fibres (SMF) - Polychlorinated Biphenyl's (PCB) - Lead Paint - Ozone Depleting Substances Any existing structures and all parts of the site should be examined in order to determine the presence of hazardous materials before commencement of any renovation or demolition. Inspection should be conducted in accordance with DG48. Where hazardous materials are found a Hazardous Materials Management Plan should be prepared	Ph 1: Site Selection and Masterplan	DG48.01	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	Head contractor to provide Hazardous Materials Management Plan	Hazardous materials management plan	Head Contractor	
Consume responsibly	**Operational waste** A waste storage area must be included in all new school sites. The provision of space must include source separation including bin stations and appropriate signage of waste and receptacles for multiple waste streams, including: - Organics - Comingled containers - Paper & cardboard - Container deposit scheme - Soft plastic - General waste Designers must refer to AS 4123.7 Mobile waste containers - Colours, markings, and designation requirements for further guidance on bin colour, waste stream and waste type. Safe methods for vehicle access and the transfer of waste must also be considered. For new and refurbished schools, an operational waste management plan (OWMP) must be developed to establish operational waste targets, identify opportunities for reuse and recycling in the operation of the facilities and make adequate provision for the facilities to accommodate for the OWMP. The OWMP must address all requirements from DG 2.7.2	Ph 2: Concept Design - Space planning	DG02.7.1	DAB c8 Operational Waste	Operational waste management plan Operational waste reports showing diversion rates	Y	Head contractor to provide Operational Waste Management Plan	Operational waste management plan	Head Contractor	
Consume responsibly	**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.	Ph 2: Concept Design - Space planning	DG21.1.16	Not covered in Green Star	As built drawings or statement by relevant professional	Y	Drawing to demonstrate building flexibility/statement	As built drawing to show compliance	Architect	
Consume responsibly	**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	Ph 2-5: Services Design	DG51.01	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	Letter from Hydraulic to show the sustainability initiatives implemented to reduce potable water consumption	Letter from Hyd	Hydraulic	
Consume responsibly	**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	Ph 2-5: Services Design	DG53.04	DAB c6.0 Metering	**1**. As built hydraulic drawings	Y	As-built hydraulic drawing to show the sub-meters and comply the requirement	Hydraulic drawings	Hydraulic	
Consume responsibly	**Rainwater collection** Include roof water harvesting and tank storage in new schools and 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. The rainwater tanks must be connected to toilets for toilet flushing. If this is not feasible, approval must be granted by SINSW.	Ph 2-5: Services Design	DG53.14 DG2.4.2 DG53.01	DAB c18B.2 Rainwater Reuse	**1.** As built hydraulic drawings showing tank connection to end uses and capacity	Y	Drawing to show tank connection to end uses and capacity	Hydraulic/civil drawings to demonstrate compliance	Civil/Hydraulic	
Consume responsibly	**Fire system water reuse** Where schools are required to install a sprinkler system for fire safety, it is recommended to install a closed loop system must be installed to capture and reuse fire systems testing and maintenance water, or by using an alternative non-potable water source.	Ph 2-5: Services Design	DG2.4.2	DAB c18B.5 Fire System Test Water	Fire engineering report	NA	Not applicable.			
Consume responsibly	**Ground water** Where ground water is available for use for irrigation purposes in drought affected locations, enquiries must be undertaken with the Department of Planning, Industry and Environment to determine the suitability of a ground water system.	Ph 2-5: Services Design	DG53.03	DAB c18 Potable Water	1. Relevant due diligence report / investigation	NA	Not applicable.			
Consume responsibly	**Trade waste** Arrestors for acid, grease, plaster and clay of adequate capacity must be installed to treat wastewater from science laboratories, kitchens, art rooms and canteens as required in DG52.	Ph 2-5: Services Design	DG52	Not covered in Green Star	**1.** As built drawings showing trade waste arrestors or **2.** Letter by Hydraulic Engineer confirming arrestor have been installed as required	Y	Arrestors to be installed where required	Hydraulic design to show arrestors where required	Architect Hydraulic	
Consume responsibly	**Water 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 - Urinals to 5 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. - New and replacement urinals must use manual in lieu of automatic flushing mechanisms. A microwave-activated urinal flushing system may be used as an alternative. In any case, all new water-using appliances must be at least 0.5 stars above the average WELS star rating by product type, except toilets and urinals, which must be purchased at the average WELS star rating. Where WELS rating is not available, use the alternative WaterMark rating scheme.	Ph 3-4: Product and Material Selection	DG53.02 DG2.4.1	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	FFE Schedule to demonstrate compliance	FFE Schedule to show compliance	Head Contractor Architect	

Consume responsibly	**Life cycle assessment (environmental)** Environmental impacts of products and materials has been assessed and inform material selection	Ph 3-4: Product and Material Selection	DG01.03	DAB c19A - Life cycle assessment	Life cycle assessment report		Not targeting			
Consume responsibly	**Whole of life costing (WOL)** Total cost of ownership (TCO) assessment / Analysis of direct and indirect costs and benefits / Life cycle costing analysis When calculating the whole of life cost for the different materials / building elements or systems, the following must be considered: - the total initial capital cost of the system/s – including design, project management, builder and building services works in connections etc. - resources (energy and where applicable water) consumption. - Maintenance. - the replacement of component parts. - disposal costs - ecological sustainable options - durability - vandalism - safety The whole of life cost shall be calculated over the estimated life of the asset/s.	Ph 3-4: Product and Material Selection	DG01 All design guides for selection of materials and building systems	GSC c20 - Return on Investment	Life cycle costing report for relevant system	Y	Services consultants to consider WOL in design and select systems accordingly.	Services consultants to provide WOL statement/memo to justify equipment selections.	Services consultants	JHA Mech & Elec: JHA Mechanical & Electrical have reviewed this item and have no specific concerns at this stage. Targeted credit will be incorporated within detailed design.
Consume responsibly	**Sustainable materials** Construction materials must be selected based on the following: - Adequately and economically perform their intended functions, and also have lower adverse environmental impacts throughout their life cycle (refer to DG 3) - Contain reduced or no hazardous substances (e.g. low VOC) to ensure effective indoor environmental quality. Reduce the demand for rare or non-renewable resources. - Have low embodied energy and water. - Are made from or contain recycled materials or can be reused or recycled at the end of their useful life.	Ph 3-4: Product and Material Selection	DG02.05	DAB c21 Sustainable Products	**1.** Environmental Product Declarations of products / materials used; Product certificates (like GECA, FSC, et3) **2.** Suppliers' declarations confirming recycled contents in products **3.** Bill of quantities	Y	Head contractor to provide Product certificate/statement to demonstrate compliance	Product certificate/statement	Head Contractor	
Consume responsibly	**Sustainable timber** - No rainforest timbers, or timbers from high conservation forests, are to be used unless plantation grown. Use only recycled timber, engineered and glued timber composite products, or timber from plantations or from sustainably managed regrowth forests that is FSC, AFS or PEFC certified - All timber used is to be termite (white ant) resistant or treated to be termite resistant to the appropriate hazard level.	Ph 3-4: Product and Material Selection	DG2.5.1 DG21.05.01	DAB c20.2 Responsible Building Materials - Timber	**1.** Evidence of chain of custody **2.** Bill of quantities	Y	Head contractor to provide Product certificate/statement to demonstrate compliance	Product certificate/statement	Head Contractor	
Consume responsibly	**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.	Ph 3-4: Product and Material Selection	DG02.07			Y	Head contractor to provide statement to demonstrate compliance	Product certificate/statement	Head Contractor	
Consume responsibly	**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.	Ph 3-4: Product and Material Selection	DG21.02	DAB c19B.1	**1.** Structural specifications and drawings **2**. Structural Engineer's report showing % cement replacement	Y	Contractor to provide structural specifications and drawings to demonstrate compliance	Structural specification	Structural	
Consume responsibly	**Construction waste** Targets must be established to increase diversion of waste sent to landfill, with a minimum diversion rate target of 90%. Consider opportunities for re-use and recycling of materials in the construction phase	Ph 7-9: Construction, Commissioning Post Occupancy and Operation	DG02.07	DAB c22 Construction and Demolition Waste	Construction waste reports showing percentage (minimum 90%) of waste re-used and recycled (diverted from landfill)	Y	Contractor to provide construction waste report that demonstrate compliance	Waste report	Head Contractor	
Consume responsibly	**Maintainability** 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. Any mechanical ventilation system within the building must be designed to provide adequate access for maintenance, to both sides of all moisture and debris-catching components, within the air distribution system. Moisture-producing and debris-catching components include items such as cooling coils, heating coils, fan coil units, humidifiers and filters in the air handling system. The project team should demonstrate that there is a project level review process in place to ensure that the building has been designed as per the EFSG, that any issues identified have been closed out and that the outcomes can be communicated to the relevant facilities/ operations teams Maintenance required and cost of this maintenance are to be considered in assessment of the project's life cycle cost. Operation and Maintenance manuals (O&M Manuals) are to be provided, written in clear, concise English covering the various building elements, assemblies, equipment, service installations and systems incorporated into the Works.	Ph 2-5: Services Design	DG16.10 DG 01.04	DAB c2.1 Services and Maintainability Review DAB c9.1.2 Ventilation System Attributes DAB c4 Building Information	**1.** As built drawings including all equipment access arrangements for maintenance	Y	Head contractor to provide Operation and Maintenance manuals	Operational and maintenance manual	Head Contractor	
Foster 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.	Ph 1: Site Selection and Masterplan	DG03.02	GSC c12 Culture, Heritage and Identity DAB 24.2 Contamination and Hazardous Materials	**1.** Relevant reports/surveys developed (these ideally include recommendations for further development stages) **2.** Evidence demonstrating recommendations / best practice solutions have been implemented/addressed.	Y	PM to procure reports and/or site survey as appropriate to demonstrate compliance	Reports or site survey to demonstrate compliance	PM	

Foster connections	**Ecological conservation** Schools sites must conserve for future generations, the biological diversity of genetic materials, species and ecosystems on that site and consider the surrounding natural environment. An Ecological Assessment Report must be prepared for the site in order to understand the existing conditions and future conservation strategies. The design of the facilities must provide unique and valuable environmental conservation learning opportunities and effective environmental modelling to the wider community. Schools must connect with nature and incorporate biophilic design principles. Open space must allow for exploration, and biodiversity and earth education to enhance the site's outdoor learning potential.	Ph 1: Site Selection and Masterplan	DG02.06	DAB c23 Ecological Value GSC c29 Ecological Value (incl Biodiversity Enhancement)	**1.** Biodiversity or ecological assessment / local flora and fauna survey **2.** Ecological Assessment Report which documents the following: - ecological values (current, future, and past) identified for the site and their protection measures - ecological impacts from light and noise pollution and water quality and their mitigation requirements - existing vegetated areas and biodiversity values being retained how biodiversity has been considered within the project's material supply chain - list of management strategies to protect the integrity of ecological values throughout project planning, construction, and occupancy community and local stakeholder expectations including Aboriginal or Torres Strait Islander groups and environmental groups - Adequate due diligence must be conducted where an area of biodiversity or high ecological value is identified on the site, where at least 50% of this area must be retained. **3.** Biodiversity management plan describing measures for the conservation and protection of threatened species or communities, biodiversity enhancement, tree protection, etc. **4.** Evidence demonstrating measures have been implemented to protect and enhance endangered species / ecological communities identified; to preserve or re-establish native flora; etc.	Y	PM to procure Biodiversity Management plan that demonstrate compliance	Biodiversity Management Plan	PM	
Foster connections	**Productive landscape** Consider including opportunities for development of community garden within the site and relationships with community groups for this to occur.	Ph 1: Site Selection and Masterplan	DG2.06	GSC c14.2 Local Food Production	Site plan demonstrating location and size of community garden	TBC	Landscape plans to demonstrate compliance, otherwise lodge departure with SINSW	Landscape to demonstrate community garden, otherwise departure with SINSW	Landscape	
Foster connections	**Bicycle storage** Provide 1 space for every 20 students to AS2890.3 standard	Ph 2: Concept Design - Space planning	SG552 4.36	DAB c17 Sustainable Transport		Y	Provide bicycle storage as per required	Architectural plans to demonstrate compliance	Architect	
Foster 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.	Ph 2: Concept Design - Space planning	DG16.08 Department of Education's Community Use of School Facilities Implementation Procedures	DAB c30B Community Benefits	**1.** Confirmation by the Architect that direct access has been provided to open space and any other facilities that could be shared with the community. **2**. A list of community engagement activities undertaken to develop a community benefits strategy. **3.** Plans clearly outlining how the outcomes from the community benefits strategy have been implemented in the project **4.** Joint-use or lease agreements where already in place	Y	Architect to confirm that direct access has been provided to open space and could comply with this requirement	Architectural plans to demonstrate compliance	Architect	
Foster connections	**Open play space** Open play space must be provided for students to access during recess, lunch breaks and for outdoor learning. Open play space can be comprised of - Paved and grassed areas - Rooftops and terraces - Covered outdoor areas The designated open play space must be easily monitored and managed by school staff. Where a joint use agreement can be negotiated with a local council or land owner, the required play space can be located off-site, providing the facilities are - In close proximity to the school - Easily accessible - Safe and secure Designs must aim to achieve a minimum of 10m2 per student. Where this figure is not achievable the proposed m2 per student of the completed project must not be less than the existing m2 per student currently on the site.	Ph 2: Concept Design - Space planning	DG10.03	Not covered in Green Star	Plan view drawings showing provision of open space	Y	Architectural drawings to demonstrate compliance with open play space	Architectural drawings	Architect	
Foster connections	**Staff room** Staff rooms should adequately accommodate staff work and recreation, and focus on indoor environment quality, enjoyment and interaction through provision of the following: •Daylight • Ventilation • Views • Landscaping/Indoor Plants • Acoustic Comfort	Ph 2: Concept Design - Space planning	EFSG Staff Unit	GSI c Amenity Space	**1.** Extracts from the EFSG requirements for staff rooms **2.** Evidence of staff room delivered accordingly	Y	Mechanical drawing to demonstrate the staff rooms are designed as required	Mechanical drawings to demonstrate compliance	Mechanical	JHA Mech: EFSG doesn't make mention of specific ventilation to be provided for staff rooms so compliance to AS1668.2. In addition, AC of staffroom is optional under DG55.
Foster connections	**Reconciliation action plan (RAP)** The project should adopt formalised steps to provide opportunities for Aboriginal and Torres Strait Islander peoples Projects must implement strategies during design, construction and operation that contribute positively towards reconciliation with Australia's first people and address social inequalities within Australia is between Indigenous and non-Indigenous Australians. The project demonstrate a relationship to, and a role in delivering the action items within the Department of Education's RAP. This could include incorporation of Indigenous design strategies and indigenous designers, celebration of indigenous culture on the site through art or landscape, and procurement from indigenous suppliers and workers. Refer to the GA NSW 'Designing with Country' Discussion paper for guidance and examples. The project must adopt all relevant requirements within the NSW Government's Aboriginal Procurement Policy (January 2021)	Ph 2-5: Architectural Design	Department of Education's Reconciliation Action Plan NSW Government Aboriginal Procurement Policy GANSW 'Designing with Country' discussion paper x	DAB c30D Reconciliation Action Plan	**1.** Evidence of the project's relationship with the RAP, e.g. actions implemented in line with RAP, etc.	Y	PM to procure Reconciliation Action Plan	Reconciliation Action Plan	PM	
Foster connections	**Security** Safety in Design and Crime Prevention Through Environmental Design (CPTED) principles are to be implemented in project planning stage. Advice on the electronic surveillance systems can be sought early in the design phase. CCTV systems are required in several locations where indicated in the Rooms and Spaces Technical Data table, including: - Secondary clinic - Primary sick bay - Library	Ph 2-5: Services Design	DG14.10 DG65.08 DG65.10	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	School Security Unit to provide Security Services Plans, schedules and forms	Security services plans, schedules and forms	Head Contractor	
Foster connections	**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	Ph 2-5: Services Design	DG64.12.02	GSC c22.2 Digital Infrastructure	**1.** Contracts describing the network infrastructure specification and operational requirements	Y	Head contractor to provide contracts that describes the network infrastructure specification and operational requirements	Network contracts	Head Contractor	

Foster connections	**Sustainable Transport Planning / Transport Assessment** Transport planning must prioritise the delivery of feasible, connected networks and rectify transport deficiencies. The **School Transport Assessmen**t process must prioritise critical transport infrastructure to satisfy community expectations and statutory planning obligations. The assessment seeks to address school travel demand efficiently, safely and sustainably by maximising the most active and sustainable transport modes and reducing car parking capital expenditure and car travel demand. The School Travel Plan must be developed to inform the design response, construction traffic management, travel plan and post-occupancy operations to meet daily travel demand to school	Ph 1: Site Selection and Masterplan	Schools Transport Practice Note	DAB c17 Sustainable Transport	1. Transport Assessment, which must address: • A review of the school's travel demand; • The establishment of transport modes to promote during construction and post-occupancy; • Identification of transport improvements required to meet school travel demand; • Actions to inform the site design, master plan, Construction Traffic and Pedestrian Management Plan and Travel Plan; • Actions to address road safety concerns; and • Compliance with the Transport Planning Advisory Note.	Y	PM to procure Transport Assessment to demonstrate compliance with this requirement	Transport Assessment	PM	
Unlock human potential	**Green cleaning** Designs should support the implementation of a Green Cleaning policy for the school, this may include: - Appropriate cleaning areas are to be provided to safely store chemicals and equipment. - Hand washing stations - Use of HEPA filtration in vacuum equipment - Use of materials and surfaces that are easily cleaned - Consideration of operational waste procedures and the safe and simple transfer of waste throughout the school	Ph 7-9: Construction, Commissioning Post Occupancy and Operation	WoG Facilities Ma	GSP c6 Green Cleaning	**1.** WEB Clean School User Guide **2**. Green Cleaning specifications	Y	SINSW to provide Green Cleaning specification which complies with this requirement	Green Cleaning Specification	SINSW	
Unlock human potential	**Healthy canteen policy** The NSW Healthy School Canteens Strategy applies to all NSW Government schools (primary, secondary and central schools) with a canteen. The school should play a role in encouraging healthy dietary options in an effort to help reduce childhood obesity through food provided in the school canteens. As such, School canteens should be designed to encourage onsite preparation, storage, display and promotion of healthy 'everyday' foods.	Ph 2: Concept Design - Space planning	Department of Education's Healthy Canteen Policy	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.	Y	SINSW to provide research report behind Healthy Canteen Policy	Develop reports to demonstrate compliance	SINSW	
Unlock human potential	**Daylight glare control** Discomforting glare and brightness contrasts must be avoided. Designers must seek to: - Exclude direct sunlight from all learning spaces, libraries, administrative offices and staff studies for the period of 9.00am to 3.30pm including Eastern Daylight Saving Time between 21st September to 21st March (equinoxes). - Exclude direct sunlight from desk level in all learning spaces between 9am and 3:30pm. 'Sun exclusion and glare control can be achieved by the use of elements such as sun shades, eave extensions, tinted glazing, screens, vertical blades and the like'. Glare must only be controlled by blinds as a last resort. Designers must prepare sun diagrams in the design phase as a minimum requirement.	Ph 2-5: Architectural Design	DG12 DG07.01	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	As-built drawing to have eaves/shading to the facades that has direct sunlight	Architectural drawings and/or daylight report	Architect	
Unlock human potential	**Acoustic Performance** Design of internal spaces must address the following Acoustic outcomes: **- Internal Noise Levels** : An internal noise level assessment must be carried out for all new buildings to ensure comfortable acoustic conditions for the spaces occupied. The internal noise levels within the space must meet the limits stipulated in Table 11.06.1 of Section 11.06 Acoustic Performance Guidelines or be within the range stipulated in Table 1 of the AS/NZS 2107:2016 standard. The more stringent of the two should be met.	Ph 2-5: Architectural Design	DG 11.06 DG 11.03 DG 11.02	DAB c10 Acoustic comfort	**1.** Report by qualified acoustics consultant demonstrating noise measurements are compliant. **2.** Detailed Drawings indicating sound insulation details and other relevant acoustic design features.	Y	Acoustic report and/or drawings to demonstrate compliance	Acoustic report to confirm compliance with all acoustic requirements	Acoustic	
Unlock human potential	**Noise emission (to the environment)** 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)~~ Noise Policy for Industry (NPI) or Local Council requirement. Noise Policy for Industry (NPI) instead of INP. Superseded since 2017. 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.	Ph 2-5: Architectural Design	DG11.04	Not covered in Green Star	1. Report by qualified acoustics consultant	Y	Acoustic consultant to demonstrate compliance	Acoustic consultant to confirm compliance with acoustic design certificate for construction	Acoustic	
Unlock human potential	**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.	Ph 2-5: Architectural Design	DG31.01	Not covered in Green Star	As-built drawings showing fly screening has been provided as required	Y	Fly screens to where required, otherwise not applicable	If these areas are applicable to the proposed development, provide fly screening	Architect	
Unlock human potential	**Accessibility** -All new facilities must meet current DTS provisions of the NCC and the associated standards. Generally AS 1428.1 is the minimum design standard for access and mobility. However, it is DoE's policy that any enhanced requirements noted in AS 1428.2 be incorporated in any new design. -Additionally, DoE have enhanced circulation requirements as noted in DG / CIRCULATION - Provide hearing augmentation system for areas that have amplification, generally within Gymnasium, libraries, movement studios and Communal Halls, provide a system to assist the aurally challenged to hear music and speech within the main auditorium and on the stage - Provide the International Symbol for Deafness to indicate that an assistive hearing device is installed.	Ph 2-5: Architectural Design	DG19.01 DG65.14	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	Head contractor to provide photographic or other evidence of signage installed	Signage evidence	Head Contractor	
Unlock human potential	**Access to Views** Building design must ensure that at least 60% of primary occupied spaces have a clear line of sight to high quality internal or external views. The space must be within 8m from the view. High quality views include: External views - vegetation, body of water, sky, or frequent outdoor movement (people, vehicles, animals) Internal views - landscaped area, water features, atrium' Note: Primary Spaces are defined as spaces that where students or staff are expected to work, or remain for an extended period of time, typically longer that 2 hours. This includes classrooms, laboratories, computer labs and office/administration areas.	Ph 2-5: Architectural Design	DG2.10	DAB c12.2 Views	**1.** Views Calculations and Mark-up this must be done in accordance with the GBCA's *Daylight and Views Hand Calculation Guide:* https://www.gbca.org.au/uploads/79/35919/Green%20Star_Daylight%20and%20Views%20Hand%20Calculation%20Guide%20May%202015%20RELEASE.pdf)	Y	Calculations and Mark-up to demonstrate compliance with the requirement	View Calculations and Markup according to GBCA	Architect ESD	
Unlock human potential	**Access to Daylight** Designers must seek to maximise natural daylight in all learning and administration spaces to improve indoor amenity and create a pleasant environment and reduce energy usage through windows and skylights - Access to high levels of daylight must be ensured for at least 40% of primary occupied spaces per floor. A space is considered to have high levels of daylight if: the space has minimum 160 lux due to daylight during 80% of the nominated hours OR the following requirements are met: No overshadowing – external shading should not impinge on the direct 25 degree line from centre of the window Minimum 40% Visual Light Transmittance (VLT) for building glazing' Note: Primary Spaces are defined as spaces that where students or staff are expected to work, or remain for an extended period of time, typically longer that 2 hours. This includes classrooms, laboratories, computer labs and office/administration areas.	Ph 2-5: Architectural Design	DG2.3.1 DG12	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	Green Star hand calculation to demonstrate compliance	Green Star hand calculation and/or daylight modelling	Architect ESD	

Unlock human potential	**Ventilation and Indoor Air Quality** The maximum Co2 concentration must not exceed **1,500ppm** for more than 20 consecutive minutes in each day A ventilation strategy must be developed to ensure that sufficient ventilation is provided to all spaces to meet the requirements of the BCA/NCC and associated standards. Specifically ventilation equipment must be designed from a whole-of-life perspective and support healthy indoor environments, energy efficiency and ease of maintenance. This must also meet requirements for: - Natural ventilation mode and cross ventilation: in line with DG5.01 - 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 design must adhere to DG57.18. - Roof ventilator control: in line with DG65.16 - Wind powered roof ventilators: Designed to suit local ambient climatic conditions to ensure correct sizes, locations and numbers as detailed in DG57.14 - Sanitary Spaces sufficient natural ventilation or mechanical ventilation, to disperse odours and /or humidity in line with - Cross ventilation is to be used where possible. - Provide mechanical ventilation to all Disabled Toilets. - Ventilation in storage spaces in line with DG5.05 - Ventilation in permanent learning spaces and libraries in line with DG55 - Outdoor air requirements and control of Indoor CO2 levels - designs must adhere to DG55.02 - 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. Adhere to ventilation requirements set out in DG57.07. - 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. Adhere to ventilation requirements set out in DG57.09	Ph 2-5: Services Design	DG57.01 DG05.04 DG05.05 DG57.16 DG05.01 DG57.18 DG05.02 DG37 DG65.16 Thermal Comfort and Indoor Air Quality – Performance Brief	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, including indication of windows and cross ventilation	Y	Mechanical design to demonstrate compliance	Mechanical design to incorporate	Mechanical	JHA Mech: Compliance should be easily achievable by following requirements of EFSG.
Unlock human potential	**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. - The Colour Rendering Index (CRI) for light sources must be minimum 80 or higher - Compliance with the uniformity requirements stipulated in Table 3.2 of the AS/NZS 1680 standard should be demonstrated by the presentation of the output from lighting design software. - The Unified Glare Rating (UGR) must be calculated in accordance with the procedure outlined in Clause 8.3.3 of AS/NZS 1680.1:2006 standard, and the calculated value must not exceed the maximum values specified in Table 8.2 of the standard - The maintained illuminance levels must meet the recommended levels as specified in the AS/NZS 1680 standard., and the maintained illuminance values achieve a uniformity of no less than the values given in Table 3.2 of AS 1680.1:2006, with an assumed standard maintenance factor of 0.8. - To ensure flicker-free lighting, the following luminaire requirements should be considered: LED lighting – electronic drivers with 12-bit or greater resolution - Modelling must provide output that clearly demonstrates that the proposed design is compliant with the standards including but not limited to the parameters listed in DG 63.03.02	Ph 2-5: Services Design	DG63.03	DAB c11 Lighting Comfort DAB c11.1 General Illuminance and Glare Reduction	**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	Electrical design to demonstrate compliance with the requirement	Elec drawing	Electrical	JHA Elec: JHA Electrical has reviewed this item and have no specific concerns at this stage. Targeted credit will be incorporated within detailed design.
Unlock human potential	**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 +/- 1 for 95% of occupied hours	Ph 2-5: Services Design	DG06.03 DG55.01 DG55.02	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	Project targeting 4 Star Green Star, Energy Modelling report to demonstrate compliance	Energy Modelling Report	Mechanical ESD	JHA ESD: Energy Modelling Report to be completed as part of Green Star submission deliverables.
Unlock human potential	**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.	Ph 2-5: Services Design	DG51.09 DG53.11	DAB c28 Microbial Control	1. Letter by hydraulic engineer confirming hot water is stored above 65 deg and that valves comply with code of practice.	Y	Hydraulic to provide letter.	Letter confirming compliance.	Hydraulic	
Unlock human potential	**External access lighting** External Access Lighting shall be provided to illuminate building entrances, footpaths, sheltered walkways, roadways and car park. External Access Lighting must: - Be minimal and designed to prevent glare to pedestrians, nearby residents and to motorists. Evidence of compliance with AS4282, AS/NZS 1158 and other applicable Australian Standards must be provided by the designer. - Be located so as to link various sources of illumination such as street lighting (for carpark and roadways) and internal security lighting (for footpaths, walkways and entrances). - Illuminate building entry doors. - Highlight 'accident-prone' areas such as changes in level, stairs and ramps. - Provide vertical illumination.	Ph 2-5: Services Design	DG63.08.01	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	Electrical drawings indicating the location of all external luminaries	Elec drawing	Electrical	JHA Elec: JHA Electrical has reviewed this item and have no specific concerns at this stage. Targeted credit will be incorporated within detailed design.
Unlock human potential	Low VOC-emitting materials All surface coatings, and other volatile organic compound (VOC) emitting products including adhesives, sealants, carpets, carpet tiles, and carpet underlays, must be made from low-VOC emission materials. - Paints must meet the limits stipulated in the Australian Paint Approval Scheme's (APAS) VOC limits for low VOC paints. - Paints, adhesives and sealants must not exceed the maximum VOC limits stipulated in the Green Star Buildings rating tool. - Carpets must not exceed the total VOC limits stipulated in the Green Star Buildings tool.	Ph 3-4: Product and Material Selection	DG2.5.2	DAB c13 Indoor Pollutants	**1.** Product specifications, certificates, safety datasheets that demonstrate low-VOC contents **2.** Bill of quantities	Y	Head contractor to provide product specifications, certificates, datasheets that demonstrate compliance with VOC contents	Product certificate/statement	Head Contractor	
Unlock human potential	**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. The engineered wood products must not exceed the emissions limits stipulated in the Green Star Buildings rating tool. Engineered wood products include particleboard, plywood, Medium Density Fibreboard (MDF), Laminated Veneer Lumber (LVL), High-Pressure Laminate (HPL), Compact Laminate and decorative overlaid wood panels. This requirement excludes formwork.	Ph 3-4: Product and Material Selection	DG2.5.2	DAB c13 Indoor Pollutants	**1.** Product specifications, certificates, safety datasheets that demonstrate low-formaldehyde contents Bill of quantities	Y	Head contractor to provide product specifications, certificates, datasheets that demonstrate compliance with formaldehyde contents	Product certificate/statement	Head Contractor	

Unlock human potential	**Acoustic post-occupancy evaluation** ~~Post Occupancy evaluations~~ Measurements are often undertaken to assess the performance of recently completed or existing facilities. Where ~~a Post Occupancy Evaluation~~ testing 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 must include (as per the above criteria) - Internal noise levels. As per AS 2107:2016 - Room acoustics. Reverberation Time As per AS 2107:2016 - Noise emission. As per AS1055 & NPI (Involving Mech) - Room-to-room acoustics performance. As per AS ISO 140.4 The noise measurement and documentation must be provided by a qualified acoustic consultant and in accordance with AS/NZS 2107:2016 Measurements shall be conducted in at least 10% of regularly occupied spaces.	Ph 7-9: Construction, Commissioning Post Occupancy and Operation	DG11.07	GSP c10.1 Internal Noise Levels, GSP c10.2 Reverberation, GSP c10.3 Acoustic Separation	**1**. Commitment by SI to conduct acoustic ~~post occupancy evaluation~~ testing	Y	Acoustic report to demonstrate compliance	Acoustic report to confirm compliance with all acoustic requirements	Acoustic	
Unlock human potential	**Pesticide free environments** Schools must be designed, constructed and maintained, without using chemicals for termite and other pest control. No chemical pesticides and termicide to be used. Preventive treatments to be by physical means and careful design to minimise risk	Ph 7-9: Construction, Commissioning Post Occupancy and Operation	DG2.5.3	Not covered in Green Star	Statement by head contractor that no pesticides or termites have been used.	Y	Head contractor to provide statement that no pesticides or termites have been used	Statement of compliance	Head Contractor	
Unlock human potential	**Healthy Places** The design of the project should address five key principles for Healthy Places, as defined in Green Star Communities credit 9.3. These are: - Walkability - Active and public transport, - Wayfinding -Good public space design - Social interaction	Ph 2-5: Architectural Design	DG2.5.4	Healthy Places [GSC 9.2]	**1.** Narrative providing examples of how each principle is being addressed, with examples from the Masterplan Report and Traffic/Transport Plan	Y	As-built drawing to demonstrate that the design has address the five key principles for healthy places	Architectural drawings to demonstrate compliance	Architect	

APPENDIX B – GREEN STAR MATRIX

Green Star: Design & As Built v1.3 - Credit Recommendations for HRHS

Rev: E
12/04/2023

Targeted Rating:	4 Star - Best Practice			
	Core Credits	**Innovation Points**	**Total Points**	**Safety Margin/Buffer**
Points Required			**45**	(minimum recommendation is 6 buffer points)
Targeted Points	46	8	**54**	9
Targeted Points + Points TBC	52	10	**62**	17

	SINSW Suggested Points	Targeted Points	Points TBC
Core Credits	52	46	6
Innovation	10	8	2
Total	**62**	**54**	**8**

NSW GOVERNMENT Education School Infrastructure

Green Star - Design and As Built v1.3 Requirements						**SINSW Approach to achieving Green Star Credits**										
Category/Credit	Code	Credit Criteria	Points Available	Aim	Compliance requirements	SINSW preferred approach - including pre-approved TQ alternate approaches	Relevant EFSG section or other SINSW guidelines	Example project specific evidence (For Green Star certification all evidence must be accompanied by GBCA submission Template)	Consultant(s) Responsible	SINSW SME	SINSW Suggested Points	Targeted Points	Points TBC / Can be Targeted	ESD Consultant Comments	EFSG Equivalence	Project Team Comments/Status
Management			**15**								**10**	**8**	**0**			
Green Star Accredited Professional (GSAP)	1.0	Accredited Professional	1	Recognises projects that engage a GSAP to support the Green Star certification process.	Appoint GSAP at all stages of the project, leading to certification	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	● Letter from PD stating the ESD Consultant fulfilled the role gasp certificate ● ESD consultant outputs (e.g. letters of advice, reports, etc.)	Project Manager / ESD Consultant		1	1		ESD Consultant/GSAP to submit **GSAP Confirmation Letter** for each Phase of the project from Phase 3 - Schematic Design onwards. **Project GSAP:** Phase 3 - Lawrence Yu (JHA) Phase 4 to 9 - TBC Campus-wide credit	High	
Commissioning and Tuning	2.0	Environmental Performance Targets	Mandatory for this Credit	Recognises commissioning, handover and tuning initiatives for building services to operate at their full potential and as designed.	Set environmental performance targets	SINSW set out environmental performance targets for each school type in SINSW's Environmental Performance Plan. TQ necessary to confirm SINSW alternate approach	● SINSW Environmental Performance Plan	● SINSW Environmental Performance Plan (Populated with project information) ● SI NSW Design Intent Report (Populated with project information)	SINSW Sustainability / Design Team	Sustainability	-	Y		SINSW **Environmental Performance Plan** template available. Design Team to populate **Environmental Performance Plan** and/or **Design Intent Report** with project specific information during Phase 4 - Design Development.	Med	
	2.1	Services and Maintainability Review	1		Conduct a services and maintainability review during design and prior to construction and develop a 'Service and Maintainability Report'	Refer GBCA Response R-14417 - The GBCA has approved an alternative approach where design elements tailored to services and maintainability are incorporated throughout the Educational Facilities Standards & Guidelines (EFSG). The EFSG require all systems to be installed with suitable access for 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	The project team should demonstrate that there is a project level review process in place to ensure that the building has been designed as per the EFSG, that any issues identified have been closed out and that the outcomes can be communicated to the relevant facilities/ operations teams. ● Expert review group and technical stakeholder group (TSG) meeting minutes ● TSG sign off certificates ● Design Advisory Reports	Project Manager / Design Team	Commissioning Team	1	1		As per GBCA Response R-14417, during Phase 4 - Design Development, Design Team to complete the **Services and Maintainability Review** template demonstrating project specific input from the design team, the facilities manager and operations staff, including evidence that any issues identified have been rectified and that any actions have been incorporated into the design intent report.	High	
	2.4	Independent Commissioning Agent (ICA)	1		● Appoint an ICA from schematic design	At construction and commissioning phases, the Commissioning & Handover Procedure requires comprehensive inspection, witness testing and validation. Refer **GBCA Response R-14422** - The GBCA has confirmed the SI NSW process can be adopted in lieu of a separate ICA	● Commissioning & Handover Procedure	• Evidence outlining the purpose, role and responsibilities of the Commissioning and Temporary Schools Program Team. • CVs demonstrating that the team are suitably qualified commissioning professionals. • Evidence demonstrating that the Commissioning and Temporary Schools Program Team is independent from the design team and that they are engaged on each project.	Project Manager	Commissioning Team	1	1		As per GBCA Response R-14422, projects within the Schools Infrastructure NSW Umbrella (GS-6039DA) may use the Commissioning and Temporary Schools Program Team in lieu of engaging a dedicated independent commissioning agent (ICA). SINSW to provide evidence that the Commissioning and Temporary Schools Program Team has been engaged as the project's commissioning team. Campus-wide credit	High	27/06 SINSW - Ensure SINSW Commissioning team is engaged early on. 20/07 SINSW - Commissioning Team Contact Details: Dave Thompson | Director, Commissioning | david.thompson127@det.nsw.edu.au Craig O'Shea | Senior Manager, Commissioning | craig.oshea2@det.nsw.edu.au
Adaptation and Resilience	3.0	Implementation of a Climate Adaptation Plan	2	Recognises projects that are resilient to the impacts of a changing climate and natural disasters.	Engage a qualified professional to prepare a project-specific Climate Adaptation Plan (CAP) and implement recommendations into the design and construction.	Site selection is informed by Eagle Eye or XDI Systems which are tools that identify 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 ● ESD Consultant scope of services	Climate adaptation plan	ESD Consultant	Sustainability	2	0		The assessment completed during Phase 2 - Concept Design does not comply with Green Star requirements. A more detailed assessment (at additional fee) will be needed if project would like to target these points for Green Star submission. Campus-wide credit	High	24/07 JHA ESD - As a CAP was not completed during Concept Phase, this credit it not targeted. Note project will need to meet the Climate Change Interventions as detailed in the Sustainable Development Plan.
Building Information	4.0	Building Information	1	Recognises projects that make available building information that facilitates understanding of building systems operation and maintenance requirements, and their environmental targets for optimised performance	● Provide operations and maintenance (O&M) information and log book to facilities management team and stakeholders, and ● Provide building user information to all relevant stakeholders	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 built and warranties. SINSW has developed a template that can be populated to develop a school specific Building User's Guide. Refer GBCA Response R-15394 - The GBCA has confirmed FMWeb can be used in lieu of Building Log Book. GBCA Response R-14554 confirms that the Whole of Government Facilities Management Services (Maintenance) contract can be used in lieu of confidential documents for the operations and maintenance information (if necessary)	● DG 64.10 - Manuals and Training ● DG 65.02 - Energy Conservation ● DG 16.10 - Access for Maintenance ● Commissioning & Handover Procedure	• Template SI NSW Building User Information ● Project specific manuals, as-builts, warranties, etc. ● AMS online portal pdf	SINSW Sustainability / Head Contractor	Sustainability	1	1		As per GBCA Response R-15394, in lieu of Building Log Book, compliance with 4.1.2 is achieved by demonstrating that the buildings asset maintenance information is captured through the NSW Government FMWeb Maintenance platform. Contractor is responsible for providing **Operations and Maintenance Information** in accordance with 4.1.1 & **Building User Information** in accordance with 4.1.3.	Med	
Commitment to Performance	5.1	Environmental Building Performance	1	Encourage building owners, building occupants and facilities management teams to set targets and monitor environmental performance.	Set, measure and report for at least 2 building performance metrics i.e. energy, water, waste and IEQ	SINSW monitor energy and water performance of schools and report annually for GREP. Energy efficiency programs are developed based on this monitoring. TQ necessary to confirm SINSW alternate approach		● ERM Power customer online portal ● Principal's Dashboard ● GREP annual reports ● SINSW Environmental Performance Plan	SINSW Sustainability	Sustainability	1	1		SINSW has provided standard Commitment to Environmental Performance letter for schools.	Med	
	5.2	End of Life Waste Performance	1		Commitment to extend the life of the interior fit out or finishes to at least ten years.	Life of interiors in schools extend further than 10 years. The EFSG specify materials and systems that have proven durability. TQ necessary to confirm SINSW alternate approach	● EFSG multiple specifications ● DG 40 - Materials and Finishes	- Commitment letter from AMU Executive Director	AMU		1	1		SINSW has provided a End of Life Waste Performance Letter template for schools. Campus-wide credit	Med	
Responsible Building Practices	7.0	Environmental Management Plan (EMP)	Mandatory for this Credit	Rewards responsible construction practices that manage environmental impacts, enhance staff health and wellbeing, and improve sustainability knowledge on site	Develop and implement a best practice EMP	An EMP is required for all SINSW contracts	● GC21 provisions	● Contract EMP	Head Contractor		-	Y		Head Contractor must develop & implement a project-specific best practice EMP. Campus-wide credit	High	
	7.1	Formalised Environmental Management System	1		A responsible party for the site has a formalised approach to planning, implementing and auditing is in place during construction, to ensure conformance with the EMP	ISO14001 accredited EMS contractors required	● NSW Government construction scheme	● Head contractor's ISO certificate	Head Contractor		1	1		Head Contractor must have ISO14001 accredited EMS. Campus-wide credit	High	
Operational Waste	8A	Performance Pathway	1	Recognises projects that implement waste management plans that facilitate the re-use, upcycling, or conversion of waste into energy, and stewardship of items to reduce the quantity of outgoing waste.	Qualified waste auditor prepares and Implements an Operational Waste Management Plan (OWMP) which is then reflected in design of building facilities	Can do either option School Operational Waste Management Plans are required. SSD projects can amend their Waste Management Plans accordingly.	● DG 02.07 - Waste Management	● School waste management plan	Waste consultant	Only one of the pathway can be targeted	1	1		Waste consultant required to prepare and implement an Operational Waste Management Plan (OWMP) for the project.	High	
Indoor Environment Quality			**17**								**12**	**12**	**0**			
Indoor Air Quality	9.1	Ventilation System Attributes	1	Recognises projects that provide high indoor air quality to occupants.	● Minimise outdoor air pollutants ● Design HVAC for ease of maintenance ● Clean prior to occupation ASHRAE Standard 62.1:2013 is referenced	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 ● GC21 Contract - Preliminaries ● Commissioning and Handover Procedure	● As built mechanical drawings ● Confirmation of cleaning by head contractor	Mechanical		1	1		Mechanical consultant must ensure the HVAC system is compliant with this credit.	Med	
	9.3	Exhaust or Elimination of Pollutants	1		Sources of pollutants (printing, photocopying, cooking and vehicle) compliant with minimum emissions standards or be exhausted directly to outside	The EFSG contain provisions for exhaust or elimination of pollutants for multiple spaces, incl printing rooms and kitchens	● DG 57.07 - Duplicating / Printing Room Ventilation ● DG 57.08 - Fume Cupboard - Single Side or Double Side ● DG 57.09 - Chemical Store Ventilation ● DG 57.16 - Toilet and Change Room Ventilation ● DG 57.17 - Laundry	● Product data sheets or certificates of emissions compliant MFDs ● As built mechanical drawings ● SINSW Printing processes cover letter	Mechanical / SINSW Sustainability		1	1		Mechanical consultant to ensure cooking processes and vehicle exhausts comply with credit requirements. For printing equipment, SINSW have purchase contract in place with FUJIFILM to provide low emission printers and photocopiers to all schools. Refer to FAQ-F-00269 and FUJIFILM Low Emission Certificates for details.	High	

Acoustic Comfort	10.1	Internal Noise Levels	1	Rewards projects that provide appropriate and comfortable acoustic conditions for occupants.	● Internal ambient noise levels no more than 5db(A) above lower figure in table 1 of AS/NZA 2107:2016 ● Compliance shall be demonstrated through measurement provided by a qualified acoustic consultant	The EFSG set acoustic performance requirements for the different spaces, including noise levels, reverberation and acoustic separation. These requirements are best practice for schools.	● DG 55.02 - Thermal Comfort and Indoor Air Quality Performance Brief (noise levels from HVAC) ● DG 11.07 - Acoustic post occupancy evaluation	● Detailed drawings ● Acoustic report ● Commissioning report ● Acoustic post occupancy evaluation	Acoustic		1	1		Acoustic consultant to ensure compliance with this credit.	High	
	10.2	Reverberation	1		● Reverberation time below max stated in table 1 of AS/NZS 2107:2016 ● Compliance shall be demonstrated through measurement		As above		Acoustic		1	1		Acoustic consultant to ensure compliance with this credit.	High	
	10.3	Acoustic Separation	1		Reduce noise transmission between enclosed spaces Rw of at least 35 for partitions with doors and at least 45 for partitions without a door	Note (Rw) from 30 to 35 for glazed operable walls between enclosed spaces only. (Refer **GBCA response R-14412**)	● DG 11.05 - Room to Room Noise Control		Acoustic		1	1		Acoustic consultant to ensure compliance with this credit, noting for **glazed operable walls** between enclosed spaces, sound reduction index (Rw) of 30 (instead of 35) applies (Refer GBCA response R-14412).	High	
Lighting Comfort	11.0	Minimum Lighting Comfort	Mandatory for this Credit	Recognises well-lit spaces that provide a high degree of comfort to users	Lights in the nominated area (all primary and secondary spaces) are Flicker-free lights and min Colour Rendering Index (CRI) of 80	The EFSG include best practice provisions for lighting comfort, illuminance levels, glare reduction, surface illuminance and lighting controls. Modelling is required to inform design and demonstrate outcomes.	● DG 63.03 - Lighting Design ● SG951 - Lighting Specification	● Lighting drawings ● Architectural drawings ● Lighting specifications / schedules ● Isolux drawings	Electrical		-	Y		Electrical consultant to ensure compliance with this credit.	High	04/07 JHA Elec - This can be achieved electrically in scope areas.
	11.1	General Illuminance and Glare Reduction	1		● Lighting levels and quality comply with the GBCA best practice guidelines; and ● Glare is reduced				Electrical		1	1		Electrical consultant to ensure compliance with this credit.	High	04/07 JHA Elec - This can be achieved electrically in scope areas.
	11.2	Surface Illuminance	1		Combination of lighting and surfaces improve uniformity of lighting				Electrical / Architect		1	1		Requires a plain ceiling to achieve uniform surface reflectance of at least 0.75. Architect to confirm if this credit is to be targeted. If targeted, Electrical consultant to ensure ceiling area has an average surface illuminance of at least 30% of the lighting levels on the working plane via direct/indirect lighting system.	High	27/06 SINSW - Targeted on most SINSW projects. 04/07 SINSW Meeting - updated to targeted pending further confirmation from arch. 04/07 JHA Elec - This can be achieved if architect is targeting this item.
Visual Comfort	12.0	Glare Reduction	Mandatory for this Credit	Recognises well-lit spaces that provide high levels of visual comfort to building occupants.	Reduce glare through a combination of blinds, screens, fixed devices, or other means	The EFSG require daylight glare controls are implemented on exposed facades subject to direct sunlight. Specifically, external window shading.	● DG 12 - Light - Natural ● DG 07 - Sun Control ● DG 2.3.1 - Energy Conservation (shading devices)	● Architectural drawings	Architect		-	Y		Architect to ensure compliance with this credit.	High	02/07 EJE - External Screens will be documented on a number of external windows and internal blinds scheduled for all external windows
	12.1	Daylight	2		● 1 point - 40% of the nominated area (all primary spaces) receives high levels of daylight ● 2 points - 60% of the nominated area (all primary spaces) receives high levels of daylight	The EFSG require to maximise natural daylight in all habitable spaces to improve indoor amenity and create a pleasant environment.	● DG 2.3.1 - Lighting ● DG 12 - Light - Natural	● Daylight modelling report	ESD Consultant	Sustainability	1	1		ESD consultant to undertake Daylight Autonomy modelling to confirm compliance with this credit during Phase 4 - Design Development. It is noted this credit may be challenging in some situations depending on the building type. Also note each building must comply with the requirement individually to achieve points under the campus rating.	High	
	12.2	Views	1		60% of the nominated area (all primary spaces) has a clear line of sight to a high quality internal or external view ● External View – A high quality external view must extend to the outside towards natural elements such as large bodies of vegetation, a body of water, frequent movement of (people, vehicles, or animals) or sky ● Internal View - A high quality internal view is defined as a view towards an area that is landscaped or contains a water feature, or an atrium	This is not explicitly required in the EFSG but 100% achievable based on typical room design, window location and quality landscaping in new schools.	● DG 90 - Landscape Design	● Landscape design report ● Architectural drawings ● Short Report / calculation	Architect, ESD consultant	Sustainability	1	1		ESD consultant to finalise Views calculation to confirm compliance with this credit during Phase 4 - Design Development. It is noted this credit may be challenging in some situations depending on the building type. Also note each building must comply with the requirement individually to achieve points under the campus rating.	High	02/07 EJE - The Admin, Support Hub, and hall will have views to Landscaped gardens and sports field.
Indoor Pollutants	13.1	Paints, Adhesives, Sealants and Carpets	1	Recognises projects that safeguard occupant health through the reduction of internal air pollutant levels.	● No paints, adhesives, sealants or carpets are used in the building; or ● 95% of all internal paints, adhesives, sealants and carpets meet total VOC limits	The EFSG require low VOC and formaldehyde content in line with Green Star requirements.	● DG 2.5.2 - Low VOC	● Materials specifications	Architect, Mech, Elec, Hyd, Fire	Sustainability	1	1		All consultants to ensure their specifications comply with credit requirements. Campus-wide credit	Med	02/07 EJE - Noted - To confirm products/materials to be scheduled/specified
	13.2	Engineered Wood Products	1		● No new engineered wood products are used in the building; or ● At least 95% of all engineered wood products meet formaldehyde emission limits		● DG 2.5.2 - Low VOC	● Materials specifications	Architect	Sustainability	1	1		All consultants to ensure their specifications comply with credit requirements. Campus-wide credit	Med	02/07 EJE - Noted - To confirm products/materials to be scheduled/specified
Thermal Comfort	14.1	Thermal Comfort	1	Recognises projects that achieve high levels of thermal comfort.	80% of occupants satisfied - equivalent to PMV between -1 and +1	Schools are naturally ventilated except when outside climate is not adequate. Inclusion of active cooling is directed by DoE's thermal comfort policy. The EFSG require thermal comfort is automatically controlled within specified parameters. Thermal modelling is undertaken to demonstrate that learning spaces and libraries have been designed to achieve a predicted mean vote (PMV) of +/- 1	● DG 55.02 - Thermal Comfort and Indoor Air Quality Performance Brief	● Drawings ● Thermal comfort modelling report	ESD Consultant / Mechanical	Sustainability	1	1		ESD consultant to undertake PMV modelling to confirm compliance with this credit during Phase 4 - Design Development.	Med	07/07 Design Meeting - noted discussion regarding not providing AC to admin building due to costs (TBC). Point potentially at risk without AC. Adapative Comfort assessment will need to be carried out for naturally ventilated spaces to confirm compliance with 80% of Acceptability Limit 1 of ASHRAE Standard 55-2013.
Energy			**24**								**5**	**5**	**2**			
Greenhouse Gas Emissions	15E.0	Conditional Requirement: Reference Building Pathway	Mandatory for this Credit and Certification	Encourages energy efficient buildings and the reduction of greenhouse gas (GHG) emissions associated with the use of energy in building operations.	Projects targeting: ● 4 Star - Proposed building must achieve 10% improvement on NCC Section J reference building. Equivalent to GBCA Benchmark Building ● 5 Star - Minimum points threshold = 3 points ● 6 Star - Minimum points threshold = 6 points	The EFSG require 'energy consumption is predicted to be at least 10% lower than if build to minimum compliance with National Construction Code requirements'. To comply with 15E energy modelling must be completed.	● DG 02.03 - Energy Conservation	● Section J modelling report	ESD Consultant	Sustainability	-	Y		ESD consultant to undertake energy modelling to confirm compliance with this credit during Phase 4 - Design Development, without including renewable energy generation in the calculation. All services consultant to provide at least 10% improvement in energy efficiency compared to the minimum requirements in NCC Section J for their respective services.	High	05/07 JHA Elec - noted. 05/07 JHA Mech - noted
	15E.1	Reference Building Pathway	20		Points awarded for emissions reduction: ● Building fabric relative to NCC Section J to Reference Building - 1 point for 5%, 2 point for 10%, 3 point for 15%, max. 4 point for 20% ● Proposed building relative to GBCA Benchmark Building - 1.6 point for 10%, 3.2 point for 20%, 4.8 point for 30%, 6.4 point for 40% etc.	The EFSG require a number of measures for reduced energy consumption including: - Passive design (building envelope, orientation, daylighting, insulation, etc.) - Energy efficient air conditioning, ventilation and lighting systems - Solar PV (large systems up to 100 kW) Six points are conservatively estimated based on the above and Green Star benchmarking done for SINSW projects - 6% Greenpower requirement in Whole of Government Electricity Contracts 776 and 777	● 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	ESD, Architect, Mechanical, Electrical	Sustainability	4	4	2	It is anticipated that SINSW projects should be able to achieve at least 4 points, with possibility to achieve 2 additional points to be confirmed with energy modelling. ESD consultant to undertake energy modelling to confirm points achievable under this credit during Phase 4 - Design Development. **Note**: Green Star DAB v1.3 references NCC 2019 Section J as the base case. It is unclear at this stage what impacts NCC 2022 Section J will have on the design (since it has not been released) or how GBCA will assess projects that are required to comply with NCC 2022.	High	02/07 EJE - Section J review to indicate window and fabric requirements. Note that existing constraints prevent ideal orientation of the new works 04/07 JHA Elec - Electrical design will be done to NCC Section J6 requirement. Section J6 will be assessed as whole instead of individual room. EFSG requires 99kW for each site. Currently, there is 8kW PV at HRHS. APP advised that school will have 30kW PV, managed by Smart Energy Schools Pilot Project. Therefore, we will document 61kW PV on our project. At this stage, have proposed to locate PV on New Learning Hub building. If gym building is preferred, we can relocate easily. The power generated by PV will be share between all new buildings. 04/07 JHA Mech - saving would also need to be based on efficient façade etc.
Peak Electricity Demand Reduction	16B	Performance Pathway - Reference Building	2	Encourages the reduction of peak demand load on the electricity network infrastructure.	Project's predicted peak electricity demand has been reduced below that of a Reference Building: ● 1 point - 20% reduction ● 2 points - 30% reduction	The EFSG require installation of PV systems. Batteries may be installed if substantiated	● DG66 - Photovoltaic Solar Power Generator Guidelines ● SG933 - Schedule of Photovoltaic Solar Power Generator	Energy modelling report	ESD, Electrical	Sustainability	1	1		ESD consultant to undertake peak demand modelling to confirm compliance with this credit during Phase 4 - Design Development.	Med	
Transport			**10**								**10**	**10**	**0**			

Sustainable Transport	17A	Performance Pathway	10	Rewards projects that implement design and operational measures that reduce the carbon emissions arising from occupant travel to and from the project, when compared to a reference building. This also promotes the health and fitness of commuters, and the increased liveability of the location. note: Typically projects are expected to gain more points using the 17A pathway. However if projects cannot comply with 17A, the prescriptive pathway may be applied.	● GBCA response R-14426 accepts the SINSW School Transport Planning Process as an alternative to standard Green Star Requirements for Credit 17- Performance Pathway ● Transport Plans undertaken for all SINSW project must follow the SINSW School Transport Planning process outlined in the Practice Note: School Transport Planning. This Practice note is available to project teams on T-Reign.	BN AMD21/289 approved by Chief Exec April 2021 approved the use of the SINSW School Transport Planning Process for all infrastructure upgrades . Transport planners must be engaged in the master planning phase and in the ongoing design development phases noting that Transport Plans are an environmental assessment and planning approval requirement. The BN states that Transport Plans will be undertaken as per the School Transport Plan Practice note.	● SEARs/ Planning approval requirements ● T-Reign Practice Note 16: SINSW Transport Planning Document pack ● Exec approval for provided in BN AMD21/289 available in T-Reign document Pack.	SINSW Schools Transport Assessment Process outcomes including: • A summary of the project specific School Travel Plan. • A copy of the Transport Assessment template and evidence that the School Transport Plan framework has been completed as per the template including excerpts from the Plan documenting; transport goals, policies and procedures, information on the school transport operations. the communications plan, the collection of data and monitoring and adherence to the governance framework. • Evidence documenting the consultation process i.e. excerpts from meeting minutes, actions and amendments to the transport assessment/ school travel plan. • Evidence that the School Transport Plan has been implemented and that the recommendations made in the Plan have/ will be reflected in the design of the building's facilities, ongoing operational processes and communications. • A verification from the Project Applicant/ Transport Project Director that the transport assessment and plan has been delivered as per the EFSG and 'Transport Assessment: Template'. • A copy of the GBCA technical question response ● Architectural drawings	Architect / Transport Professional	Sustainable Transport Technical Advisor	10	10		Under SINSW Umbrella may target 10 points according to R-14426. Project team to complete **SINSW Transport Assessment template** during Phase 4 - Design Development. Campus-wide credit	High	27/06 SINSW - Ensure SINSW Transport team is engaged early on. Contact - Rebecca Lehman. 02/07 EJE - will be worked through with Transport consultant 04/07 SINSW Meeting - noted project needs to engage with SIINSW Transport Team early on to verify if all 10 points is achieved. 20/07 SINSW - contact for SINSW Transport team: Rebecca Lehman | rebecca.lehman@det.nsw.edu.au
Water			**12**									**6**	**5**	**0**			
Potable Water	18B	Prescriptive Pathway	1		18B.1 Sanitary Fixture Efficiency	WELS rating adhere to DG 2.4.1 Water efficient appliances	● DG 53 - Water ● DG02 2.4.1 - Water Conservation ● DG 51.01 - Hydraulics	● Schedule of Fixtures ● WELS certificates or Manufacturers information	Architect	Sustainability	1	1		Architect to ensure compliance with this credit. All fixtures must be within one star of highest WELS rating available.	High	02/07 EJE - Noted - To confirm products to be scheduled/specified
			1		18B.2 Rainwater Reuse	Typically required by DG53.14 Water Tanks	● DG 53 - Water ● DG02 2.4.1 - Water Conservation ● DG 51.01 - Hydraulics	● Hydraulic drawings showing connection to on site rainwater tank(s)	Hydraulic Engineer	Sustainability	1	1		Hydraulics consultant to ensure compliance with this credit. Rainwater tank volume - 10 L/m2 of GFA.	Med	
			2		18B.3 Heat Rejection	Expected to be achievable in most schools as new schools do not employ water based heat rejection	● DG55 Cooling Policy	● Hydraulic drawings showing connection to on site rainwater tank(s)	Mechanical Engineer	Sustainability	2	2		Mechanical consultant to confirm compliance with this credit.	Med	04/07 JHA Mech - Air cooled systems are being designed
			1		18B.4 Landscape Irrigation	GBCA have approved a best practice landscape irrigation system to be used on ovals, sports fields and sports courts - Refer **GBCA Response R-14546.** The landscape irrigation system must incorporate a moisture sensor override feature or similar control technology	● DG 53 - Water ● DG02 2.4.1 - Water Conservation ● DG 51.01 - Hydraulics	● Manufacturer's information showing that the application efficiency for the landscape irrigation system.	Landscape Architect	Sustainability	1	1		Landscape architect to ensure compliance with this credit. Landscape must be irrigated by drip irrigation only with moisture sensor override installed. Note Alternative Approach as per GBCA Response R-14546 - For ovals, sports fields and sports courts compliance is achieved if the landscape irrigation system incorporates a moisture sensor override feature or similar control technology.	Med	
			1		18B.5 Fire Protection System Test Water	18B.5 Fire Protection System Test Water - Most schools are exempt from requiring a sprinkler system under Part E of the NCC - when this is the case the credit becomes N/A	● DG 53 - Water ● DG02 2.4.1 - Water Conservation ● DG 51.01 - Hydraulics	Extracts from the Fire Engineering Report where it states that the building's fire system has no sprinklers	Hydraulic (and Fire Consultant if applicable), Architect	Sustainability	1	NA		Not targeted based on Fire consultant advice,	High	21/06/22 Jamie Guajardo | HDR - no sprinkler system required at this point in time, there is a fire hydrant system but we have no tanks proposed. Compliance will be at additional costs to the project. 04/07 SINSW Meeting - noted sprinklers may be required under NCC 2022.
Materials			**18**									**2**	**1**	**3**			
Life Cycle Impacts	19B.1	Concrete	3	Rewards projects that include building materials that are responsibly sourced or have a sustainable supply chain.	Requires reduced use of: ● Portland cement content by at least 30% ● potable water by at least 50% replacement with recycled or reclaimed water. ● course aggregate by 40% or fine aggregate by 25%	EFSG recommend fly ash can be used in concrete mixes. This is a procurement decision that varies across projects.	Not currently supported by EFSG ● DG 21.02 - Concrete ● SG314 Concrete- Insitu	Structural Specifications, drawings, Engineers report including: ● Summary calculation for the product replacement ● Identifying all water or coarse or fine aggregate uses in the project and demonstrating how the Credit Criteria is met. ● Concrete suppliers submission detailing target mix designs for each product supplied.	Structural		0		1	Structural consultant to ensure compliance with this credit.	Low	04/07 SINSW Meeting - updated to TBC as it is not mandatory under the EFSG and there may be costs associated to achieve in regional areas.
Responsible Building Materials	20.2	Timber Products	1		95% (by cost) of all timber used is certified or reused	The EFSG require that only sustainable timber is procured	● DG02 2.5.1 - Sustainable Materials (timber)	● Bill of Quantities or similar report from qualified professional. ● Invoices quoting chain of custody code	Architect, Structural		1	0	1	Compliant timber with chain of custody code may be difficult/costly to source. Hence not recommended but point could be targeted. Campus-wide credit	High	02/07 EJE - Limited or no proposed use of timber for the buildings. Joinery will need to be considered.
	20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1		Requires that only sustainably produced PVC is used	Not required in EFSG. This is a procurement decision that varies across projects.		● Bill of Quantities or similar report from qualified professional. ● Evidence of best practice product certification and data sheets ● Invoices	Architect, Structural, Electrical, Hydraulic, Mechanical		0		1	All consultants to ensure their specifications comply with credit requirements. Campus-wide credit	Low	02/07 EJE - Can be scheduled - pending advice regarding costing 04/07 SINSW Meeting - updated to TBC as it is not mandatory under the EFSG and there may be costs associated to achieve in regional areas. 04/07 JHA Elec - Performance specification will be provided.
Construction and Demolition Waste	22.0	Reporting Accuracy	Mandatory for this Credit	Rewards projects that reduce construction waste going to landfill by reusing or recycling building materials.	All waste contractors and waste processing facilities that provide waste management and reporting services must demonstrate compliance with *Green Star Construction and Demolition Waste Reporting Criteria*	GC21 construction contract contains provisions to minimise construction and demolition waste. DG 2.7.1 requires minimum diversion rate target of 90%/	● GC21 ● DG 02.07 Waste Management ● DG02 2.7.1 Construction and demolition waste	● Compliance Verification summaries and Disclosure Statement from waste contractors ● C&D waste report including demolition or site drawings and cumulative waste report. ● Environmental Management Plan	Head Contractor		-	Y		Head Contractor to ensure compliance with this credit. Campus-wide credit	Med	
	22B	Percentage Benchmark	1		90% of construction and demolition waste generated to be diverted from landfill or Less than 10kg/m^2 of GFA goes to landfill				Head Contractor		1	1		Head Contractor to ensure compliance with this credit. Campus-wide credit	High	
Land Use & Ecology			**6**									**3**	**1**	**1**			
Sustainable Sites	24.0	Conditional Requirement	Mandatory for this Credit and Certification	Rewards projects that choose to develop sites that have limited ecological value, that reuse previously developed land, and that remediate contaminated land.	Site did not include old growth forest, prime agricultural land, wetland of high national importance or impact on matters of national significance	The EFSG require comprehensive due diligence studies are undertaken to inform site selection when a new school is developed. Ecologist report confirming no issues of concern present onsite. Or option for DA/SSD projects only - conditions showing site not subject to approval under the EPBC act	● DG03 - Site Selection	● Ecologist report ● CV of Ecologist ● Where applicable the project may use a statement acknowledging the length of time that the school has been in operation in lieu of providing the date of site purchase or option contract (previous condition of the site) and evidence of the site that existed at this time. (Approved in GBCA Request R-14474)	Ecologist	Statutory Planning	-	Y		Mandatory "Conditional Requirement" for all Green Star projects. Ecologist to confirm compliance with this credit. Campus-wide credit	High	
	24.2	Contamination and Hazardous Materials	1		Environmental site assessment concludes site is contaminated and is to be remediated prior to development	The EFSG require investigation of presence of contamination and hazardous materials and appropriate remediation measures.	● DG48 Hazardous materials	● Hazardous materials surveys ● Decontamination reports and clearance certificates	Environmental Services consultant / Architect		1	0	1	This Credit is only applicable if there is substantial recommendations for containment and/or removal made in the site contamination report. Architect to confirm. Campus-wide credit	High	04/07 SINSW Meeting - ESD to review contamination report to confirm if point is applicable.
Heat Island Effect	25.0	Heat Island Effect Reduction	1	Recognises projects that reduce the contribution of the project site to the 'heat island effect'.	75% of the total project site area comprises of elements to reduce heat island effect - vegetation, light colour roof, shading	The EFSG contain multiple provisions to this end: - Recommend use of lightly coloured roofs. - Minimum open space provision typically include landscaped areas - Tree preservation - PV installation (absorb heat)	● DG 27 - Roofing ● DG 66 - PV solar generator ● DG 90 - Landscape design	● Site drawing ● Roofing and hardscape materials data sheets showing SRI for products	Architect		1	1		Architect to ensure compliance with this credit. Campus-wide credit	Med	02/07 EJE - Light roof will be specified. PV's to be confirmed by Electrical Consultant. Landscape items to be referred to Landscape consultant 04/07 SINSW Meeting - JHA ESD to nominate site boundary to confirm if credits are achievable.
Emissions			**5**									**4**	**4**	**0**			
Stormwater	26.1	Stormwater Peak Discharge	1	Rewards projects that minimise peak storm water outflows from the site and reduce pollutants entering the public sewer infrastructure or other water bodies.	Post-development peak average recurrence interval (ARI) event discharge from site does not exceed pre-development	EFSGs require stormwater system to be integrated with relevant authority requirements, especially the local council and water authority.	● DG 2.4.3 - Stormwater Management ● DG95 Stormwater	● Civil/Hydraulics drawings and specifications ● Modelling/calculations report	Civil consultant		1	1		Civil consultant to ensure compliance with this credit. Campus-wide credit	Med	
	26.2	Stormwater Pollution Targets	1		Additional point awarded for stormwater site discharge to meet GBCA pollution reduction targets	EFSGs require stormwater treatment to minimise the transportation of toxicants to waterways and other offsite environments, and maintain the existing hydrological regimes. Local gov't may provide pre-determined infrastructure solutions that are 'deemed to comply' with the aim of this credit.		● Performance certifications for stormwater treatment devices	Civil consultant		1	1		Civil consultant to ensure compliance with this credit. Campus-wide credit	Med	
Light Pollution	27.0	Light Pollution to Neighbouring Bodies	Mandatory for this Credit	Rewards projects that minimise light pollution.	Requires that external luminaires meet Australian Standard to avoid light pollution to neighbouring development	EFSGs require external lights to be designed to prevent glare to nearby residents	● DG 63.08.01 - External Access Lighting	● As built drawings ● Luminaire schedule ● Calculation Plots	Electrical consultant		-	Y		Electrical consultant to ensure compliance with this credit. Campus-wide credit	High	04/07 JHA Elec - Lighting design will be designed to AS1680, AS1158 and AS4282
	27.1	Light Pollution to Night Sky	1		Requires that external luminaires do not emit light pollution to the night sky above a given benchmark	Not an EFSG requirement, however external lighting is minimal and luminaires typically meet the benchmark required.					1	1		Electrical consultant to ensure compliance with this credit. Campus-wide credit	Med	04/07 JHA Elec - Lighting design will be designed to AS1680, AS1158 and AS4282

Microbial Control	28.0	Legionella Impacts from Cooling Systems	1	Minimise the impacts associated with harmful microbes in building cooling systems.	● Building naturally ventilated, or ● Has waterless heat rejection system, or ● Has water-based heat rejection systems that includes measures for Legionella control and Risk Management	Typically waterless air conditioning systems are installed.	● DG 51.09 - Microbial Control	● Mechanical system specifications	Mechanical consultant		1	1		Mechanical consultant to confirm compliance with this credit.	High	04/07 JHA Mech - Air cooled systems are being designed
Innovation			**17**								**10**	**8**	**2**	Note: Maximum of 10 innovation points can be awarded.		
30A Innovative Technology or Process	30A	On-site Renewable Energy	2	The project meets the aims of an existing credit using a technology or process that is considered innovative in Australia or the world	Up to two (2) points may be awarded for installing on-site renewable energy sources. Partial points available - 1 point is 15% and 2 is 30%	EFSG requires all new buildings to have on-site solar	● DG66 - Photovoltaic Solar Power Generator Guidelines ● SG933 - Schedule of Photovoltaic Solar Power Generator	● Electrical specifications ● As built drawings ● Product data sheets	Electrical		1	1		Electrical consultant to confirm compliance with this credit. Campus-wide credit	High	04/07 JHA Elec - PV system will be documented to EFSG requirement
	30A	The Principal's Dashboard	1		Projects within the Schools Infrastructure NSW v1.3 Umbrella (GS-6039DA) may target one (1) point under credit criterion 30A Innovative Technology or Process for the Principal's Dashboard initiative.				School Principal		1	1		According to R-14537, projects within the Schools Infrastructure NSW v1.3 Umbrella (GS-6039DA) may target one (1) point under credit criterion 30A Innovative Technology or Process for the Principal's Dashboard initiative. Campus-wide credit	High	
30B Market Transformation	30B	DfMA	**1**	The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in Australia or in the world	Requires DfMA objectives to be achieved on the project, with the benefits of this approach presented through the SI NSW DfMA discussion paper, analysing the lifecycle impacts, greenhouse gas emissions and energy analysis of prefabricated reusable building modules.	**GBCA Response R-14427** has approved projects delivered by Schools Infrastructure NSW to target one (1) point under 30B Market Transformation in Green Star - Design & As Built for seeking to integrate sustainability in the approach 'Design for Manufacture and Assembly' (DfMA).	DFMA Guideline for Schools	• A short narrative outlining the purpose of the DfMA analysis • DfMA Guideline document outlining how sustainability principles can be embedded throughout prefabricated building processes/ component-based construction. • Evidence outlining how DfMA has been used on the project • Evidence outlining how the sustainability advice in the Guideline was integrated into the construction of component-based structures; addressing a minimum of 3 items from the guidelines for each project (items may be the same on multiple projects)	Architect		1	1		Under SINSW Umbrella may target 1 points according to R-14427 for seeking to integrate sustainability in the approach 'Design for Manufacture and Assembly' (DfMA). This is now referred to as Modern Methods of Construction (MMC) for SINSW projects. Architect to confirm if this is applicable for this project. Campus-wide credit	High	02/07 EJE - NLH is designed and setout to new Standard Templates and 7.5m x 9m grids. A kit of parts approach is expected to be adopted.
30C Improving on GS Benchmarks	30C	Stormwater Pollution Targets	**2**	The project has achieved full points in a Green Star credit and demonstrates a substantial improvement on the benchmark	Up to two (2) additional points may be awarded where projects can demonstrate achieving Pollution Reduction Targets from column B (1 point) or C (2 points) as stated in Table 26.1.	Projects generally will not be able to achieve.			Civil Consultant		0		1	Civil consultant to advise if this credit is achievable. Campus-wide credit	Low	
30D Innovation Challenge	30D	Community Benefits	1	Encourages investment in infrastructure for use by the broader community, such as the incorporation of spaces that are publicly accessible.	Requires a needs analysis of the surrounding community and a strategy for how the project will provide social/community benefits and consult with the broader community on the proposed plan.	The GBCA response R-14478 has accepted the Department of Education's policy 'Community Use of School Facilities' and 'Share Our Spaces' program guide in lieu of the Needs Analysis Report.	● Community Use of School Facilities Policy ● Share Our Spaces program ● DC16.08 Community Use Facilities	● Community Use of School Facilities ● Share Our Spaces' program ● Confirmation of spaces accessible for community uses	Architect		1	1		Projects within the Schools Infrastructure NSW v1.3 Umbrella (GS-6039DA) may target one (1) point under Innovation Challenge- Community Benefits, using the Schools Infrastructure policy 'Community Use of School Facilities' and the 'Share Our Spaces' program guide in lieu of a Needs Analysis Report. Campus-wide credit	High	02/07 EJE - TBC and further discussed
	30D	Incorporation of Indigenous Design	1	Encourages the incorporation of Aboriginal and Torres Strait Islander participation in the design development of the projects and visibility throughout the project's life cycle using Indigenous Design and Planning principles	Project teams must demonstrate that the Australian Indigenous Design Charter guiding principles are incorporated in the design of the building.		GAO Designing with Country	Connecting to country engagement strategy Meeting minutes Design outcomes	Architect		1		1	Credit changed from not targeted to TBC base on comments during SINSW Meeting (04/07). Campus-wide credit	High	04/07 SINSW Meeting - APP noted due to the site location and significant indigenous residents in the school's catchment, project will aim to incorporate indigenous design during Phase 4- Design Development.
	30D	Integrating Healthy Environments	1	Supports high-performance, cost-effective and health-promoting project outcomes through an early analysis of the interrelationships among systems.	Requires an analysis of community health needs and to address those needs through implementation of adequate strategies	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. Refer **GBCA Response R-14476** - The GBCA have approved school projects to provide the Healthy Canteen Policy research report in lieu of a community analysis report.	● Healthy Canteen Strategy	● Healthy Canteen Strategy • Research report behind Healthy Canteen Policy. • A Letter of Commitment that the program will be implemented by the school. • Evidence demonstrating that this policy has/ will be implemented on the school under assessment.	School Principal		1	1		Projects within the Schools Infrastructure NSW v1.3 Umbrella (GS-6039P) may target one (1) point under Innovation Challenge- Integrating Healthy Environments, providing the Healthy Canteen Policy research report in lieu of a community analysis report. Campus-wide credit	High	
	30D	RAP	1	Encourages organisations to take formalised steps to provide opportunities for Aboriginal and Torres Strait Islander peoples.	A reconciliation action plan endorsed by Reconciliation Australia is required	The Department of Education has a RAP in place which the GBCA has confirmed can be used to target the innovation challenge through the frequently asked question **FAQ F-00101** The Individual project must demonstrate a relationship to, and a role in delivering, the action items within the organisational RAP. The actions within the DOE Rap cover four key areas: Relationships, Respect , Opportunities and Governance & Tracking Progress Individual Schools may seek to integrate a number of RAP targets within the design & construction of the project: ● Build internal and external relationships ● Investigate Aboriginal and Torres Strait Islander cultural learning and development ● Raise internal understanding of Aboriginal and Torres Strait Islander cultural protocols ● Investigate Aboriginal and Torres Strait Islander employment ● Investigate Aboriginal and Torres Strait Islander supplier diversity	●DOE Reconciliation Action Plan - Reflect ● GA NSW Designing with Country ● NSW Government Aboriginal Participation in Construction (APIC) Policy ● NSW Government Aboriginal Procurement Policy 2021	● Aboriginal community engagement or measures implemented in project ● Design Reports which detail how design principles celebrate indigenous cultural heritage ● Targets or strategies regarding engagement of Aboriginal and Torres Straight Islander individuals or organisations within the project team	Project Manager Architect Head Contractor		1	1		The DOE Reflect RAP was dated January 2019 – January 2020. The RAP currently in the process of being reviewed and updated to the next iteration. Organisation Reconciliation Action Plan (RAP) can be used to demonstrate compliance with this Innovation Challenge as per F-00101. Campus-wide credit	Med	02/07 EJE - TBC and further discussed
	30D	Universal Design	1	Encourages projects to provide safe, equitable and dignified access for persons with disabilities.	Require to develop and implement an accessibility plan based on a needs analysis	The EFSG contain extensive provisions to ensure universal design. Refer GBCA Response R-14538 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	Architect		1	1		Projects within the Schools Infrastructure NSW v1.3 Umbrella (GS-6039P) may target one (1) point under Innovation Challenge- Universal Design, providing the Education Facilities Sustainable Guidelines (EFSG) in lieu of a needs analysis report. Campus-wide credit	High	
30 E Global Sustainability	30E	Stakeholder Engagement Strategy [GSC 3.1] Community engagement	1	Recognises projects that develop and implement a comprehensive, project specific stakeholder engagement strategy early in the planning process.	The project has a Stakeholder Engagement Strategy prepared in accordance with specified requirements.	Extensive stakeholder engagement is undertaken for all capital projects via project reference groups (PRG), project control groups (PCG) and broader community consultation. Stakeholders needs and comments are assessed and responded.	● Project Governance Framework	● Service need report ● Education rationale ● PRG meeting minutes ● Business case report ● Community consultation strategy and materials ● Responses to community feedback	SINSW		1	1		Projects within the Schools Infrastructure NSW Umbrella project GS-6039DA may target one (1) point under 30E Global Sustainability for Green Star- Communities v1.1 credit 3.1 Stakeholder Engagement Strategy using the SINSW Community Communications Strategy. Campus-wide credit	High	
	30E	Design for Safety [GSC 15.1]	1	Recognises projects that take into consideration designing out crime principles.	Requires incorporation of CPTED principles	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	Architect		1		1	TQ yet to be submitted by SINSW Sustainability confirming requirements Campus-wide credit	High	

APPENDIX C – CLIMATE RISK INTERVENTIONS SCHEDULE

PROJECT:	Hunter River High School
REVISION:	Phase 3 (Schematic Design) - Rev C
AUTHOR:	Lawrence Yu

Climate Risks	Climate Risk Interventions	Responsible Parties	Responsible Parties Comments/Confirmations
Sea Level Rise Long term changes to coastal processes (e.g. erosion / accretion)	Floor levels located above 1:100 year flooding event and general levels at 7m AHD.	Architect	The current 1% AEP flood level across the site is 4.7m AHD. Council has nominated a Flood Planning Level of 5.7m AHD for the site. Due to existing ground levels, the proposed new buildings will be set at FFL 7.30m AHD - 2.6m above the 1% AEP flood level. This provides significant contingency for climate change impacts to levels. It is noted that the proposed level is below the Probable Maximum Flood Level of 8.5m AHD. Due to this, we have recommended a flood evacuation policy be prepared for the school.
Atmospheric salt (salt spray) Long term increases of atmospheric salt due to changes in wind direction and speed	The site is located more than 12km from breaking surf, but 1km from the Hunter River which is an estuarine river. Selection of exterior materials to address the risk of salt spray & wind speed.	Architect	Materials appropriate to the site's proximity to salt spray and the site's particular atmospheric salt category will be selected during the detailed design documentation phase of the project, especially for building elements and fabric to be located externally.
Average annual rainfall Long term changes to frequency, intensity, and duration	Installation of water harvest equipment e.g. rainwater tanks - to capture a portion of rainwater for reuse, limiting spill across the site.	Hydraulics/Civil	A 5000L rainwater tank has been proposed to capture roof runoff from the proposed administration building. This is proposed for landscape re-use. This size has been provided based on Architectural advice.
Extreme rainfall events (flooding) Includes frequency and intensity, leads to changes in the intensity and frequency of flooding and to landslides and erosion, and to intensity of electrical storms	Prepare flood management plan to manage evacuation procedures. Identify max. flood levels to direct detailed design of power & other services.	SINSW Architect/Services Consultants	Flood consultant is currently being procured. Expecting to be on-board in the next four weeks (as of 25/08/2022). All building floor level are set well above the 1% AEP flood level/ Council Flood Planning Level
Drought Changes to frequency, intensity, and duration	Installation of water storage equipment e.g. rainwater tanks - to capture rainfall for reuse during drought periods and to conserve water. Installation of water flow equipment to minimise water usage and wastage e.g. flow restrictors, installation of taps with timed flow, use of non-portable water sources for irrigation & toilet flushing and the installation of water efficient appliances within the project. Recommend native and drought tolerant planting.	Hydraulics/Civil Architect Landscape Architect	A 5000L rainwater tank has been proposed to capture roof runoff from the proposed administration building. This is proposed for landscape re-use. This size has been provided based on Architectural advice. Landscape Architect The landscape design will incorporate local native and drought tolerant species in the plant selections, which will negate the need for irrigation and have a greater chance of establishment & survival.
Gales and extreme wind Winds in excess of 8 on the Beaufort scale	Selection of materials, fixtures, and fittings to address extreme wind speeds and reduce the amounts of enclosed exterior corridors to minimise wind tunnels through the site. Regularly inspect established trees to minimise risk of falling branches and trees during high wind and storm surges. Remove any branches and/or trees that pose a risk.	Architect SINSW	Materials, fixtures and fittings will be selected during the detailed design documentation phase that are suitable for the site's location. Design & installation of systems are subject to site specific wind loads. External covered walkways are proposed around the perimeter of new buildings. The arrangement and separation between new buildings are not expected to create problematic wind tunnelling effects. Part of school's regular, routine maintenance work carried out to keep school operational and safe. Consulting Arborists will be engaged by the AMU or School Principals to assist with completing the Annual Tree Inspection and Checklists and also for the provision of advice in respect to trees of concern.

Storms Increased frequency and intensity of snow, hail, dust, and lightning storms, storm surges, and storm tides	Utilise stormwater management practices to reduce stormwater pollution and erosion during rainfall & storm surges. Strategies includes incorporating water sensitive design practices into the project to promote filtration, utilising stormwater retention units, overflow pipes and swales to control water flow and capturing overflow to be utilised for irrigation. Regularly inspect established trees to minimise risk of falling branches and tree during high wind and storm surges. Remove any branches and/or trees that propose a risk. Provide external gutters and leaf guards that overflow away from the building in the event of being blocked and cross falls to walkways.	Civil/Landscape Architect SINSW Architect	WSUD measures are in place within the proposed stormwater design. These include pit inlet filters, hydrosystem treatment tank system, rainwater tanks and infiltration disposal. Part of school's regular, routine maintenance work carried out to keep school operational and safe. Consulting Arborists will be engaged by the AMU or School Principals to assist with completing the Annual Tree Inspection and Checklists and also for the provision of advice in respect to trees of concern. All surfaces around buildings fall away from the building at a min 1% fall.
Bush fire risk Changes to Fire Danger Index	Selection of non-combustible materials. Maintain vegetation on site to limit fuel	Architect Landscape Architect/SINSW	A bushfire threat assessment will be undertaken where required by planning legislation. Materials, finishes and construction methods will be in accordance with the particular BAL (Bushfire Attack Level) construction standard. The Bushfire Threat Assessment and any required APZ's and vegetation management recommendations will determine the maintenance of vegetation on site.
Average temperatures Long term changes to average annual temperatures, including extreme temperature events and solar radiation	Selection of materials with reduced solar absorbency and good thermal performance to regulate room temperatures. Provisions for adequate insulation in walls and roofing. Undercover walkways to limit sun exposure. Retain trees to provide shade to buildings and student areas.	Architect Landscape Architect	Where possible, and in consideration of EFSG building fabric requirements, materials with reduced solar absorbance and good thermal performance will be incorporated into the detailed design documentation for the project., as well as appropriate thermal insulation and shading elements Where possible existing trees will be retained to areas around the school site to provide shade amenity for students and staff. Covered walkways are also proposed to connect with the main pedestrian pathways networks.