Fort Street Public School
Sustainable Development Report for SSDA

SSD 10340

Prepared by Cundall

For School Infrastructure NSW

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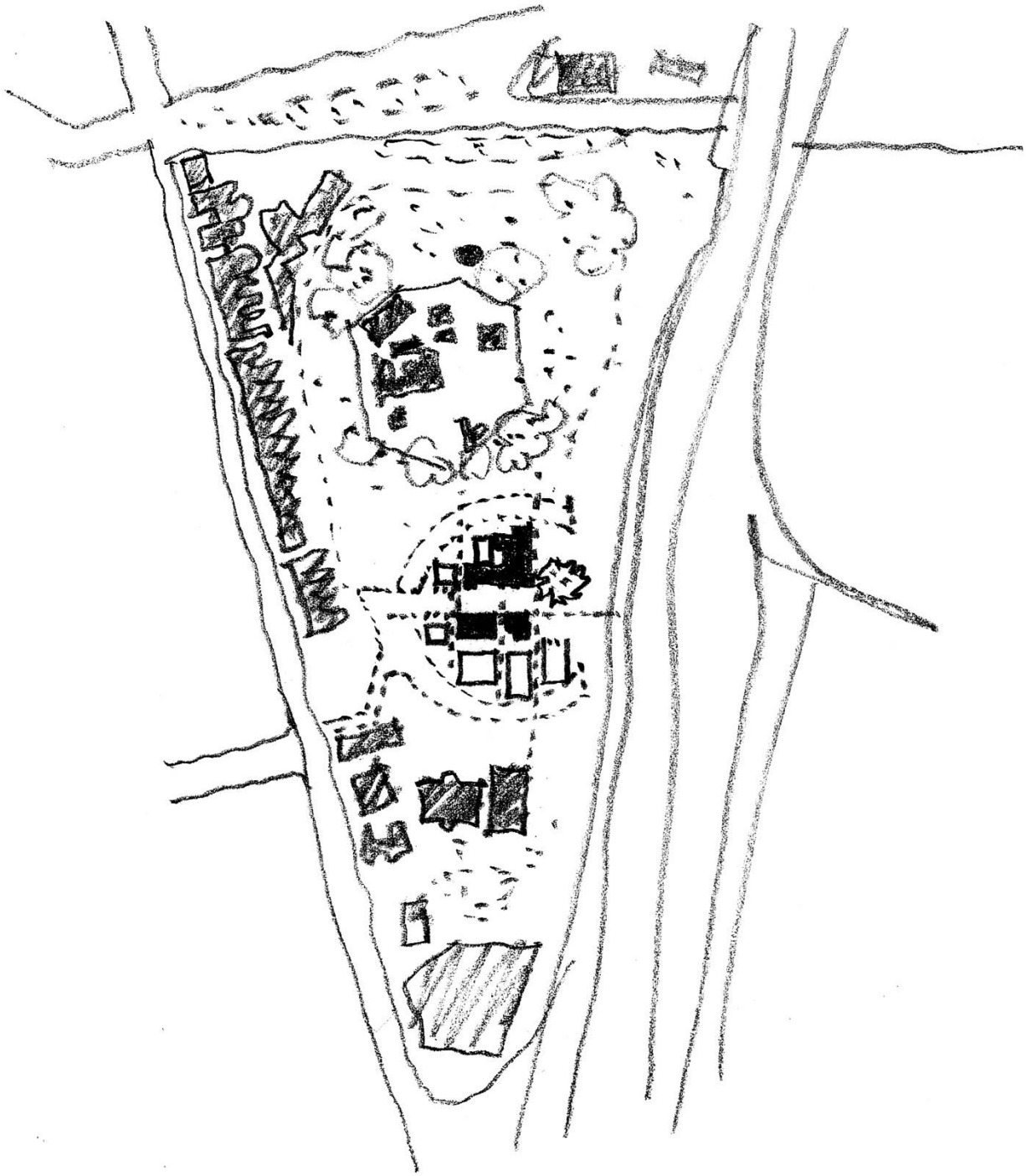

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Document Revision History

Revision Ref	Issue Date	Purpose of issue / description of revision
A	01 October 2019	Draft for comment
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Figure 1 Project site location

1.0 Sustainable Development Principles

1.1 Secretary's Environmental Assessment Requirements

This report supports a concept State Significant Development application (concept SSD Application) by addressing Section 8 - Ecologically Sustainable Development (ESD) of the Secretary's Environmental Assessment Requirements (SEARs), dated 1 March 2019, following requirements:

Secretary's Environmental Assessment Requirements	Response in Section
• Detail how ESD Principles (as defined in clause 7(4) of Schedule 2 of the EPA Regulation) will be incorporated in the design and ongoing operation phases of the development.	1.2 ESD Principles
• Include a framework for how the future development will be designed to consider and reflect national best practice sustainable building principles to improve environmental performance and reduce ecological impact. This should be based on a materiality assessment and include: o waste reduction design measures o future proofing o use of sustainable and low-carbon materials o energy and water efficient design (including water sensitive urban design) o and technology and use of renewable energy	2.0 Sustainability Framework Overview 3.0 Sustainability Framework
• Demonstrate how environmental design will be achieved in accordance with GANSW Environmental Design in Schools Manual	2.4 Government Architect New South Wales Environmental Design in Schools 3.0 Sustainability Framework
• Include preliminary consideration of building performance and mitigation of climate change, including consideration of Green Star Performance. Include an assessment against an accredited ESD rating system or an equivalent ESD performance. This should include a minimum rating scheme target level.	2.5 Green Star 3.0 Sustainability Framework
• Provide a statement regarding how the design of the future development is responsive to the CSIRO projected impacts of climate change, specifically: o hotter days and more frequent heatwave events o extended drought periods o more extreme rainfall events o gustier wind conditions o how these will inform landscape design, material selection and social equity aspects (respite/shelter areas). Relevant Policies and Guidelines • NSW and ACT Government Regional Climate Modelling (NARCliM) climate change projections.	2.6 CSIRO projected impacts of climate change

1.2 ESD Principles

Clause 7(4) of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*, defines the principles of ecologically sustainable development as follows:

*(a) the **precautionary principle**, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:*
  i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
  ii) an assessment of the risk-weighted consequences of various options,

*(b) **inter-generational equity**, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,*

*(c) **conservation of biological diversity and ecological integrity**, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,*

*(d) **improved valuation, pricing and incentive mechanisms**, namely, that environmental factors should be included in the valuation of assets and services, such as:*
  i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,
  ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,
  iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

1.2.1 Response to ESD Principles

- **Precautionary Principle** - The project shall present no threat of serious or irreversible environmental damage. The project will deliver ecological restoration and habitat creation to improve the site, implement climate change adaptation principles, and apply industry best practice ESD initiatives. An appropriate due diligence has been and will continue to be conducted along the development process to ensure the precautionary principle is satisfied. Due diligence includes conducting required studies to address all SEARs environmental requirements and all statutory provisions in all relevant planning instruments, including the Biodiversity Conservation Act 2016, relevant SEPPs and LEPs.

- **Inter-Generational Equity** - The buildings will provide healthy internal and external environments for teaching students today and in the future. The landscaping principles of ecological restoration and habitat creation will deliver benefit to current and future generations. The principle will be addressed by ensuring the development is done in accordance to the SINSW Educational Facilities Standards and Guidelines (EFSG) which encompass minimum requirements for healthy environments.

- **Conservation of Biological Diversity and Ecological Integrity** - A biodiversity assessment will be carried out as per SEARs key issue 18 for the site regardless being preliminarily identified as of low ecological value. The landscape design will enhance the biological diversity and ecological integrity of the site

- **Improved Valuation, Pricing and Incentive Mechanisms** - The design and operation of the school will reduce energy and water consumption and greenhouse gas emissions. Life Cycle Costing will be used throughout the design process to justify capital investment and reduce ongoing impacts.

2.0 Sustainability Framework Overview

This section provides information on how Sustainability Framework has been established and is being pursued in the design, construction and ongoing operation phases of the project, including a framework for the future development. The framework will be designed to consider and reflect national best practice sustainable building principles.

The following guidelines, regulations, standards and impacts were reviewed to establish sustainable goals:

- Educational Facilities Standards and Guidelines (EFSG),
- National Construction Code 2019 Building Code of Australia (NCC),
- NSW Government Resource Efficiency Policy (GREP),
- Government Architect NSW - Environmental Design Guide for Schools (GANSW)
- Green Star Design & As Built v1.3 - equivalent standard only (GSDAB)
- Commonwealth Scientific and Industrial Research Organisation (CSIRO) projected impacts of climate change
- NSW Climate Change Framework
- NSW School Assets Strategic Plan
- Sustainability strategy in Greater Sydney Commission District plans
- Commonwealth Department of Environment and Energy 'Sustainable Procurement Guide' for Sustainable Procurement of Services

2.1 Educational Facilities Standards and Guidelines

The Design Guide is a compilation of standards and guidelines that are required for the design of a school. It contains guidelines which exceed normal statutory requirements mentioned in the Building Code of Australia (BCA) and Australian Standards (AS), which are deemed appropriate for School Design by the NSW Department of Education.

The purpose of the EFSG Design Guide is as follows:

- To provide facilities planners with the hindsight and experience developed from completing similar educational projects to required standards and budget.
- To outline the general performance requirements of the various design elements that make up a school facility.
- To provide the minimum standards required of the technical components that make an element of school design.

The Fort Street Public School development will align with the DG02 Ecologically Sustainable Development guidelines as follows:

- 02.02 - NSW Government Resource Efficiency Policy – by implementing efficiency measures for energy, water, waste and air quality
- 02.03 - Energy Conservation – by efficient lighting design, implementing lighting and HVAC controls, installation of PV system on the roof, installing energy efficient appliances and equipment. The development will be designed and built so that energy consumption is at least 10% lower than if built to minimum compliance with National Construction Code requirements.
- 02.04 - Water Conservation – by installing water efficient appliances, roof water harvesting and stormwater management
- 02.05 - Sustainable Materials – by using low Volatile Organic Compound (VOC) paints, adhesives, sealants, carpets, low formaldehyde-emitting engineered wood products, and by using timber from sustainably managed regrowth forests. School will be designed, constructed and maintained, without using chemicals for termite and other pest control.

- 02.06 - Ecological Conservation – by connecting with nature through green landscape and the use of native low water use plants
- 02.07 - Waste Management – by the provision of space for the separation of waste and receptacles for multiple waste streams
- 02.08 - Climate Change Adaptation – by giving a consideration to how sites and school communities will be able to adaptively respond to climate change over time
- 2.09 - Sustainability Benchmarking – by designing and building the school to a 4 Star Green Star rating equivalency

2.2 National Construction Code 2019 Building Code of Australia

The NCC details the minimum necessary requirements for safety, health, amenity and sustainability in the design and construction of new buildings throughout Australia. NCC Building Code of Australia (BCA) Section J sets minimum energy performance requirements for all new developments, including the performance of building fabric, glazing thermal performance, air-conditioning, ventilation, lighting, power and hot water.

BCA Section J compliance can be demonstrated by complying with the Deemed-to-Satisfy (DTS) Provisions; otherwise, Performance Solution of the building design must be shown as compliant using an Assessment Method such as energy modelling in accordance with the JV3 section.

The Fort Street Public School design will comply with the NCC BCA 2019 Section J through aligning with the DTS Provisions for building fabrics or JV3 modelling.

2.3 NSW Government Resource Efficiency Policy

The aim of the NSW Government Resource Efficiency Policy (GREP), introduced in 2014, is to reduce the NSW Government's operating costs and lead by example in increasing the efficiency of its resource use. The policy contributes to the Premier's Priorities and the State Priorities and delivers commitments under the NSW Climate Change Policy Framework and the State Infrastructure Strategy.

The policy ensures NSW Government agencies, like schools, meet the challenge of rising costs for energy, water, clean air and waste management through a set of principles in five categories: energy, water, waste, clan air, monitoring and reporting.

This policy applies to all general government sector agencies, however for agencies with fewer than 100 employees, the implementation of and reporting on this policy is voluntary.

The Fort Street Public School development design will align with the following:

- Energy – by implementing energy efficiency measures to ensure the school have energy-efficient buildings, appliances and equipment, and make use of renewable energy through solar panels
- Water – by implementing water efficiency measures to ensure the school have water-efficient buildings and appliances, and continually improve their water efficiency
- Waste – by ensuring the school is aware of the waste they produce, and continually improve their waste efficiency
- Clean air – by using low-VOC materials

2.4 Government Architect New South Wales Environmental Design in Schools

The Environmental Design in Schools manual guide was prepared by the NSW Government Architect (GANSW) in collaboration with Schools Infrastructure NSW (SINSW) to provide a holistic approach to environmental design. It was developed as an accessible and practical guide to engage and enthuse school communities to make sustainable interventions in the building and operating of their schools.

The manual demonstrates how schools can incorporate environmental design principles and passive design strategies by addressing Air, Comfort, Light, Nosie, Water, Energy, Landscape and Materials.

The Fort Street Public School development design will align with the following design strategies:

- Air – by provision of good air quality that can improve student wellbeing
- Comfort – by designing good learning spaces comfortable for all staff, students and visitors
- Light – by providing an access to daylight that can minimise electricity use
- Noise – by providing appropriate acoustic conditions in learning spaces, where applicable
- Water – by water efficiency measures and promoting awareness of the importance of water conservation
- Landscape – by promoting biodiversity through caring for native, local ecosystem
- Materials – by using durable, robust materials that last a long time

2.5 Green Star

Green Star, developed and administered by the Green Building Council of Australia (GBCA), is a set of rating tools that deliver independent verification of sustainable outcomes throughout the life cycle of the built environment.

The GBCA's mission is to "*lead the sustainable transformation of the built environment*" and it aims to achieve this by encouraging practices that:

- Reduce the impact of climate change
- Enhance the health and quality of life of inhabitants and the sustainability of the built environment
- Restore and protect the planet's biodiversity and ecosystems
- Ensure the ongoing optimum operational performance of buildings
- Contribute to market transformation and a sustainable economy

Green Star - Design & As Built scheme assesses the sustainability outcomes from the design and construction of new buildings or major refurbishments and rates them on a scale from 4 (Best Practice) to 6 Stars (World Leadership).

Green Star Design & As Built rating tool includes requirements across the following nine holistic impact categories:

- Management - Aims to encourage and reward the adoption of practices and processes that support best practice sustainability outcomes throughout the different phases of a project's design, construction and ongoing operation.
- Indoor Environment Quality - Aims to encourage and reward initiatives that enhance the comfort and well-being of occupants. The credits within this category address issues such as air quality, thermal comfort and acoustic comfort.
- Energy - Aims to reward projects that are designed and constructed to reduce overall greenhouse emissions from operations by addressing energy demand reduction, use efficiency and generation from alternative sources.
- Transport - Aims to reward projects that facilitate a reduction on the dependency of private car use as an important means of reducing overall greenhouse gas emissions, as well as to encourage the provision of alternative forms of transportation.

- Water - Aims to encourage and reward initiatives that reduce the consumption of potable water through measures such as the incorporation of water efficient fixtures and building systems and water re-use.
- Materials - Aims to address the consumption of resources for the project, by encouraging the selection of low-impact materials.
- Land Use and Ecology - Aims to reduce the negative impacts on sites' ecological value as a result of urban development and reward projects that minimise harm and enhance the quality of local ecology.
- Emissions - Aims to assess the environmental impacts of 'point source' pollution generated by projects and reduce their effects on the atmosphere, watercourse and native animals.
- Innovation - Aims to recognise the implementation of innovative practices, processes and strategies that promote sustainability in the built environment.

2.5.1 Green Star equivalency approach

Fort Street Public School will be developed and constructed to a standard equivalent to a 4 Star Green Star Design & As Built v1.3 rating - Industry Best Practice, but formal GBCA full certification will not be sought.

Full certification is not sought due to the cost and administration of an official rating outweighing the benefit given the EFSG guidelines and SINSW requirements are already achieving a significant environmental improvement for the school. Independent verification will be undertaken to ensure that all mandatory ESD requirements within EFSG have been addressed and that the development achieves Industry Best Practice equivalency. As such the unofficial approach that will include a reduced set of documentation and self-certification process to achieve an equivalent and similar environmental outcome to a 4 Star Green Star project.

A Preliminary Green Star Pathway for the project is provided showing the targeted credits. As the design develops, these may be modified but still maintain a minimum score of 45 points - equivalent to 4 Star rating.

The table below shows 45 Points that are initially targeted for 4 Star Green Star equivalency. The exact credits will be adapted and adjusted during the design development so the project will need flexibility to change these credits whilst maintaining the overall target of 45 points and 4 Star Green Star equivalency in accordance with the EFSG standards.

Table 1 Gren Star Targeted Credits

Credit Code	Credit Category	Points Available	Points Targeted
	Management		
1	Green Star Accredited Professional	1	1
2	Commissioning and Tuning	4	2
3	Adaptation and Resilience	2	2
4	Building Information	1	1
5	Commitment to Performance	2	1
6	Metering and Monitoring	1	1
7	Responsible Building Practices	2	2
8	Operational Waste	1	1
	Indoor Environment Quality		
9	Indoor Air Quality	4	3
10	Acoustic Comfort	3	2
11	Lighting Comfort	3	2
12	Visual Comfort	3	
13	Indoor Pollutants	2	2
14	Thermal Comfort	2	1
	Energy		
15	Greenhouse Gas Emissions NCC 2019	20	2
16	Peak Electricity Demand Reduction	2	
	Transport		
17	Sustainable Transport	10	2
	Water		
18	Potable Water	12	5

	Materials		
19	Life Cycle Impacts	7	1
20	Responsible Building Materials	3	2
21	Sustainable Products	3	
22	Construction and Demolition Waste	1	1
	Land Use & Ecology		
23	Ecological Value	3	
24	Sustainable Sites	2	2
25	Heat Island Effect	1	
	Emissions		
26	Stormwater	2	2
27	Light Pollution	1	1
28	Microbial Control	1	1
29	Refrigerant Impacts	1	
	Innovation		
30	Community Benefits (Sharing School Facilities) Integrating Healthy Environments (School Canteen) Reconciliation Action Plan Universal design (Access for People with Disabilities) Green Cleaning Low VOC paints Powered by Renewables (optional) Amenity Space (optional) Digital Infrastructure (optional)	10	6
	Total	**110**	**45**

2.6 CSIRO projected impacts of climate change

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) is an Australian Government corporate entity, constituted by and operated under the provisions of the Science and Industry Research Act 1949.

CSIRO informs on Australia's national future climate projections indicating that over coming decades Australia will experience:

- Further increase in temperatures, with more extremely hot days and fewer extremely cool days
- Ongoing sea level rise
- Further warming and acidification of the oceans around Australia
- More frequent, extensive, intense and longer-lasting marine heatwaves, suggesting in turn more frequent and severe bleaching events on the Great Barrier Reef, and potentially the loss of many types of coral throughout the tropical reef systems of Australia and globally
- A decrease in cool-season rainfall across many regions of southern Australia, with more time spent in drought
- More intense heavy rainfall throughout Australia, particularly for short-duration extreme rainfall events
- An increase in the number of high fire weather danger days and a longer fire season for southern and eastern Australia
- Fewer tropical cyclones, but a greater proportion of high-intensity storms, with ongoing large variations from year to year

An assessment of climate change scenarios and impacts on the project will be undertaken using at least two timescales relevant to the project lifespan. CSIRO or NSW Government projections will be used.

The assessment will consider direct and indirect environmental, social and economic effects and impacts of changes in temperature, precipitation, relative humidity, wind speed, and sea level, and changes in the occurrence of heatwaves, drought, flood, storms, cyclones and bushfires.

Any risk items identified as 'high' or 'extreme' will be addressed by specific design responses, actions and responsibilities.

The design of the Fort Street Public School development will response to the CSIRO projected impacts of climate change, specifically:

- hotter days and more frequent heatwave events
- extended drought periods
- more extreme rainfall events
- gustier wind conditions

Findings on the above will inform landscape design, material selection and social equity aspects (respite/shelter areas).

3.0 Sustainability Framework

The proposed development will address all relevant Sustainability Initiatives for its design, construction and ongoing operation. A Sustainability Framework was created to outline the best initiatives in nine key impact categories:

- Energy and emissions
- Water
- Resource and materials
- Biodiversity
- Improved quality of life
- Life-long learning
- Clean water and sanitation
- Economic growth and job opportunities
- Inclusive environment

The following initiatives and measures will be reviewed and implemented, where applicable by the Design Team and the School, in order to minimise consumption of resources, especially energy and water, and ensure delivery of an ecologically sustainable development.

This sustainability framework will inform design, construction and operational stages of the development. An integrated design approach will be preferred for the incorporation of ESD measures, with input from the ESD consultant from early planning through to construction phases.

Implementation of ESD measures will be verified by an independent ESD consultant against this framework and the ESD requirements within the EFSG. This process will ensure the development incorporates Australian best practice sustainability initiatives.

Energy and Emissions

- Efficient heating, ventilation and cooling - common area automated control, economiser on an air-conditioning (using outside air in active and mixed mode), will be provided where applicable
- Air pollution will be limited through selection of refrigerants with the low ozone depletion potential and global warming potential, or no refrigerants will be used
- Energy efficient electrical appliances and equipment will be specified (GREP-E3)
- Energy efficient lighting - Energy efficient LED and fluorescent lighting with lighting control system including timers, photocells and dimming
- Incorporating passive design measures to minimise energy consumption (e.g. shading, blinds)
- High-performance double-glazing windows in most conditioned spaces.
- High-performance thermal insulation for new or major refurbished building fabric
- Lighting and HVAC controls - Building Management System and smart controls to monitor, control, and optimise energy usage at the operational stage
- Metering and monitoring system will be provided for energy
- Building Management System to monitor, control, and optimise energy usage at the operational stage
- Renewable energy generation - Use of renewable energy by solar panels installation on the roof (GREP-E5)
- Comprehensive operations and maintenance information will be developed and provided to facilities management team
- Bicycle parking and showers for staff, will be provided to promote sustainable transport modes
- Limited car parking spaces to encourage use of public transport
- External lighting designed to reduce light pollution of a night sky
- Noise pollution will be reduced through acoustic insulation and/or selection of building services systems based on their acoustic performance

Water

- Water efficient appliances and fittings - Efficient fittings and fixtures with high Water Efficiency Labelling and Standards (WELS) rating, and/or sensor operated taps (GREP-W3)
- Tank storage / roof water harvesting - Rainwater harvesting to be used for landscape irrigation
- Metering and monitoring system will be provided for water
- Building Management System to monitor, control, and optimise water usage at the operational stage
- Landscaping to be design as a xeriscape garden, otherwise designed to reduce the consumption of potable water
- Fire protection system to be design as a closed loop with water recirculation during testing
- Stormwater management - Passive stormwater management through water sensitive urban design principles, including permeable pavements, vegetated filter strips and bioretention areas, where possible

Resources and Materials

- Building materials will be selected considering the following qualities: durability, responsible sourcing, sustainable supply chain, Low Volatile Organic Content (VOC), low formaldehyde emissions, low-carbon materials
- Whole-of-life analysis will be undertaken and materials with low embodied carbon will be prioritised where possible
- Construction materials and products life cycle impact will be addressed by minimising Portland cement content and using crushed slag aggregate or another alternative material for the concrete structure where feasible.
- Building's steel will be sourced from a Responsible Steel Maker and will be produced using energy-reducing processed in its manufacture
- Minimise use of non-renewable resources - Timber, if used, will be certified by a forest certification scheme (FSC or PERFC) or will be from a reused or responsible source
- PVC Best Practice materials to be used across the project
- Where possible, materials and products will be procured locally
- Suitable durability and protection measures and/or designed features/solutions will be used to prevent damage to vulnerable parts of the internal and external building and landscaping elements
- Waste Management Plan for the construction will aim to minimise, reuse and recycle construction materials
- Reuse and recycling- The minimisation of construction waste will be addressed in the design through efficient design and material selections avoiding unnecessary packaging, and assembly waste
- Provision of sorting - Operational Waste Management Plan initiatives will be reflected in the design of the building's facilities to provide adequate solutions for waste segregation and recycling
- Flexible and reconfigurable - reconfigurable methodology will be incorporated in designing classrooms and workspaces
- End-of-life repurposing, reusing and recycling of buildings and building materials will be considered for the project end-of-life

Biodiversity

- The use of green walls and indoor plants will be considered in the design
- Preservation of habitat - Landscaping will be designed to support indigenous flora, fauna and biodiversity
- Minimising use of pesticides - Applications of pesticides and herbicides are to be reduced to mitigate negative environmental impact
- Environmental impacts during construction will be managed by implementing a best practice environmental management plan

Resilience

- A Climate Adaptation Plan will be developed for the project
- Consideration will be given to appropriate solutions to be incorporated into design that specifically address all extreme and high risks resulting from climate change with regard hotter days and more frequent heatwave events, extended drought periods, more extreme rainfall events and gustier wind conditions
- Identified required protection against storms, drought, flooding and blackouts will be addressed by the design

Improved Quality of Life

- Planting of food - Provision of a garden with on-site food production with additional educational purposes will be considered for the school development
- Healthy lifestyle and well-being - Active promotion and advertisement of healthier food options will be considered where applicable within the school development
- Education on healthy and balanced diet will take place for school students considering vegan or vegetarian cooking classes
- Improve nutrition - canteen will provide healthy options for school students
- Promote physical activity – School will promote physical activity and active living through the design of open spaces
- Safe access for walking and cycling to and from campus will be provided
- Provision of Out of School Hours (OOSH) - Assist the school in providing safe, stimulating and supportive environment during OOSH to meets the needs of working and non-working parents.
- Ventilation systems to be designed to mitigate outdoor air pollutants and for ease of maintenance and cleaning, and cleaned prior to occupation and use, where required
- Efficient heating, ventilating and air-conditioning (HVAC) system to assure high level of thermal comfort
- Provisions of outside air flow rates above the minimum regulatory requirements will be considered
- Provision of good acoustic conditions through appropriate HVAC design and acoustic treatment, where required
- Lighting fixtures will provide good colour quality and equipped with high frequency ballasts and high-Intensity discharge, where relevant
- Glare control through selected systems and devices, blinds, screen and fixed devices, where required
- Maximising areas with adequate daylight and views
- Connection to nature will be considered through appropriate measures like green walls or interior plants at the office component
- Relaxation zones, outdoor comfort & shelter initiatives will be incorporated across the development
- Opportunities to assist the school on their mental health and well-being education/programs through the design of spaces

Life-long Learning

- Educational programs to inform on sustainability initiatives delivered on the project will be available for students and parents and community
- Monitoring, reporting and educating on energy, water, waste and air emissions (GREP-R1) will be provided to use building as a learning device
- Exposed building services will be labelled and/or coloured for student's awareness and learning
- Additional learning - Students will be encouraged to participate in recycling programs through available educational campaigns, and introduction of recycling hub (e.g. recycling single-use plastics)
- Flexible spaces will be provided to be used by local community for various civic engagement
- Collaborative spaces will be provided to enhance learning and communal environment

Clean Water and Sanitation

- Safe and inclusive sanitation - accessibility to clean, fresh water for safe drinking and cooking will be ensured
- Design will promote hygiene and sanitation
- Exposure to allergens pathogens and hazardous chemical will be minimised by applying green cleaning products
- Water bubblers and taps will be provided to encourage water drinking and minimise plastic bottle waste

Economic Growth and Job Opportunities

- Engagement with local organisations and individuals to foster economic growth within surrounding community will be considered by the school
- Materials will be sourced locally to support local suppliers and companies, where possible
- Diverse and inclusive employment opportunities will be promoted to enhance workforce representation
- Aboriginal and Torres Strait Islander employment initiatives to improve the employment quality of the indigenous population will be provided where possible

Inclusive environments

- Design will include solutions for accessibility and comfortability, allowing to be used by people of all ages, genders, abilities, and backgrounds
- Interactive outputs will be developed to accommodate all needs of all potential users; for anyone with disability and/or is facing any barriers (e.g. Braille signage, audio in elevators)
- Indigenous heritage and community recognition, protection and conservation will be provided in all operations
- Inclusion of Aboriginal and Torres Strait Islander peoples by encouraging involvement of Aboriginal and Torres Strait Islander communities

The following Table provides a holistic Sustainability Framework for the Fort Street Public School redevelopment:

Table 2 Sustainability Framework for the Fort Street Public School

Impact	Objective	Alignment with EFSG DG02 ESD	Alignment with Government Architect NSW Environmental Design	Relevant Green Star Design & As-Built credits for equivalency	Strategies / Sustainability Initiatives
Life-long Learning	Educational approach that aims to develop students, schools and communities with the values and the motivation to take action for sustainability.		• Inspire the school community and the wider community and instill a sense of environmental responsibility, caring, and connection	Possible Innovation for learning opportunities Management • 4 Building Information • 5 Commitment to Performance	• Programs to inform on sustainability initiatives delivered on the project • Diverse educational programs available for students and parents • A digital Sustainability Awareness campaign • Monitoring, reporting and educating on energy, water, waste and air emissions (GREP-R1) – display data to students • Exposed building services, colour coding for students awareness and learning • Community interaction – naming, art provision, exhibition space • Event spaces for community use
Energy and Emissions	Making buildings and infrastructure energy efficient and supplying all energy with renewables. Reducing the need to travel and encouraging walking, cycling and low carbon transport. Minimising air, noise, land, water and night sky pollution.	NSW government resource efficiency policy 02.02 Energy Conservation 02.03 • 2.3.2 Lighting and HVAC Controls (DG65 Lighting, DG65.03 Automatic Lighting Control) • 2.3.2 Energy Efficient Appliances and equipment • 2.3.4 Renewable Energy Generation (DG66 Photovoltaic Solar Power Generator)	Energy • Passive design • Simple strategies • Reducing need for artificial light • Solar design Noise Active transport	Energy • 15 Greenhouse Gas Emissions • 16 Peak Electricity Demand Reduction Management • 2 Commissioning and Tuning • 6 Metering and Monitoring Transport • 17 Sustainable Transport Emissions • 26 Stormwater • 27 Light Pollution • 28 Microbial Control	• Passive design including building shape, orientation, daylighting, insulation and thermal mass • Façade retrofits • Heat recovery ventilation • Energy efficient lighting • Energy efficient electrical appliances and equipment (GREP-E3) • Smart controls • Monitor, set targets and reduce energy use • Bicycle parking and showers for staff • Safe access for walking & cycling to and from campus • Reduce air pollution • Reduce noise pollution • Reduce night sky pollution via lighting design and control

	**Water**	Using water efficiently, protecting local water resources and reducing flooding, drought and water pollution.	Water Conservation 02.04 • 2.4.1 Water efficient appliances • 2.4.2 Roof water harvesting and tank storage (DG53 Water) • 2.4.3 Stormwater Management	Water • Responsible water usage • Water-efficient • design	Water • 18 Potable Water Emissions Management • 2 Commissioning and Tuning • 6 Metering and Monitoring Emissions • 26 Stormwater	• Low flow fittings • Rainwater harvesting and reuse • Passive stormwater treatment • System controls and sensors • Water metering • Minimal irrigation • Water efficient appliances (GREP-W3) • Monitor, set targets and reduce water use (GREP-W1) • Provision of water bubblers
	**Resources and Materials**	Using materials from sustainable sources, applying circular economy principles and prioritising products with transparent, ethical supply chains in a whole-of-life approach. Reducing consumption and re-using and recycling to maximise diversion from landfill.	Sustainable Materials 2.5 • 2.5.1 Timber • 2.5.2 Low VOC • 2.5.3 Pesticides • DG01 Whole of Life Waste Management 2.7	Materials • Building materials from sustainable resources	Indoor Environment Quality • 13 Indoor Pollutants Materials • 19 Prescriptive Pathway - Life Cycle Impacts • 20 Responsible Building Materials • 21 Sustainable Products • 22 Construction and Demolition Waste Management • 8 Operational Waste	• Limit-VOC materials (A2) • Formaldehyde-free materials • Recycled content for concrete and steel • Third party certification • FSC / PEFC Timber • Local procurement • Recycling hub • Specify durable products • Recycling and composting • Recycle single-use plastics • Reduce packaging • Compostable or biodegradable food containers • Waste Management Plan - set targets and reduce (P1) • Design for disassembly • Adaptive reuse of heritage buildings
	**Biodiversity**	Restore, preserve and protect land, biodiversity and natural capital for the benefit of people and wildlife.	Ecological Conservation 2.6 • DG90 Landscape Design	Landscape • Reduce heat island effect • improve environmental design	Land Use & Ecology • 23 Ecological Value • 24 Sustainable Sites • 25 Heat Island Effect Management	• Landscaping designed to support indigenous flora, fauna and biodiversity • Green walls and plants in classes • Conducting classes outside – engage students with nature • Stormwater retention and filtration

				• 7 Construction Environmental Management	
Resilience	Applying practical actions to manage risks from climate impacts, protecting communities and strengthening the resilience of the local economy.	Climate Change Adaptation 2.8		Management • 3 Adaptation and Resilience	• Coping with increasing extremes of heat, wind and rain • Protection against storms, drought, flooding and blackouts • Future proofing infrastructure
Improved Quality of Life	Encouraging active, social, meaningful lives and providing the buildings, infrastructure and spaces to support good health and wellbeing for all ages. Promoting sustainable humane farming and healthy diets high in local, seasonal organic food and vegetable protein.		Air Quality Comfort Light	Indoor Environment Quality • 9 Indoor Air Quality • 10 Acoustic Comfort • 11 Lighting Comfort • 12 Visual Comfort • 14 Thermal Comfort Innovation • 30 Green Cleaning	• High-quality indoor environment quality • Lighting for learning • Connection to nature - green walls • Outdoor comfort & shelter • Urban heat island effect • IEQ monitoring • Thermal comfort • Access to daylight and shading devices for glare control • Acoustic comfort • Garden with on-site food production • Set targets for local food sourcing • Active promotion and advertisement of healthier food options • Education on healthy and balanced diet • Canteen to provide healthy options • Vegan/vegetarian cooking classes • Active transport • Safe environment for OOSH • Mental health and well-being assistance Green cleaning policy
Clean Water and Sanitation	Ensuring access to safe drinking water and provide sanitation facilities, and to encourage hygiene at all levels	Water Conservation 02.04 • 2.4.1 Water efficient appliances	Water • Responsible water usage • Adopting water-sensitive strategies	Water • 18 Potable Water	• Provision of safe and accessible water • Sanitation and waste awareness design • Minimise use of harmful chemical products
Economic Growth and Job Opportunities	Promote sustainable and inclusive environment for economic growth, employment and decent work for all Improve the physical surroundings, community, and economy through productive and inclusive jobs			Materials • 21 Sustainable Products Innovation • Local procurement	• Involvement of local employment and organisations • Local resourcing • Diverse and inclusive employment • Aboriginal and Torres Strait employment

	**Inclusive Environments**	Nurturing local identity and heritage, empowering communities and promoting a culture of all in regard to age, gender, ability, and background		• Connecting with the place to assist schools to embrace diversity, cultural history and identity, including Aboriginal cultural heritage Heritage, character, and place • reinforce heritage improve school's appearance		• Accessibility and confortability in design • Interactive outputs to cater for all users • Indigenous heritage recogniton • Indigenous community involvement

Targets and Benchmarking:

1. **Educational Facilities Standards and Guidelines** (EFSG) https://efsg.det.nsw (Create an account to LOG-IN)
   Note: Design Team to review remaining EFSG guidelines, sections: Whole of Life, Design, Fabric, Openings, Finishes, Services, Fittings, Site, Colour Schemes.
2. **The Government Architect NSW (GANSW) Environmental Design in Schools** https://www.governmentarchitect.nsw.gov.au/resources/ga/media/files/ga/manuals-and-guides/better-placed-environmental-design-in-schools-2018-10-29.pdf
3. **NSW Government Resource Efficiency Policy** https://www.environment.nsw.gov.au/research-and-publications/publications-search/nsw-government-resource-efficiency-policy
4. **National Construction Code** (NCC) Section J on energy efficiency
5. **Green Building Council of Australia - Green Star Design & As Built v1.3** – equivalency only. Formal GBCA full certification will not be sought

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