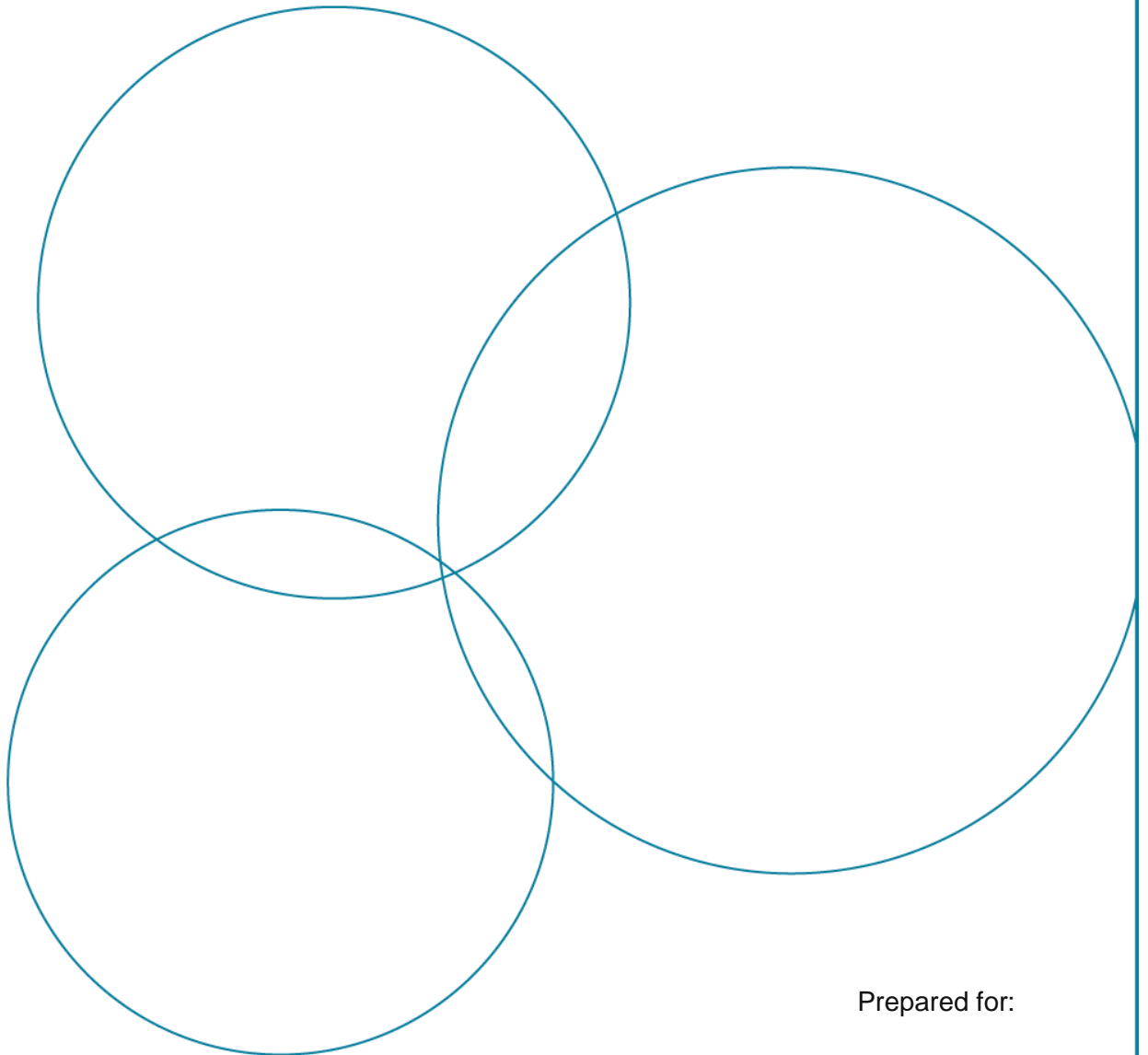


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ESD Strategy for SSD Application

Sts Peter & Paul Primary School



Prepared for:

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Executive Summary

This report describes how the Sts Peter & Paul Primary School will achieve the ecologically sustainable development (ESD) requirements set out in clause 7 of the Secretary's Environmental Assessment Requirements (SEARs) dated 13 April 2018 (SSD 9210).

1. The ESD principles set out in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulations 2000 – the precautionary principle, inter-generational equity, conservation of biological diversity and ecological integrity, and improved valuation, pricing and incentive mechanisms – are all achieved through a range of design and operation initiatives described in this report.
2. The development will be benchmarked against the criteria required to achieve a 4 star Green Star Design & As Built v1.2 rating, which represents Industry Best Practice for sustainable primary school design.
3. A range of measures will be implemented to minimise the consumption of energy, water and resources, and to enhance health & wellbeing and biodiversity.

1 Introduction

1.1 The Project

The project comprises the following:

- A new co-education Primary School, including Library, Administration, Multi-purpose Hall, COLAs and amenities. The school will ultimately be a 3-stream school from Kindergarten to Year 6 of approximately 630 pupils and 35 staff.
- A multi-use central play/events area, various forecourts/paved areas and sports fields/courts.
- An on-grade car parking and drop-off / pick-up area to accommodate all car parking as required on this site (min. 35 staff car parking spaces).

1.2 ESD Planning Requirements

This document has been prepared to support the State Significant Development (SSD) application prepared on behalf of Assyrian Schools Limited for the land at 17-19 Kosovich Place, Cecil Park.

Clause 7 of the Secretary's Environmental Assessment Requirements (SEARs) dated 13 April 2018 includes the following requirements for ecologically sustainable development (ESD):

- *Detail how ESD principles (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) will be incorporated in the design and ongoing operation phases of the development;*
- *Demonstrate that the development has been assessed against a suitably accredited rating scheme to meet industry best practice;*
- *Include a description of the measures that would be implemented to minimise consumption of resources, water (including water sensitive urban design) and energy.*

2 ESD Principles

2.1 EPAR 2000 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.

2.2 Precautionary Principle

The project presents 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.

2.3 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.

2.4 Conservation of Biological Diversity and Ecological Integrity

The site is currently of low ecological value. The landscape design will enhance the biological diversity and ecological integrity of the site.

2.5 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.

3 Accredited Rating Scheme

The school will be developed and constructed to a standard equivalent to a 4 star Green Star Design & As Built v1.2 rating. The Green Building Council of Australia defines 4 stars as representing Industry Best Practice in sustainable design and construction.

A preliminary scorecard can be found in the Appendix showing the credits that will be targeted in the design. As the design develops, these may be modified however sufficient credits will always be targeted to achieve a minimum score of 45 points.

4 Recommended ESD Initiatives

The school will implement a range of measures consistent with the principles of ecologically sustainable development (ESD). These are summarised below:

4.1 Energy & Greenhouse Gas Emissions

- Passive Design
 - Well-insulated and sealed building fabric to exceed NCC Section J
 - Shading to glazing through built-form and landscaping
 - High performance glazing
 - Natural ventilation
- Energy Efficiency & Control
 - Exceed energy efficiency requirements of NCC Section J
 - LED lighting with occupancy sensors
 - Air source heat pumps for heating and cooling (with occupancy sensors)
 - Energy efficient fans, equipment and appliances
 - Educate staff and students on methods to reduce energy consumption
 - Out of hours use – zoning and control to suit
 - Minimise landscape lighting use generally - particularly for non-essential areas (respect need for darkness)
- Renewable Energy
 - Photovoltaic panels (area to be confirmed)

4.2 Water

- Water efficient fixtures and fittings
- Roof water collected and stored for landscape irrigation use
- Sewerage treated and used to irrigate sports field
- Plant numerous trees to intercept and slow stormwater runoff.
- OSD tanks
- Extensive area of site left undeveloped/ unpaved, providing good natural infiltration stormwater shed in 'sheet' form (i.e. surcharge pits and spreaders to ovals)
- Gross Pollutant Traps (GPTs) to be provided where stormwater leaves roads, carpark.

4.3 Materials & Waste

- To minimise material consumption and waste, the school will be built in well-planned stages of permanent construction rather than utilising temporary demountable classrooms
- Prioritise recycled and low embodied energy materials
- Balance cut and fill on site to minimise importing or exporting fill
- Apply life cycle assessment principles during material selection
- Aluminium and steel furniture and fencing used to allow for easy recycling and durability.
- Decomposed granite pathways – to minimise concrete, allow infiltration and demarcate native restoration areas to minimise spread of weeds or exotics into riparian zone
- Educate students on good recycling principles
- Facilitate ease of separation of waste streams
- Implement Waste Minimisation Plan during construction.

4.4 Land & Nature

- Numerous trees and soft landscaping around buildings
- Plant natural and endemic species all along the riparian corridor - restore nature and habitat values.
- Carefully strip, collect and reuse all existing site topsoils and ameliorate onsite to achieve good growing media rather than import soils from off site
- Peripheral fields over-seeded with native grass species or hardy low water use grasses to move to a lower water use and native plants rather than imported species.
- Contaminated material (fill from offsite which included small asbestos pieces) to be removed
- Utilise a small area for food growing garden - composting, food production, education.

4.5 Health & Wellbeing

- Classrooms provide healthy learning environments:
 - Naturally ventilated – with potential mechanical ventilation boost
 - Passive design for thermal comfort
 - CO₂ sensors in classrooms
 - Daylight maximised
 - Access to views
 - Acoustically-designed interior learning spaces
- School grounds provide space for outdoor learning and promote regular physical activity
- Sports field for active engagement
- Low off-gassing materials.

4.6 Climate Risk & Adaptation

- Building located well above flood plain
- Bushfire management plan to be implemented
- Plant selection to be hardy species, suitable to position and climate to minimise maintenance inputs and potential unnecessary or early replacements.

5 Conclusion

The initiatives outlined in this report demonstrate how the proposed development can incorporate best practice ESD initiatives into its design, construction and ongoing operation. Through a combination of energy, water and other strategies, the project will exceed minimum requirements for ecologically sustainable development.

6 Appendix – Preliminary Green Star Scorecard

Green Star - Design & As Built Scorecard

Project:	Sts Peter & Paul Primary School
Targeted Rating:	4 Star - Best Practice

Core Points Available	Total Score Targeted
100	45.0

NA	CATEGORY / CREDIT	AIM OF THE CREDIT / SELECTION	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS TARGETED
Management					14	
	Green Star Accredited Professional	To recognise the appointment and active involvement of a Green Star Accredited Professional in order to ensure that the rating tool is applied effectively and as intended.	1.0	Accredited Professional	1	1
	Commissioning and Tuning	To encourage and recognise commissioning, handover and tuning initiatives that ensure all building services operate to their full potential.	2.0	Environmental Performance Targets	-	Complies
			2.1	Services and Maintainability Review	1	1
			2.2	Building Commissioning	1	1
			2.3	Building Systems Tuning	1	
			2.4	Independent Commissioning Agent	1	
	Adaptation and Resilience	To encourage and recognise projects that are resilient to the impacts of a changing climate and natural disasters.	3.1	Implementation of a Climate Adaptation Plan	2	2
	Building Information	To recognise the development and provision of building information that facilitates understanding of a building's systems, operation and maintenance requirements, and environmental targets to enable the optimised performance.	4.1	Building Information	1	1
	Commitment to Performance	To recognise practices that encourage building owners, building occupants and facilities management teams to set targets and monitor environmental performance in a collaborative way.	5.1	Environmental Building Performance	1	1
			5.2	End of Life Waste Performance	1	
	Metering and Monitoring	To recognise the implementation of effective energy and water metering and monitoring systems.	6.0	Metering	-	Complies
			6.1	Monitoring Systems	1	1
	Responsible Building Practices	To reward projects that use best practice formal environmental management procedures during construction.	7.0	Environmental Management Plan	-	
			7.1	Formalised Environmental Management System	1	
			7.2	High Quality Staff Support	1	
	Operational Waste	Prescriptive Pathway	8A	Performance Pathway - Specialist Plan	-	
			8B	Prescriptive Pathway - Facilities	1	1
Total					14	9

Indoor Environment Quality					17	
<input type="checkbox"/>	Indoor Air Quality	To recognise projects that provide high air quality to occupants.	9.1	Ventilation System Attributes	1	1
<input type="checkbox"/>			9.2	Provision of Outdoor Air	2	2
<input type="checkbox"/>			9.3	Exhaust or Elimination of Pollutants	1	1
<input type="checkbox"/>	Acoustic Comfort	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	10.1	Internal Noise Levels	1	
<input type="checkbox"/>			10.2	Reverberation	1	
<input type="checkbox"/>			10.3	Acoustic Separation	1	
			11.0	Minimum Lighting Comfort	-	Complies

<input type="checkbox"/>	Lighting Comfort	To encourage and recognise well-lit spaces that provide a high degree of comfort to users.	11.1	General Illuminance and Glare Reduction	1	1
<input type="checkbox"/>			11.2	Surface Illuminance	1	
<input type="checkbox"/>			11.3	Localised Lighting Control	1	
<input type="checkbox"/>	Visual Comfort	To recognise the delivery of well-lit spaces that provide high levels of visual comfort to building occupants.	12.0	Glare Reduction	-	Complies
<input type="checkbox"/>			12.1	Daylight	2	2
<input type="checkbox"/>			12.2	Views	1	1
<input type="checkbox"/>	Indoor Pollutants	To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.	13.1	Paints, Adhesives, Sealants and Carpets	1	1
<input type="checkbox"/>			13.2	Engineered Wood Products	1	1
<input type="checkbox"/>	Thermal Comfort	To encourage and recognise projects that achieve high levels of thermal comfort.	14.1	Thermal Comfort	1	
<input type="checkbox"/>			14.2	Advanced Thermal Comfort	1	
Total					17	10

Energy		22				
Greenhouse Gas Emissions	A. Prescriptive Pathway	15A.0	Conditional Requirement: Prescriptive Pathway	-		
		15A.1	Building Envelope	1		
		15A.2	Glazing	1		
		15A.3	Lighting	1	1	
		15A.4	Ventilation and Air-conditioning	1	1	
		15A.5	Domestic Hot Water Systems	1	1	
		15A.6	Accredited GreenPower	5		
		15B.0	Conditional Requirement: NatHERS Pathway	-		
		15B.1	NatHERS Pathway	-		
		15C.0	Conditional Requirement: BASIX Pathway	-		
		15C.1	BASIX Pathway	-		
		15D.0	Conditional Requirement: NABERS Pathway	-		
		15D.1	NABERS Energy Commitment Agreement Pathway	-		
		15E.0	Conditional Requirement: Reference Building Pathway	-		
		15E.1	Comparison to a Reference Building Pathway	-		
Peak Electricity Demand Reduction	Prescriptive Pathway	16A	Prescriptive Pathway - On-site Energy Generation	1	1	
		16B	Performance Pathway - Reference Building	-		
Total					11	4

Transport

10

<input type="checkbox"/> <input type="checkbox"/>	Sustainable Transport	Prescriptive Pathway	17A.1 Performance Pathway	0	
			17B.1 Access by Public Transport	3	
			17B.2 Reduced Car Parking Provision	1	
			17B.3 Low Emission Vehicle Infrastructure	1	
			17B.4 Active Transport Facilities	1	
			17B.5 Walkable Neighbourhoods	1	
Total			7	0	

Water		12			
<input type="checkbox"/> <input type="checkbox"/>	Potable Water	Prescriptive Pathway	18A.1 Potable Water - Performance Pathway	0	
			18B.1 Sanitary Fixture Efficiency	1	1
			18B.2 Rainwater Reuse	1	1
			18B.3 Heat Rejection	2	2
			18B.4 Landscape Irrigation	1	1
			18B.5 Fire System Test Water	1	
Total			6	5	

Materials		14			
<input type="checkbox"/> <input type="checkbox"/>	Life Cycle Impacts	Prescriptive Pathway - Life Cycle Impacts	19A.1 Comparative Life Cycle Assessment	0	
			19A.2 Additional Life Cycle Impact Reporting	4	
			19B.1 Concrete	3	3
			19B.2 Steel	1	1
			19B.3 Building Reuse	4	
			19B.4 Structural Timber	4	1
<input type="checkbox"/> <input type="checkbox"/>	Responsible Building Materials	To reward projects that include materials that are responsibly sourced or have a sustainable supply chain.	20.1 Structural and Reinforcing Steel	1	1
			20.2 Timber Products	1	1
			20.3 Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1
Sustainable Products	To encourage sustainability and transparency in product specification.	21.1 Product Transparency and Sustainability	3	3	
<input type="checkbox"/>	Construction and Demolition Waste	Fixed Benchmark	22A Fixed Benchmark	1	
			22B Percentage Benchmark	-	
Total			12	11	

Land Use & Ecology

6

Ecological Value	To reward projects that improve the ecological value of their site.	23.0	Endangered, Threatened or Vulnerable Species	-	
		23.1	Ecological Value	3	
Sustainable Sites	To reward projects that choose to develop sites that have limited ecological value, re-use previously developed land and remediate contaminate land.	24.0	Conditional Requirement	-	Complies
		24.1	Reuse of Land	1	
		24.2	Contamination and Hazardous Materials	1	1
Heat Island Effect	To encourage and recognise projects that reduce the contribution of the project site to the heat island effect.	25.0	Heat Island Effect Reduction	1	
Total				6	1

Emissions				5	
Stormwater	To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure.	26.1	Stormwater Peak Discharge	1	1
		26.2	Stormwater Pollution Targets	1	1
Light Pollution	To reward projects that minimise light pollution.	27.0	Light Pollution to Neighbouring Bodies	-	Complies
		27.1	Light Pollution to Night Sky	1	1
Microbial Control	To recognise projects that implement systems to minimise the impacts associated with harmful microbes in building systems.	28.0	Legionella Impacts from Cooling Systems	1	1
Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	29.0	Refrigerants Impacts	1	1
Total				5	5

Innovation				10	
Innovative Technology or Process	The project meets the aims of an existing credit using a technology or process that is considered innovative in Australia or the world.	30A	Innovative Technology or Process	10	
Market Transformation	The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in	30B	Market Transformation		
Improving on Green Star Benchmarks	The project has achieved full points in a Green Star credit and demonstrates a substantial improvement on the benchmark required to achieve full points.	30C	Improving on Green Star Benchmarks		
Innovation Challenge	Where the project addresses a sustainability issue not included within any of the Credits in the existing Green Star rating tools.	30D	Innovation Challenge		
Global Sustainability	Project teams may adopt an approved credit from a Global Green Building Rating tool that addresses a sustainability issue that is currently outside the scope of this Green Star	30E	Global Sustainability		
Total				10	0

TOTALS	AVAILABLE	TARGETED
CORE POINTS	100	45.0
CATEGORY PERCENTAGE SCORE		45.0
INNOVATION POINTS	10	0.0
TOTAL SCORE TARGETED		45.0