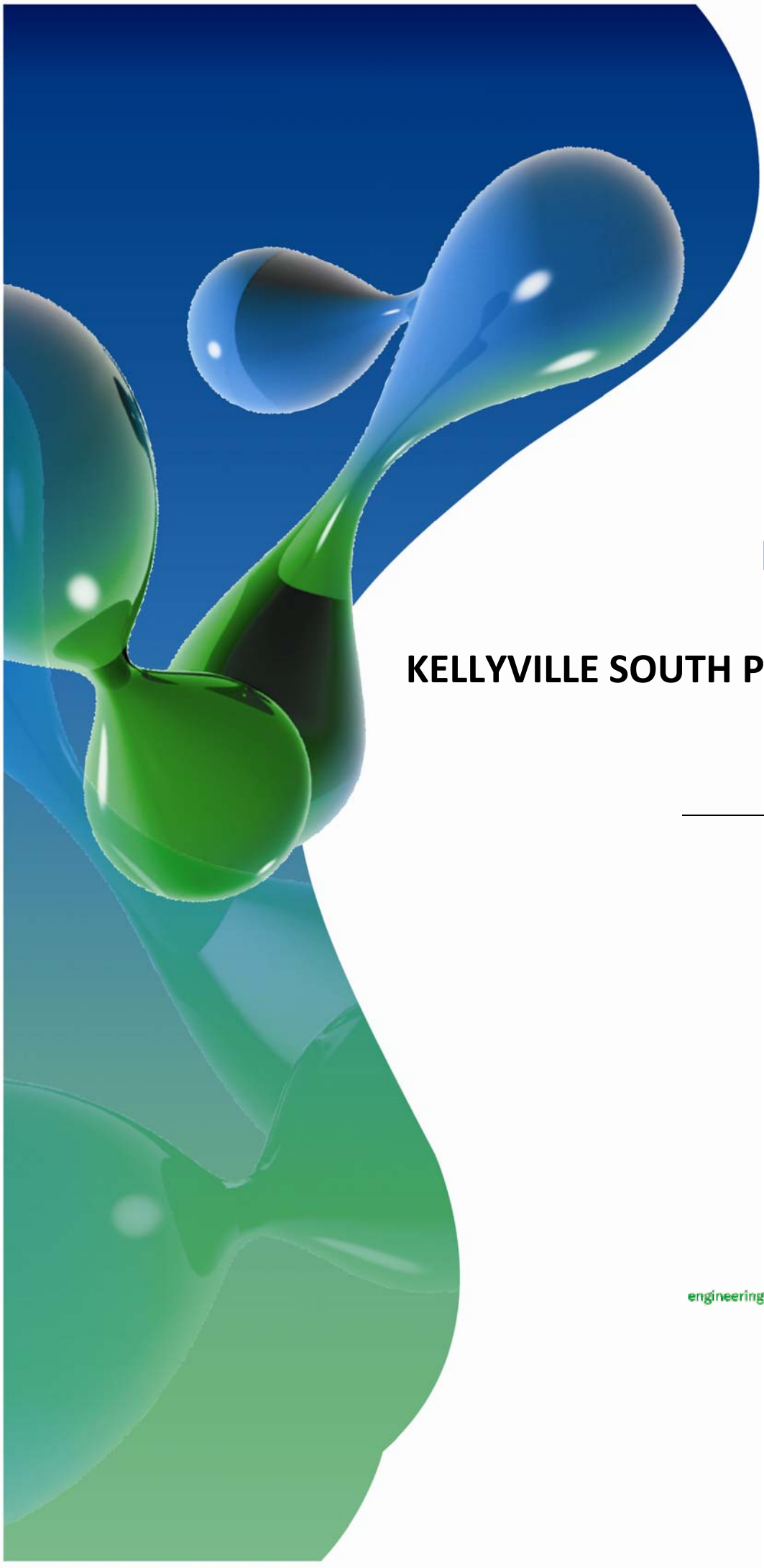

ESD REPORT

KELLYVILLE SOUTH PUBLIC SCHOOL

Kellyville, NSW

Report No: S.DOE-0103-R01

Report Date: 18/11/2016

Umow Lai

engineering sustainable environments

REPORT AUTHORISATION

PROJECT: Kellyville South Public School

Kellyville, NSW

Date	Rev	Comment	Prepared by	Checked by	Authorised by
18/11/16	A	Draft Issue	JAD / DCH	DCH	
5/12/16	B	Final Issue	JAD / DCH	DCH	PJ
7/12/16	C	Introduction updated	DCH	DCH	PJ

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1.0 INTRODUCTION

1.1 GENERAL

This ESD Report has been prepared by Umow Lai on behalf of the New South Wales Department of Education (the 'Applicant'). It accompanies an Environmental Impact Statement (EIS) prepared in support of State Significant Development Application SSD 16_7787 for the development of 'Kellyville South Public School' at Nos. 21-23 Fairway Drive, Kellyville (the 'site').

The purpose of this ESD Report is to outline the measures that have been implemented to minimise consumption of resources, energy and water, and to demonstrate that the project has been assessed against a suitable accredited rating scheme, as detailed within the EIS.

1.2 PROJECT DESCRIPTION

The site, Lot 11 DP 247442 and Lot 501 DP 1130020 is located within the Hills Shire Local Government Area at the Balmoral Road Release Area. The site is rectangular in shape, has a total area of 35,004m^2 and contains a 180m street frontage to Fairway Drive to the east.

Kellyville South Public School (the 'School') is proposed to facilitate up-to 1000 students to take enrolment pressure off surrounding primary schools exceeding student capacity. The primary school will contain high quality classrooms, collaborative learning spaces, open play spaces, sports courts and associated facilities.

1.3 REFERENCED STANDARDS

This report has been undertaken with reference to the following:

- Clause 7(4) Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulations)
- Green Building Council of Australia, Green Star Design & As-Built v1.1 Rating Tool

1.4 SOURCE DOCUMENTATION

Table 1 outlines a summary of the documentation used as the basis of this compliance analysis. Inputs in this report have been coordinated with all relevant consultants.

Discipline	Documentation Type	Issue	Date	Custodian
Architectural	Architectural Drawings	Preliminary	09/09/2016	TKD Architects
Ecology	Flora & Fauna Survey & Ecological Assessment	Final	23/4/16	UBM Ecological Consultants
Arboricultural	Impact Assessment Report	Final	4/16	Bluegum
Hazardous Materials	Report	Final	14/4/16	Hibbs & Associates
Structural & Civil	Specification	P1	29/8/16	Woolacotts
Environmental	Report – Pre Stage 2 Environmental Site Assessment	Final	02/05/2016	Environmental Investigation Services (EIS)

Table 1 *Summary of basis documentation*

1.5 LIMITATIONS OF THIS REPORT

Due care and skill has been exercised in the preparation of this report.

The purpose of this ESD Report is to outline the measures that have been implemented to minimise consumption of resources, energy and water, and to demonstrate that the project has been assessed against a suitable accredited rating scheme, as detailed within the EIS. It should be read in conjunction with the current project documentation and specific applications may vary during the design development of the project.

No responsibility or liability to any third party is accepted for any loss or damage arising out of the use of this report by any third party. Any third party wishing to act upon any material contained in this report should first contact Umow Lai for detailed advice which will take into account that party's particular requirements.

2.0 PRINCIPLES OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The followings section details how the proposed Kellyville South Public School incorporates the principles of ecologically sustainable development (ESD) in accordance with Clause 7(4) Schedule 2 of the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulations).

2.1 THE PRECAUTIONARY PRINCIPLE

*(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.

2.1.1 PROJECT RESPONSE

The precautionary principle has been adopted and all potential impacts have been considered and mitigated where a risk is present, as outlined in supporting ecological and environmental assessments and conclusions.

The design places particular emphasis on low energy demand through extensive day-lighting and natural ventilation, and therefore directly addresses Greenhouse Gas Emissions (GHG Emissions) and their impact on climate change.

2.2 INTER-GENERATIONAL EQUITY

*(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.*

2.2.1 PROJECT RESPONSE

The proposed design has been developed in close response to the topography of the site, thereby minimising the consumption of resources required for the early works and construction of the buildings.

The extensive harnessing of daylight and natural cross ventilation also have a measurable reduction in energy consumption and associated GHG Emissions. GHG Emissions are a known key contributor to human-caused climate change, considered one of the most critical inter-generational issue of our time.

The proposed site layout also responds closely to the existing topography of the site, and in combination with the proposed landscape design the project will actively engage its occupants with their surroundings, considered a key factor in the link between building design and occupant wellbeing – commonly referred to as our 'biophilic response'.

2.3 CONSERVATION OF BIOLOGICAL DIVERSITY AND ECOLOGICAL INTEGRITY

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

2.3.1 PROJECT RESPONSE

Refer to the supporting Flora & Fauna Survey and Ecological Assessment (by UBM Ecological Consultants Pty Ltd) and Arboricultural Impact Assessment Report (by Bluegum Tree Care & Consultancy) for assessment results and conclusions.

2.4 IMPROVED VALUATION, PRICING AND INCENTIVE MECHANISMS

(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.

2.4.1 PROJECT RESPONSE

The environmental targets for the project have largely been embedded in the base design, rather than as additional 'add-on' items. For example, the narrow floor plate design for the buildings simultaneously responds to the sloping site's contours – thus minimising earth works and embedded energy in the structure, and also allows excellent distribution of daylight into learning and teaching spaces – reducing ongoing operating costs for the school.

The narrow floor plates are also arranged to facilitate very effective natural cross ventilation, further reducing operation costs for the school.

3.0 RATING SCHEME EQUIVALENCE - GREEN STAR

Green Star has been selected by the project team as a tracking mechanism for the proposal's sustainability attributes. Green Star is a comprehensive environmental rating system for buildings. Green Star separately evaluates the environmental initiatives of design, projects and/or buildings based on a number of criteria, including energy and water efficiency, indoor environmental quality and resource conservations.

The proposal's informal (i.e. not formally certified by the Green Building Council of Australia, the administrators for Green Star) rating achieves at least a 4 Star Best Practice outcome.

The Green Star environmental rating system for buildings was created for the property industry in order to:

- Establish a common language;
- Set a standard of measurement for green buildings;
- Promote integrated, whole-building design;
- Recognise environmental leadership;
- Identify building life-cycle impacts; and
- Raise awareness of green building benefits.

3.1 GREEN STAR CATEGORIES

The Green Star rating systems is made up of the following environmental categories:

- Management
- Indoor Environmental Quality
- Energy
- Transport
- Water
- Materials
- Land Use and Ecology
- Emissions
- Innovation

The categories are then divided into individual credits, each of which addresses an initiative that improves or has the potential to improve, a design, project or building's environmental performance. Points are awarded in each credit for actions that demonstrate the project has met the overall objectives or Green Star and the specific aims of the rating tool.

In establishing the project's level of alignment with the Green Star rating tool 'scorecard', several assumptions must be made relating to how the future school will be managed and operated. Given that Green Star rewards projects not only for built works but also for how the completed building is operated, it is necessary during design phases to assume a minimum or best practice level of operational performance. The assumptions made within are considered 'typical' for new buildings and will without exception contribute to better environmental and financial performance of the completed school.

3.1.1 MANAGEMENT

The management category encourages and rewards the adoption of practices and processes that enable and support best practice sustainability outcomes throughout the different phases of a project's design, construction and its ongoing operation. The management category recognises the projects who improve a projects' sustainability performance by influencing areas where decision-making is critical, rewarding the implementation of processes and strategies that support positive sustainability outcomes during construction. The category also promotes practices that ensure a project will be used to its optimum operational potential.

The Project will include the following initiatives;

1. The School should establish ongoing environmental performance targets relating to its consumption of energy and water, production and recycling of waste, and to the ongoing maintenance and improvement of good indoor environmental quality.
2. During Tender documentation and documentation for construction, the design will be reviewed for its ease of maintenance for all building services and building fabric.
3. Building services will be fine-tuned during the first 12 months of operation, covering all four seasons, and providing monthly reviews, quarterly tuning and a final re-commissioning after 12 months. The purpose of this process is to tune the buildings to suit the way they are being used.
4. Building user guides will be produced to help users interact effectively with the buildings, optimising building performance and user comfort. The Guides will include guidance on all sustainability attributes of the site, e.g. cyclist facilities, public transport, waste recycling etc., and also information on maintenance requirements;
5. Building services will include metering on all major energy and water-consuming equipment, providing the facility manager with live information on system performance and allowing them to closely manage efficient use of resources on site;
6. The proposal includes facilities for the separation and recycling of waste streams

3.1.2 INDOOR ENVIRONMENTAL QUALITY

The Indoor Environment Quality category 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. This category rewards projects that achieve sustainability performance improvements in a manner that also improves occupants' experience of the space. The 'Indoor Environment Quality' category recognises that buildings are designed for people and that reductions in energy use should never be made at the expense of the occupants' health and wellbeing.

The Project will include the following initiatives;

1. All habitable rooms including teaching and learning spaces will be naturally ventilated in accordance with the BCA. Only the communications room will be air conditioned.
2. Indoor noise levels will provide a high level of acoustic comfort, with internal noise levels and reverberation being no higher than 5db(A) above the 'satisfactory' sound levels in Table 1 of AS?NZS 2107:2000;

3. Light fittings shall be selected such that no direct line of sight is created to light globes – a common cause of glare. Lighting shall also be zoned locally in order to optimise the users' ability to control their own environment whilst minimising energy consumption through lighting;
4. Teaching and learning spaces are also extensively daylit, delivering high quality daylight and reduced energy consumption.
5. Occupants have extensive views to the surrounding landscape, a key factor in a building's connection to occupants' health and wellbeing;
6. All paints, sealants, adhesives, floor coverings and composite timbers used internally will meet low VOC (Volatile Organic Compound) emissions limits in accordance with Green Star VOC Emissions limits tables.
7. To deliver thermal comfort during winter, gas or electric (for smaller rooms) heating will be provided to all teaching spaces and habitable rooms.

3.1.3 ENERGY

The Energy category aims to reward projects that are designed and constructed to reduce their overall operational energy consumption below that of a comparable standard-practice building. Such reductions are directly related to reduced greenhouse gas emissions, lower overall energy demand as well as reductions in operating costs for building owners and occupants. The Energy category rewards projects that facilitate reductions in greenhouse gas emissions through energy efficient design and encouraging the utilisation of energy generated by low-emission sources.

The Project will include the following initiatives;

1. The building envelope will exceed NCC BCA Section J Parts J1 and J2 by at least 15%;
2. For lighting, the actual installed aggregate illumination power density will be 30% less than the maximum illumination power densities defined in NCC Table J6.2a. Lighting will be controlled either through the period bell system or time clock controlled to meet BCA Section J6 requirements;
3. The hot water system will be powered by either renewable energy, natural gas, waste heat or heat recovered from other sources, or will be an electric heat pump with a minimum COP of 3.5 under normal conditions.
4. The project also includes solar photovoltaic (PV) arrays to offset daytime energy demand and reduce ongoing operating costs.

3.1.4 TRANSPORT

The Transport category aims to reward projects that facilitate a reduction of the dependency of occupants on private car use as an important means of reducing overall greenhouse gas emissions. The use of motor vehicles directly contributes to climate change in two ways - through the high amounts of energy required to produce cars and build and maintain supporting road transport infrastructure and services; and the direct emissions that result from car operations.

If reliance on individual motor vehicle transportation is to be reduced, it is necessary to maximise alternative transportation options. Rather than limiting access to private fossil fuel vehicles, the Transport category aims to encourage and reward initiatives that reduce the need for their use. This may include initiatives that encourage and make possible the use of mass transport options, cycling or walking, and the selection of sites that are close to a large number of amenities.

The Project will include the following initiatives;

1. The proposal includes cyclist facilities for students and staff

3.1.5 WATER

The Water category 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.

Reductions in operational water consumption may be achieved through maximisation of water efficiency within a project, as well as through the utilisation of reclaimed water sources.

The Project will include the following initiatives;

1. The proposal includes rainwater harvest and re-use for landscape irrigation
2. All bathroom fixtures (toilet pans, urinals, hand basin taps and showers) will meet minimum WELS ratings in accordance with the most recent EFSG Design Guidelines, e.g.,
    a. Basin taps to be more than 4.5 but not more than 6.0L/s
    b. Showers more than 7.5 but not more than 9.0L/minute
    c. WCs more than 3.5 but not more than 4.0 litres average flush volume
3. Areas with mass planting will be irrigated using sub-soil drippers and soil moisture sensors to limit un-necessary irrigation

3.1.6 MATERIALS

The Materials category aims to address the consumption of resources within a building construction context, by encouraging the selection of lower-impact materials. The category also encourages absolute reductions in the amount of waste generated or the recycling of as much of the waste generated as possible.

The Project will include the following initiatives;

1. The use of Portland Cement will be minimised through substitution with alternative materials such as fly ash (subject to availability at the time of construction;
2. Steel will be sourced from manufacturers accredited to the Environmental Sustainability Charter of the Australian Steel Institute (ASI). Steel suppliers must also be members of the World Steel Association's (WSA) Climate Action Programme (CAP).
3. All timber used during the construction process (e.g. timber formwork) and in the completed building will be either accredited under the FSC or PEFC timber accreditation schemes, or shall be re-used timber;

4. Any PVC products shall meet the *Best Practice Guidelines for PVC in the Built Environment*, published by the Green Building Council of Australia

3.1.7 LAND USE AND ECOLOGY

The Land Use & Ecology category 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.

The Project will include the following initiatives;

1. Building and landscape finishes will be selected to have a high Solar Reflectance Index (SRI), contributing to a cooler microclimate and therefore improved user comfort.

3.1.8 EMISSIONS

The Emissions category aims to assess the environmental impacts of 'point source' pollution generated by projects. Negative impacts commonly associated with buildings include damage to the environment through refrigerant leaks or disturbances to native animals and their migratory patterns as a result of light pollution.

The Project will include the following initiatives;

1. Exterior and landscape lighting shall be carefully selected and orientated to light only the buildings and required surfaces, with no artificial lighting into the night sky;
2. A gross pollutant trap will assist in the treatment of stormwater prior to discharge from the site.

3.1.9 INNOVATION

The Innovation category is a way of encouraging, recognising, and rewarding the spread of innovative practices, processes and strategies that promote sustainable communities and cities.

The Innovation category acknowledges efforts which demonstrate that sustainable development principles have been incorporated not only for the community for which the Green Star criteria apply, but in also in a broader sense. This may include collaboration between developers and other parties, and is recognised separately from any outcomes rewarded in other categories.

At this early stage of the project the details of potential Innovations have not yet been developed, which typically require extensive input from the final facility operators, managers and users. The proposal has assumed a conservative five (5) Innovation points from a potential ten (10).

4.0 RESOURCES, ENERGY AND WATER

As described above, the project has adopted multiple initiatives that combine to reduce the consumption of resources during construction and operation, and also to support the adoption of more sustainable resources.

4.1 RESOURCES

- The proposal aims to minimise the consumption of resources required for construction, partly through close adoption of site contours and partly through responsible sourcing of major materials such as concrete, steel and timber.

4.2 ENERGY

- The narrow floor plates of the proposal are ideally laid out to permit extensive high quality daylight, leading to superior learning and teaching space amenity and reduced energy consumption for lighting. The narrow floor plates also facilitate effective natural cross ventilation, further contributing to reduced energy consumption and costs.
- The proposal also includes PV arrays to further reduce ongoing energy costs for the school

4.3 WATER

- The proposal includes rainwater tanks and re-use of rainwater for irrigating mass-planted areas of landscape
- The proposed landscape will be low water demand, and any irrigation will be via sub-soil drip irrigation in order to further minimise water consumption and costs.

5.0 APPENDIX A – GREEN STAR SCORECARD

Green Star - Design & As Built Scorecard

Project:	0
Targeted Rating:	4 Star - Best Practice

Core Points Available	Total Score Targeted
100	49.0

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	
		2.3	Building Systems Tuning	1	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	
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 Operations and Maintenance Information	1	1
		4.2	Building User 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
Construction Environmental Management	To reward projects that use best practice formal environmental management procedures during construction.	7.0	Environmental Management Plan	-	Complies
		7.1	Formalised Environmental Management System	1	1
Operational Waste	Prescriptive Pathway	8A	Performance Pathway - Specialist Plan	-	
		8B	Prescriptive Pathway - Facilities	1	1
Total				14	9

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

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
		11.2	Surface Illuminance	1	1
		11.3	Localised Lighting Control	1	1
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
		12.1	Daylight	2	2
		12.2	Views	1	1
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
		13.2	Engineered Wood Products	1	1
Thermal Comfort	To encourage and recognise projects that achieve high levels of thermal comfort.	14.1	Thermal Comfort	1	1
		14.2	Advanced Thermal Comfort	1	
Total				**17**	**15**

Energy				**22**	
Greenhouse Gas Emissions	A. Prescriptive Pathway	15A.0	Conditional Requirement: Prescriptive Pathway	-	Complies
		15A.1	Building Envelope	1	1
		15A.2	Glazing	1	1
		15A.3	Lighting	1	
		15A.4	Ventilation and Air-conditioning	1	
		15A.5	Domestic Hot Water Systems	1	1
		15A.6	Building Sealing	1	
		15A.7	Accredited GreenPower	2	
		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	Performance Pathway	16A	Prescriptive Pathway - On-site Energy Generation	-	
		16B	Performance Pathway - Reference Building	2	
Total				**7**	**3**

Transport					
				10	
Sustainable Transport	Prescriptive Pathway	17A.1	Performance Pathway	0	
		17B.1	Access by Public Transport	3	1
		17B.2	Reduced Car Parking Provision	1	1
		17B.3	Low Emission Vehicle Infrastructure	1	
		17B.4	Active Transport Facilities	1	1
		17B.5	Walkable Neighbourhoods	1	
Total				7	3

Water					
				12	
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	
		18B.4	Landscape Irrigation	1	1
		18B.5	Fire System Test Water	1	
Total				6	3

Materials					
				14	
Life Cycle Impacts	Prescriptive Pathway - Life Cycle Impacts	19A.1	Comparative Life Cycle Assessment	0	
		19A.2	Additional Life Cycle Impact Reporting	0	
		19B.1	Concrete	3	1
		19B.2	Steel	1	
		19B.3	Building Reuse	4	
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	1
Construction and Demolition Waste	Percentage Benchmark	22A	Fixed Benchmark	-	
		22B	Percentage Benchmark	1	1
Total				12	6

Land Use & Ecology					
				6	

Ecological Value	To reward projects that improve the ecological value of their site.	23.0	Endangered, Threatened or Vulnerable Species	-	Complies
		23.1	Ecological Value	3	1
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	
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	1
Total				**6**	**2**

Emissions				**5**	
Stormwater	To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure.	26.1	Reduced Peak Discharge	1	
		26.2	Reduced Pollution Targets	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**	**3**

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		
Market Transformation	The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in	30B	Market Transformation		5
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	10	
Innovation Challenge	Where the project addresses an 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**	**5**

TOTALS	**AVAILABLE**	**TARGETED**
CORE POINTS	**100**	**44.0**
CATEGORY PERCENTAGE SCORE		**44.0**
INNOVATION POINTS	**10**	**5.0**
TOTAL SCORE TARGETED		**49.0**