



## The Sandstone Precinct

### Environmental Sustainability Management Plan Development Application

Revision 2

#### Prepared for:

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#### Date:

14/10/2016

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# Revision

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# The Sandstone Buildings, Sydney

## Executive summary

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This Environmental Sustainability Management Plan has been prepared for Pontiac Land Group C/- Sagent. The report is intended to provide an overview of the proposed project's ecologically sustainable design components in line with the City of Sydney Development Control Plan 2012 (DCP) Section 3 – General Provisions.

This report includes:

- An overview of the sustainability drivers for the project (both regulatory & identified project drivers);
- A description of how the development meets the sustainability requirements outlined in the Government Property NSW report.
- Details regarding ecologically sustainable aspects incorporated into the design in response to the controls of the DCP/LEP and The Sandstone Precinct ESD Strategy outlined by Government Property NSW; and
- A Green Star Compliance pathway and matrix that describes how the project demonstrates 4 Star Green Star equivalent. No official rating will be pursued.

Information contained within this report has been prepared in direct response to:

- Sydney City Local Environment Plan (LEP) 2012
- Sydney City Development Control Plan (DCP) 2012
- Government Property NSW Sandstone Precinct ESD Report by Arup

# The Sandstone Buildings, Sydney

## 1. Introduction

The project involves the refurbishment of two existing heritage sandstone buildings into a hotel development at 23-39 Bridge Street, Sydney. The two buildings are known as the 'Lands' and 'Education' buildings.

The project consists of:

- The Education building, 14 storeys with 166 rooms;
- The Lands Building, 6 storeys with 61 rooms;
- Ground floor retail areas;
- Ballroom and function spaces;
- Subterranean link between the two buildings;
- Internal courtyard

The development has the following characteristics:

- The street address is 23-39 Bridge Street, Sydney;
- The sites are irregular in shape and are approximately 2,700m<sup>2</sup> and 3,200m<sup>2</sup> in area;
- The Lands Building has frontages of:
  - approximately 30m along Bridge Street
  - approximately 32m along Gresham street
  - approximately 33m along Loftus Street
  - approximately 22m along Bent Street
- The Education Building has frontages of:
  - approximately 21m along Bridge Street
  - approximately 22m along Young Street
  - approximately 32m along Loftus Street
  - approximately 22m along Bent Street
- The buildings currently house the Department of Education and Department of Lands
- The Lands building can be accessed via Gresham Street and Bridge Street on Lower Ground Floor; and Bent Street and Loftus Street on Ground floor
- The Education building can be accessed via Loftus Street and Bridge Street on Lower Ground Floor; and Bent Street on Ground Floor

### 1.1 Design Documentation

The following relevant design documents have assisted in the preparation of this report, as prepared by Make Architects, dated 06/10/2016 and 14/10/2016 "Development Application", including:

- SP-DA-G-1500 Proposed Site Plan
- SP-DA-G-2496 – Education Building – Basement 03
- SP-DA-G-2497 – Education Building – Basement 02
- SP-DA-G-2498 – Lands Building – Lower Ground, Education Building – Basement 01
- SP-DA-G-2499 – Lands Building – Ground, Education Building – Lower Ground
- SP-DA-G-2500 – Lands Building – Level 01, Education Building – Ground
- SP-DA-G-2501 – Lands Building – Level 02, Education Building – Level 01
- SP-DA-G-2502 – Lands Building – Level 03, Education Building – Level 02
- SP-DA-G-2503 – Lands Building – Level 04, Education Building – Level 03
- SP-DA-G-2504 – Lands Building – Level 05, Education Building – Level 04
- SP-DA-G-2505 – Lands Building – Level 06, Education Building – Level 05
- SP-DA-G-2506 – Lands Building – Level 07, Education Building – Level 06
- SP-DA-G-2507 – Lands Building – Level 08, Education Building – Level 07
- SP-DA-G-2508 – Lands Building – Roof, Education Building – Level 08
- SP-DA-G-2509 – Lands Building – Roof, Education Building – Level 09
- SP-DA-G-2510 – Lands Building – Roof, Education Building – Roof

# The Sandstone Buildings, Sydney

All assumptions and strategies within the current scheme and drawings are subject to change through the design development and documentation stages.

## 2. Project Sustainability Drivers

The proposed sustainability response for the project includes various associated drivers including:

- Ecological sustainable design provisions identified within the City of Sydney DCP – 2012 (minimum regulatory planning provisions);
- Government Property NSW ESD Strategy for the Sandstone Precinct as outlined in the ESD Report by Arup dated 27 November 2014; and
- Minimum code requirements, including National Construction Code (NCC) and Environmental Planning and Assessment Act (EPA).

### 2.1 Applicable Regulatory Frameworks

The following regulatory frameworks apply to the development:

#### 2.1.1 City of Sydney Council (Local Environmental Plan / Development Control Plan)

##### **Local Environmental Plan (LEP) – 2012**

The City of Sydney Local Environment Plan (2012) has a specific focus on providing ecologically sustainable development through the city of Sydney. In consultation with this community need, the LEP includes specific provisions for mixed use developments so they do not have an adverse impact on the surrounding environment. The particular aims of the plan include:

- to support the City of Sydney as an important location for business, educational and cultural activities and tourism;
- to promote ecologically sustainable development;
- to encourage the growth and diversity of the residential population of the City of Sydney by providing for a range of appropriately located housing, including affordable housing; and
- to enable a range of services and infrastructure that meets the needs of residents, workers and visitors.

##### **Development Control Plan (DCP) – December 2012**

Part 3 – General Provisions: 3.6 – Ecologically Sustainable Development supports the LEP in the identification of more detailed sustainability planning controls, these include:

- 3.6.1 – Energy Efficiency in non-residential developments – Development is to be designed and constructed to reduce the need for active heating and cooling by incorporating passive design measures including design, location and thermal properties of glazing, natural ventilation, appropriate use of thermal mass and external shading, including vegetation.
- 3.6.2 – Water Efficiency in non-residential developments – to reduce the potable water consumption of the building, through a mixture of reduction and re-use
- 3.6.3 - Photovoltaic solar panels – To further reduce energy consumption and provide offsets
- 3.6.4 – Wind Turbines – Setting parameters for wind turbines for noise restraints and site coordination
- 3.6.5 - Materials and building Components – Encouraging the use of sustainable and low toxicity materials.

# The Sandstone Buildings, Sydney

## 2.1.2 National Construction Code Series – Energy Efficiency

### NCC Section J – Energy Efficiency

Introduced into the National Construction Code series in 2004, Section J establishes minimum energy efficiency provisions for all classes of building. The provisions are designed to achieve the functional objective of Section J which is to reduce greenhouse gas emissions.

Minimum design requirements shall be applied to the whole of the development in response to Section J including:

- Building Fabric
- External Glazing
- Building Sealing
- Air-conditioning & ventilation systems
- Electrical lighting & power supply
- Access for maintenance; and
- Hot water services.

## 2.1.3 Ecological Sustainable Development – Best Practice

The City of Sydney DCP – 2012 suggests the use of “an environmental building rating tool, such as Green Star or any similar rating tool, to demonstrate the environmental performance of a proposed development”.

Green Star, created by the Green Building Council of Australia is widely regarded by the construction industry as a holistic environmental tool which represents Australian Best Practice in both project design & construction. The Green Star rating system was designed to assist project teams, developers and the like validate the environmental & sustainability initiatives included within the design & construction of new or refurbishment projects.

The development’s design is of such a standard to meet an equivalent 4 star Green Star Design and As-built standard to demonstrate the buildings environmental performance and meet the above criteria in the DCP. No official Green Star rating will be pursued

## 2.2 Green Star Equivalency

This development is designed to meet an equivalent design of 4 Star Green Star Design & As Built. No formal rating will be pursued.

The Green Star suite of rating tools has been compiled by the Green Building Council of Australia to assess the level of environmentally sustainable design that may be incorporated into a building. In October, 2014 the GBCA consolidated all previous legacy tools into one new tool: Green Star Design and As-Built. This looks at developments in 9 categories, namely:

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

A 4 star rating is equivalent to “Australian Best Practice”. A minimum 45 points is required to achieve 4 Star. The building’s design is of such standard to achieve 48 points. Further detailed information is provided within Section 3 of this report.

# The Sandstone Buildings, Sydney

## 2.3 The Sandstone Precinct ESD Strategy

The development has been designed to incorporate initiatives which address the ESD focus areas identified by Government Property NSW for the Sandstone Precinct, as outlined within the ESD Report by Arup dated 27 November 2014. The following key ESD focus areas have been identified for the precinct:

- Energy
- Water
- Transport
- Materials
- Society

A number of initiatives have been included in the design of the Lands and Education buildings to address or exceed the intent of each of the key focus areas. Demonstrating the building is designed to an equivalent 4 Star Green Star Design & As-Built level addresses the majority of these focus areas and is further described in Section 3 and Appendix 1.

The particular elements include

### **Energy**

- Re-use of existing buildings allows the development to make use of the low window to wall ratio, high thermal mass and the buildings' inherent building energy performance. Performance glazing and secondary glazing layers will further improve building efficiency.
- New plant to the development includes high efficiency chillers, boilers, fans and pumps throughout. Control systems to the rooms and spaces will further drive energy efficiency.
- Provision of a centralised plant to the two buildings improves overall HVAC, space and energy efficiency.
- Initiatives outlined within Section 3.2 describe how the development is firstly focused on reducing overall energy demand, in line with the energy approach hierarchy.

### **Water**

- Potable Water reduction techniques have been outlined within Section 3.3. The project follows the Water Approach Hierarchy by reducing water demand from fixtures, irrigation and mechanical uses.

### **Transport**

- The location of the site provides a multitude of opportunities for public transport use, with close proximity to buses, train and ferries.

### **Materials**

- Reuse of the existing Lands and Education Buildings allows for a significant reduction of materials usage, embodied energy and associated greenhouse gas emissions as compared to a new build construction
- Existing materials are to be reused for the development to improve material efficiency

### **Societal**

- Preservation of the heritage Lands and Education Buildings will serve to provide a link to Sydney's past for the Sydney community and it is envisaged the development will become a significant community asset.
- The reinvigoration of Farrer Place through enhanced pedestrian links, meeting points and landscaping will make it a focus point for local residents, workers and tourists.

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## 3. Ecological Design Response

With the intent to satisfy the sustainability drivers identified within Section 2 and mitigate the negative ecological impacts of the development, the preliminary design response & targeted ESD initiatives for the proposed development will target these elements through the documented 4 Star Green Star Pathway. This pathway is further explained below and documented in Appendix I.

### 3.1 Ecology and Landscape

The ecological value of the site will not be significantly changed from its current state, and in most ways uplifted. This is achieved through:

- Re-use of existing building structures and façades;
- Increased trees and planting to Farrer place;
- Garden courtyard to Education Building with tree palms and indigenous planting;
- Stormwater collection and upgraded drainage to reduce peak discharge on site

A combination of low-demand vegetation and low ratios of hard surface areas will all respond to the objectives of the DCP by reducing the stormwater run-off impacts of the development and the overall impact on the surrounding ecology.

### 3.2 Energy, Greenhouse Gas Emissions

Energy and more specifically, energy efficiency and reductions in Greenhouse Gas Emissions, remains a key driver for sustainability within the project. Operational energy use within buildings represents approximately 23% all energy related greenhouse gas emissions in Australia (ABSEC, 2007). By planning for greater energy efficiency within new developments, the annual greenhouse emissions are lowered.

Energy Efficiency initiatives proposed for inclusion within the development will include:-

- Reuse of existing buildings to significantly reduce embodied energy and associated greenhouse gas emissions of construction materials and practices;
- Wall insulation, roof insulation and thermally efficient glass selection to exceed the NCC requirements;
- Sandstone and thermal mass will improve passive thermal performance of the building;
- Management of lighting and air conditioning systems;
- Tracking energy use data for whole of building via energy metering
- Low lighting densities and no use of incandescent lamps in rooms, circulation spaces and back of house areas.
- Use of resource efficient fixtures and fittings;
- Quality glazing will be installed where possible to reduce heat gain to the space and weather-stripped windows;
- High efficiency motors on fans and pumps, as well as excellent HVAC&R equipment;
- Variable Frequency Drives (VFDs) to be specified for HVAC fans, pumps and motors;
- Fan coil units to all guest rooms rather than split systems;
- Building Management Control System for control and monitoring of HVAC, domestic hot water, hot water, pumps and metering;
- Guest rooms provided with master switches to reduce energy consumption.

### 3.3 Water Resources / Potable Demand Reduction

The development will seek to address water efficiency and reduce the potable water demand via the following initiatives:-

- All water fittings and fixtures are to meet the high Water Efficiency Rating Scheme (WELS) ratings, specifically this includes:
  - Toilets Dual flush 6/3 litres (4 ½ litre available), min 4 Star WELS
  - Showerheads 9-12 litres/min, min 3 Star WELS; and

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- Taps max 6L/min
- Tracking of water use via water meters;

## 3.4 Emissions

The development will seek to address ecologically damaging emissions via the following initiatives:-

- Emissions during construction will be reduced through reuse of existing buildings and shortened construction times;
- Stormwater runoff will be reduced or remain equal through improved stormwater collection on site; This is in line with City of Sydney DCP requirements, which are quite strict;
- External lighting reduced from pointing up to the night sky;
- Low or zero VOC paints & adhesives.

## 3.5 Indoor Environment Quality

In response to Sections around Solar Access, Lighting, Ventilation and Visual/Acoustic Privacy, the development will target a number of elements to increase the indoor environment quality. The following will be targeted in the development:-

- Acoustic comfort provided through low noise levels in occupied spaces and high levels of acoustic separation between spaces to meet DCP requirements;
- Low reverberation through choice of finishes;
- Reduced health risks through low or zero VOC paints, and low formaldehyde engineered wood products;
- Glare control through use of blinds and shading;
- Individual comfort control provided to people in their hotel rooms.
- Levels of comfort met through mechanical system design and winter gardens buffering loads to the building.

## 3.6 Waste

To address best practice operational and construction waste management, the following is included:-

- A dedicated waste recycling storage area will be provided, sized for the needs of the project;
- A construction waste management plan (WMP) will be implemented for construction, in accordance with DCP 3.14.1 requirements. This will also address ongoing waste management;
- Diversion of a minimum 90% of construction/demolition waste from landfill

## 3.7 Management

To ensure the appropriate ongoing performance of the building, the following management strategies will be considered to ensure high quality delivery and ongoing performance of the building. This is in line with the management category of Green Star:-

- The services installed will be commissioned in line with the relevant standards;
- The building services will be tuned for a period of 12 months post completion to ensure the maximum operational performance of the building;
- Environmental performance targets will be made for common areas and services. These will be set and measured for water and energy;
- A monitoring and metering strategy will be in place that records the energy and water consumption in quarter hourly, hourly daily, monthly and annual energy use.

# The Sandstone Buildings, Sydney

## 4. Summary of Design Response

This Environmental Sustainability Management Plan has been prepared for Patina c/- Make Architects. The report has provided an overview of the proposed project's ecologically sustainable design and how it directly addresses the intent of City of Sydney LEP & DCP 2012 and incorporates initiatives to address the ESD Strategy developed for The Sandstone Precinct by the NSW Government Property. This is primarily demonstrated through designing the building to an equivalent 4 Star Green Star Design & As-Built design for the development.

By including a significant number of best practice environmental initiatives throughout the development, the resultant building is designed to reduce the ecological damage commonly associated with construction and design. Further, by using Green Star as a metric, a high number of specific and relevant actions have been included in the design.

We trust that the information that has been outlined within this report provides a suitable overview of the project's commitment to ecological sustainable development and a reduced environmental impact.

# Appendix 1

## Star Green Star Matrix – Nominated Compliance Pathway

# Green Star - Design & As Built Scorecard

<b>Project:</b>	The Sandstone Buildings, Sydney
<b>Targeted Rating:</b>	4 Star - Best Practice

Core Points Available	Total Score Targeted
100	48.0

CATEGORY / CREDIT	AIM OF THE CREDIT / SELECTION	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS TARGETED	ASSESSMENT COMMENTS
<b>Management</b>				<b>14</b>		
<b>Green Star Accredited Professional</b>	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	Design reviewed by GSAP
		2.0	Environmental Performance Targets	-	Complies	Design intent report to be produced outlining environmental performance targets for the project
<b>Commissioning and Tuning</b>	To encourage and recognise commissioning, handover and tuning initiatives that ensure all building services operate to their full potential.	2.1	Services and Maintainability Review	1	1	Review required in collaboration with building management
		2.2	Building Commissioning	1	1	Building to be commissioned to relevant standards.
		2.3	Building Systems Tuning	1	1	Building systems to be tuned post completion in defects and warantee period
		2.4	Independent Commissioning Agent	1	0	
<b>Adaptation and Resilience</b>	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	0	
<b>Building Information</b>	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	O&M manual to be developed in line with the credit criteria
		4.2	Building User Information	1	1	Documentation for facilities management to be produced
<b>Commitment to Performance</b>	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		
		5.2	End of Life Waste Performance	1	0	
<b>Metering and Monitoring</b>	To recognise the implementation of effective energy and water metering and monitoring systems.	6.0	Metering	-	Complies	All meters to be accessible.
		6.1	Monitoring Systems	1	1	Monitoring strategy implemented inline with a standard such as CIBSE TM39
<b>Construction Environmental Management</b>	To reward projects that use best practice formal environmental management procedures during construction.	7.0	Environmental Management Plan	-	Complies	An EMP must be developed and in place for the construction process
		7.1	Formalised Environmental Management System	1	1	An EMS must be developed and implemented during construction
<b>Operational Waste</b>	Performance Pathway	8A	Performance Pathway - Specialist Plan	1	1	Dedicated waste management plan in line with DCP requirements
		8B	Prescriptive Pathway - Facilities	-		
<b>Total</b>				<b>14</b>	<b>9</b>	

<b>Indoor Environment Quality</b>				<b>17</b>		
<b>Indoor Air Quality</b>	To recognise projects that provide high air quality to occupants.	9.1	Ventilation System Attributes	1	1	Ventilation system attributes to comply with Green Star credit criteria.
		9.2	Provision of Outdoor Air	2	0	
		9.3	Exhaust or Elimination of Pollutants	1	0	
<b>Acoustic Comfort</b>	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	10.1	Internal Noise Levels	1	1	Internal noise levels no more than 5db above AS/NZS 2107:2000
		10.2	Reverberation	1	1	Reverberation times to meet credit criteria
		10.3	Acoustic Separation	1	1	Party walls to meet criteria between rooms
<b>Lighting Comfort</b>	To encourage and recognise well-lit spaces that provide a high degree of comfort to users.	11.0	Minimum Lighting Comfort	-	Complies	Lighting specification to state flicker free lighting and Green Star requirements
		11.1	General Illuminance and Glare Reduction	1	1	Glare eliminated through blinds or shading
		11.2	Surface Illuminance	1	1	
		11.3	Localised Lighting Control	1	1	To be achieved through providing secondary GPOs in rooms.
<b>Visual Comfort</b>	To recognise the delivery of well-lit spaces that provide high levels of visual comfort to building occupants.	12.0	Glare Reduction	-	Complies	Blinds required or overhangs to facades.
		12.1	Daylight	2		40% of rooms to achieve high levels of daylight. Bedrooms/bathrooms excluded
		12.2	Views	1	1	60% of rooms to have line of sight to quality external views or internal courtyards
<b>Indoor Pollutants</b>	To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.	13.1	Paints, Adhesives, Sealants and Carpets	1		
		13.2	Engineered Wood Products	1	1	Engineered wood prodcts to meet Green Star formaldehyde criteria

<b>Thermal Comfort</b>	To encourage and recognise projects that achieve high levels of thermal comfort.	14.1 Thermal Comfort	1	1	
		14.2 Advanced Thermal Comfort	1	0	
<b>Total</b>			<b>17</b>	<b>10</b>	

<b>Energy</b>					
<b>Greenhouse Gas Emissions</b>	E. Modelled Performance Pathway	15A.0 Conditional Requirement: Prescriptive Pathway	-	Complies	Met through efficient plant and glazed facades
		15A.1 Building Envelope	-		
		15A.2 Glazing	-		
		15A.3 Lighting	-	1	Lighting designed to exceed BCA maximum consumption by greater than 30%. Dimmers, occupant sensors and/or master switches reduce energy use
		15A.4 Ventilation and Air-conditioning	-		
		15A.5 Domestic Hot Water Systems	-	1	Natural Gas used to heat domestic hot water
		15A.6 Building Sealing	-		
		15A.7 Accredited GreenPower	-		
		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	20				
<b>Peak Electricity Demand Reduction</b>	Performance Pathway	16A Prescriptive Pathway - On-site Energy Generation	-		
		16B Performance Pathway - Reference Building	2	0	
<b>Total</b>			<b>22</b>	<b>2</b>	

<b>Transport</b>					
<b>Sustainable Transport</b>	Prescriptive Pathway	17A.1 Performance Pathway	0		
		17B.1 Access by Public Transport	3	3	Calculator completed, 3 points achieved
		17B.2 Reduced Car Parking Provision	1	1	No car parking provided
		17B.3 Low Emission Vehicle Infrastructure	1	0	None proposed at this stage
		17B.4 Active Transport Facilities	1	0	None proposed at this stage
		17B.5 Walkable Neighbourhoods	1	1	Walkscore 95 achieved
<b>Total</b>			<b>7</b>	<b>5</b>	

<b>Water</b>					
<b>Potable Water</b>	Performance Pathway	18A.1 Potable Water - Performance Pathway	0		
		18B.1 Sanitary Fixture Efficiency	1	1	WELS ratings to be met for Green Star compliance.
		18B.2 Rainwater Reuse	1	0	No rainwater tank proposed due to spatial requirements in heritage building
		18B.3 Heat Rejection	2	0	Water based heat rejection system proposed.
		18B.4 Landscape Irrigation	1		No drip water system
		18B.5 Fire System Test Water	1		Fire system testing water not captured
<b>Total</b>			<b>6</b>	<b>1</b>	

<b>Materials</b>					
<b>Life Cycle Impacts</b>	Prescriptive Pathway - Life Cycle Impacts	19A.1 Comparative Life Cycle Assessment	0		
		19A.2 Additional Life Cycle Impact Reporting	0		
		19B.1 Concrete	3	0	
		19B.2 Steel	1	1	5% reduction in steel content (reo or framing) compared to a reference case
		19B.3 Building Reuse	4	4	Existing façade and structure reused
<b>Responsible Building Materials</b>	To reward projects that include materials that are responsibly sourced or have a sustainable supply chain.	20.1 Structural and Reinforcing Steel	0	0	
		20.2 Timber Products	1	1	95% of timber sourced from forest certification scheme that meets GBCAs list of criteria
		20.3 Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1	Requirements for 'best practice' PVC standards used throughout
<b>Sustainable Products</b>	To encourage sustainability and transparency in product specification.	21.1 Product Transparency and Sustainability	3	0	
<b>Construction and Demolition Waste</b>	Percentage Benchmark	22A Fixed Benchmark	-		
		22B Percentage Benchmark	1	1	To achieve minimum 90% recycling of construction / demolition waste
<b>Total</b>			<b>14</b>	<b>8</b>	

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	Site previously developed and does not contain endangered or threatened species.
		23.1	Ecological Value	3	1	Native plants to courtyard area of Education building
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	1	75% of the site was previously developed at time of purchase
		24.2	Contamination and Hazardous Materials	1	1	Contaminated materials to be removed from site
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	0	
<b>Total</b>				<b>6</b>	<b>3</b>	

Emissions				5		
Stormwater	To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure.	26.1	Reduced Peak Discharge	1	1	Post development peak discharge will not exceed pre-development discharge
		26.2	Reduced Pollution Targets	1	0	
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	Control of upward lighting
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	0	
Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	29.0	Refrigerants Impacts	1	0	
<b>Total</b>				<b>5</b>	<b>2</b>	

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 Australia or in the world.	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		2	No new car parking provided Stormwater targets column B met
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		2	Innovation challenges including: - Culture, Heritage & Identity, for the restoration of a heritage listed building - Beauty
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 rating tools.	30E	Global Sustainability			
<b>Total</b>				<b>10</b>	<b>4</b>	

TOTALS	AVAILABLE	TARGETED
CORE POINTS	100	44.0
CATEGORY PERCENTAGE SCORE		44.0
INNOVATION POINTS	10	4.0
TOTAL SCORE TARGETED		48.0