



Gazcorp Industrial Estate,
813-913 Wallgrove Rd, NSW
Sustainability Strategy Report
For Gazcorp

Revision	Date	Description	Author
0	12/11/2021	Preliminary Sustainability Strategy Report	AS
1	01/12/2021	Sustainability Strategy Report for submission to DPIE	AS
2	28/01/2022	Sustainability Strategy Report (updated to include DPIE comments)	AS

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Introduction

This Sustainability Strategy report supports State Significant Development (SSD) Development Consent, Condition A12 requirements for Gazcorp Industrial Estate development at 813 – 913 Wallgrove Road, Horsley Park, Eastern Creek NSW 2175. The industrial development comprises of 15 numbers of development lots and is located within Climate Zone 6, at the Fairfield City Council local government area.

This report is based on the documents and drawings from the SSD 5248 Package for Gazcorp Industrial Estate, as well as the document associated with Modification 1 approved on 23 December 2021.

- Detail how the ESD and WUSD initiatives and energy efficiency measures outlined in the EIS will be implemented on site;
- Identify the total Greenhouse Gas Savings estimated to be achieved in comparison to a base case development (i.e. development constructed in accordance with the minimum requirements of the latest version of Section J, Volume One of the National Construction Code (NCC) if the measures proposed under the Sustainability Strategy are implemented;
- Include a calculation of water requirements and measures incorporated to reduce water use;
- Include a program to monitor and report annually on the efficiency measures implemented; and
- Ensure the development will continue to operate at industry best practice over time.

Conditions B2. and B3. of the SSD 5248 Development Consent will be submitted separately with respective development applications. This is in line with the conditions outlined under SSD 5248 Development Consent, Part B Conditions to Be Met in Future Development Applications.

Reference and benchmarking will be made to the industry Best Practice framework ("Green Star Design & As-Built") where applicable.

Reference Documents

This report is based on the following documents and drawings from the SSD 5248 Package for Gazcorp Industrial Estate.

Project Overview

The development is located at 813 – 913 Wallgrove Road, Horsley Park NSW 2175.

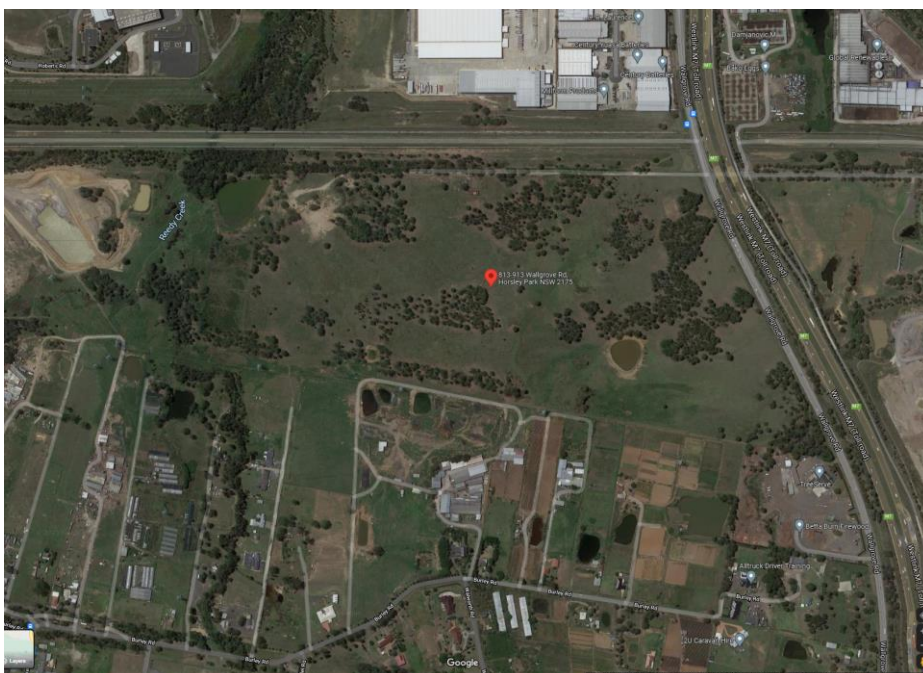


Figure 1: Satellite View of Project Site Location (source: Google Map)

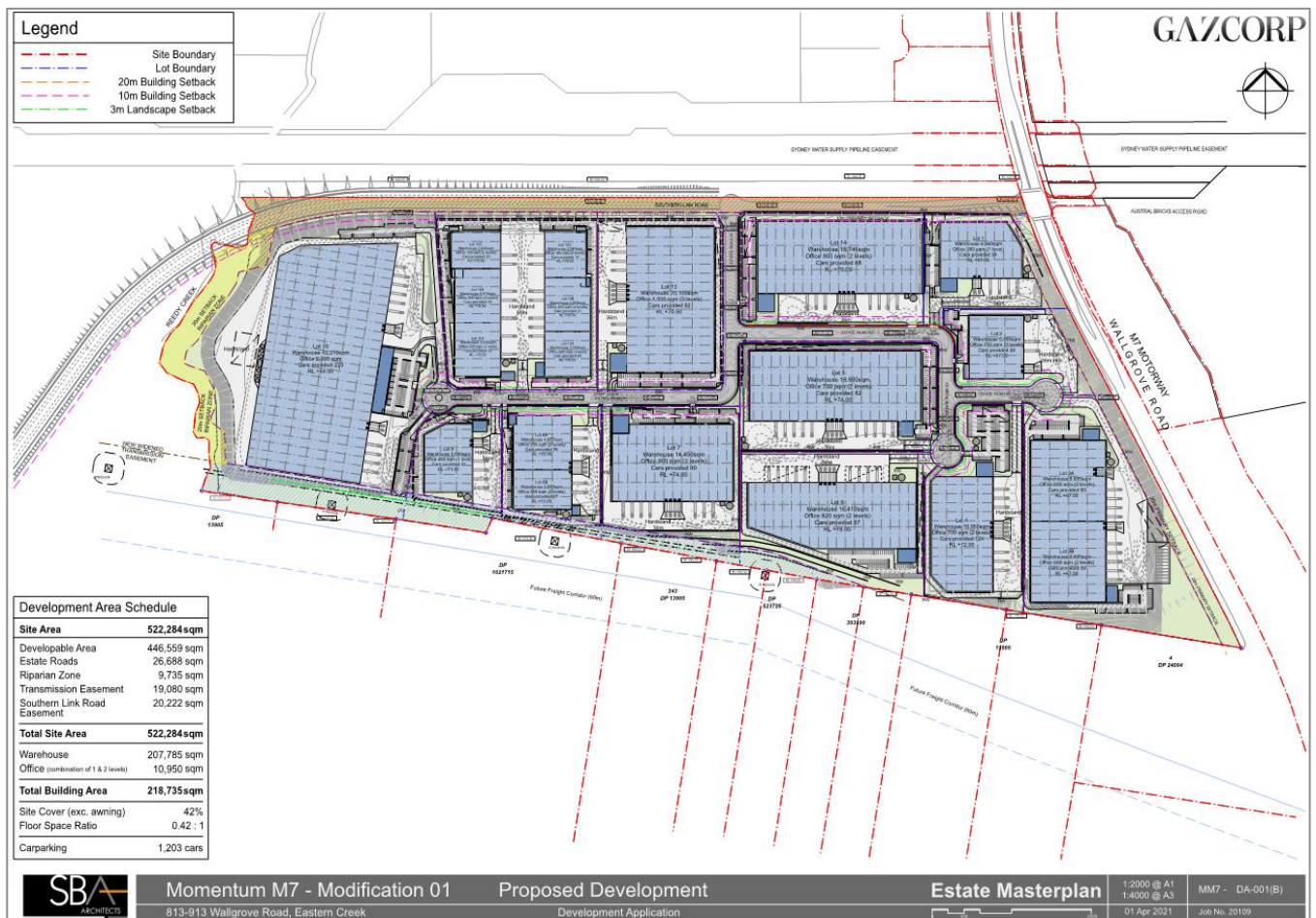


Figure 2: Proposed Development Estate Masterplan (source: MM7 – 12026 DA-001(B))

The Staged Development Application for the Gazcorp Industrial Estate comprised of a Concept Proposal with:

- 218,735 square metre (m²) of gross floor area (GFA) comprised of 207,785 m² of warehouse/industrial uses and 10,950 m² of ancillary office space;
- 14 warehouse buildings; and
- conceptual lot layout, site levels, road layout, urban design controls, conceptual landscape designs and infrastructure arrangements.

The following table 1 provides a breakdown of Conditions A12 addressed in this SMP report:

Condi tion No.	General Requirements	Responses
12.	1. Detail how the ESD and WUSD initiatives and energy efficiency measures outlined in the EIS will be implemented on site.	Responses have been addressed under Section 1.0 ESD, WSUD and Energy Efficiency Measures. Note that as ESD (Ecologically Sustainable Development) refers to sustainability in general, the responses provided for WSUD and Energy satisfies ESD measures for these elements.
	2. Identify the total Greenhouse Gas Savings estimated to be achieved in comparison to a base case development (i.e. development constructed in accordance with the minimum requirements of the latest version of Section J, Volume One of the National Construction Code (NCC) if the measures proposed under the Sustainability Strategy are implemented.	Responses have been addressed under Section 2.0, NCC 2019 Section J Energy Efficiency. Note that Greenhouse gas emissions savings is a building specific assessment in a form of Section J compliance report can Section J compliance report will be addressed separately under the respective lot development application.
	3. Include a calculation of water requirements and measures incorporated to reduce water use.	Responses have been addressed under Section 3.0 Potable Water Use. Note that development building specific calculation are to be addressed separately under the respective lot development application.
	4. Include a program to monitor and report annually on the efficiency measures implemented.	Responses have been addressed under Section 4.0, NCC 2019 Part J8 Facilities for Energy Monitoring. Note that details of energy monitoring system shall be addressed separately under the respective lot development application.
	5. Ensure the development will continue to operate at industry best practice over time.	Responses have been addressed under Section 5.0 Industry Best Practice.

Table 1: Condition A12 Requirements and summarised response table

Requirements and Responses

1. ESD, WSUD and Energy Efficiency Measures

Condition A12 Requirements

- Detail how the ESD and WUSD initiatives and energy efficiency measures outlined in the EIS will be implemented on site.

Water Sensitive Urban Design (WSUD) Initiatives

With reference to the Environmental Impact Statement (EIS) SSD package, stormwater management plan for the proposed development have taken into consideration the requirements of the Fairfield Development Concept Plan (November, 2010); Urban Area Onsite Detention Handbook (February, 1997) for water quantity and Sydney Metropolitan Catchment Management Authority, Interim Reference Guidelines for South East Queensland Concept Design Guidelines for WSUD for water quality management.

Water quality measures will be incorporated into the development to achieve appropriate pollution reduction targets. The stormwater concept plan takes into consideration the following initiatives:

- On-site detention (OSD) strategy capable of reducing developed peak flows to pre-developed flows from the site for 5 year to 100 year ARI design storm events for the ultimate developed site as well as the Interim Stage 1 to manage stormwater quantity discharging from the site.
- Stormwater treatment strategy which is capable of reducing pollutant loads of TSS, TP, TN and gross pollutants to the reduction targets outlined in the Sydney Metropolitan Catchment Management Authority, Interim Reference Guidelines for South East Queensland Concept Design Guidelines for WSUD.
- Onsite treatment for individual lot for stormwater pollutant targets reduction and hence, contributing to meeting the sitewide pollutants removal rate targets;
- Gross pollutant traps (GPTs) for access road area, placed in line with trunk drainage system prior to discharge to remove litter, debris and sediment.

Further details of WSUD can be referenced from the Stormwater Report submitted as "Appendix K1 - Stormwater Concept Plan.pdf", "Appendix G3_ Updated Stormwater Report.pdf" and its associated documentations.

Table 2 compares the project targeted pollutants reduction performance percentage against the industry best practice standards benchmark.

Pollutants	% Reduction Performance Targets based on the Stormwater Concept Plan	% Reduction Performance Targets based on Green Star Column A Reduction Targets (Green Star Benchmark)	% Reduction Performance Targets based on Green Star Column B Reduction Targets (Recognised as exceeding Green Star benchmark)
Total Suspended Solids (TSS)	85%	80%	80%
Gross Pollutants (GP)	90%	85%	90%
Total Nitrogen (TN)	45%	30%	45%
Total Phosphorus (TP)	65%	30%	60%
Total Petroleum Hydrocarbons	-	60%	90%
Free Oils	-	90%	90%

Table 2: Condition A12 Requirements and summarised response table

Based on the above, it is demonstrated that the initiatives outlined in the concept stormwater plan has the potential to exceed the performance target of industry best practice for TSS, GP, TN and TP if implemented. Petroleum Hydrocarbons and free oils removal may be considered should a development lot decided to pursue a Green Star formal certification. Another initiative that can be considered at development lot level and submitted if pursued under a separate development application submission is on-site rainwater harvesting. This will not only contribute to the overall stormwater management but also assist to reduce potable water usage.

Energy Efficiency Measures

Energy efficiency measures are largely building specific and hence, will be addressed under separate development application submission for respective development lot. Nevertheless, the following outlined a list of proposed energy efficiency measures that may be taken into consideration across each lot development, subject to building-specific detailed design, functionality and users' requirements, and the intent to pursue a green rating certification. Development lot pursuing a green rating certification may require a higher performance than those listed below:

- The roof and ceiling design shall allow for 10% increase on the minimum total system R-value required under NCC Part J1.3, including thermal bridging consideration.
- Roof upper surface solar absorptance shall allow for at least 0.05 less than maximum allowable value in NCC Part J1.3.
- The floor design shall allow for 10% increase on the minimum total system R-value required under NCC Part J1.6.
- For industrial roof lights, polycarbonate strips with total system U-value of less than or equal to 3.3 W/m²K and SHGC of less than or equal to 85% of the maximum allowable value in NCC Part J1.4.
- Wall-glazing construction overall U-value of at least 10% less than the allowable in NCC Part J1.5, including thermal bridging consideration.
- Wall-glazing construction SHGC value across all facades achieve no more than 90% of the calculated reference representative air-conditioning value allowable in Part J1.5.
- For wall exceed 80%, achieve 10% increase beyond Part J1.5 requirement.
- LED lighting design to achieve at least 20% reduction from the maximum allowable power based on the maximum allowable lighting power densities in Table J6.2a and be linked to automatic lighting control such as occupant detection and daylight adjustment.
- For Class 5 office space, provision of individually switched lighting zones that is no more than 150m² for 95% of the office area.
- Ventilation and air-conditioning systems shall be designed such that the installed fan motor power and pump power, is at least 15% and 10% respectively less than the maximum fan motor powers and pump powers defined in NCC BCA Section J Part J5.
- For unitary air conditioning equipment, the minimum energy efficiency ratio (EER) (cooling) to be at least 5% higher than the required minimum EER (cooling) as per Part J5.11.
- Where HVAC is only provided to office space, a minimum Energy Rating Labelling for unitary air-conditioning equipment must be at least 4-star as per AS/NZS 3823.2:2013, with the associated rated cooling or heating capacity of the unit does not exceed the design cooling or heating load, whichever is greater, by more than 15%.
- Domestic hot water powered either by renewable energy, electric heat pump with minimum COP3.5 under design conditions or waste heat recovered by other process.
- Where applicable, select Class A or B minimum lift energy efficiency in accordance with ISO25745-2, ISO25745-2 level 1 lift idle and standby energy performance level and ISO25745-3 class A+ to A+++ minimum escalator energy performance.
- Provision of rooftop solar photovoltaic systems for onsite renewable energy.

2. NCC 2019 Section J Energy Efficiency

Condition A12(b) Requirements

- Identify the total Greenhouse Gas Savings estimated to be achieved in comparison to a base case development (i.e. development constructed in accordance with the minimum requirements of the latest version of Section J, Volume One of the National Construction Code (NCC)) if the measures proposed under the Sustainability Strategy are implemented.

Greenhouse gas emissions

The NCC 2019 Section J contains mandatory requirements for the design of building envelope and features to minimise energy use. The development in this project will be designed to comply with the minimum requirements as specified under NCC 2019 Section J, addressing the following.

- Building fabric
- Building sealing
- Air-conditioning and ventilation systems
- Artificial lighting and power
- Heated water supply
- Facilities for energy monitoring

As Greenhouse Gas savings is a building specific assessment, a more detailed predictive Greenhouse gas emissions (GHG) modelling will be carried out at development lot building level. A copy of the Section J JV compliance modelling report will be addressed separately under the respective lot development application.

For the purpose of benchmarking, an industrial facility building (i.e. Proposed building) that is seeking to pursue a Green Star rating certification via Credit 15E Reference Building pathway typically achieve at least 10% of Greenhouse Gas savings when compared against a NCC Section J compliant building (i.e. Reference building as defined in line with the NCC Section J assessment methodology).

For the purpose of condition A12(b), Table 3 shows the estimated greenhouse gas emissions (kgCO₂e/annum) for both the reference case (NCC compliant) and proposed case based on two warehouse usage proportion scenarios:

Development Scenario	Reference (NCC compliant) Case Est. GHG Emissions (kgCO ₂ e/annum)	Proposed Case Est. GHG Emissions (kgCO ₂ e/annum)	% Est. GHG Emissions Reduction
<u>Scenario 1</u> 100% of the entire estate is built with typical Ambient Warehouse with associated office and amenities	880,000	792,000	10%
<u>Scenario 2</u> 25% of the entire estate is built with Temperature – Controlled Warehouse with associated office and amenities (with remaining estate built with Ambient Warehouse with associated office and amenities)	2,400,000	2,160,000	10%

Table 3: Condition A12(b) Requirements and summarised response table

3. Potable Water Use

Condition A12 Requirements

- Include a calculation of water requirements and measures incorporated to reduce water use.

Predictive Potable Water

Water efficiency measures is generally building based and will be addressed under separate development application submission for respective development lot. The following are few key best practice water reduction strategies that may be taken into consideration for reducing consumption of potable water and reliance on potable water source:

- All toilets – 4 star WELS rating
- All urinals – 6 star WELS rating
- All indoor taps – 6 star WELS rating
- All showers – 6 star WELS rating
- Onsite rainwater harvesting (in line with recommendation outlined under Schedule 2 of Environmental Planning and Assessment Regulation 2000) for all landscape irrigation and if applicable, general washing
- Landscape irrigation to be fitted with subsurface drip irrigation system with moisture sensor control

Figure 3 shows examples of general industrial building water modelling with implementation of the above initiatives. Based on the summary of demand from each potable water use between proposed vs. standard practice annual water demand, it is estimated that a percentage reduction in potable water consumption of at least 45% reduction when compared to equivalent Standard Practice Building is achievable. This is subject to detailed design parameters such as extent of catchment area, area served, landscape design, quantity and type of sanitary fittings.

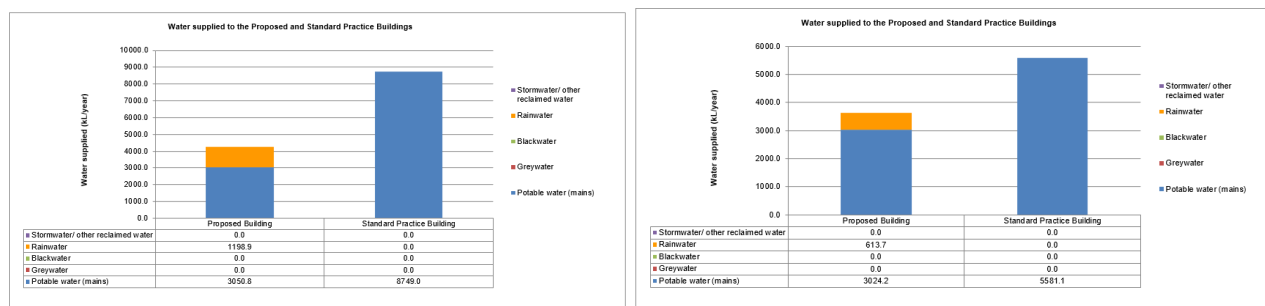


Figure 3: Examples of Predictive Annual Water Demand Comparison between Standard vs. Proposed Industrial Building

4. NCC 2019 Part J8 Facilities for Energy Monitoring

Condition A12 Requirements

- Include a program to monitor and report annually on the efficiency of the measures implemented.

Energy Monitoring

The development will be designed to comply with the minimum requirements as specified under NCC 2019 Section Part J8 Facilities for Energy Monitoring. The emphasis of Part J8 is on being able to maintain the required performance level such that excessive energy use can be detected and rectified, if arise.

In line with J8, a building with a floor area of more than 2,500 m² must have energy meters configured to enable individual time-of use energy consumption data recording, and must be interlinked by a

communication system that collates the time-of-use energy consumption data to a single interface monitoring system where it can be stored, analysed and reviewed, of the energy consumption of:

- (i) air-conditioning plant including, where appropriate, heating plant, cooling plant and air handling fans; and
- (ii) artificial lighting; and
- (iii) appliance power; and
- (iv) central hot water supply; and
- (v) internal transport devices including lifts, escalators and moving walkways where there is more than one serving the building; and
- (vi) other ancillary plant.

Details of energy monitoring system shall be addressed separately under the respective lot development application.

5. Industry Best Practice

Condition A12 Requirements

- Ensure the development will continue to operate at industry best practice over time.

Best Practice Sustainability Strategies

The Green Star rating sustainability framework is well-recognised within the local industry. For the purpose of industry best practise benchmarking initiatives, the table below provides a list of recommended initiatives for respective lot development considerations, where applicable. These includes several categories, including energy and water efficiency, indoor environmental quality and resource conservations.

Category	Sustainability Strategy for Considerations
Management	• Owner's commitment to set environmental performance targets, and provide ongoing metering, monitoring and improvement of energy and water consumption, and indoor environmental parameters for occupants' comfort (e.g. indoor air quality, thermal comfort and lighting comfort). • Services and maintainability review during design and prior to construction stage to address the commissionability, controllability, maintainability, operability and safety of building systems and fabric design. • Owner's commitment to form a tuning team and incorporate tuning process with quarterly adjustment, measurement and review of manufacturers' warranties for nominated building systems for the first 12-month after receipt of occupancy certificate in accordance with O&M manuals and building tuning plan that was developed in accordance with approved standards and guidelines. • An Operations and Maintenance (O&M) manual will be developed for all nominated building system to provide all relevant building system and operation information to the facilities management team. • A Building User Information (BUI) in digital format will be developed and made available to relevant stakeholders and building users to provide an easy to understand guidance for efficient day-to-day use. • Owner's commitment to include as part of its policy or guideline to reduce demolition waste and extend the life of interior fitout and finishes to at least 10 years. • Separate energy sub-metering for each system per each space of different functional use that is linked to Building Monitoring & Control System (BMCS) will be provided for areas with different usage pattern (e.g. office, warehouse, laboratory etc) and all major item that exceeds 5% of total building energy use, or have rated load greater than 100kW or combined energy use of max. 10kVA.

	• Separate water sub-metering that is linked to Building Monitoring & Control System (BMCS) will be provided for common uses of water that consume 10% of overall water use e.g. irrigation, toilet flushing. • Contractor shall adopt formalised EMS ISO14001 certified Environmental Management Plan (EMP) or equivalent, report on all non-conformities and implement relevant corrective and preventive actions during construction. • Implement recommendations outlined in Operational Waste Management Plan (OWMP) prepared by qualified waste auditor. • Easily accessible bin center provision sized according to best practice guide to provide adequate space for separation and storage of at least 3 separate waste streams with clearly marked bins/ containers distributed throughout the building.
Indoor Environmental Quality	• Minimum separation distances between pollution sources and outdoor air intakes design in compliance to ASHRAE Standard 62.1:2003 to minimize entry of outdoor air pollutants. • Owner's commitment to provide only low-emission equipment (i.e. printing/ photocopy machines and kitchen stoves) that comply with test standards ECMA-328, RAL-UZ171 or GGPS.003. • Design to maintain high level of acoustic comfort of internal ambient noise levels no higher than 5dB(A) above the lower figure in the range recommended in Table 1 of AS/NZ 2107:2016 • Provision of finishes with acoustically absorptive properties to the internal spaces to reduce the effects of noise breaking into office spaces and to assist in controlling reverberation. • Provision of material construction and finishes that limits noise transmission between enclosed spaces such that the sound level between enclosed spaces is more than 75. • Flicker free lighting with minimum colour rendering index (CRI) of 80 shall be selected and installed for visual comfort. • Lighting levels shall be designed to comply with best practice guidelines and light fixtures with anti-glare features (e.g. baffles, louvers, translucent diffusers to obscure direct light source from all viewing angle including upward views) shall be selected such that glare is controlled or eliminated. • Ambient warehouse spaces shall be extensively daylight and linked to automatic lighting control system for energy savings. • Low total volatile organic compounds (TVOC) paints, adhesives, finishes and low formaldehyde engineered wood products shall be specified to provide good indoor air quality for all indoor areas. • At least 95% of all new engineered wood products to meet the formaldehyde emission limits stipulated under Green Star Design & As-Built Table 13.2B.
Energy	• Energy efficiency measures as outlined under Section 1.0 of this report
Transport	• Early engagement of transport specialist to provide advice in reducing reliance on car driving and increase initiatives to encourage use of public transport, car share or walking through various strategies such as provision of active transport facilities and staff incentives.

Water	• All sanitary fixtures with high WELS rating. • Provision of rainwater tank to be installed to collect and reuse rainwater within the project's site boundary. • No water-based heat rejection used on the project. Proposed air conditioning systems will utilise air-cooled outdoor condensing units • Landscaping and associated systems will be designed such that subsoil drip irrigation with moisture sensor override and controls shall be incorporated. • Provision of a temporary storage for 80% of the routine fire protection system test water and maintenance drain downs where possible for reuse
Materials	• 95% of the building's steel (by mass) is sourced from a Responsible Steel Maker and at least 60% of the fabricated structural steelwork is supplied by a steel fabricator/contractor accredited to the Environmental Sustainability Charter of the Australian Steel Institute. • 95% of timber (by cost) used in building and construction will be from a reused source or certified by a forest certification scheme. • 90% of PVC products (by cost) used in the project including those in all formwork, pipes, flooring, blinds and cables shall meet the <i>Best Practice Guidelines for PVC in the Built Environment</i>, published by the Green Building Council of Australia, or no PVC products will be used; • Divert at least 90% of construction and demolition waste from landfill.
Land Use & Ecology	• At least 75% of the site area where applicable to be covered with softscape, exposed hardscape with SRI of 34 (3yr) or 39, water body, cool roof or roof with SRI 64 (over 3yr) or 84 to reduce urban heat island effect.
Emissions	• A gross pollutant trap (or similar) and swale landscapes will assist in the treatment of stormwater prior to discharge from the site. • Exterior and landscape lighting shall be carefully selected to ensure reduction in light pollution either by installing external light that achieve compliance with 5% upward light output ratio (ULOR) relative to its mounting orientation or by control of direct illuminance (0.1 lux to site boundary and 0.1 lux to 4.5 metres beyond the site into the night sky when calculated in accordance with AS4282:1997.
Innovation	• Improving on Green Star Benchmarks – Ultra Low VOC Paints: At least 50% (by cost) of the paints specified in the buildings shall have a maximum TVOC content of 5g/L and shall be verified by one of the approved paint test methods. • On-site renewable energy generation: Replace at least 15% of the building energy consumption. • Construction & Demolition (C&D) Waste: C&D waste to landfill are limited to a fixed benchmark of 5kg of waste per square meter of gross floor area (GFA). • Global Sustainability – Green Cleaning: Cleaning contract adopting green cleaning policy/ scope of works to all areas under building owner's control.

Table 4: Sustainability Strategies for Considerations

Sydney

Level 1,
15 Atchison Street
St Leonards NSW 2065
+612 9437 1022

Melbourne

Level 3,
116 Hardware Street
Melbourne VIC 3000
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