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The Australian Hearing Hub

Macquarie University

ESD Return Brief

Prepared for

Macquarie University

CUNDALL

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The success and realisation of the proposed initiatives will be dependant upon the commitment of the design team, the development of the initiatives through the life of the design and also the implementation into the operation of the building. Without this undertaking the proposed targets may not be achieved		

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1 Introduction

This document provides a summary of the proposed ESD strategies for the Australian Hearing Hub at Macquarie University to achieve:

- A 5 Star Green Star Office v3 rating (Design & As-Built) for the base building;
- A (minimum) 4.5 Star NABERS Energy rating for the base building; and
- Future proofing against rising utility costs.

Whilst this return brief presents a possible approach to achieving the above targets, the responsibility lies with the head contractor to ensure that the base building achieves each of the nominated Green Star and NABERS Energy targets.

Strategies focus on the following key issues:

- Providing premium indoor environment quality by optimising air quality, natural daylight, thermal comfort and glare control
- Reducing energy consumption and thus greenhouse gas emissions
- Reducing the use of mains potable water
- Reducing embodied energy within the development
- Reducing the environmental impact of harmful emissions to the air, land and water
- Allowing for adaptation to regulations and costs associated with climate change
- Ensuring building occupants understand the ESD strategies within the building so that it can function as designed

2 ESD Resources

The Contractor is required to provide a dedicated resource for managing all documentation related to the Green Star Design and As Built submissions in addition to the ESD consultant.

3 Programme

In order to achieve the ESD requirements outlined above the following program for submission of Green Star and NABERS shall be adhered to:

3.1 Green Star Office Design v3

- The contractor shall ensure that all relevant documentation required for the 5 Star Green Star Office v3 Design rating shall be complete and submitted to the ESD consultant by December 2010. The documents shall then be collated and submitted to the GBCA for round 1 of the Green Star review process.

3.2 Green Star Office As Built v3

- The contractor shall ensure that all relevant documentation and Consultant/ contractor certification required for the 5 Star Green Star Office v3 As Built rating shall be complete and submitted to the ESD consultant within 2 months after Practical Completion. The documents shall then be collated and submitted to the GBCA for round 1 of the Green Star review process.

3.3 NABERS 4.5 Star Base Building Energy rating Commitment agreement

Data will be provided by the contractor as requested by the NABERS Accredited Assessor so that a Performance Rating can be completed for the Premises within 13 months and no more than 14 months from the date of Full Operation.

NABERS commitment agreement protocol requires the building to be fully commissioned as agreed by builder and Principal AND at 75% occupancy as outlined in lease agreements before the rating period can commence. A 12 month continual period is to be utilised in order to gain a formal NABERS base building rating.

Any discrepancies between this document and the NABERS protocol to be used at the time of the rated period, the NABERS protocol shall prevail.

4 NABERS Office Base Building energy rating Requirements

The Contractor is to familiarise themselves of the relevant NABERS protocol required to be used at operation of the building.

During the rated period as defined by the current NABERS protocol at the time of operation the Contractor is to:

- Organise and Chair 4 x Quarterly meetings and advise on the rating performance of the Works. As a minimum the Principal, the Contractor the ESD consultant, the ICA the Building manager and will be required. Subcontractors and Consultants may need to attend if required.
- To attend monthly meetings organised by the Contractor and assist the Principal in obtaining the NABERS rating.
- Advise on the rating performance of the Works.
- To make available documentation at the request of Principal.
- Manage and direct the Mechanical Engineer, the Mechanical Contractor, the ESD Consultant and the ICA's duties in assisting the Principal in obtaining the NABERS rating.

Minimum Requirements.

The minimum requirements of the building tuning process after PC is defined as follows:

- The Mechanical Contractor will prepare monthly data to compare the actual energy consumption v's the estimated energy usage and submit to the Contractor
- The Principal will provide all energy Bills to compare the metered power usage to the Billed power usage.
- The Principal will complete the Monthly Checklist see Appendix G, which establishes the operational issues and identifies and addresses those issues that may affect the rating.
- Upon the direction of the Contractor the parties will review the data and make recommendations
- Upon direction of the Team members the Contractor will direct subcontractors to investigate and rectify or identify those areas where energy consumption exceeds the estimated usage. Should operational issues need investigating the Principal will direct the Building Manager to rectify.
- Identify Tenants complaints and resolve
- The Contractor will direct the timeframe for subcontractor actions.
- The Contractor will direct the final re-commissioning process.
- The Contractor will engage the ESD Consultant after 12 months to undertake a review of the construction and operation of the Works and to write his opinion whether the works should achieve the rating at full occupancy.
- The Contractor will direct System Optimisation initiatives at his discretion.

5 Green Star Office v3 Initiatives

5.1 Facade

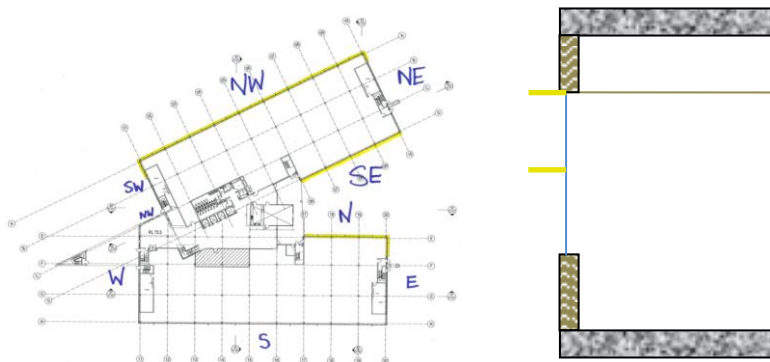
The facade design balances a number of performance trade-offs: cost, aesthetic, natural light penetration to improve indoor environment quality and reduce electric lighting energy use, external shading and solar performance of glazing to reduce perimeter heat loads and mechanical plant size as well as cooling energy use, thermal performance to balance thermal gains and losses through the fabric, glare control to provide visual comfort for occupants, design for disassembly and BCA Section J minimum requirements for fabric and glazing (see Appendix B for Section J glazing compliance calculations).

The facade design will contribute towards achieving the following Green Star credits:

- IEQ-4 Daylight
- IEQ-5 Daylight Glare Control
- IEQ-9 Thermal Comfort
- ENE-1 Greenhouse Gas Emissions Reduction
- MAT-9 Design for Disassembly

As such, the facade performance requirements are as follows:

- Non-glazed external walls: Minimum R2.8 insulation
- Roof fabric: Minimum R3.2 insulation
- 2 x 450mm horizontal shades on the NW and N facades indicated in yellow below (single shade only for SE facade) – this is the minimum shading treatment required.



- Maximum U Value (including framing): 2.7W/m²K
- Maximum Solar Heat Gain Coefficient: 0.35
- Minimum Visual Light Transmission: 60%
- Demountable facade panels for ease of disassembly and reuse as well as ease of replacement by operable windows for natural ventilation or other panel typologies to significantly reduce the future cost of improving energy efficiency (see Appendix A for climatic analysis for natural ventilation)

5.2 Architectural

The architectural design has been provided by Perumal Pedavoli Architects and satisfies Green Star credit criteria for the following credits:

- **IEQ-4 Daylight** (see section 2.1)
- **IEQ-5 Daylight Glare Control** (see section 2.1)
- **IEQ-9 Thermal Comfort** (see section 2.1)
- **IEQ-13 Volatile Organic Compounds** – Paints and Coatings must comply with the following table (see Appendix C for a list of compliant products)

Paints & Coatings must comply with ASTM D3960	
Product Type	Maximum VOC Content (g/litre)
Interior Semi Gloss	16
Interior Low Sheen	16
Interior Flat Washable	16
Ceilings Interior	14
Exterior Gloss	75
Trim - gloss, semi gloss, satin, varnishes & wood stains	75
Timber and binding primers	30
Latex primer for galvanised iron and zincalume	60
Interior Latex undercoat	65
Interior Sealer	65
Interior Sealer	65
One and two pack performance coatings for floors	140
Other solvent based coatings	200

- **IEQ-13 Volatile Organic Compounds** – Sealants and Adhesives must comply with the following table (see Appendix C for a list of compliant products)

Adhesives & Sealants must comply with South Coast Air Quality Management District Rule 1168	
Product Type	Maximum VOC Content (g/litre)
Indoor carpet adhesive	50
Carpet pad adhesive	50
Wood flooring and laminate adhesive	100
Rubber flooring adhesive	60
Sub-floor adhesive	50
Ceramic tile adhesive	65
Cove base adhesive	50
Dry wall & panel adhesive	50
Multipurpose construction adhesive	70
Structural glazing adhesive	100
Architectural sealants	250

- **IEQ-13 Volatile Organic Compounds** – Carpets must comply with the following table (see Appendix C for a list of compliant products)

Carpets must comply with Carpet & Rug Institute Green Label or ASTM D5116		
Product Type	Maximum VOC Emission (mg/m ² /hr)	Maximum 4-PC Emission (mg/m ² /hr)
All carpet products	0.5	0.05

- **IEQ-14 Formaldehyde Minimisation** – Engineered wood products must comply with the following table (see Appendix D for a list of compliant products)

Engineered Wood Products				
Product Type	Formaldehyde Emission Limit (E1)	Formaldehyde Emission Limit (E0)	Formaldehyde Emission Limit (Super E0)	Applicable Testing Method
Plywood	1.0 mg/L	0.5 mg/L	0.3 mg/L	AS 2098.11
Particle Board	1.0 mg/L	0.5 mg/L	0.3 mg/L	AS 4266.16
MDF	1.5 mg/L	0.5 mg/L	0.3 mg/L	AS 4266.16
Plywood	6 mg / 100 g	4 mg / 100 g	2.4 mg / 100 g	EN 120
Particle Board	9 mg / 100 g	6 mg / 100 g	2.8 mg / 100 g	EN 120
MDF	9 mg / 100 g	6 mg / 100 g	2.8 mg / 100 g	EN 120
Plywood	0.12 mg/m ³ h	0.08 mg/m ³ h	0.04 mg/m ³ h	DIN EN 717-1
Particle Board	0.12 mg/m ³ h	0.08 mg/m ³ h	0.04 mg/m ³ h	DIN EN 717-1
MDF	0.12 mg/m ³ h	0.08 mg/m ³ h	NA	DIN EN 717-1

- **TRA-2 Fuel Efficient Transport**

- A minimum of 80% of all spaces designated for use by car-pool participants, small cars, hybrid or other alternative fuel vehicles must be preferred parking spaces- these are defined as closest to the facility entrance or lift core. These spots must be clearly signposted and marked with a separate colour from other spots and must not be double or tandem spaces.
- The size of a car space specified for a 'small vehicle' must be physically reduced and suitably labelled according to the AS/NZS2890.1:2004 minimum (i.e. **2.3m by 5m** for most cases. Refer to Australian Standard for more information).

- **TRA-3 Cyclist Facilities**

- One staff cycle rack per 150m² NLA will be provided, including a locker for clothes per rack and a shower and changing room per ten racks
- One visitor cycle rack will be provided per 750m² NLA in a covered location

- **WAT-1 Occupant Amenity Potable Water Efficiency**

- Efficient tapware has been specified as follows, resulting in a 35% reduction in potable water consumption compared to the current commercial benchmark
 - Minimum 6 Star WELS rated urinals (max. 0.8L/flush)
 - Minimum 5 Star WELS rated taps (max. 5L/min)
 - Minimum 4 Star WELS rated toilets (max. 3.5L/flush)
 - Minimum 3 Star WELS rated showerheads (max. 9L/min)

- **MAT-1 Recycling Waste Storage**

- A dedicated storage area of over 40m² for the separation and collection of office recyclables will be provided that is located in the same level as the delivery area with clearly marked, sign-posted and within 20m of the lift core serving all floors;
- The area is adequately sized to accommodate the storage equipment for the following as a minimum: cardboard, glass, used cooking oil, organic (compost) materials, plastics (mixed containers, soft plastics and polystyrene) and metals;
- The area meets the access requirements of 'Policy for Waste Minimisation in New Developments' (NSW, 2004): Section A, points A-12 through A-17, and Section C, points C6 and C7:
 - A12 The room/s for storing waste and recycling must be located in a position that is convenient for both users and waste collection staff.
 - A13 Collection vehicles must be able to service the development efficiently and effectively, with limited need to reverse. If a vehicle turntable is used it must have a 30 tonne capacity.
 - A14 If clearance proposed is less than 3.8 metres, then vehicle specification will be required from the waste provider that conforms with the proposed development.
 - A15 A suitable refuse collection point must be nominated where waste loading operations can occur on a level surface away from gradients and vehicle ramps.
 - A16 The path for wheeling bins between a central waste storage point and the collection vehicle must be level and free of steps or kerbs. The maximum travel distance between the storage point and the collection point for bins is:
 - 10 metres – for bins including 240 litre, 660 litre & 1000 litre Mobile Garbage Bins (MGB's)
 - 3 metres – for both 1500L and 2000 litre bulk bins (also known as skips)
 - Any proposed variations require further assessment and discussion with relevant Council Officers.

- A17 Where collection vehicles are required to drive into a building to collect waste or recycling, adequate vehicle clearance is required. See Appendix C for typical dimensions of collection vehicles. Access to an approved collection point within a building must enable all collection vehicles to both enter and exit the premises in a forward direction.

- **MAT-8 Sustainable Timber**
 - All timber used in the design will be sourced from sustainable sources such as plantations (FSC certified) or reused from post-consumer recyclers.

- **EMI-4 Insulant ODP**
 - 100% of insulants will have an Ozone Depletion Potential (ODP) of zero

- **IEQ-12 Internal Noise Levels**
 - 95% of the NLA will not exceed the 'Satisfactory' ambient internal noise levels in accordance with AS/NZS 2107:2000, as follows:
 - Within the entire base building general office space, noise from the building services will not exceed 40dBAeq.
 - Within the base building office space, the sound level will not exceed 40dBAeq (measured in open plan offices).

Additionally as part of the O&M manual, consideration will be given to best practice environmentally responsible materials for replacement/repair.

5.3 Electrical

A high efficiency electrical design has been developed by JHA consulting. The design satisfies Green Star credit criteria for the following credits:

- **MAN-2 Commissioning Clauses** (see Section 2.7)
- **MAN-3 Building Tuning** (see Section 2.7)
- **IEQ-6 High Frequency Ballasts**
 - High frequency ballasts will be installed in fluorescent luminaries for 95% NLA as measured at the working plane (720mm AFFL)
- **IEQ-7 Electric Lighting Levels**
 - Office lighting design will maintain an illuminance level of no more than 400 Lux for 95% NLA as measured at the working plane (720mm AFFL)
- **ENE-2 Energy Sub-metering**
 - Sub-metering and monitoring of the following will be provided:
 - Lighting for each tenancy
 - Power for each tenancy
 - Power uses over 100kVA
- **ENE-3 Lighting Power Density**
 - Maximum lighting power density of 1.5W/m² per 100 lux in general office areas, 2.0W/m² in meeting rooms and cellular offices (720mm AFFL)
- **ENE-4 Lighting Zoning**
 - Lighting zones to remain less than 100m² with switches accessible to occupants and individually addressable switching circuits
 - Daylight sensors for dimming will be provided
- **ENE-5 Peak Demand Reduction**
 - A connection will be made to the Library Thermal Energy Storage (TES) system such that the Hearing Hub electric chillers will assist in charging the TES during off-peak times and draw chilled water during peak times to achieve a 15% peak demand reduction.
- **EMI-7 Light Pollution**
 - External lighting will be designed to avoid light being directed upwards such that no light beam, generated from within the building or outside of the building boundary, is directed at any point in the sky hemisphere without falling directly onto a non-transparent surface.
 - The design will comply with AS4282 "Control of the Obtrusive Effects of Outdoor Lighting" and 95% of outdoor spaces will not exceed the minimum requirements of AS1158 for illuminance levels.

Additionally, infrastructure capacity for future connection to a roof-mounted PV system will be provided to allow the building to increase its onsite energy generation potential when funding allows. Electrical infrastructure will also be provided for future electric car charging bays.

5.4 Mechanical

A high efficiency VAV system suitable for a multi-tenanted layout has been designed by Erbas consulting. The design satisfies Green Star credit criteria for the following credits:

- **MAN-2 Commissioning Clauses** (see Section 2.7)
- **MAN-3 Building Tuning** (see Section 2.7)
- **IEQ-1 Ventilation Rates**
 - 50% improvement on AS1668.2-2002 for ventilation rates
- **IEQ-2 Air Change Effectiveness**

The ventilation systems must be designed to achieve an Air Change Effectiveness (ACE) of >0.95 for at least 95% of the NLA when measured in accordance with ASHRAE 129-1997: 'Measuring Air Change Effectiveness'; measured in the breathing zone (nominally 1m from finished floor level).
- **IEQ-3 Carbon Dioxide Monitoring and Control**
 - A CO₂ monitoring and control system must be provided with a minimum of one CO₂ sensor at all return points on each floor, to facilitate continuous monitoring and adjustment of outside air ventilation rates to each level and independent control of ventilation rates to achieve outside air requirements.
- **IEQ-16 Tenant Exhaust Riser**
 - Dedicated tenant exhaust risers must be provided with the following characteristics:
 - Compliant with section 5.7 of AS1668.2-2002;
 - Providing no less than 0.2 L/s/m² for 100% of the NLA;
 - Capacity of 0.35 L/s/ m² for 100% of NLA on any individual floor; and
 - Exhaust will not be recycled to other enclosures of different use.
- In contribution to **ENE-1 (Greenhouse Gas Emission Reduction)**, consideration will be given to maximising the energy efficiency of ancillary components of the mechanical system such as fans, pumps and all chillers.
- **EMI-1 Refrigerant ODP**
 - 100% of refrigerants will have an Ozone Depletion Potential (ODP) of zero
- **EMI-3 Refrigerant Leaks**
 - HVAC Systems containing refrigerants are to be contained in a moderately air tight enclosure and a refrigerant leak detection system is to be installed to cover high-risk parts of the plant; and
 - A refrigerant recovery system will be equipped with an automated pump-down system sized to effectively and safely capture, isolate, and store 95% (by weight) of the maximum refrigerant charge.

- **WAT-4 Heat Rejection Water**

- The Potable water consumption of water-based heat rejection systems will be reduced by 50% through the use of evaporative condensers for the base building HVAC system heat rejection.

Additionally, the system will allow for:

- An economy cycle operation where outside air will be brought to the space without any active conditioning;
- A future mixed mode operation to allow the air conditioning system to switch off when the facade is replaced with openable windows and the outside temperature permits natural ventilation; and
- Consideration for a future high efficiency replacement system.

5.5 Hydraulics

A water efficient hydraulic design has been prepared by Steve Paul and Partners consulting. The design satisfies Green Star credit criteria for the following credits:

- **MAN-2 Commissioning Clauses** (see Section 2.7)
- **MAN-3 Building Tuning** (see Section 2.7)
- **WAT-1 Occupant Amenity Potable Water Efficiency**
 - Rainwater will be captured from the roof and stored in a 200kL tank to supply irrigation and toilet flushing
- **WAT-2 Water Meters**
 - Sub-metering and monitoring of water will be provided for each tenancy
 - Sub-metering and monitoring of water will be provided for major water uses within the base building, including:
 - Bathrooms;
 - Showers;
 - Irrigation;
 - Wash-down systems;
 - Rainwater supply; and
 - Future recycled water supply (to be provided in future)
- **WAT-3 Landscape Irrigation**
 - Rainwater will be captured from the roof and stored in a 200kL tank to supply over 90% of water demand for irrigation

- **WAT-5 Fire System Water Consumption**
 - Sufficient temporary storage will be provided for a minimum of 80% of the routine fire protection system test water and maintenance drain-downs, for reuse on-site
- **EMI-6 Discharge to Sewer**
 - The reduction in potable water consumption due to water efficiency measures will result in a 50% reduction in discharge to sewer compared to the current commercial benchmark

Additionally, infrastructure provision will be made to allow the cooling towers to be fed from a future district recycled water main and as part of the O&M manual, consideration will be given to best practice water efficient replacement fittings in future.

5.6 Structural/Civil

The structural and civil engineering design has been prepared by Woolacotts consulting. The design satisfies Green Star credit criteria for the following credits:

- **MAT-5 Concrete**
 - A proportion of cement will be replaced with an industrial waste product (at least 30% for in-situ concrete, 20% for precast concrete and 15% for stressed concrete), reducing the embodied energy impacts of Portland cement production
 - 20% of all aggregate used for structural purposes will be recycled (Class 1 RCA in accordance with HB155-2002) or slag aggregate; and no natural aggregates will be used in non-structural uses (e.g. building base course, sub-grade to any car parks and footpaths, backfilling to service trenches, kerb and gutter)
- **EMI-5 Watercourse Pollution**
 - Stormwater will be detained such that the development does not increase peak stormwater flows compared to the pre-development site for rainfall events of up to a 1-in 2 year storm;
 - All stormwater leaving the site, at any time up to a 1-in-20 year storm event, will be treated or filtered in accordance with either:
 - CSIRO Urban Stormwater: Best Practice Environmental Management Guidelines; or
 - Australian and New Zealand Environment Conservation Council (ANZECC)'s Guidelines for Urban Stormwater Management.

5.7 Construction & Operational Management

The head contractor, commissioning agent and facilities management will be required to ensure that the construction and operational management will achieve high levels of performance for environmental management. The current management approach satisfies Green Star credit criteria for the following credits:

- **MAN-2 Commissioning Clauses**

- Comprehensive pre-commissioning, commissioning, and quality monitoring are to be contractually required to be performed for all building services (BMS, mechanical, electrical and hydraulic); and the works completed in exact accordance with CIBSE Commissioning Codes or ASHRAE Commissioning Guideline 1-1996 (for mechanical services only); and
- The design team and contractor are required to transfer project knowledge to the building owner/manager through all of the following:
 - Documented design intent
 - As-built drawings
 - Operations and Maintenance Manual
 - Commissioning Report; and
 - Training of building management staff

- **MAN-3 Building Tuning**

- After handover, the building owner must implement tuning of all building systems; and a relevant member of the design team is involved in the tuning process.
- Monthly monitoring must be undertaken and the outcomes are reported to the building owner quarterly
- Full re-commissioning is to be undertaken 12 months after practical completion
- A Building Tuning Report on the outcomes of the tuning process is to be provided to the building owner and made available to the design team.

- **MAN-4 Independent Commissioning Agent**

- An independent commissioning agent, Graeme Thwaite, will provide commissioning advice to the building owner and the design team as well as monitor and verify the commissioning of all building systems.

- **MAN-5 Building User's Guide**

- A simple and easy-to-use Building Users' Guide, which includes information relevant for the building users, occupants and tenants' representatives, will be developed and made available to the building owner.

- **MAN-6 Environmental Management**

- The head contractor is to implement a comprehensive, project-specific Environmental Management Plan (EMP) for the works in accordance with Section 4 of the NSW Environmental Management System guidelines 1998 or 2007; and
- The head contractor must have valid ISO 14001 Environmental Management System (EMS) accreditation prior to and throughout the project.

- **MAN-7 Waste Management**
 - More than 80% of demolition and construction waste will be recycled.
- **ECO-1 Waste Management**
 - Should no topsoil be deemed contaminated, then:
 - All topsoil impacted by the construction works shall be separated and protected from degradation, erosion or mixing with fill or waste;
 - There must be no net change in the volume of topsoil on the site; and
 - 95% of all topsoil (by volume) must retain its productivity

5.8 Innovation: Future-Proofing & Design for Climate Change Adaptation

The design team has developed a long-term greenhouse gas emissions reduction strategy for the building to allow it to respond to adaptation to regulations and costs associated with climate change.

Current cost barriers to low carbon buildings preclude the majority of new buildings from targeting energy reductions of 70-100% compared to the current average. This range is becoming globally accepted as the 'restorative' range to prevent catastrophic climate change due to atmospheric greenhouse gas emissions. As a result, buildings constructed today will face regulations relating to greenhouse gas emissions reductions that will require making significant upgrades during their lifetime.

The project team believes that designing in the ability to make these upgrades without major demolition and refurbishment can potentially avoid major future cost penalties with little capital cost to the current building construction.

Currently the Australian Hearing Hub is targeting a reduction of 50% which will be achieved through strong passive design, efficient building services and a shared energy system connection with the library thermal energy storage tank.

Cost-benefit analysis has shown that other on-site energy generation systems such as solar cooling or photovoltaic electricity generation are not cost effective and have thus been omitted from the design. It is expected that technologies such as these will become cost-effective during the lifetime of this building and as such the building has been designed to accommodate a future photovoltaic electricity generation system.

Additionally, the facade has been designed as demountable and the mechanical system controls have been designed to allow future mixed-mode operation when conditions permit.

Furthermore, the operations and maintenance manual will include requirements to source energy efficient equipment as replacements become necessary.

In addition to the greenhouse gas reduction approach, a number of other future-proofing strategies have been developed. The table below summarises all future-proofing strategies associated with the Australian Hearing Hub.

Future Proofing Initiative	Description & Benefits
Shared Thermal Energy Storage for Peak Demand Reduction	A connection will be made to the Library Thermal Energy Storage (TES) system such that the Hearing Hub electric chillers will assist in charging the TES during off-peak times and draw chilled water during peak times to achieve a 15% peak demand reduction.
Photovoltaic electricity generation	Provision has been made within the electrical distribution board to allow future connection of photovoltaic panels.
Natural ventilation mode	A demountable facade has been designed such that a replacement facade with openable windows can be provided quickly and cost-effectively so that the building can operate in natural ventilation mode when conditions permit. Mechanical system controls have been designed to allow for this mode of operation.
Electric Car Charging	Provision of electrical infrastructure has been made to allow for future car charging bays in the basement.
Sustainable Equipment Replacement Policy	Requirements for an improvement in the environmental performance of replacement equipment compared to components being replaced have been included in the operation and maintenance manual.
Recycled Water for Non-potable demands	Provision has been made to allow cooling towers and sanitary flushing to connect to a future district recycled water main.

5.9 Credit Summary

The table below summarises the credits being targeted to achieve a 5 Star Green Star Office Design & As-Built certification.

Category	Title	Credit No.	Points Available	Points Achieved		Points to be Confirmed
Management						
	Green Star Accredited Professional	Man-1	2	2		0
	Commissioning Clauses	Man-2	2	2		0
	Building Tuning	Man-3	2	2		0
	Independent Commissioning Agent	Man-4	1	1		0
	Building Users' Guide	Man-5	1	1		0
	Environmental Management	Man-6	2	2		0
	Waste Management	Man-7	2	2		0
		TOTAL	12	12		0
Indoor Environment Quality						
	Ventilation Rates	IEQ - 1	3	1		0
	Air Change Effectiveness	IEQ - 2	2	2		0
	Carbon Dioxide Monitoring and Control	IEQ - 3	1	1		0
	Daylight	IEQ - 4	3	1		0
	Daylight Glare Control	IEQ - 5	1	1		0
	High Frequency Ballasts	IEQ - 6	1	1		0
	Electric Lighting Levels	IEQ - 7	1	1		0
	External Views	IEQ - 8	2	0		0
	Thermal Comfort	IEQ - 9	2	2		0
	Individual Comfort Control	IEQ - 10	2	0		0
	Hazardous Materials	IEQ - 11	1	1		0
	Internal Noise Levels	IEQ - 12	2	2		0
	Volatile Organic Compounds	IEQ - 13	3	3		0
	Formaldehyde Minimisation	IEQ - 14	1	1		0
	Mould Prevention	IEQ - 15	1	0		0
	Tenant Exhaust Riser	IEQ - 16	1	1		0
		TOTAL	27	18		0
Energy						
	Conditional Requirement	Ene -	-	-		0
	Greenhouse Gas Emissions	Ene - 1	20	5		0
	Energy Sub-metering	Ene - 2	2	2		0
	Lighting Power Density	Ene - 3	3	2		0
	Lighting Zoning	Ene - 4	2	2		0
	Peak Energy Demand Reduction	Ene - 5	2	1		0
		TOTAL	29	12		0
Transport						
	Provision of Car Parking	Tra - 1	2	2		0
	Fuel-Efficient Transport	Tra - 2	1	1		0
	Cyclist Facilities	Tra - 3	3	3		0
	Commuting Mass Transport	Tra - 4	5	5		0
		TOTAL	11	11		0

Water						
	Occupant Amenity Water	Wat - 1	5	4		0
	Water Meters	Wat - 2	1	1		0
	Landscape Irrigation	Wat - 3	1	1		0
	Heat Rejection Water	Wat - 4	4	2		0
	Fire System Water Consumption	Wat - 5	1	1		0
		TOTAL	12	9		0
Materials						
	Recycling Waste Storage	Mat - 1	2	2		0
	Building Reuse	Mat - 2	0	na		0
	Reused Materials	Mat - 3	1	0		0
	Shell and Core or Integrated Fit-out	Mat - 4	2	2		0
	Concrete	Mat - 5	3	2		0
	Steel	Mat - 6	2	0		0
	PVC Minimisation	Mat - 7	2	0		0
	Sustainable Timber	Mat - 8	2	2		0
	Design for Disassembly	Mat - 9	1	1		0
	Dematerialisation	Mat - 10	1	0		0
		TOTAL	16	9		0
Land Use & Ecology						
	Conditional Requirement	Eco -	0	-		0
	Topsoil	Eco - 1	1	0		1
	Reuse of Land	Eco - 2	1	1		0
	Reclaimed Contaminated Land	Eco - 3	2	2		0
	Change of Ecological Value	Eco - 4	4	1		0
		TOTAL	8	4		1
Emissions						
	Refrigerant ODP	Emi - 1	1	1		0
	Refrigerant GWP	Emi - 2	2	0		0
	Refrigerant Leaks	Emi - 3	2	2		0
	Watercourse Pollution	Emi - 5	2	2		0
	Discharge to Sewer	Emi - 6	4	2		0
	Light Pollution	Emi - 7	1	1		0
	Legionella	Emi - 8	1	1		0
	Insulant ODP	Emi - 4	1	1		0
		TOTAL	14	10		0
	Total weighted points:	65				1
	Once certified this would equate to a Five Star rating.					

Appendix A: Climatic Analysis for Natural Ventilation

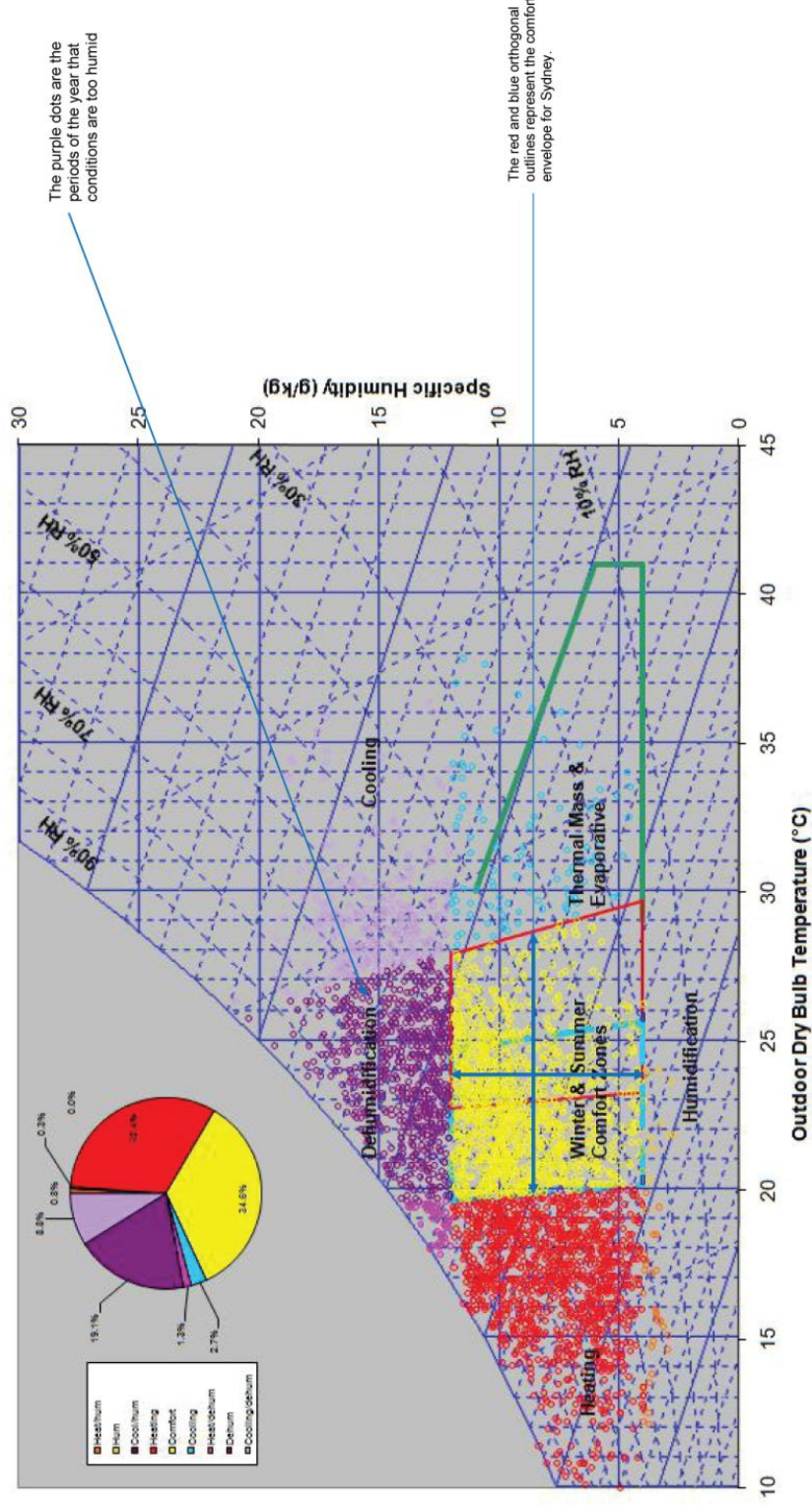
The building has been designed such that the facade will be able to demount to allow the installation of openable windows at a later date.

The diagram below is a psychometric chart that represents annual Sydney weather data. Each individual dot on the chart represents an hour of weather data for a typical year. The pie chart in the left corner groups all the points into comfort categories i.e. comfortable (yellow) too hot (blue), too humid (purple), too cold (red).

The red and blue orthogonal outlines represent the comfort envelopes for summer and winter. All the yellow dots that are contained within this envelope are the comfortable hours. If just air temperatures were used to represent comfort between 19 to 26 deg C then comfort conditions could represent 60% of the year.

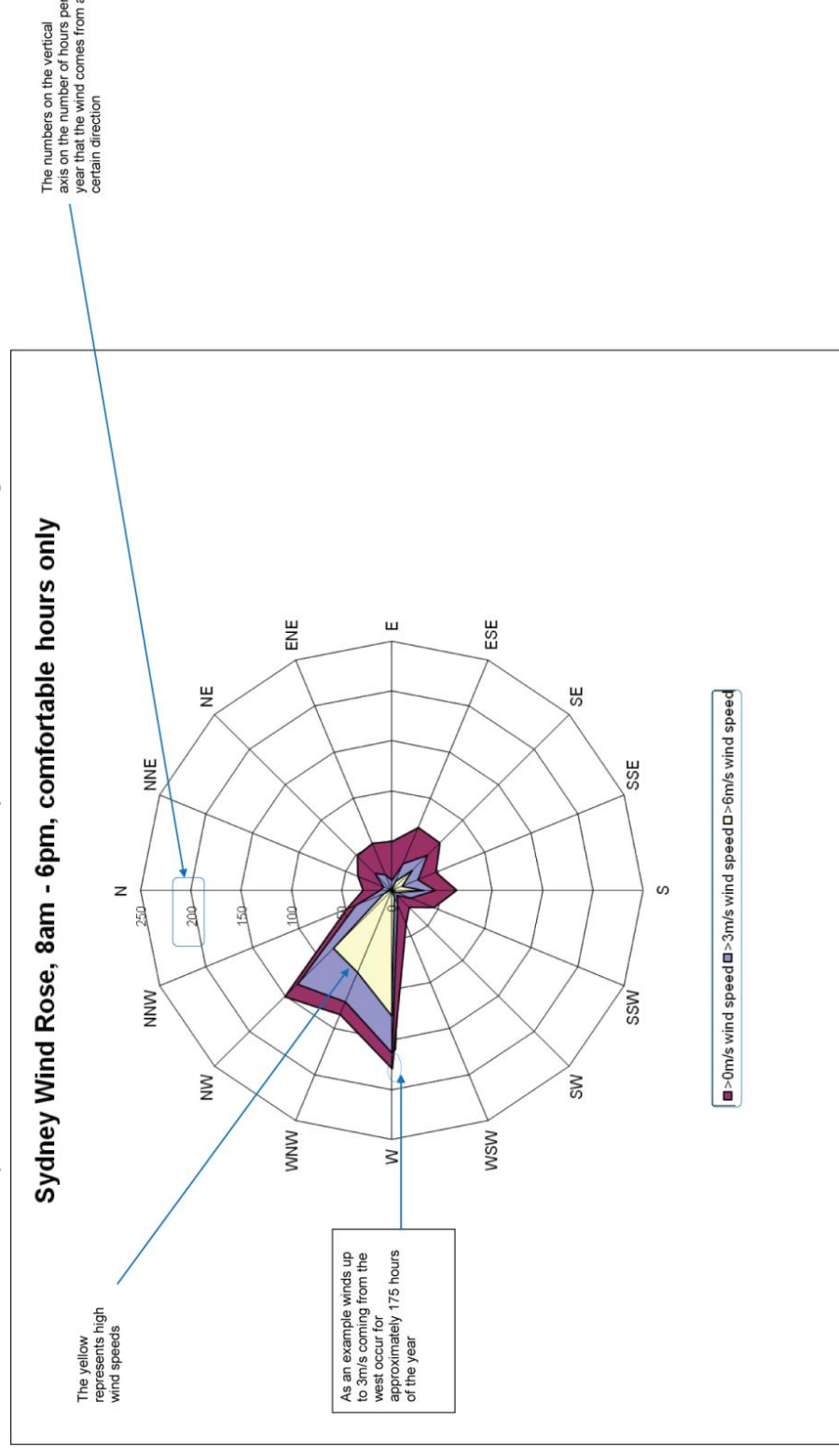
The high humid levels that are experienced in Sydney (represented by the purple dots) have a considerable impact on comfort reducing the acceptable comfort period to 35% of the year.

The assessment has been made for the working hours between 8am and 6pm and the data has been adjusted to represent internal conditions allowing for internal office loads.



The diagram below is a wind rose that has been generated for the comfort hours represented in the psychometric chart (the yellow dots).

A typical wind rose for Sydney for all hours has three main characteristics for strong and frequent wind conditions - predominant strong southerlies, cool north easterlies after hot summer days and occasional but strong hot westerlies in summer. The typical wind rose looks very different from the wind rose that just represents the conditions when temperatures are comfortable. The predominant breezes during the comfort hours is from the west and north-west. These breezes should be targeted for areas appropriate for mixed-mode ventilation.



Appendix B: BCA Section J 2010 Glazing Calculations

The tables below illustrate the compliant glazing taken from the BCA Section J2 glazing calculator for each floor.

[illegible]

BCA VOLUME ONE GLAZING CALCULATOR (first issued with BCA 2010)

Building name/description: **1F** Climate zone: **5** Application: **other**

Storey: **2**

Facade areas		N	NE	E	SE	S	SW	W	NW	Internal
Option A	89m ²	93m ²	152m ²	118m ²	264m ²	61m ²	104m ²	295m ²		
Option B										
Glazing area (A)	41m ²	16m ²	15m ²	55m ²	124m ²	9.4m ²	35m ²	135m ²		

Number of rows preferred in table below: **23** (as currently displayed)

LAZING ELEMENTS, ORIENTATION SECTOR, SIZE AND PERFORMANCE CHARACTERISTICS

Glazing element	Facing sector	Size			Performance		SHADING			CALCULATED OUTCOMES OK (if inputs are valid)						
		A facade	Option B facades	Height (m)	Width (m)	Area (m ²)	U-Value (AFRC)	SHGC (AFRC)	P	P/H	H	Shading	Multipliers	Size	Area used	Heat ng (S _a)
1 NW-1-1	NW			0.90	73.80	2.7	0.35	0.450	0.900	0.50	0.00	0.78	0.60	66.42	48% of 60%	
2 NW-1-2	NW			0.90	73.80	2.7	0.35	0.450	0.900	0.50	0.00	0.78	0.60	66.42	48% of 60%	
3 NW-2	NW			1.20	1.00	2.7	0.35					1.00	1.00	1.20	2% of 60%	
4 NW-3	NW			1.20	1.00	2.7	0.35					1.00	1.00	1.20	2% of 60%	
5 SW-1-1	SW			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.79	0.70	0.99	9% of 19%	
6 SW-1-2	SW			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.79	0.70	0.99	9% of 19%	
7 SW-2	SW			1.80	4.10	2.7	0.35					1.00	1.00	7.38	82% of 19%	
8 W-1	W			3.60	7.06	2.7	0.35					1.00	1.00	25.42	73% of 68%	
9 W-2	W			1.80	5.15	2.7	0.35					1.00	1.00	9.27	27% of 68%	
## S-1	S			1.80	68.85	2.7	0.35					1.00	1.00	####	100% of 46%	
## E-1	E			1.80	3.00	2.7	0.35					1.00	1.00	5.40	38% of 22%	
## E-2	E			1.80	4.10	2.7	0.35					1.00	1.00	7.38	52% of 22%	
## E-3-1	E			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.71	0.66	0.99	5% of 22%	
## E-3-2	E			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.71	0.66	0.99	5% of 22%	
## N-1-1	N			0.90	22.95	2.7	0.35	0.450	0.900	0.50	0.00	0.76	0.54	20.66	50% of 54%	
## N-1-2	N			0.90	22.95	2.7	0.35	0.450	0.900	0.50	0.00	0.76	0.54	20.66	50% of 54%	
## SE-1	SE			1.80	30.65	2.7	0.35	0.450	1.800	0.25	0.00	0.87	0.83	55.17	100% of 61%	
## NE-1-1	NE			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%	
## NE-1-2	NE			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%	
## NE-2	NE			1.80	4.68	2.7	0.35					1.00	1.00	8.42	60% of 43%	
## NE-3	NE			1.80	1.90	2.7	0.35					1.00	1.00	3.42	24% of 43%	
## NE-4-1	NE			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%	
## NE-4-2	NE			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%	

if inputs are valid

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BCA VOLUME ONE GLAZING CALCULATOR (first issued with BCA 2010)

Building name/description: **2F** Application: **other** Climate zone: **5**

Storey: **3**

Facade areas	N	NE	E	SE	S	SV	V	NW	Internal
Option A	89m ²	152m ²	118m ²	264m ²	61m ²	104m ²	295m ²		
Option B									
Glazing area (A)	41m ²	16m ²	15m ²	55m ²	124m ²	9.4m ²	35m ²	136m ²	

Number of rows preferred in table below: **23** (as currently displayed)

LAZING ELEMENTS, ORIENTATION SECTOR, SIZE AND PERFORMANCE CHARACTERISTICS

Glazing element	Facing sector	Size			Performance			SHADING			CALCULATED OUTCOMES OK (if inputs are valid)				
		A facade	Option B facades	Area (m ²)	U-Value (AFRC)	SHGC (AFRC)	P/H or device	P/H	G	Shading	Multipliers	Size	Outcomes		
1 NW-1-1	NW			0.90	73.80	2.7	0.35	0.450	0.900	0.50	0.00	0.73	0.60	66.42	48% of 61%
2 NW-1-2	NW			0.90	73.80	2.7	0.35	0.450	0.900	0.50	0.00	0.73	0.60	66.42	48% of 61%
3 NW-2	NW			1.20	1.00	2.7	0.35			0.00	1.00	1.00	1.00	1.20	2% of 61%
4 NW-3	NW			1.20	2.00	2.7	0.35			0.00	1.00	1.00	1.00	2.40	3% of 61%
5 SW-1-1	SW			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.79	0.70	0.99	9% of 19%
6 SW-1-2	SW			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.79	0.70	0.99	9% of 19%
7 SW-2	SW			1.80	4.10	2.7	0.35			0.00	1.00	1.00	1.00	7.38	82% of 19%
8 W-1	W			3.60	7.06	2.7	0.35			0.00	1.00	1.00	1.00	25.42	73% of 68%
9 W-2	W			1.80	5.15	2.7	0.35			0.00	1.00	1.00	1.00	9.27	27% of 68%
## S-1	S			1.80	68.85	2.7	0.35			0.00	1.00	1.00	1.00	####	100% of 46%
## E-1	E			1.80	3.00	2.7	0.35			0.00	1.00	1.00	1.00	5.40	38% of 22%
## E-2	E			1.80	4.10	2.7	0.35			0.00	1.00	1.00	1.00	7.38	52% of 22%
## E-3-1	E			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.71	0.66	0.99	5% of 22%
## E-3-2	E			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.71	0.66	0.99	5% of 22%
## N-1-1	N			0.90	22.95	2.7	0.35	0.450	0.900	0.50	0.00	0.76	0.54	20.66	50% of 54%
## N-1-2	N			0.90	22.95	2.7	0.35	0.450	0.900	0.50	0.00	0.76	0.54	20.66	50% of 54%
## SE-1	SE			1.80	30.65	2.7	0.35	0.450	1.800	0.25	0.00	0.87	0.83	55.17	100% of 61%
## NE-1-1	NE			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%
## NE-1-2	NE			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%
## NE-2	NE			1.80	4.68	2.7	0.35			0.00	1.00	1.00	1.00	8.42	60% of 43%
## NE-3	NE			1.80	1.90	2.7	0.35			0.00	1.00	1.00	1.00	3.42	24% of 43%
## NE-4-1	NE			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%
## NE-4-2	NE			0.90	1.10	2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%

if inputs are valid

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[illegible]

Building name/description										Application		Climate zone	
4F										other		5	
Storey										VOLUME ONE		VOLUME ONE	
Facade areas										VOLUME ONE		VOLUME ONE	
Facing sector										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
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Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
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Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element										VOLUME ONE		VOLUME ONE	
Glazing element													

Building name/description		ABCS		ABCS		ABCS		ABCS		Application ⁸		Climate zone	
5F		VOLUME ONE		VOLUME ONE		VOLUME ONE		VOLUME ONE		other		5	
Storey	6	Facade areas		VOLUME ONE		VOLUME ONE		VOLUME ONE		VOLUME ONE		VOLUME ONE	
		N	NE	E	SE	S	SV	V	NV	Internal			
Option A		147m ²	93m ²	126m ²	178m ²	349m ²	60m ²	60m ²	389m ²				
Option B													
Glazing area (A)		73m ²	16m ²	31m ²	84m ²	130m ²	9.4m ²	9.3m ²	145m ²				
Number of rows preferred in table below 27 (as currently displayed)													

LAZING ELEMENTS, ORIENTATION SECTOR, SIZE and PERFORMANCE CHARACTERISTICS										SHADING				P&H or device				SHADING				CALCULATED OUTCOMES OK (if inputs are valid)			
ID	Description (Optional)	Facing sector	Height (m)	Width (m)	Area (m ²)	U-Value (AFRC)	SHGC (AFRC)	P	H	PH	G	Shading	Heat ing (Sw)	Cooli ng (Sc)	Area used (m ²)	of % of allowance used									
1	NW-1-1	NW	0.90	73.80		2.7	0.35	0.450	0.900	0.50	0.00	0.78	0.60	66.42	43% of 52%										
2	NW-1-2	NW	0.90	73.80		2.7	0.35	0.450	0.900	0.50	0.00	0.78	0.60	66.42	43% of 52%										
3	NW-2	NW	1.20	2.00		2.7	0.35				0.00	1.00	1.00	2.40	3% of 52%										
4	NW-3	NW	1.20	2.00		2.7	0.35				0.00	1.00	1.00	2.40	3% of 52%										
5	NW-4	NW	1.80	4.05		2.7	0.35				0.00	1.00	1.00	7.29	9% of 52%										
6	SW-1-1	SW	0.90	1.10		2.7	0.35	0.450	0.900	0.50	0.00	0.79	0.70	0.99	9% of 19%										
7	SW-1-2	SW	0.90	1.10		2.7	0.35	0.450	0.900	0.50	0.00	0.79	0.70	0.99	9% of 19%										
8	SW-2	SW	1.80	4.10		2.7	0.35				0.00	1.00	1.00	7.38	82% of 19%										
9	W-1	W	1.80	5.15		2.7	0.35				0.00	1.00	1.00	9.27	100% of 31%										
##	S-1	S	1.20	2.00		2.7	0.35				0.00	1.00	1.00	2.40	2% of 36%										
##	S-2	S	1.20	1.00		2.7	0.35				0.00	1.00	1.00	1.20	1% of 36%										
##	S-3	S	1.20	2.00		2.7	0.35				0.00	1.00	1.00	2.40	2% of 36%										
##	S-4	S	1.80	68.85		2.7	0.35				0.00	1.00	1.00	###	95% of 36%										
##	E-1	E	1.80	3.00		2.7	0.35				0.00	1.00	1.00	5.40	18% of 56%										
##	E-2	E	1.80	4.10		2.7	0.35				0.00	1.00	1.00	7.38	24% of 56%										
##	E-3-1	E	0.90	1.10		2.7	0.35	0.450	0.900	0.50	0.00	0.71	0.66	0.99	2% of 56%										
##	E-3-2	E	0.90	1.10		2.7	0.35	0.450	0.900	0.50	0.00	0.71	0.66	0.99	2% of 56%										
##	E-4	E	1.80	9.10		2.7	0.35				0.00	1.00	1.00	16.38	54% of 56%										
##	N-1-1	N	0.90	40.50		2.7	0.35	0.450	0.900	0.50	0.00	0.76	0.54	36.45	50% of 58%										
##	N-1-2	N	0.90	40.50		2.7	0.35	0.450	0.900	0.50	0.00	0.76	0.54	36.45	50% of 58%										
##	SE-1	SE	1.80	46.80		2.7	0.35	0.450	1.800	0.25	0.00	0.87	0.83	84.24	100% of 62%										
##	NE-1-1	NE	0.90	1.10		2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%										
##	NE-1-2	NE	0.90	1.10		2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%										
##	NE-2	NE	1.80	4.68		2.7	0.35				0.00	1.00	1.00	8.42	60% of 43%										
##	NE-3	NE	1.80	1.90		2.7	0.35				0.00	1.00	1.00	3.42	24% of 43%										
##	NE-4-1	NE	0.90	1.10		2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%										
##	NE-4-2	NE	0.90	1.10		2.7	0.35	0.450	0.900	0.50	0.00	0.74	0.61	0.99	4% of 43%										

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if inputs are valid

Appendix C: IEQ-13 Compliant Product List

The following list has been prepared to provide guidance on compliant products for Green Star credit IEQ-13. Whilst the list has been prepared with best endeavours, the responsibility lies with the contractors to source compliant products and provide the required documentation for Green Star Office As-Built v3.

Adhesives & Sealants - must comply with South Coast Air Quality Management District Rule 1168				
Product Type	Brand	Name	Compliant VOC Content (g/litre)	Actual VOC Content (g/litre)
Indoor carpet adhesive			50	
	Mapei	ECO 800		<0.01
	Mapei	Ultrabond ECO 90		TBC
	Mapei	Ultrabond ECO 185		TBC
	Mapei	Ultrabond ECO 200		TBC
	Mapei	Ultrabond ECO 220		TBC
	Mapei	Ultrabond ECO 840		TBC
	Mapei	Ultrabond ECO 8200		TBC
Carpet pad adhesive	Interface	Intertac		<1
			50	
	RLA Polymers	GS100		11
	RLA Polymers	GS300		<1
	RLA Polymers	GS400		10
Wood flooring and laminate adhesive				
			100	
	Ultrabond	P990		<5
Rubber flooring adhesive				
			60	
	Mapei	ECO 300		<0.01

	Mapei	ECO 540			TBC
Sub-floor adhesive				50	
	Ardex	LQ 92			5
Ceramic tile adhesive				65	
	MCB	A80			14
	Ardex	FG 8			2
	Ardex	Abacolor			2
	Spirit Marble & Tile	Water based premium sealer			61
Cove base adhesive				50	
	Ultrabond	ECO 350			<0.01
Dry wall & panel adhesive				50	
	CSR	Gyprock™ Back Blocking Cement			<10
	CSR	Gyprock™ Base Coat 20			<10
	CSR	Gyprock™ Base Coat 60			<10
	CSR	Gyprock™ Base Coat 45			<10
	CSR	Gyprock™ Base Coat 90			<10
	CSR	Gyprock™ Casting Plaster			<10
	CSR	Gyprock™ Cornice Cement 60			<10
	CSR	Gyprock™ Dental Plaster			<10
	CSR	Gyprock™ Hardwall Plaster			<10
	CSR	Gyprock™ Pottery Plaster			<10
	CSR	Gyprock™ Masonry Adhesive			<10
	CSR	Gyprock™ Spray Plaster			<10
	CSR	Gyprock™ Stopping Plaster			<10
	CSR	Gyprock™ Superfine Plaster			<10
	CSR	Gyprock™ Total Cote Lite			<10
	CSR	Gyprock™ Easy Finish Topping Compound			<10

	CSR	Gyprock™ External Joint Compound		35
	CSR	Gyprock™ Pro-Lite Topping Compound		<10
	CSR	Gyprock™ Jointmaster Topping Compound		<10
	CSR	Gyprock™ Stud Adhesive		<10
	CSR	Gyprock™ Easy Flow		<10
	CSR	Gyprock™ Final Finish Topping Compound		<10
	CSR	Gyprock™ Multipurpose Joint Compound		<10
	CSR	Gyprock™ Wet Area Joint Compound		33
	CSR	Gyprock™ Wet Area Base Coat		35
	CSR	Gyprock™ Rapid Patch		<10
	CSR	Cemintel External Jointing Compound		<10
	CSR	Cemintel Texture Coat		<10
	CSR	MiTex Skim Coat Medium		<10
	CSR	MiTex Skim Coat Coarse		20
	CSR	MiTex MiBond		<10
	CSR	MiTex MiRender		<10
	CSR	MiTex Kalahari Medium		<10
	CSR	MiTex Kalahari Fine		<10
	CSR	MiTex Mojave 2mm Scratch		<10
Multipurpose construction adhesive			70	
	Hilti	HIT HY150		60
	RLA Polymers Pty Ltd	RL1018		20
	RLA Polymers Pty Ltd	RLA Polymers Pty Ltd		10
	DuPont	Corian		<0.25mg/m3

Structural glazing adhesive			100	
Architectural sealants			250	
	Ardex	Ardex SE		125
	Rockstar	Concrete Sealer		<1
	Rockstar	Water-based Natural Finish Stone Sealer		100
	Lyndon's	Multicure R		49
	Applied Concrete Solutions	Slabclab R		49
	Selleys	Proseries Fireblock		5.5
	Resene	Cemseal		0
	Mapei	AC		TBC
	Mapei	Mapelastix		TBC
	Mapei	Mapelastix Smart		TBC
	Mapei	Mapegum WPS		TBC
	Mapei	Plastimul		TBC
	Mapei	Idrosilex Pronto		TBC
	Mapei	Kerapoxy		TBC
	Mapei	Mapei Keracolor SF		TBC
	Mapei	Mapei Keracolor FF		TBC
	Mapei	Mapei Keracolor GG		TBC
	Mapei	Ultracolor Plus		TBC
	Mapei	Mapei Kerabond Plus		TBC
	Mapei	Mapei Isolastic 50		TBC
	Mapei	Mapei Granirapid		TBC
	Mapei	Mapei Ultramastic Eco		TBC
	Mapei	Mapei Adeflex R		TBC
	Mapei	Mapei Adesilex P4		TBC
	Mapei	Mapei Keraflex		TBC
	Mapei	Mapei Keraquick		TBC

	Mapei	Mapei Keraset	TBC
	Mapei	Mapei Latex Plus	TBC
	Mapei	Mapei Tixobond Fine S1	TBC

Paints & Coatings - must comply with ASTM D3960				
Product Type	Brand	Name	Compliant VOC Content (g/litre)	Actual VOC Content (g/litre)
Interior Semi Gloss			16	
	Resene	Decorator Acrylic Semi-Gloss		7
Interior Low Sheen			16	
	Resene	Zylone Sheen VOC Free		0
	Dulux	Enviro2 Low Sheen DD1274 (white)		1
Interior Flat Washable			16	
	Resene	Broadwall Waterborne Wallboard Sealer		0
	Resene	Decorator Acrylic I/E Flat		7
			14	
Ceilings Interior	Resene	Ceiling Paint		7
Exterior Gloss			75	
	Resene	Aquashield		7
Trim - gloss, semi gloss, satin, varnishes & woodstains			75	
	Dulux	Aquanamel Gloss DD1282 (signal red)		<69
	Resene	Enamacryl		63

Timber and binding primers				30	
	Mapei	Mapeprim SP			TBC
	Mapei	Biblock			TBC
	Mapei	Triblock			TBC
	Mapei	Primer G			TBC
	Mapei	ECO Prim T			TBC
Latex primer for galvanised iron and zincalume				60	
	Dulux	Quit Rust Galvanised Iron Primer Plus DD1048			<60
Interior Latex undercoat				65	
	Resene	Quick Dry Acrylic Undercoat			41
Interior Sealer				65	
	Resene	Broadwall 3 in 1			5
	Resene	Broadwall Surface Prep			27
	Resene	Decorator Acrylic Primer Undercoat			41
	Resene	Aquapel Sealer			10
	Resene	Broadwall Waterborne Wallboard Sealer			0
One and two pack performance coatings for floors				140	
(Semi gloss tintable)	ArtEpoxy	ArtEpoxy 110			<110
(Clear coating)	ArtEpoxy	ArtEpoxy 140			<140
	ArtEpoxy	ArtEpoxy 180			<90
(Gloss tintable)	Jaxxon	Jaxxon 1505			<140
	Jaxxon	Jaxxon 1515			<140
	Jaxxon	Jaxxon 1525			<140
	Jaxxon	Jaxxon 1535			<140

Other solvent based coatings				200	
		Jaxxon	Jaxxon 1335		<150
		Jaxxon	Jaxxon 1355		<180
		Jaxxon	Jaxxon 1545		<160
		ArtEpox	ArtEpox 130		<160
		Mapei	Ultraplan		TBC
		Mapei	Ultraplan ECO		TBC
		Mapei	Ultraplan Maxi		TBC
		Mapei	Plano 3		TBC
		Mapei	UC Leveller		TBC
		Mapei	Novoplan 21		TBC
		Mapei	Nivorapid		TBC
		Mapei	Ultra Skimcoat		TBC
		Mapei	Planipatch		TBC

Carpets - must comply with Carpet & Rug Institute Green Label or ASTM D5116					
Product Type	Brand	Name	Compliant VOC Emission (mg/m ² /hr)	Compliant 4-PC Emission (mg/m ² /hr)	Actual 4-PC Emission (mg/m ² /hr)
All carpet products			0.5	0.05	
	Carpets Inter	Nylon modular tile with ECOfelt PETG backing (#25139660)			0.02
	Carpets Inter	GlassBacRE			0.002
	Carpets Inter	Graphlex			<0.006

Appendix D: IEQ-14 Compliant Product List

The following list has been prepared to provide guidance on compliant products for Green Star credit IEQ-14. Whilst the list has been prepared with best endeavours, the responsibility lies with the contractors to source compliant products and provide the required documentation for Green Star Office As-Built v3.

Engineered Wood Products							
Product Type	Brand	Product	Formaldehyde Emission Limit (E1)	Formaldehyde Emission Limit (E0)	Formaldehyde Emission Limit (Super E0)	Actual Emissions	Applicable Testing Method
Plywood			1.0 mg/L	0.5 mg/L	0.3 mg/L		AS 2098.11
	Amerind	E0 Plywood				0.5	
	Ausply (Big River Timbers)	Plywood 'Super E0'				0.3	
Particle Board			1.0 mg/L	0.5 mg/L	0.3 mg/L		AS 4266.16
	Laminex	E0 Particle Board				<1.0	
	Laminex	E1 Particle Board (9mm and 16mm product non-compliant)				<1.0	
MDF	Carter Holt Harvey	E0 Particle Board				<0.5	
			1.5 mg/L	0.5 mg/L	0.3 mg/L		AS 4266.16
	Laminex	E0 MDF				<0.5	
	Laminex	E1 MDF				<1.0	
	Supawood	E0 MDF				<0.5	
	Alpine	E0 MDF				<0.5	

Appendix E: MAT-8 Compliant Product List

The following list has been prepared to provide guidance on compliant products for Green Star credit MAT-8. Whilst the list has been prepared with best endeavours, the responsibility lies with the contractors to source compliant products and provide the required documentation for Green Star Office As-Built v3.

FSC Timber Products			
Supplier	Product Class	Product Type	Trade Name
Amerind	311	3110	Timber (Sawn)
	312	3121	Timber (Mouldings)
	314	3142	MDF, hardboard, softboard, whiteboards, colourboards, particle board, plywood
		3143	MDF, hardboard, softboard, whiteboards, colourboards, particle board, plywood
Briggs Veneers			
		FSC-Pure	
		FSC-mixed timber veneer	
		FSC-mixed timber	
		FSC-mixed fibre board	
		FSC-Controlled timber veneer	
New Age Veneers		FSC-Controlled timber	
		FSC-Pure	
		FSC-mixed timber veneer	
		FSC-mixed timber	
Elton Group			
		FSC-mixed timber	
		FSC-recycled timber	
Boral		Highland Products	Softwood

Appendix F: Integrated Fitout Guidelines

The following base building Green Star (As-Built) points are at risk of being lost due to tenancy works, particularly the large area of cellular offices and meeting rooms. Any tenancy works commencing before the practical completion of the base building must allow for the base building As-Built requirements to be satisfied. It is the contractor's requirement to ensure that the fitout works are integrated with the base building works according to the following table.

Credit	Title	Base Building As-Built Requirement	Requirement(s) for Fitouts
MAN-2	Commissioning – Clauses	Summary Commissioning Report for all services including commissioning dates, tests carried out and changes made as a result of the commissioning process. This summary report must demonstrate compliance with either the ASHRAE Guideline 1 or the CIBSE Commissioning codes. A copy of the documentation and information transferred to the building owner/manager (including a copy of each transmittal) for each of: mechanical, electrical and hydraulic services.	Commissioning only required for base building systems. Commissioning of tenancy services to dovetail with commissioning of base building services.
MAN-3	Commissioning – Building Tuning	Copies of the building tuning contracts (prices may be deleted) for all building services, demonstrating that there is a client commitment to a firm 12-month commissioning building tuning period after handover. This requires minimum quarterly reviews and a final recommissioning after 12 months of operation. Contracts must show the scope and timeframe of the building tuning process, requiring the above criteria and be signed by both the client and the contractor.	Tuning only required for base building systems. Tuning of tenancy services to dovetail with tuning of base building services.
MAN-4	Commissioning - Agent	An extract from the independent agent's commissioning report that summarises the major findings and recommendations of the commissioning process.	ICA not responsible for commissioning tenant-installed items.
MAN-6	Environmental Management	A copy of the EMP and all reporting created through the use of the EMP clearly demonstrating compliance with the requirements of with section 4 of the NSW Environmental Management System guidelines.	Tenancy EMP to sit under base building EMP and not affect the directives of base building EMP (duplication preferred).
MAN-7	Waste Management	An extract from the contract provisions which demonstrated that the contractor was required to reuse/recycle a minimum fixed proportion of construction waste and report on waste reuse quarterly to the client. Copies of the waste reports issued to the client quarterly showing the percentage waste recycled or reused (by weight) Sub-contractor certification confirming that the waste reuse/recycling target was achieved for this site.	Waste Management plan to duplicate base building's waste management plan to recycle 80% of construction waste. Combine waste from both base build and fitout, ensuring that over 80% of demolition and construction waste is recycled in total.

IEQ-1	Ventilation Rates	Minimum outside air to be provided at rates 50% better than the requirements of AS 1668.2-1991. As-built drawings and commissioning report to be provided showing minimum fresh air rates served by each AHU; plus a summary table showing that for each space served by an AHU, the requirements of the credit for the points claimed are met. Note that improvements must be measured against AS1668.2 (1991).	Dedicated tenant systems do not need to comply with IEQ-1 requirements.
IEQ-2	Air Change Effectiveness	The ventilation systems are designed to achieve an Air Change Effectiveness (ACE) of >0.95 for at least 95% of the NLA when measured in accordance with ASHRAE 129-1997: 'Measuring Air Change Effectiveness'; and ACE is measured in the breathing zone (nominally 1m from finished floor level).	To achieve this point for As-Built certification, modelling will be conducted without tenant partitions.
IEQ-3	CO ₂ Monitoring	One CO ₂ sensor must be provided per return duct that facilitates continuous monitoring and adjustment of outside air ventilation rates. As-built drawings, O&M requirements and a BMS point schedule to be provided in a short report.	A sensor must be supplied as per the credit criteria to general office areas.
IEQ-4	Daylight	30% of the NLA will have a Daylight Factor (DF) of not less than 2.0%, at desk-height level (720mm AFFL) under a uniform design sky.	To achieve this point for As-Built certification, modelling will be conducted without tenant partitions.
IEQ-6	High Frequency Ballasts	High frequency ballasts to be installed in fluorescent luminaires over a minimum of 95% of NLA. Documentation required: as-installed drawings of lighting systems showing proportion of NLA served by fittings with high frequency ballasts; a copy of supplier or sub-contractor certification which confirms the total number of high frequency ballast fittings which have been installed; a summary calculation sheet from the lighting engineer showing the total number of fittings required for each floor and for the entire project.	Any fluorescent lighting provided must comply with the credit criteria.
IEQ-7	Electric Lighting Levels	Office lighting design to maintain illuminance level of no more than 400 Lux for 95% of the NLA at 900mm (shown on illuminance lighting level drawings).	Any lighting provided must comply with the credit criteria. Labs and quiet rooms are excluded from this credit, pending approval of a CIR from the GBCA.
IEQ-9	Thermal Comfort	Thermal comfort levels are to achieve Predicted Mean Vote (PMV) levels between -0.5 and +0.5, calculated in accordance with ISO7730 (or equivalent using Draft ASHRAE Comfort Standard 55 and "Developing an Adaptive Model of Thermal Comfort and Preference - Final Report on ASHRAE RP884") and must be achieved during Standard Hours of Occupancy using standard clothing, metabolic rate and air velocity values for 98% of the year.	To achieve this point for As-Built certification, modelling will be conducted without tenant partitions.

IEQ-12	Internal Noise Levels	For 95% of the building's NLA, the building services noise must meet the recommended design sound levels provided in Table 1 of AS/NZS 2107:2000. Additionally, the sound levels must be between 40 dB LAeqT in general offices and 40dB LAeqT in private offices. Extracts from the commissioning report are required to show the results of noise level testing and outline the conditions under which the tests were carried out.	To achieve this point for As-Built certification, measurement will be conducted in open plan areas. A report will be prepared by an acoustic consultant showing how the credit was achieved.																														
IEQ-13	Volatile Organic Compounds	Use of VOCs in carpets, sealants, adhesives and paints to be reduced in accordance with the following requirements: <table><tr><th colspan="2">Paints & Coatings must comply with ASTM D3960</th></tr><tr><th>Product Type</th><th>Compliant VOC Content (g/litre)</th></tr><tr><td>Interior Semi Gloss</td><td>16</td></tr><tr><td>Interior Low Sheen</td><td>16</td></tr><tr><td>Interior Flat Washable</td><td>16</td></tr><tr><td>Ceilings Interior</td><td>14</td></tr><tr><td>Exterior Gloss</td><td>75</td></tr><tr><td>Trim - gloss, semi gloss, satin, varnishes & wood stains</td><td>75</td></tr><tr><td>Timber and binding primers</td><td>30</td></tr><tr><td>Latex primer for galvanised iron and zincalume</td><td>60</td></tr><tr><td>Interior Latex undercoat</td><td>65</td></tr><tr><td>Interior Sealer</td><td>65</td></tr><tr><td>Interior Sealer</td><td>65</td></tr><tr><td>One and two pack performance coatings for floors</td><td>140</td></tr><tr><td>Other solvent based coatings</td><td>200</td></tr></table>	Paints & Coatings must comply with ASTM D3960		Product Type	Compliant VOC Content (g/litre)	Interior Semi Gloss	16	Interior Low Sheen	16	Interior Flat Washable	16	Ceilings Interior	14	Exterior Gloss	75	Trim - gloss, semi gloss, satin, varnishes & wood stains	75	Timber and binding primers	30	Latex primer for galvanised iron and zincalume	60	Interior Latex undercoat	65	Interior Sealer	65	Interior Sealer	65	One and two pack performance coatings for floors	140	Other solvent based coatings	200	Fitouts wil comply with the credit criteria.
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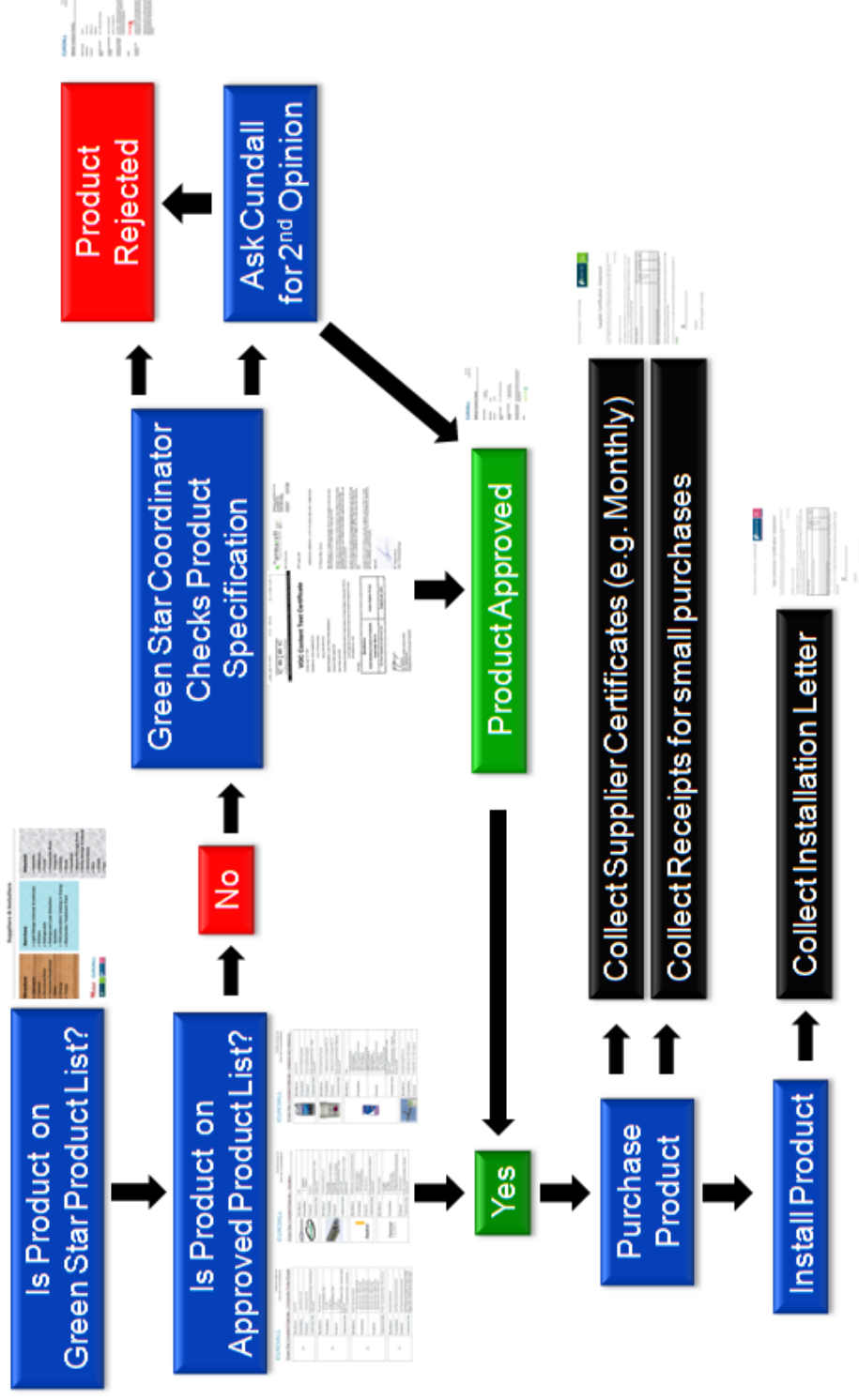
		<table><tr><th colspan="3">Adhesives & Sealants must comply with South Coast Air Quality Management District Rule 1168</th></tr><tr><th>Product Type</th><th></th><th>Compliant VOC Content (g/litre)</th></tr><tr><td>Indoor carpet adhesive</td><td></td><td>50</td></tr><tr><td>Carpet pad adhesive</td><td></td><td>50</td></tr><tr><td>Wood flooring and laminate adhesive</td><td></td><td>100</td></tr><tr><td>Rubber flooring adhesive</td><td></td><td>60</td></tr><tr><td>Sub-floor adhesive</td><td></td><td>50</td></tr><tr><td>Ceramic tile adhesive</td><td></td><td>65</td></tr><tr><td>Cove base adhesive</td><td></td><td>50</td></tr><tr><td>Dry wall & panel adhesive</td><td></td><td>50</td></tr><tr><td>Multipurpose construction adhesive</td><td></td><td>70</td></tr><tr><td>Structural glazing adhesive</td><td></td><td>100</td></tr><tr><td>Architectural sealants</td><td></td><td>250</td></tr></table> Fitouts will comply with the credit criteria.	Adhesives & Sealants must comply with South Coast Air Quality Management District Rule 1168			Product Type		Compliant VOC Content (g/litre)	Indoor carpet adhesive		50	Carpet pad adhesive		50	Wood flooring and laminate adhesive		100	Rubber flooring adhesive		60	Sub-floor adhesive		50	Ceramic tile adhesive		65	Cove base adhesive		50	Dry wall & panel adhesive		50	Multipurpose construction adhesive		70	Structural glazing adhesive		100	Architectural sealants		250
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IEQ-14	Formaldehyde Minimisation	All composite wood products must satisfy the requirements of the following table: <table><tr><th colspan="5">Engineered Wood Products</th></tr><tr><th>Product Type</th><th>Formaldehyde Emission Limit (E1)</th><th>Formaldehyde Emission Limit (E0)</th><th>Formaldehyde Emission Limit (Super E0)</th><th>Applicable Testing Method</th></tr><tr><td>Plywood</td><td>1.0 mg/L</td><td>0.5 mg/L</td><td>0.3 mg/L</td><td>AS 2098.11</td></tr><tr><td>Particle Board</td><td>1.0 mg/L</td><td>0.5 mg/L</td><td>0.3 mg/L</td><td>AS 4266.16</td></tr><tr><td>MDF</td><td>1.5 mg/L</td><td>0.5 mg/L</td><td>0.3 mg/L</td><td>AS 4266.16</td></tr><tr><td>Plywood</td><td>6 mg / 100 g</td><td>4 mg / 100 g</td><td>2.4 mg / 100 g</td><td>EN 120</td></tr><tr><td>Particle Board</td><td>9 mg / 100 g</td><td>6 mg / 100 g</td><td>2.8 mg / 100 g</td><td>EN 120</td></tr><tr><td>MDF</td><td>9 mg / 100 g</td><td>6 mg / 100 g</td><td>2.8 mg / 100 g</td><td>EN 120</td></tr><tr><td>Plywood</td><td>0.12 mg/m3h</td><td>0.08 mg/m3h</td><td>0.04 mg/m3h</td><td>DIN EN 717-1</td></tr><tr><td>Particle Board</td><td>0.12 mg/m3h</td><td>0.08 mg/m3h</td><td>0.04 mg/m3h</td><td>DIN EN 717-1</td></tr><tr><td>MDF</td><td>0.12 mg/m3h</td><td>0.08 mg/m3h</td><td>NA</td><td>DIN EN 717-1</td></tr></table>					Engineered Wood Products					Product Type	Formaldehyde Emission Limit (E1)	Formaldehyde Emission Limit (E0)	Formaldehyde Emission Limit (Super E0)	Applicable Testing Method	Plywood	1.0 mg/L	0.5 mg/L	0.3 mg/L	AS 2098.11	Particle Board	1.0 mg/L	0.5 mg/L	0.3 mg/L	AS 4266.16	MDF	1.5 mg/L	0.5 mg/L	0.3 mg/L	AS 4266.16	Plywood	6 mg / 100 g	4 mg / 100 g	2.4 mg / 100 g	EN 120	Particle Board	9 mg / 100 g	6 mg / 100 g	2.8 mg / 100 g	EN 120	MDF	9 mg / 100 g	6 mg / 100 g	2.8 mg / 100 g	EN 120	Plywood	0.12 mg/m3h	0.08 mg/m3h	0.04 mg/m3h	DIN EN 717-1	Particle Board	0.12 mg/m3h	0.08 mg/m3h	0.04 mg/m3h	DIN EN 717-1	MDF	0.12 mg/m3h	0.08 mg/m3h	NA	DIN EN 717-1	Fitouts will comply with the credit criteria.
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IEQ-16	Tenant Exhaust Riser	Must provide a dedicated tenant exhaust riser (complying with Section 5.7 of AS 1668.2-2002) that: - Provides no less than 0.2L/s/m2 for 100% of the NLA; - Has a capacity of 0.5L/s/m2 for 100% of the NLA on any individual floor; and - The exhaust system is not recycled to other enclosures of different use.					Tenancy fit out to permit installation of exhaust riser as per the base building requirements.																																																							
ENE-1	Greenhouse Gas Emissions Reduction	Must provide base building energy use data after 12 months of operation (with occupancy greater than 70%) demonstrating that base building systems perform at a 4.5 Star NABERS Energy level. The Base Building rating is based on: Common Area Lighting; Lifts; Common Area Ventilation; Car Park Ventilation; Hot Water; Condenser Water Heat Rejection; Office Air Conditioning					To achieve this point for As-Built certification, base building energy modelling will be conducted without tenant partitions.																																																							
ENE-3	Sub-Metering Required for Electrical uses over 100kVA	Sub-meters must be installed for any tenant systems exceeding 100kVA. BMS schedule plus as-installed schematics must be provided with location of all sub meters clearly marked, showing maximum load for each meter.					Tenant to permit installation of sub-meters for any tenant systems exceeding 100kVA.																																																							

ENE-4	Sub-Metering required for each tenancy	Sub-meters must be installed for each tenancy. BMS schedule plus as-installed schematics must be provided with location of all sub meters clearly marked, showing inputs for each meter.	Tenant to permit energy sub-metering and monitoring by base building BMS
ENE-5	Office Lighting Power Density	The average lighting power densities for 95% of the NLA must not exceed 1.5 W/m ² per 100 Lux. In order to comply with IEQ-7(Office lighting design to maintained illuminance level of no more than 400 Lux for 95% of the NLA at 900mm (shown on illuminance lighting level drawings), the average lighting power densities for 95% of the NLA must not exceed 6 W/m ² .	To achieve 2 points for this credit, all general office lighting provided must comply with the credit criteria and the marked up cellular office areas and meeting rooms are not to exceed 2 W/m ² per 100 Lux. Labs and quiet rooms are excluded from this credit; pending approval of a CIR from the GBCA.
ENE-6	Increased Office Lighting Zoning Control	The following is required: - All individual or enclosed spaces must have individual switches; - the size of individually switched lighting zones must not exceed 100m² for 95% of the NLA; and - switching must be clearly labelled and easily accessible by building occupants.	Fitouts will comply with the credit criteria.
WAT-1	Potable Water Efficiency	All sanitary fixtures and tapware to achieve: - Minimum 6 Star WELS rated urinals (max. 0.8L/flush) - Minimum 5 Star WELS rated taps (max. 6L/min) - Minimum 4 Star WELS rated toilets (max. 3.4L/flush) - Minimum 3 Star WELS rated showerheads (max. 9L/min) The following documentation is required: - Supplier certification confirming the quantity of water efficient fittings claimed were provided for this project - Sub-contractor certification confirming water efficient fittings supplied were installed for this project	Fitouts will comply with the credit criteria.
MAT-8	Sustainable Timber	All timber products to be sourced from FSC timber plantations or post-consumer reused timber. The following documentation is required: - Summary document listing all uses of timber on the project, the supplier cost and whether or not the timber qualifies for the credit; - Supplier certification confirming quantity and cost of timber supplied for this project and including supplier or manufacturer certification that the timber meets the requirements of this green star credit - Sub-contractor certification confirming the quantities and types of timber used for various building elements for this project	Fitouts will comply with the credit criteria.

EMI-1	Refrigerant ODP	100% of HVAC refrigerants in use have an Ozone Depletion Potential (ODP) of zero. The following documentation is required: • Supplier certification quantifying all refrigerants supplied to that site (this is to correlate to the calculations summary showing the refrigerants used) • Sub-contractor certification demonstrating that the refrigerants and chillers supplied to the site are the items that were installed • References proving 100% of refrigerants used have an ODP of zero as determined from either HB 40.1-2001: The Australian Refrigeration and Air-conditioning Code of Good Practice (Appendix 3 & 4) or AIRAH Refrigerant Selection Guide 2003	Fitouts will comply with the credit criteria.
EMI-9	Insulant ODP	All thermal insulation avoids the use of ozone depleting substances in both manufacture or composition. Items to be covered include: building services such as chilled water pipework, refrigerant pipework, ductwork, hot & cold water pipes and water tanks, building fabric insulation for walls, roof, floor, window frames, doors, cavity closures and lintels.	Fitouts will comply with the credit criteria.

The head contractor will develop a plan to ensure that the base building achieves its Green Star Office v3 As-Built rating. An example of a successful management procedure is shown below.



Appendix F: Green Star Office v3 DESIGN Specifications

The following list summarises the documentation required from each discipline for the Green Star Office v3 **Design** submission.

The list has been prepared based on the Green Star credits and ESD strategies identified in this tender package. Any variations to these strategies may impact the documentation required for the Green Star submission to the GBCA.



Acoustic Logic

IEQ-12 A Short report

Prepared by a qualified acoustics consultant that describes how the Credit Criteria have been met by describing:

- Describing all relevant noise sources;
- Describing the design features required to demonstrate that the Credit Criteria has been achieved; and
- Stating that the design features have been included in the tender documentation.

BMS Contractor

Wat-2 E BMS Point Schedule

Showing the connection of water meters to the automated monitoring system (e.g. BMS).

Cundall

Man-1 A Proof of accreditation

A copy of the nominated Green Star Accredited Professional's accreditation certificate; or A printout of the relevant page of the online Green Star Accredited Professional Directory, found on the GBCA website, signed and dated by the project's Green Star Accredited Professional, with his/her name underlined.

Man-1 B Letter of appointment

A copy of Green Star Accredited Professional's letter of appointment that lists his/her scope of works.

Man-1 C Meeting schedule

A list of project meetings attended by the Green Star Accredited Professional. The relevant items must be highlighted as necessary.

Man-1 D Extract(s) from the meeting minutes

Extract(s) from the meeting minutes clearly indicating the attendance and participation of the Green Star Accredited Professional. The relevant items must be highlighted as necessary.

Man-2 F Short report on design intent

Must outline the design intent and include the following items:

Man-2 G Energy and environmental strategy

Description of the building initiatives intended to enhance energy efficiency and minimise greenhouse gas emissions, including an overview of the potential savings, as stated for economic and environmental impact.

Man-2 H Monitoring and targeting

Details on energy, water, indoor environmental quality, waste targets and benchmarks for the building, such as W/m2 and/or AGBR rating, and on the metering and sub-metering strategy.

Man-5 A Building User's Guide

A complete Building Users' Guide, which includes all the information outlined in this credit, must be provided for assessment. The Building Users' Guide must include the following information:

Man-5 B Energy and environmental strategy

Description of the building initiatives intended to enhance energy efficiency and minimise greenhouse gas emissions, including an overview of the potential savings, as stated for economic and environmental impact.

Man-5 C Monitoring and targeting

Details on energy, water, indoor environment quality and waste targets and benchmarks for the building, such as W/m2 and /or ABGR rating, and on the metering & sub-metering strategy.

Man-5 E Transport facilities

Car park requirements and provision of cyclist facilities, conditions of access, and appropriate use. Also provide, where applicable, local public transport information, maps and timetables, and details or links on alternative methods of transport to the workplace, such as carpooling.

Man-5 H References and further information

Should include links to other information such as websites, publications, and organisations relating to energy and water conservation, efficient building operation, indoor air quality or sick building syndrome, and environmentally friendly design features.

Man-5 I Materials and waste policy

Include instructions on proper use for less common practices, such as composting, as well as information on recycling including:

- What can be recycled;
- Where the recycling storage areas are; and
- Schedules for waste and recycling removal.

Man-5 J Expansion/re-fit considerations

Include a list of environmental recommendations for consideration, highlighting in particular the areas covered in the Building Users' Guide. Consider using Green Star documentation and the GBCA Clean Up Your Business guide, which details examples such as use of environmentally friendly materials, re-use of other materials, or exhausts for printing and photocopying rooms.

Man-6 A Short report

Prepared by a relevant project team member that correlates the provisions of the EMP with the NSW Environmental Management System Guidelines 1998 or 2007.

IEQ-2 D Summary of CFD Report

Prepared by a suitable professional that describes how the Credit Criteria have been met by; - Describing the proposed system; - Includes a tabulated summary table that identifies all apaced in the building and their area, nominates compliant spaces, indicates their ventilation mode and how compliance is achieved and confirms that compliant spaces jointly account for at least the stipulated proportion of the NLA.

IEQ-2 G CFD report

Prepared by a suitably qualified professional and referencing attached evidence:

- Summarising the CFD analysis and modelling results;
- Demonstrating that the as-built design provides an Air Change Effectiveness of >0.95 calculated in accordance with the ASHRAE Standard 129-1997: 'Measuring Air Change Effectiveness' for 95% of the NLA with minimum turn-down rates; and
- Providing the CFD modelling results and demonstrating that the computerised model reflects the documented design.

IEQ-4 A Daylight modelling report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Describing the methodology and/or modelling software used to calculate the DF or DI;
- Describing the building model including values of reflectance and transmittance used for each relevant material/glazing;
- Showing legible floor plan outputs from the daylight modelling for each plan area claimed to have either a DF of not less than 2.0%, or a DI of at least 250 Lux;
- Providing a summary table that identifies all spaces within the building's NLA, nominates spaces that comply and their area, identifies the DF or DI value within those spaces, and provides calculations to confirm that compliant areas jointly contribute to the claimed percentage of the NLA;
- Where compliance is on the basis of DF, describing the Uniform Design Sky used for the daylight model; and - Where compliance is on the basis of DI, confirming that the result was achieved on the basis of dynamic simulation of daylight for a whole year. OR Short Report prepared by a relevant project team member and supported by the design and referencing drawings that describes how the Credit Criteria has been met using hand calculations:
- Identifying all spaces within the building;
- Nominating the spaces where the Credit Criteria has been met, and their area;
- Providing calculations for the DF within each compliant space; and
- Providing a summary table to demonstrate that compliant spaces jointly account for the stipulated proportion of the NLA.

IEQ-5 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Identifying all spaces where glare is minimised and nominating their areas;
- Nominating the solution(s) used to minimise glare in each space; and
- Where internal blinds/screens are used, describing how all direct sun penetration will be avoided.

IEQ-5 B Tender façade or plan drawings

Of the building and any atriums marked up to show:

- Each typical glazing system (see 'Additional Guidance') in the design and its orientation;
- The glare control solution(s) used for each typical glazing system or atrium;
- The extent of fixed shading for that glazing system or atrium;
- Wherever necessary, construction detail drawings of the glare control devices; and
- Where external shading is used, stereographic diagram at the working plane, 1.5m in from the centre of that glazing system, demonstrating that the point is shaded for at least 80% of standard working hours.

IEQ-5 C Extract(s) from the specification(s)

That stipulate how the Credit Criteria will be achieved: - Indicating the daylight glare control system within the design.

IEQ-9 A Thermal comfort report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Referencing specification(s) and drawing;
- For naturally ventilated buildings and MANV, summarising the thermal comfort calculations for the project design and aligning them with ASHRAE Standard 55-2004; and referencing and appending any evidence to justify that the system will operate as designed; and
- For mechanically air-conditioned spaces, summarising thermal comfort calculations for the project design and demonstrating that the PMV targets are achieved. The Thermal Comfort Report must include:
 - Thermal Modelling simulation output including hourly PMV levels for each day of the year that the space is occupied;
 - A summary of mean radiant temperatures, air temperatures and humidity from the simulation and details of the weather data used;
 - A description of the HVAC system and drawings showing how the building layout has been zoned for the thermal comfort analysis;
 - A description of the methodology and software package used for determining the thermal comfort levels;
 - The clothing, metabolic rate and air movement values used (see Standard Variables values in 'Additional Guidelines');
 - A summary of the hourly thermal comfort results, mean radiant temperatures, air temperatures and humidity for each zone; and
 - A description of the year's worth of weather data used.

IEQ-9 B Tender drawings

Plans marked up to indicate all zones assessed for thermal comfort; and

- Façade, roof and, wherever relevant, section drawings showing the materials in the design.
- For naturally ventilated spaces and MANV spaces, indicating and dimensioning all ventilation openings, inlets and outlets.

IEQ-11 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met.

IEQ-13. A Short report

Prepared by a suitable professional that describes how Credit Criteria have been met by:

- Summarizing how the product used meet the Credit Criteria;
- Listing and referencing all the products within the relevant category used in the project; and
- Nominating the ones that meet the Credit Criteria.

IEQ-14 A Short report

Prepared by a suitable professional that describes how Credit Criteria have been met by:

- Summarizing how the product used meet the Credit Criteria;
- Listing and referencing all the engineered wood products used within the project; and
- Nominating the ones that meet the Credit Criteria.

Ene-0 A Energy modelling report

In accordance with either the ABGR Validation Protocol for Computer Simulations or the final version of the Green Star Energy Calculator Guide (unless otherwise clarified on the GBCA website): - Following the structure of the ABGR Validation Protocol for Computer Simulations or the final version of the Green Star Energy Calculator Guide; - Clearly identifying all default values used (e.g. occupant density); - Clearly identifying all of the design-driven inputs and referencing drawings; whenever assumptions are used, they must be justified and conservative; and - Clearly corresponding to the design.

Ene-0 B Copy of the completed ABGR Calculator OR Green Star Calculator

Ene-1 A

No further documentation is required other than that submitted in Ene-Conditional Requirement

Tra-1 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by stating how the development satisfies the Credit Criteria, including a comparison between the total number of car parking spaces provided by the project against the total maximum or minimum number of car parking spaces allowed.

Tra-2 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Indicating the number of car pool, motorbike, small car, and total number of parking spaces being provided, and referencing the site plans when necessary;
- Where alternative compliance is claimed, providing calculations that relate the number of parking spaces provided to the project nominated area; and
- Stating that the spaces are designed in accordance with the dimensional requirements for small spaces set out in AS/NZS 2890.1:2004

Tra-3 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by: - Describing the location and provision of the cyclist facilities and referencing the cyclist facilities drawings; - Demonstrating that the spaces are weather protected and have good natural surveillance (or are in a secured area); - Stating what proportion of NLA is assigned, and how access is provided, to each bicycle space, shower and locker facilities; and - Where the additional point is being claimed: - Describing the number and location of visitor cyclist facilities; - Showing that the spaces provided are signposted in an accessible location near a major public entrance; and

- Demonstrating that the visitor spaces are provided with good natural surveillance and weather protection.

Tra-4 A Completed Green Star Mass Transport Calculator

A copy of completed Mass Transport Calculator.

Tra-4 B Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by: - Summarising the services that correspond to each mass transport stop showing the route number of the bus service for each stop and/or tram or train line servicing the nearest station. The timetables used for the calculations must be included as an appendix.

Tra-4 C Site plan extending to surrounding areas

The site plan must clearly justify the 'Distance to Site' inputs in the Calculator. It must be legible and to scale. The major public entrances to the building must be marked. The mass transport stops must be clearly indicated and labelled with the associated services.

Tra-4 D Extract(s) from timetables

For each route showing service frequency at peak periods. The timetable provided must not be more than six months old from the date of submission.

Wat-1 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met, and including: - Descriptions of all the water-efficient features in the building; - Justifications of the predicted water savings, wherever not solely achieved by fittings/fixtures; and - Calculations undertaken for the Potable Water Calculator, including the capacity of all the water reuse, collection and storage systems. - Where greywater, blackwater or rainwater systems are to be installed, and the contribution determined by the design team rather than using the simple calculators, then calculations demonstrating the reduction in potable water consumption must be submitted by a qualified and experienced consultant who has been involved in the design of such systems.

Wat-1 E Completed Potable Water Calculator

A copy of the completed Potable Water Calculator referencing the short report and supporting evidence.

Mat-1 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Calculations demonstrating compliance with the sizing requirements for the recycling storage area outlined in Table Mat-1.1;
- Identifying how the design complies with the access requirements of NSW document 'Policy for Waste Minimisation in New Developments' (2004): Section A.

Mat-1 B Tender drawing(s)

Marked up to show:

- The location of the recycling storage area(s), with dimensions indicated; and
- The route connecting the recycling storage area(s) with either the exit and/or the lift core, with dimensions indicated.

Mat-4 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Providing a tabulated summary that identifies all NLA spaces in The building and their areas, nominates whether they are delivered as shell and core, integrated fitout or neither, and confirms that compliant spaces jointly account for at least the stipulated proportion of the NLA.

Mat-8 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Providing cost calculations and a summary table to confirm that reused, recycled and FSC timber jointly account for at least 95% of timber costs in the project.

Eco-0 A Extract(s) from the current local development control plan

That shows that the site was appropriately zoned prior to development approval.

Eco-0 B Development zone map

That shows that the site was appropriately zoned prior to development approval.

Eco-0 C Confirmation from the relevant local council or consent authority

Stating the site was not on land of high ecological value as defined in the Credit Criteria prior to purchase.

Eco-1 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Quantifying the amount of topsoil on the site at time of purchase; all assumptions must be justified;
- Describing the scope and extent of the construction works, and how they will affect existing topsoil;
- Where topsoil is present and affected, describing how the integrity of the site's topsoil will be protected throughout construction works; and
- Describing, with calculations and references to drawings, the 'before' and 'after' conditions that account for all topsoil on the site, and clearly confirming that no more than 5% of the site's topsoil will be covered by hard surfaces as a consequence of the design, and that at least 95% of the site's topsoil will remain productive.
- The report must reference, and be consistent with, the site documentation provided for the General Section of the Green Star Submission

Eco-4 A Completed Change in Ecology Calculator:

A copy of the Change in Ecology Calculator Completed in accordance with supporting documentation.

Eco-4 C Site Report from the Relevant Authority

Identifying the site's bioregion and confirming or refuting the presence of threatened or vulnerable species on the site.

Emi-6.1 A Completed Sewerage Calculator

In accordance with supporting documentation.

Emi-6.1 B Completed Potable Water Calculator

In accordance with supporting documentation.

Inn-1 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by: - Including a detailed description of each proposed innovation initiative; - Articulating the nature and magnitude of the environmental benefit achieved by proposed initiative(s); and - Referencing evidence and calculations, wherever appropriate, that supports all claims.

Inn-1 B Evidence of innovation viability

Including any evidence necessary to demonstrate that the innovation claimed is first in the world or in Australia; - Evidence may be in the form of as-built drawings, extract(s) from the Commissioning Report that demonstrate that the initiative operates as intended by the design, extracts from a peer-reviewed publication or other research acknowledgement; and - Evidence may include confirmation that the initiative has qualified for an AusIndustry R&D Tax Concession.

Inn-2 A Short Report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Including a detailed description of each proposed innovation initiative;
- Identifying the credit for which the project claims to exceed the Green Star benchmark;
- Substantiating why exceeding the top benchmark has a positive environmental impact;
- Quantifying, consistent with the approach of the credit with the initial benchmark, the margin by which the benchmark is exceeded; and
- Referencing evidence and calculations, wherever appropriate, that support all claims.

Inn-2 B Evidence of innovation viability

Including any evidence necessary to demonstrate that the benchmark(s) have been exceeded.

Evidence may be in the form of as-built drawings or extract(s) from the Commissioning Report that demonstrate that the initiative operates as intended by the design.

Electrical Contractor**IEQ-6 A Short report**

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Listing each typical lighting layout; - Showing the NLA served by each layout; - Providing an area summary demonstrating that areas with maintained illuminance level of no more than 400 Lux jointly account for at least 95% of the Class 5 Commercial Office NLA; and
- Providing illuminance calculations demonstrating:
 - The maximum lighting levels for each layout;
 - The working plane used; and
 - Compliance with the percentage NLA requirements.

IEQ-7 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Listing each typical lighting layout;
- Showing the NLA served by each layout;
- Providing an area summary demonstrating that areas with maintained illuminance level of no more than 400 lux jointly account for at least 95% of the Class 5 Commercial Office NLA; and
- Providing illuminance calculations demonstrating
 - The maximum lighting levels for each layout
 - The working plane used; and
 - Compliance with the percentage NLA requirements

IEQ-7 C Reflected ceiling plan (RCP) drawings

For each typical ceiling layout, marked up to demonstrate compliance with the Credit Criteria, with the location, type and expected maintained illuminance of all luminaires clearly indicated.

IEQ-7 D Isolux Plot Drawings

Marked up to show the location and size of all areas where maintained illuminance levels exceed 400 lux, and correlated with the short report.

Ene-0 H Drawings

Demonstrating that all the inputs used in the energy simulation are reflected in the current design including RCPs and/or schematics with any automated lighting controls to common areas clearly indicated.

Ene-2 A Short report

Prepared by a relevant project team member describing how the Credit Criteria have been met by:

- Providing a summary table of all separately metered spaces in the building; and
- Describing how the energy consumption data will be effectively monitored during the building's operation.
- Where the additional point is claimed, describing how sub-metering is provided separately for lighting and separately for power for each floor or tenancy, whichever is smaller; and the effective mechanism for monitoring energy consumption data.

Ene-2 C Schematic electrical drawings

With all uses and loads clearly indicated and with the location of all sub-meters clearly marked. Including individual metering of mechanical services where relevant

Ene-3 A Short report

Prepared by a relevant project team member describing how the Credit Criteria have been met by:

- Providing a summary table that lists all layouts and their area, demonstrating that compliant areas jointly account for at least 95% of the NLA;
- Stating the working plane used in the calculations; and
- Outlining the lighting power density calculations for each of the typical layouts.

Ene-3 C Reflected ceiling plan or Tender Lighting Plan

indicating the location and area of each typical lighting layout, the luminaires used, the types of lamps used for each fitting, the ballasts and control systems.

Ene-4 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met and providing a summary table that lists all separately switched zones and their area, demonstrating that compliant areas jointly account for the stipulated proportion of the NLA.

Ene-4 B Lighting Plan

Identifying the control zone and luminaire and switch locations

Ene-5 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by: - Where compliance is demonstrated through reduction of peak electrical demand: - Justifying, with supporting calculations, the building's peak demand value; - Detailing, with supporting calculations, the design, operation, and sufficient capacity of the intended system; - Appropriately referencing drawings and AS3000; and - Clearly identifying what active mechanisms will ensure that the demand on the infrastructure will at no point exceed the stipulated percentage of the building's demand. - Where compliance is demonstrated through a flatter electrical demand curve: - Describing building attributes that result in a flatter overall electrical demand curve; and - Providing calculations supporting compliance with the Credit Criteria.

Ene-5 C Schematic electrical drawings

Clearly indicating the type, location and details of the proposed solution(s).

Emi-7 A Short report

From the lighting engineer describing how the Credit criteria have been met by:

- Detailing the external and atrium lighting on the site, the areas illuminated, calculations and illumination diagrams (including horizontal and vertical light distribution) to demonstrate that no light spill is impacting the night sky or neighbouring properties in accordance with AS 4282-1997, and that 95% of outdoor spaces do not exceed the minimum requirements of AS1158 for illuminance levels.

Emi-7 C Luminaire schedule

For all external lighting and relevant internal lighting (where a glazed atrium is present), nominating the type, lighting distribution and quantity of each luminaire.

Emi-7 D Drawing(s)

Site plan indicating the location and type of all external luminaires, and marked up to show the area(s) that does not exceed the minimum requirements of AS1158 for illuminance levels; and

- Where a glazed atrium is present, atrium drawings indicating the location and type of internal luminaires.

Erbas**Man-2 A Commissioning specification extract(s) (mech)**

Extract(s) from the design specification describing the project's required commissioning requirements. Relevant items must be highlighted; and Must be in exact accordance with the CIBSE Commissioning Codes for all services, or ASRAE Commissioning Guideline 1-1996

Man-2 K Extract(s) from the specification(s) (Mech)

The specifications must list the sub-contractor's requirements to provide the head contractor and independent commissioning agent with the following prior to building hand-over:

- As-built/as-Installed drawings;
- Dates and details of all commissioning performed, clearly demonstrating compliance with the relevant CIBSE Commissioning Codes or ASHRAE Commissioning Guideline 1-1996 ; and
- Training to ensure that the building management staff have all the information and understanding needed to operate and maintain the features and systems in the building.

Man-3 A Extract(s) from the specification (s) (Mech)

Including a requirement for a minimum 12-month period commissioning process which includes no less than monthly monitoring, quarterly reviews and reporting, and a full re-commissioning service carried out 12 months after practical completion in accordance with design intent documentation from the design team, with a Building Tuning Report generated for the building owner; and listing the roles and responsibilities of the various parties to be involved during this period.

IEQ-1 E Extract(s) from the specification(s)

Where design occupant density is specified and design outside-air rates are nominated.

IEQ-3 G Extract(s) from the specification(s)

That identify the proposed HVAC system(s) and outline its requirements and operation.

IEQ-13. C Extract(s) from the specification(s) (Mech)

Nominating the VOC limits for each product within the relevant category type;

- Stating that the contractor is required to obtain approval of the design team or client before substituting the finishes listed in the schedule;
- Requiring that at the end of construction works, the contractor undertakes a final audit to ensure that the correct products have been used; and
- Where the project has no products from a particular category, showing where it is stipulated that no paint; adhesive/sealant is to be used in the project.

IEQ-15 E Extract(s) from the specification(s)

Extract(s) from the Specification(s) where the system design parameters in terms of design conditions, humidity and temperature, and humidity control parameters are stipulated.

IEQ-16 B Extract(s) from the specification(s)

Outlining the design criteria for the exhaust riser demonstrating compliance with the Credit Criteria.

Ene-0 D Extract(s) from the specification(s) (Mech)

Demonstrating that all inputs used in the energy simulation are reflected in the current design. Including, but not limited to, equipment details and operating profiles

Ene-5 B Extract(s) from the specification(s)

Where the proposed solution(s) are described.

Wat-4 B Extract(s) from the specification(s)

Identifying and detailing the proposed heat rejection system, its water sources and operation requirements.

Emi-3 C Extract(s) from the Specification(s)

Where the refrigerant leak detection system(s) are detailed as per Credit Criteria:

- Where the additional point is claimed, where the chiller and refrigerant recovery characteristics are detailed as mentioned in the Credit Criteria; and
- Where refrigerants used in the project meet the requirements of Emi-1 and Emi-2, stipulating that any refrigerant must have a GWP of less than 10 and an ODP of 0.

Emi-4 B Extract(s) from the Specification(s)

Where the requirements for thermal insulants are stipulated.

Graeme Thwaite**Man-4 A CV of the Independent Commissioning Agent**

CV of the Independent Commissioning Agent detailing the qualifications and experience relevant to the project.

Head Contractor**Man-6 B Environmental Management Plan**

Comprehensive, project specific EMP, clearly demonstrating compliance with the requirements of Section 4 of the NSW Environmental Management System Guidelines 1998 or 2007.

Man-6 C Contractor ISO14001 certificate

Contractor ISO14001 Certificate that is current and valid, demonstrating that an appropriate EMS is operating within that organisation.

Man-6 D Confirmation of subcontractor adherence to ISO14001 requirements

Letter of confirmation from the contractor stating that any subcontractors relevant to the project will adhere to applicable ISO14001 requirements.

Mat-5 A Concrete Technologist report

That describes how the Credit Criteria have been met by:

- Providing a breakdown of all concrete uses in the project, with the description, volume, composition and proportions of components clearly identified for each mix and use;
- Clearly indicating the volume of Portland cement replaced by the industrial waste product or oversize aggregate;
- Correlating with the specification;
- If oversized aggregate is used, calculations that demonstrate that this approach is equivalent to reducing the amount of cement used in a project by replacing it with industrial waste products; and
- Where the additional point is claimed, identifying all aggregate uses in the project, describing where recycled or natural aggregate is used, and demonstrating that the Credit Criteria has been met.

Mat-5 C Short report

Summarising the findings of the Concrete Technologist's Report

Hydraulics Contractor**Wat-1 C Tender schematic hydraulic drawings**

Showing the location of all water reuse, collection and storage systems.

Wat-1 D Evidence of approval from the relevant authority

Confirming approval or no objection of the documented design; the authority's approval of as-installed system may be conditional on the project's ability to clearly demonstrate compliance with relevant regulation or standards, which may be cited.

Wat-2 A Short report

On water management prepared by the relevant qualified project team member to describe how the Credit Criteria have been met: - Identifying the major water uses in the building; and - Describing how the water consumption data will be effectively monitored during the building's operation, including the function of the alert and leak detection systems.

Wat-2 C Tender schematic hydraulics drawings

Showing the location of all water meters in the project and the associated water uses.

Wat-3 A Short report

Prepared by a suitably qualified professional, detailing:

- The proposed landscape irrigation system, its water sources and operation;
- Providing calculations (and justifying values used) for the reference case;
- Demonstrating how the proposed system meets the Credit Criteria against the reference case; and
- Referencing the drawings, the extract(s) from the specification and compliance with relevant authority approval when necessary.

Wat-3 C Tender drawings

- Indicating the design, location and water supply of the irrigation system; and
- Specifically showing that the tank size is the same as that calculated.

Wat-5 A Short report

from the suitable professional that describes how the Credit Criteria has been met, including:

- The proposed fire protection system, its operation and testing requirements, and justifying how the system design meets the Credit Criteria and how the collected water will be reused on site.
- Where the project has no fire sprinkler system, the report must state how the project meets the required fire safety standards outlined in the BCA.

Wat-5 C Tender schematic fire suppression drawings

For each typical floor, and drawings of the water storage and reuse system(s).

JHA**Man-2 B Commissioning specification extract(s) (elec)**

Extract(s) from the design specification describing the project's required commissioning requirements. Relevant items must be highlighted; and Must be in exact accordance with the CIBSE Commissioning Codes for all services, or ASRAE Commissioning Guideline 1-1996

Man-2 L Extract(s) from the specification(s) (Elec)

The specifications must list the sub-contractor's requirements to provide the head contractor and independent commissioning agent with the following prior to building hand-over:

- As-built/as-Installed drawings;
- Dates and details of all commissioning performed, clearly demonstrating compliance with the relevant CIBSE Commissioning Codes; and
- Training to ensure that the building management staff have all the information and understanding needed to operate and maintain the features and systems in the building.

Man-3 B Extract(s) from the specification (s) (Elec)

Including a requirement for a minimum 12-month period commissioning process which includes no less than monthly monitoring, quarterly reviews and reporting, and a full re-commissioning service carried out 12 months after practical completion in accordance with design intent documentation from the design team, with a Building Tuning Report generated for the building owner; and listing the roles and responsibilities of the various parties to be involved during this period.

IEQ-6 B Extract(s) from the specification(s) OR Luminaire Schedule

Stipulating the use of high-frequency ballasts for all the luminaires listed.

IEQ-13. D Extract(s) from the specification(s) (Elec)

Nominating the VOC limits for each product within the relevant category type;

- Stating that the contractor is required to obtain approval of the design team or client before substituting the finishes listed in the schedule;
- Requiring that at the end of construction works, the contractor undertakes a final audit to ensure that the correct products have been used; and
- Where the project has no products from a particular category, showing where it is stipulated that no paint; adhesive/sealant is to be used in the project.

Ene-0 E Extract(s) from the specification(s) (Elec)

Demonstrating that all inputs used in the energy simulation are reflected in the current design including, but not limited to common area lighting controls

Ene-2 B Extract(s) from the specification(s)

Describing the installation requirements for electrical sub-meters that meets the Credit Criteria and requires the electrical contractor to undertake verification of the accuracy of the meters by long testing in conjunction with the BMCS verification of the interface with the meters and requires the ICA to witness and verify the metering.

Ene-3 B Extract from the specification

Describing the lighting power density requirements.

Ene-4 D Extract(s) from the specification(s)

Where the requirements for switching and zoning are stipulated.

Emi-4 D Extract(s) from the Specification(s)

Where the requirements for thermal insulants are stipulated.

Emi-7 B Extract(s) from the Specification(s)

Where relevant lighting and its requirements is identified, e.g. atrium, internal perimeter areas and external lighting.

Wat-3 D Tender site plans

Of the entire site showing the use of each area (including roofs) and clearly indicating the location, or lack of landscaped area

Eco-4 B Short report

By a suitably qualified member of the design team nominating the bioregion of the site and describing land types, with corresponding areas, in the 'before' and 'after' condition of the site.

- Where the project claims to create land types with ecological value of 15 or greater, the report must identify the conditions and time period necessary for these areas to assume and perform their ecological function;
- Based on the complexity and sensitivity of the proposed design, installment and maintenance plans may be required to be developed and implemented by the building management, e.g. as part of the Operations and Maintenance (O&M) Manual; and
- The short report may rely on additional evidence of ecosystem viability to demonstrate that the installed landscape will function as intended by the design.
- The report must refer to, and be consistent with, the site documentation provided for the General Section of the Green Star submission.

Eco-4 F Landscape Plan

Of the design clearly identifying all land types present on the site in accordance with the Calculator and indicating the area they occupy.

Eco-4 H Landscaping Schedule

Where planting and any requirements necessary to ensure that the landscaping functions as intended by the design are nominated.

Macquarie University**Man-2 E Confirmation from the building owner**

Confirmation that indicates the building owner's commitment to incorporate the commissioning requirements into the project in accordance with the specifications. In order to show that the building owner is aware of the time required for effective commissioning, the document must clearly state the time related requirements of the pre-commissioning, commissioning, and quality monitoring required by the credit criteria.

Man-4 B Letter of appointment

Letter of Appointment by the building owner of the independent commissioning agent:

- Must state that the commissioning agent is an objective advocate of the building owner; and
- Must include the responsibilities for the commissioning agent outlined in this credit.

Man-7 A Extract(s) from the contract(s)

Extract(s) of the contracts conditions between the contractor and either the developer or the building owner stipulating in the body of the contract the full criteria for reuse/recycling of the stated proportion of construction and demolition waste; the exact provisions of the Credit Criteria must be found in the body (rather than Appendices) of the document.

IEQ-11 C Hazardous materials survey OR contractual commitment

That has been carried out on the existing building. - Where hazardous materials were found, a new survey must be carried out showing that hazardous materials have been removed and disposed of according to the standards listed under Table IEQ-11.1, or a contractual commitment to remove hazardous materials in accordance with the standards and legislation listed in Table IEQ-11.1.

Tra-2 D Car pooling / car sharing program registration

With contractual evidence showing registration or preparatory agreements, such as a memorandum of understanding or confirmation from the car pooling program that the project is undergoing registration or is registered.

Mat-2 F Letter

Prepared by a suitably qualified professional Stating that no buildings existed on the site at the time of purchase.

Mat-2 G Evidence of site purchase (refer General Section)

Mat-2 H Site documentation (Refer General Section)

Eco-2 B Evidence of site purchase (Refer General Section)

Eco-2 C Site documentation (Refer General Section)

Eco-3 A Short Report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Outlining all available decontamination options, and proposing the remediation strategy; and
- In order for encapsulation to be deemed appropriate for meeting the Credit Criteria, the report must clearly identify that no other remediation options exist for this project.

Eco-3 B Contamination Report

Completed in line with NEPM guidelines;

- Current at the time of site purchase or otherwise reflective of the site condition at the time of purchase; and
- Clearly documenting the contamination present on the site.

Eco-3 C Evidence of site purchase (Refer General Section)

Eco-4 D Evidence of site purchase (Refer General Section)

Eco-4 E Site Documentation (Refer General Section)

Emi-5.1 D Site Documentation (Refer General Section)

Emi-5.1 E Evidence of Site Purchase (Refer General Section)

Macquarie University

Tra-1 B Extract(s) from local authority planning allowances

Extract(s) from the Local Authority Planning Allowances where:

- The car parking allowances for the site or region are nominated;
- It is indicated where the allowances are mandatory or otherwise; and
- The date and issuing authority are identified.

Mat-4 F Confirmation from the building owner

Or designated representative, stating that the fitout design is being coordinated with the base building design and construction. This communication must also indicate the area of the integrated fitout.

Eco-1 B Extract(s) from the contract

Stipulating that if no topsoil is contaminated that the contractor and sub-contractors must retain all topsoil on site and that 95% must retain its productivity, ensuring that the Credit Criteria are met.

Eco-1 E Evidence of site purchase (Refer General Section)

Eco-1 F Site documentation (Refer General Section)

Mechanical Contractor

IEQ-1 D Short report

Short Report prepared by a mechanical engineer that describes how the Credit Criteria have been met by:

- Providing a schedule of all spaces within the building, indicating their ventilation mode(s) and areas as referenced in the tender drawings;
- For mechanically air-conditioned and MANV spaces, indicating the AHU(s) or fans that serve each space, the minimum amount of outside-air rates supplied by each AHU or fan as evident in the commissioning and compared with the minimum requirements of AS1668.2-1991, and confirming that the minimum requirements of AS1668.2-1991 will be exceeded for at least 95% of the NLA; and
- For mechanically air conditioned and MANV spaces, the report must include the interpretation of minimum requirements of AS1668.2-1991 for the project.

IEQ-1 F Schematic mechanical drawings

For each typical mechanically air conditioned space, indicating the area and nominating the outside-air supply rates.

IEQ-2 E Drawings

Of each typical space indicating floor area, ventilation system and key elements of the ventilation and air-conditioning system.

IEQ-2 F Schematic mechanical drawings

Of the proposed HVAC system, marked up to clearly indicate key elements of the system.

IEQ-3 F Short report

Short Report prepared by a mechanical engineer that describes how the Credit Criteria have been met:

- For mechanically air-conditioned and MANV spaces, confirming that the minimum requirements of AS1668.2 1991 will be exceeded for at least 95% fo the NLA.

IEQ-3 H Schematic mechanical drawings

Of the HVAC system(s) for each typical mechanically air-conditioned or MANV spaces, indicating the mechanical system, its configuration, location of all key elements (such as AHUs or CO2 sensors), the area served by each AHU/CO2 sensor, and nominating the outside-air supply rates.

IEQ-15 D Short report

prepared by a mechanical engineer that describes how the Credit Criteria have been met:

- For mechanically air-conditioned spaces, describing the active humidity control system.

IEQ-15 F Mechanical drawings

For each mechanically ventilated space highlighting and showing the active humidity control systems.

IEQ-16 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by: - Describing how the tenant's exhaust riser is controlled and operated; - Describing how the system is connected to the base building energy meter; - Describing how it meets the requirements of the credit and referring to design drawings and specifications; and - Clear calculations correlating per-floor air rates to the NLA, specifications and the drawings.

IEQ-16 C Exhaust riser drawings

Showing the location of the tenants' exhaust risers. These drawings can be in the form of architectural drawings or reflected ceiling plans, and must contain the information required for this credit.

Ene-0 G Drawings

Demonstrating that all the inputs used in the energy simulation are reflected in the current design, specifically schematics showing system configuration and flows.

Wat-4 A Short report

On the heat rejection system(s) in the project, prepared by a suitably qualified project team member, referencing drawings and detailing: - The heat rejection requirements of the building; - Describing any proposed water-based heat rejection system; - Providing calculations (and justifying values used) for the reference case; and - Demonstrating how the proposed system meets the Credit Criteria against the reference case.

Wat-4 C Mechanical drawings

Showing the location and water supply of the water-based heat rejection systems; and - Any supplementary equipment that may be required to achieve the specified reduction in potable water consumption.

Emi-1 D Short report

Prepared by a mechanical engineer that describes how the Credit Criteria have been met:

- Referencing specifications and tender drawings;
- Describing the HVAC system and all its components;
- Identifying all systems that contain refrigerant;
- Indicating all of the type and volume of refrigerant(s) used in the system(s);
- Where the project is a refurbishment, describing how the existing system(s) are converted, confirming this can be performed and maintained viably and without any refrigerant loss to the atmosphere;
- Where no refrigerants are present in the project, demonstrating that no refrigerants are required for proper operation of the system(s); and
- For naturally ventilated and mechanically assisted naturally ventilated spaces, referencing either the schedule of openings, the empirical calculations or the computer modelling report.

Emi-1 E Schematic mechanical drawings

Of the HVAC system(s), indicating location and type of all components containing refrigerant.

Emi-1 F Equipment schedule(s)

- Where the requirements for the HVAC system are stipulated;
- Where it is stipulated that any refrigerant must have an ODP of zero; and
- Where the project is a refurbishment, stipulating the requirements for the conversion of the existing system.

Emi-3 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Referencing specifications and tender drawing(s);
- Describing the HVAC system and all its components;
- Identifying all systems that contain refrigerant;
- Indicating all of the type and volume of refrigerant(s) used in the system(s);
- Outlining the design and intended operation of the refrigerant leak detection system(s) and, if the additional point is claimed, of the refrigerant recovery system(s);
- Where refrigerants in the project meet the requirements of Emi-1 and Emi-2, identifying the types and volumes of the zero-ODP refrigerants and refrigerants with GWP of 10 or less; and
- For naturally ventilated and mechanically assisted naturally ventilated, referencing either the schedule of openings, the empirical calculations or the computer modelling report and demonstrating that the building is designed in accordance with AS1668.2-2002.

Emi-3 D Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Referencing specifications and tender drawing(s);
- Describing the HVAC system and all its components;
- Identifying all systems that contain refrigerant;
- Indicating all of the type and volume of refrigerant(s) used in the system(s);
- Outlining the design and intended operation of the refrigerant leak detection system(s) and, if the additional point is claimed, of the refrigerant recovery system(s);
- Where refrigerants in the project meet the requirements of Emi-1 and Emi-2, identifying the types and volumes of the zero-ODP refrigerants and refrigerants with GWP of 10 or less; and
- For naturally ventilated and mechanically assisted naturally ventilated, referencing either the schedule of openings, the empirical calculations or the computer modelling report and demonstrating that the building is designed in accordance with AS1668.2-2002.

Emi-8 D Short report

Prepared by a mechanical engineer that describes how the Credit criteria have been met by: - Describing the HVAC system and all its components; and if it requires refrigerants, their type(s) and volume.

Emi-8 F Mechanical Drawing(s)

Of the HVAC system, with components clearly nominated.

PP-A**Man-2 J Extract(s) from the specification(s) (Arch)**

The specification must list the contractor's requirements to provide the owner with the following at building hand-over:

- As-built/as-Installed drawings;
- The Commissioning Report prepared by the Independent Commissioning Agent with input from all trades; and
- Training to ensure that the building management staff have all the information and understanding needed to operate and maintain the features and systems in the building.

IEQ-4 B Isometric or architectural façade drawings

Identifying the façade materials in the design.

IEQ-4 C Isometric or architectural roof drawings

Identifying the roof materials in the design.

IEQ-4 D Isometric or architectural plan drawings

Clearly identifying those areas considered to have a DF of 2.0%, or a DI of at least 250 Lux, with the NLA of each section clearly shown.

IEQ-4 E Isometric or architectural site plan extending to surrounding areas

Identifying heights and location of surrounding buildings and average reflectance for those buildings.

IEQ-9 C Extract(s) from the specification(s)

Where the thermal properties of all materials that are used as inputs for demonstrating compliance are nominated.

IEQ-13. B Extract(s) from the specification(s) (Arch)

Nominating the VOC limits for each product within the relevant category type; - Stating that the contractor is required to obtain approval of the design team or client before substituting the finishes listed in the schedule; - Requiring that at the end of construction works, the contractor undertakes a final audit to ensure that the correct products have been used; and - Where the project has no products from a particular category, showing where it is stipulated that no carpet; paint; adhesive/sealant is to be used in the project.

IEQ-13. F Extract(s) from the specification(s) (Arch)

Nominating the VOC limits for each carpet or flooring type; - Stating that the contractor is required to obtain approval of the design team or client before substituting the finishes listed in the schedule; - Requiring that at the end of construction works, the contractor undertakes a final audit to ensure that the correct products have been used; and - Where the project has no products from a particular category, showing where it is stipulated that no carpet; paint; adhesive/sealant is to be used in the project.

IEQ-14 B Extract(s) from the specification(s)

Extract(s) from the Specification(s) stipulating:
- The formaldehyde content or emissions standard for all engineered wood products used in the project (excepting the excluded applications); and
- The contractor is required to obtain the approval of the design team or client before substituting the engineered wood products listed in the schedule.

Ene-0 C Extract(s) from the specification(s) (Arch)

Demonstrating that all inputs used in the energy simulation are reflected in the current design including, but not limited to the thermal properties of all materials used in the building envelope

Ene-0 F Tender drawings

Demonstrating that all the inputs used in the energy simulation are reflected in the current design:
- For naturally ventilated spaces, showing openings, with dimensions clearly indicated, and ventilation inlets and outlets.

Tra-2 B Tender drawings

Indicating the total number of small parking spaces (showing that their sizes are physically limited) moped/motorbike spaces, car pooling participants and other alternative fuel vehicles clearly marked and dimensioned.

Tra-3 B Tender drawing(s)

Of the cyclist facilities showing: - The number and location of bicycle racks/rails/storage facilities; - The number and location of shower and locker facilities; and - Where the additional point is being claimed, the number and location of visitor bicycle parking.

Mat-8 C Timber schedule

Of all timber uses in the project and the proposed material for those uses.

Mat-8 D Extract(s) from the specification(s)

Demonstrating Credit Criteria requirements, stipulating the timber source for each requirement and that the evidence confirming compliance with the Credit Criteria (e.g. FSC Certificate) and receipts be kept and logged.

Eco-2 A Short report

From the project architect describing the built area on the site at the time of purchase, and providing calculations (with justification of all inputs used) of the proportion of the built area on the site.

Emi-4 A Extract(s) from the Specification(s)

Where the requirements for thermal insulants are stipulated.

PP-A/SPP**Wat-1 B Extract(s) from the specification(s)**

Listing and describing: - All hydraulic fixtures and fittings in the projects*; - All water reuse systems; and - All water collection systems with a specific mention of the capacity of the system.

*A Fittings and Fixtures schedule may substituted for this section of the specification.

Services Contractors**Man-2 I Building services**

Description of the basic functions and operation of the following systems:

- Ventilation;
- Heating System;
- Cooling System;
- Electrical Systems;
- Lighting; and
- Domestic Hot Water (DHW).

Each referenced system must be accompanied by the following documentation:

- A simplified Diagram of the system;
- A description of its intended operation and its conditions;
- A list of the main components (including controls), and the value and conditions of their efficient use;
- Details on maintenance, including recommended frequency; and
- A list of likely tell-tale signs of system failure, system 'do's and don'ts', and notes on inefficient operation.

Man-5 D Building services

Description off basic function and operation of the following, with simplified systems diagrams and an explanation of energy saving features:

- Ventilation;
- Heating System;
- Cooling System;
- Electrical Systems;
- Lighting; and
- Domestic Hot Water (DHW)

Slattery

Mat-8 B Quantity Surveyor report

Estimating the total material cost of timber (including estimated value of the existing timber if part of refurbishment, should it be replaced) as a proportion of the project's total value.

Mat-9 H Quantity Surveyor report

Estimating the total quantity of new structural framing, roofing and façade cladding systems (including existing elements if part of a refurbishment) being designed for disassembly as a proportion of the project's total contract value.

SPP**Man-2 C Commissioning specification extract(s) (hyd)**

Extract(s) from the design specification describing the project's required commissioning requirements. Relevant items must be highlighted; and Must be in exact accordance with the CIBSE Commissioning Codes for all services, or ASRAE Commissioning Guideline 1-1996

Man-2 Extract(s) from the specification(s) (Hyd)

The specifications must list the sub-contractor's requirements to provide the head contractor and independent commissioning agent with the following prior to building hand-over:

- As-built/as-Installed drawings;
- Dates and details of all commissioning performed, clearly demonstrating compliance with the relevant CIBSE Commissioning Codes ; and
- Training to ensure that the building management staff have all the information and understanding needed to operate and maintain the features and systems in the building.

Man-3 C Extract(s) from the specification (s) (Hyd)

Including a requirement for a minimum 12-month period commissioning process which includes no less than monthly monitoring, quarterly reviews and reporting, and a full re-commissioning service carried out 12 months after practical completion in accordance with design intent documentation from the design team, with a Building Tuning Report generated for the building owner; and listing the roles and responsibilities of the various parties to be involved during this period.

IEQ-13. E Extract(s) from the specification(s) (Hyd)

Nominating the VOC limits for each product within the relevant category type;

- Stating that the contractor is required to obtain approval of the design team or client before substituting the finishes listed in the schedule;
- Requiring that at the end of construction works, the contractor undertakes a final audit to ensure that the correct products have been used; and
- Where the project has no products from a particular category, showing where it is stipulated that no paint; adhesive/sealant is to be used in the project.

Wat-2 B Extract(s) from the specification

Listing the major water uses within the project and stipulating their sub-metering requirements. - Where an automated monitoring system is present, showing that the water meters are to be connected to the automated monitoring system is present (e.g. BMS). A requirement must be made for the hydraulic contractor to verify the accuracy of the meters by undertaking water quantity (and gas) testing in conjunction with the BMCS verification of the interface with the meters and for the ICA to witness and verify the metering.

Wat-3 B Extract(s) from the specification(s)

Identifying the proposed landscape irrigation system, its water sources and operation requirements.

Eco-4 G Extract(s) from Specification(s)

Where any requirements necessary to ensure that the landscaping functions as intended by the design are nominated.

Emi-4 C Extract(s) from the Specification(s)

Where the requirements for thermal insulants are stipulated.

TTW**IEQ-4 F Extract(s) from the specification(s)**

Where all glazing properties and minimum visual transmittance levels are nominated.

Mat-9 A Short report

Prepared by a suitable professional that describes how the Credit Criteria have been met by:

- Outlining the overall approach;
- Identifying the elements designed for disassembly; and
- Providing calculations and a summary table confirming that the stipulated proportion of the relevant elements is designed for disassembly.

Mat-9 C Tender drawings

Detail drawings of connections demonstrating that the relevant building elements can be disassembled without cutting, material damage, or hindrance from adjacent materials;

- Elevation drawings of façades marked to identify elements designed for disassembly and the elements adjacent or consequential to the disassembly of these elements, as referenced in the Disassembly Plan;
- Floor plan drawings of each typical floor marked to identify elements designed for disassembly and the elements adjacent or consequential to the disassembly of these elements, as referenced in the Disassembly Plan; and
- Roof drawings, sectional drawings or any other relevant drawings marked to identify elements designed for disassembly and the elements adjacent or consequential to the disassembly of these elements, as referenced in the Disassembly Plan.

Mat-9 D Extract(s) from the specification(s)

That:

- Identify products and materials that demonstrate compliance with the Credit Criteria and describe their requirements; and
- Stipulate that whenever materials/products that enable compliance with the Credit Criteria are fabricated on site, the contractors are required to mark them with their inherent properties and date of fabrication.

Woolacotts

Mat-5 D Extract(s) from specification(s)

Nominating how the Credit Criteria will be met, accounting for all concrete in the project;

- Stating that no industrial waste product came from industrial facilities co-fired with hazardous waste;
 - Where industrial waste product is being used for cement replacement, identifying the proportion of industrial waste product to be used in place of cement;
 - Where oversized aggregate is being used for cement replacement, identifying the use of oversize aggregate in order to reduce the amount of cement required in a project; and
 - Where the additional point is claimed, nominating the proportion of recycled aggregate to be used and stipulating that the recycled aggregate be classified as Class 1 RCA (in accordance with HB 155-2002).
-

Emi-5.1 A Short report

Prepared by the relevant project team member that describes how Credit Criteria have been met:

- Referencing the guidelines used;
 - Referencing the specification and site plan;
 - Providing calculations of original peak stormwater flows (based on site conditions at the time of purchase) against projected peak stormwater guidelines; and
 - Where the additional point is claimed, detailing the planting, soil types, slope or gradient of the area, additional mulching (if appropriate) and extent of the Riparian Buffer Zone to be installed.
 - The report must reference, and be consistent with, the site documentation provided for the General Section of the Green Star submission.
-

Emi-5.1 B Extract(s) from the Specification(s)

Where requirements for control and treatment of stormwater runoff treatment are stipulated.

Emi-5.1 C Tender Site Plan

Showing the systems included in the project design

Appendix G Monthly Client Checklist for each functional space (i.e. each tenant)

Australian Hearing Hub.

Please circle the answer. Please complete each question and return to the Building manager.

1 Change of usage to functional space

Has any change occurred this month? **No** **Yes**....Provide details

2 Fitout changes to functional space

Has any change occurred to the approved fitout layouts? **No** **Yes**....Provide drawings

3 Occupancy levels and hours of usage

Has any change occurred this month? **No** **Yes**....Provide details

4 Records of house power used for fitout works

Has any house power been used for fitout works this month?

No **Yes**....Provide records and amounts

5 Records of additional energy/fuel sources

Has deliveries of other fuel sources been delivered this month?

No **Yes**....Provide records and amounts

6 Records of suspension of services

Has any tenants requests been made to suspend services this month?

No **Yes**....Provide written request from the tenants

7 Energy bills from utility companies

Provide this months utility Bills

8 Delivery dockets for diesel

Has any deliveries been carried out this month?

No **Yes**....Provide copy of delivery docket.

9 Requests for after hours usage records

Has any requests been made by the tenants this month?

No **Yes**....Provide copy of written request by each tenant for each instance.

10 New Lease agreements.

Has any new lease agreements been signed this month?

No **Yes**....Provide copy of wording of service hours in agreement.

11 Records of when occupancy began.

Has any new occupancy begun this month?

No **Yes**....Provide details of dates and areas affected.

12 Plans to deviate from exclusive use provision

Have the tenants sub let or changed their exclusive use of their NLA this month?

No **Yes**....Provide details of dates and areas affected.

13 Plans to remove base building services

Have any changes to the installed base building services other than that approved by BCS been carried out this month?

No **Yes**....Provide details of dates and areas/services affected.

14 Unauthorised use of house power

Confirm that there has been no other unauthorised use of house power.

No **Yes**....Provide details

15 Complaint records

Have any tenants' complaints about the services been received this month?

No **Yes**....Provide details of each complaint

16 Has any new agreements with the building tenants been made this month with regard to tenant car-parking bays allocation?

No **Yes**....Provide details of new arrangements.

17 Are you aware of any other issues which have arisen this month which could have an affect on the Base building NABERS rating?

No **Yes**....Provide details.

Signed..... Company.....

Date.....

Name.....

(please print)

Please complete and return by the COB on the last day of each month to the building manager

Appendix H: Green Star Office v3 AS-BUILT Specifications

The following list summarises the documentation required from each discipline for the Green Star Office v3 **As-Built** submission.

The list has been prepared based on the Green Star credits and ESD strategies identified in this tender package. Any variations to these strategies may impact the documentation required for the Green Star submission to the GBCA.



Credit Document

Acoustic Logic

IEQ-12 A Short report

Short report prepared by a qualified acoustics consultant that describes how the credit criteria have been met by describing: -All relevant internal and external noise sources -The design features required to demonstrate that the Credit Criteria has been achieved - Show that the commissioning agent was present at the time of the acoustic testing (to be carried out by the builder), and state that the plant was fully in operation when the tests were carried out

Arch

Mat-4 B As-built drawings

As-built drawings for all areas: -Indicating whether they are delivered as integrated fitout

BMS Contractor

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) demonstrating compliance with CIBSE Commissioning Codes

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) which includes commissioning dates, records of all functional/commissioning testing undertaken, list any future seasonal testing, and include a written list of outstanding commissioning issues.

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) which includes the outcomes and changes made to the building as a result of the commissioning process, accounting for all recommendations.

Man-2 D As-built drawings

Provide a complete set of BMS as-built drawings

Man-3 A Building tuning contract with the contractor

Building Tuning contract signed by the building owner and the BMS Contractor showing the scope, timeframe, milestones and deliverables of the building tuning process. The contract must stipulate that a Building Tuning Report be generated by the building tuning team, and reviewed by the BMS Contractor, once the building tuning process has been finalised. The report must subsequently be made available to the building owner and other project team members.

BMSCont

Man-6 D Confirmation of subcontractor adherence to ISO14001 requirements

Documentation included with the EMS or Project EMP showing that any subcontractors relevant to the project have adhered to applicable ISO14001 requirements.

Ene-2 E As-built BMS points schedule

As-built BMS point schedule showing inputs from the sub-meters and that they are duly connected

Wat-2 C As-installed BMS points schedule

As-installed BMS point schedule showing the connection of water meters to the automated monitoring system (e.g. BMS), and confirming that all of them have been correctly installed

Builder

Man-6 A Environmental management plan

A comprehensive, project-specific EMP, clearly demonstrating compliance with the requirements of Section 4 of the NSW Environmental Management System guidelines 1998 or 2007.

Man-6 B Documentation (As-built)

Short Report describing how the EMP was implemented, including a summary table describing all the reporting created through the use of the EMP confirming its thorough implementation in accordance with Section 3 of the NSW Environmental Management System guidelines 2007

Man-6 B Documentation (As-built)

A compliance Matrix that includes the NSW Environmental Management System requirements and a statement of how these have been fulfilled

Man-6 C Contractor ISO14001 certificate

A copy of the current and valid ISO14001 certification, its applicability and its restrictions.

Man-7 A Short report

Short Report confirming compliance with the Credit Criteria by summarising the total amount of demolition and construction waste generated, how it was reused/recycled, and indicating the total percentage of the waste diverted from landfill.

Man-7 B Quarterly waste reports

Quarterly waste reports for the entire duration of construction works issued to the building owner, referencing appended receipts and any other appropriate records (e.g. evidence of reuse), stating the total amount (by mass) of waste generated and the percentage reused or recycled.

IEQ-4 B Confirmation from the Head Contractor

Identifying that the glazing was installed as per the drawings, and correlating the type of glazing installed against the information from the As Built Drawings and Material Data Sheets from the manufacturer

IEQ-5 C Confirmation from the Head Contractor

Confirmation identifying that the glazing was installed as per the drawings, and correlating the type of glazing installed against the information from the As Built Drawings and Material Data Sheets from the manufacturer

IEQ-9 D Glass data sheets

Supplier or Manufacturer Data Sheets for each supplied glass

IEQ-11 D Disposal receipts

Disposal receipts from the contractor (or suitable sub-contractor(s)) confirming that the asbestos, lead and polychlorinated biphenyls has been removed and disposed in accordance with the standards listed under the Compliance Requirements, or in the case of asbestos, the relevant environmental and OH&S legislation

IEQ-13. A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Summarising how the products used meet the credit criteria -Listing and referencing all the products within the relevant category used in the project -Nominating the ones that meet the credit criteria -Referencing the appropriate VOC datasheet

IEQ-13. B Confirmation from suppliers

Confirmation from suppliers of the type and quantity of each product supplied to the project

IEQ-13. C Confirmation from the contractor

Confirmation from the contractor: -That compliant low-VOC products were used by all subcontractors and relevant trades wherever specified, to meet the credit criteria by describing the application, amount, type and supplier of carpet, paints and sealants and adhesives (whichever relevant) used throughout the project

IEQ-13. D VOC datasheets

VOC datasheets provided by the manufacturer/supplier -For every compliant product nominated -For every datasheet provided, the compliant VOC levels must be highlighted and referenced in the short report -Stating the calculation method followed to determine TVOC levels of each specified product -The datasheets must come from: - Laboratory test reports or test certificates – Product TVOC test reports/certificates must be issued by a NATA or ISO/IEC 17025 certified testing laboratory and must state the product name, TVOC result and the testing method used. Refer to the Additional Guidance section of the Green Star VOC credit for lists of compliant test methods. OR -Material Safety Data Sheets (MSDS) – Where a product MSDS includes TVOC information, it must include the numerical result expressed in g/litre of product and the test method used to obtain the results. Refer to the Additional Guidance section of the Green Star VOC credit for lists of compliant test methods. OR -Manufacturer prepared VOC data sheets – Product VOC data sheets that have been prepared by the manufacturer to demonstrate TVOC must be based on theoretical calculations of the subtotal of the known VOC values of the product's raw material components. Where the TVOC content of individual components is not known, it must be determined experimentally by one of the appropriate test methods listed in the Additional Guidance section of the Green Star VOC credit. Theoretical TVOC calculations prepared by manufacturers may be submitted as evidence for compliance with the credit. Project teams must submit a signed letter from the manufacturer containing the following: - Numerical TVOC results expressed in g/litre of product; - Manufacturer's statement that the results have been obtained based on the subtotal of the known VOC values of the product's raw material components.

IEQ-14 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Summarising how the products used meet the credit criteria -Listing and referencing all the engineered wood products used in the project -Nominating the ones that meet the credit criteria -Referencing the appropriate formaldehyde datasheet

IEQ-14 B Confirmations from the suppliers

Confirmations from the suppliers of the type and quantity of each product supplied to the project

IEQ-14 C Formaldehyde emissions reports

Formaldehyde emissions reports provided by the manufacturer/supplier: -Quoting the formaldehyde emission level of each engineered wood product used in the project (excepting excluded applications) -Highlighting the compliant emission values in the test results for clarity of submission purposes

Mat-5 A Concrete technologist report

Concrete technologist report that describes how the credit criteria has been met by: -Providing a breakdown of all concrete uses in the project, with the description, volume, composition and proportions of components clearly identified for each mix and use -Clearly indicating the volume of Portland cement replaced by the industrial waste product or oversized aggregate -Correlating with specification -If oversized aggregate is used, calculations to demonstrate that this approach is equivalent to reducing the amount of cement used in a project by replacing it with industrial waste products

Mat-5 B Confirmations from suppliers

Confirmation(s) from supplier(s): -Of quantities of Portland cement, industrial waste product and aggregate (both recycled and non-recycled) supplied to site -That no industrial waste product came from industrial facilities co-fired with hazardous waste

Mat-5 D Short report

Short Report summarising: -To demonstrate replacement of Portland Cement, the findings of the Concrete Technologist

Mat-5 E Concrete technologist report

Concrete technologist report that describes how the credit criteria has been met by: -Providing a breakdown of all concrete uses in the project, with the description, volume, composition and proportions of components clearly identified for each mix and use -Clearly indicating the volume of Portland cement replaced by the industrial waste product or oversized aggregate -Correlating with specification -If oversized aggregate is used, calculations to demonstrate that this approach is equivalent to reducing the amount of cement used in a project by replacing it with industrial waste products -Where the additional point is claimed, identifying all aggregate uses in the project, describing where recycled or natural aggregate is used, and demonstrating that the Credit Criteria has been met.

Mat-5 F Confirmations from suppliers

Confirmation(s) from supplier(s): -Of quantities of Portland cement, industrial waste product and aggregate (both recycled and non-recycled) supplied to site -That no industrial waste product came from industrial facilities co-fired with hazardous waste -Where the additional point is claimed, providing certification that the aggregate claimed to be recycled is classified as Class 1 RCA in accordance with HB155-2002

Mat-8 A Short report

Short Report Short Report prepared by a suitable professional that describes how the Credit Criteria have been met by: -Listing all uses of timber on the project and the timber used -Identifying (with supporting receipts) the supplier cost of all timber uses in the project -Providing cost calculations and a summary table to confirm that reused, recycled and FSC timber jointly account for at least 95% of timber costs in the project

Mat-8 B Extracts from the contract

Extracts from the issued contract that includes the project's total value

Mat-8 D Confirmation from suppliers including Chain of Custody certificates

Confirmation from suppliers -Indicating the quantity, cost and type of all timber supplied to the project -Identifying properties of the timber as they relate to the Credit Criteria, i.e. whether the timber was reused, recycled or FSC certified -Wherever FSC certified timber is used, including the chain of Custody Certificates for all parties in custody of the product or material prior to it being produced for this project

Mat-8 E Confirmation from the contractor

Confirmation from contractor identifying all timber uses within the project and indicating the quantity and type of timber used

Mat-9 C Manufacturers data sheets

Manufacturer(s)' data sheets for pre-manufactured building elements, identifying their properties and addressing the Compliance Requirements

Eco-1 C Confirmation from the contractor

Confirmation from the contractor: -Confirming that no topsoil was exported from the site -Quantifying the amount of topsoil covered by hard surfaces as a result of the project -Describing how the Credit Criteria were met during or as a result of construction works

Eco-3 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Outlining all available decontamination options, and proposing the remediation strategy -In order for encapsulation to be deemed appropriate for meeting the Credit Criteria, the report must clearly identify that no other remediation options exist for the project

Emi-4 B Confirmation from the suppliers

Confirmation from the supplier(s): -Identifying (with supporting evidence such as Manufacturer's Data Sheets (MDS) and delivery docket(s) the type, and properties of the insulant(s) supplied to the project. -The MDS must clearly confirm that the insulants are free of ozone-depleting substances in both manufacture and composition.

Emi-5.1 A Short report

Short Report prepared by the relevant project team member that describes how Credit Criteria have been met: -Referencing the guidelines used -Referencing the specification and site plan -Providing calculations of original peak stormwater flows (based on site conditions at the time of purchase) against projected peak stormwater guidelines

Emi-5.1 B As-built drawings

As-built drawings: -Showing the system included in the project design

Client

Man-4 A CV of the independent commissioning agent

A copy of the CV of the independent commissioning agent provided to the client detailing qualifications and relevant experience.

Man-5 A Building users' guide

A copy of the Building Users' Guide

Man-5 B Confirmation of issue to the owner

Confirmation that it has been issued to the owner EITHER through the provision of the official transmittal OR through a letter from the owner confirming receipt of the document.

Tra-1 B Extract(s) from the local authority planning allowances

Extracts from the local authority planning allowances where -The car parking allowances for the site or region are nominated -It is indicated where the allowances are mandatory or otherwise -The date and issuing authority are identified

Tra-2 C Car pooling program registration

Car pooling program registration with contractual evidence showing registration for the car pooling scheme

Mat-4 C Confirmation(s) from the tenant(s)

Confirmation(s) from the tenant(s) for an integrated fitout, indicating: -The proportion of NLA that is an integrated fitout -That the as-built fitout has been designed to satisfy the requirements of those tenants -That no significant alterations will be carried out on the fitout provided prior to occupation

Eco-2 B Evidence of site purchase (Refer General Section)

Eco-4 C Site Report from the Relevant Authority

Site Report from the Relevant Authority identifying the site's bioregion and confirming or refuting the presence of threatened or vulnerable species on the site.

Cundall

Man-1 A Green Star Professional Certificate

Copy of Green Star Accredited Professional Certificate

Man-1 B Letter of appointment

Copy of Green Star Accredited Professional's Letter of Appointment & Scope of Works

Man-1 C Log of meeting attendance

List of meetings and involvement

Man-1 D Meeting minutes

Extracts from meeting minutes clearly indicating attendance and participation of the GSAP

Man-2 A Short report on design intent

Short report which outlines the design intent and includes the following items:

Man-2 B Short report on design intent

Monitoring and Targeting Details on energy, water, indoor environment quality and waste targets and benchmarks for the building, such as W/m2 and/or ABGR rating, and on the metering & sub-metering strategy.

Man-2 B Short report on design intent

Energy & Environmental Strategy A description of the energy efficient features and strategies in relation to the design of the building, including an overview of the potential savings, as stated for economic and environmental impact.

ElecCons

Ene-2 A Short report

Short report prepared by a suitable project team member that describes how the credit criteria have been met by: -Providing a summary table of all separately metered spaces in the building -Describing how the energy consumption data will be effectively monitored during the building's operation

ElecCont

Man-6 D Confirmation of subcontractor adherence to ISO14001 requirements

Documentation included with the EMS or Project EMP showing that any subcontractors relevant to the project have adhered to applicable ISO14001 requirements.

IEQ-6 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Identifying all the luminaries used within the building with types of ballasts and quantities nominated -The NLA served by luminaries with high frequency ballasts -Through a summary table or calculations that the areas served by the luminaries with high frequency ballasts jointly contribute at least 95% of the total NLA

IEQ-6 B As-built drawings

As-built drawings including reflected ceiling plans for each typical layout, with the type of luminaire and the area it serves clearly identified

IEQ-7 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Referencing as-built documentation and, where relevant, results of commissioning -Detailing the luminaries/fittings used -Providing a summary table of all areas in the project, indicating documented typical areas, their NLA and maintained illuminance lighting levels, and demonstrating that compliance areas jointly account for at least 95% of the Class 5 Commercial Office NLA

IEQ-7 B As-built reflected ceiling plan (RCP) drawings

As-built reflected ceiling plan (RCP) drawings for each typical ceiling layout, marked up to demonstrate compliance with the credit criteria, with the location, type and expected maintained illuminance of all luminaries clearly indicated

IEQ-7 C Confirmation from the contractor

Confirmation from the contractor that all luminaries were installed in accordance with the RCPs

Ene-2 B As-built schematic electrical drawings

As-built schematic electrical drawings with all the uses and loads clearly indicated and with the location of all sub-meters clearly marked. Submit a schedule of all equipment in excess of 100KvA, or identify the kVA of each switchboard (on the single line diagram)

Ene-2 C Short report

Short report prepared by a suitable project team member that describes how the credit criteria have been met by: -Providing a summary table of all separately metered spaces in the building -Describing how the energy consumption data will be effectively monitored during the building's operation

Ene-2 D As-built schematic electrical drawings

As-built schematic electrical drawings with all the uses and loads clearly indicated and with the location of all sub-meters clearly marked. Submit a schedule of all equipment in excess of 100KvA, or identify the kVA of each switchboard (on the single line diagram)

Ene-2 F Short report

Short report prepared by a suitable project team member that describes how the credit criteria have been met by: -Providing a summary table of all separately metered spaces in the building -Describing how the energy consumption data will be effectively monitored during the building's operation -Describing how sub-metering is provided separately for lighting and separately for power for each floor or tenancy, whichever is smaller; and the effective mechanism for monitoring energy consumption data

Ene-2 G Short report

As-built schematic electrical drawings with all the uses and loads clearly indicated and with the location of all sub-meters clearly marked. Submit a schedule of all equipment in excess of 100KvA, or identify the kVA of each switchboard (on the single line diagram)

Ene-3 A Short report

Short report prepared by a suitable project team member that describes how the credit criteria have been met by: -Providing a summary table that lists all layouts and their area, demonstrating that compliant areas jointly account for at least 95% of the NLA -Where calculations are used, stating the working plane used in the calculations and outlining the lighting power density calculations for each of the layouts -Where the values for the surface reflectance are unknown, the values for modelling these credits must be in accordance with the values stated in the Compliance Requirements section of IEQ-4.

Ene-3 B As-built reflected ceiling plan (RCP) drawings

As-built reflected ceiling plans, RCP drawings clearly indicating the location and area of each typical lighting layout, the luminaries used and the types of lamps used for each fitting

Ene-3 C Confirmation from the contractor

Confirmation from the contractor of the location and type of fittings installed, demonstrating compliance with the credit criteria

Ene-4 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met and providing a summary table that lists all separately switched zones and their area, demonstrating that compliant areas jointly account for the stipulated proportion of NLA

Ene-5 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Where compliance is demonstrated through reduction of peak electrical demand: Justifying, with supporting calculations, the building's peak demand value -Detailing, with supporting calculations, the design, operation, and sufficient capacity of the intended system -Appropriately referencing as-built drawings and AS3000 -Clearly identifying what active mechanisms will ensure that the demand on the infrastructure will at no point exceed the stipulated percentage of the building's demand

Ene-5 C As-built schematic electrical drawings

As-built schematic electrical drawings of the installed solution(s)

Emi-7 A Short report

Short report from the lighting engineer describing how the Credit Criteria have been met by: -Detailing the external and atrium lighting on the site, the areas illuminated, calculations and illumination diagrams (including horizontal and vertical light distribution), and referencing the photometric data included in the luminaire schedule to demonstrate that no light spill is impacting the night sky or neighbouring properties in accordance with AS4282 1997. * Luminaire Schedule for all external lighting (and lighting within glazed atria where applicable), nominating the type, lighting distribution and quantity of each luminaire and including the relevant photometric data showing that the luminaires do not have an upward light output ratio that exceeds 5%

Emi-7 B As-built drawings

As-built drawings -Site plan indicating the location and type of all external luminaires, and marked up to show the area(s) that does not exceed the minimum requirements of AS1158 for illuminance levels - Where a glazed atrium is present, atrium drawings indicating the location and type of internal luminaires

Emi-7 C As-built luminary schedule

As-built luminary schedule for all external lighting and relevant internal lighting (where glazed atrium is present), nominating the type, lighting distribution and quantity of each luminary

Emi-7 D Confirmation(s) from the supplier(s)

Confirmation(s) from the supplier(s) identifying (through Manufacturers Data Sheets and delivery dockets) the type and quantity of all relevant luminaires supplied to the project

Electrical Contractor**Man-2 A Commissioning report extracts**

Extract(s) from the commissioning reports (all services) which includes commissioning dates, records of all functional/commissioning testing undertaken, list any future seasonal testing, and include a written list of outstanding commissioning issues.

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) which includes the outcomes and changes made to the building as a result of the commissioning process, accounting for all recommendations.

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) demonstrating compliance with CIBSE Commissioning Codes

Man-2 E As-built drawings

Provide a complete set of electrical services as-built drawings

Man-3 A Building tuning contract with the contractor

Building Tuning contract signed by the building owner and the Electrical Contractor showing the scope, timeframe, milestones and deliverables of the building tuning process. The contract must stipulate that a Building Tuning Report be generated by the building tuning team, and reviewed by the BMS Contractor, once the building tuning process has been finalised. The report must subsequently be made available to the building owner and other project team members.

ESD**IEQ-2 D CFD report or Extracts from the commissioning report**

CFD modelling report by a suitable qualified professional and referencing attached as-built evidence: -Summarising the CFD analysis and modelling results -Demonstrating that the as-built design provides and ACE of >0.95 calculated in accordance with the ASHRAE F25-1997 'Measuring Air Change Effectiveness' for 95% of the NLA with minimum turn-down rates Providing the CFD modelling results and demonstrating that the computerised model reflects the as-built drawings OR Extracts from the Commissioning Report demonstrating that the HVAC systems have been commissioned, outlining the commissioning process to confirm testing was undertaken on typical layouts that jointly account for 95% of the NLA; and providing test results to confirm that the as-installed system complies with the credit criteria

IEQ-4 A Daylight modelling report

Daylight modelling report: -Supported by the as-built design and referencing as-built drawings -Describing the methodology and/or modelling software used to calculate the DF or DI -Describing the building model including values of reflectance and transmittance used for each relevant material/glazing -Showing legible floor plan outputs from the daylight modelling for each plan area claimed to have either a DF of not less than 2.0%, or a DI of at least 250 Lux -Summarising, in the form of a table, the NLA, divided into spaces and the area in each space which satisfies the requirement of either a 2.0% DF or DI of at least 250 Lux -Where compliance is on the basis of DF, describing the Uniform Design Sky used for the daylight model -where compliance is on the basis of DI, confirming that the result was achieved on the basis of dynamic simulation of daylight for the whole year OR Short report prepared by a relevant project team member and supported by the design and referencing drawings that describe how the credit criteria has been met using hand calculations -Identifying all spaces within the building -Nominating the spaces where the credit criteria has been met, and their area -Providing calculations for the DF within each compliant space -Providing a summary table to demonstrate that compliance spaces jointly account for the stipulated proportion of the NLA

IEQ-5 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -identifying all spaces where glare is minimised and nominating their areas -Nominating the solutions used to minimise glare in each -where internal blinds/screens are used, describing how 95% of direct sun penetration will be avoided -supported by the as-built design and referencing as-built drawings

IEQ-9 A Thermal comfort report

Thermal comfort report prepared by a suitable professional that describes how the Credit Criteria have been met by: -Referencing specifications and as-built drawings -For mechanically air-conditioned spaces, summarising thermal comfort calculations for the project design and demonstrating that the PMV targets are achieved. The thermal comfort report must include: -Thermal modelling simulation output including hourly PMV levels for each day of the year that the space is occupied -A summary of mean radiant temperatures, air temperatures and humidity from the simulation and details of weather data used -a description of the HVAC system and drawings showing how the building layout has been zoned for the thermal comfort analysis -A description of the methodology and software package used for determining thermal comfort levels -The clothing, metabolic rate and air movement values used -A summary of the hourly thermal comfort results, mean radiant temperatures, air temperatures, and humidity for each zone -A description of the year's worth of weather data used

IEQ-9 B As-built drawings

As-built drawings -Plans marked up to indicate all zones assessed for thermal comfort

Ene-0 A Energy modelling report

Energy modelling report in accordance with either the ABGR Validation Protocol for Computer Simulations or the final version of the Green Star Energy Calculator Guide (unless otherwise clarified on the GBCA website): -Following the structure of the ABGR Validation Protocol for Computer Simulations or the final version of the Green Star Energy Calculator Guide -Clearly identifying all default values use (e.g. occupant density) -Clearly identifying all the design driven inputs and referencing as-built drawings; whenever assumptions are used, they must be justified and conservative -Clearly corresponding to the as-built/as-installed design

Ene-0 B Copy of the completed ABGR Calculator OR Green Star Energy Calculator

Copy of the completed ABGR Calculator OR Green Star Energy Calculator

Tra-1 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by stating how the development satisfies the Credit Criteria, including a comparison between the total number of car parking spaces provided by the project against the total maximum or minimum number of parking spaces allowed

Tra-2 A Short report

Short report prepared by a suitable professional that describes how the Credit Criteria have been met by: -Indicating the number of car pool, motorbike, small car, and total number of parking spaces being provided, and referencing the site plans when necessary; -Where alternative compliance is claimed, providing calculations that relate the number of parking spaces provided to the project nominated area; and -Stating that the spaces are designed in accordance with the dimensional requirements for small spaces set out in AS/NZS 2890.1:2004

Tra-3 A Short report

Short report prepared by a suitable professional that describes how the Credit Criteria have been met by: -Describing the location and provision of the cyclist facilities and referencing the cyclist facilities drawings -Demonstrating that the spaces are weather protected and have good natural surveillance (or are in a secured area) -Where the additional point is being claimed: -Describing the number and location of the cyclist facilities -Showing that the spaces provided are signposted in an accessible location near a major public entrance - Demonstrating that the visitor spaces are provided with good natural surveillance and weather protection

Tra-4 A Completed Green Star Mass Transport Calculator

A copy of the completed Mass Transport Calculator

Tra-4 B Short report

Short report prepared by a suitable professional that describes how the Credit Criteria have been met by: -Summarising the services that correspond to each mass transport stop showing the route number of the bus service for each stop and/or tram or train line servicing the nearest station. The timetables used for the calculations must be included as an appendix

Tra-4 C As-built site plans extending to surrounding areas

As-built site plan extending to surrounding areas: -The site plan must clearly justify the 'Distance to Site' inputs in the Calculator. It must be legible and to scale. The major public entrances to the building must be marked. The mass transport stops must be clearly indicated and labelled with the associated services

Tra-4 D Extracts from timetables

Extracts from timetables for each route showing service frequency at peak periods. The timetable provided must not be more than six months old from the date of submission

Mat-1 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Calculations demonstrating compliance with the sizing requirements for the recycling storage area outlined in Table Mat-1.1 -Identifying how the design complies with the access requirements of NSW document 'Policy for Waste Minimisation in New Developments' (2004): Section A, points A-12 through A17, and Section C, Points C6 and C7 and referencing drawings -Demonstrating that at least one of the distance requirements is met

Mat-1 B As-built drawings

As-built drawings marked up to show: -The location of the recycling storage area(s), with dimensions indicated -The route connecting the recycling storage area(s) with either the exit and/or the lift core, with dimensions indicated

Mat-2 D Short report

Short Report prepared by a suitably qualified professional that describes how the Credit Criteria have been met by: -Providing calculations and a complete area schedule demonstrating that the GFA of the original building(s) is less than 20% of the GFA of the building replacing them, referencing documentation from original buildings; OR -Stating that no buildings existed on the site at the time of purchase.

Mat-2 E Site documentation

Scaled site plans (with built area indicated and quantified) OR aerial photographs generated at or prior to site purchase, showing the built area on the site

Mat-4 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Providing a tabulated summary table that identifies all NLA spaces in the building and their area, nominates whether they have been delivered as integrated fitout or not, and confirms that compliant spaces jointly account for at least the stipulated proportion of the NLA

Eco-0 A Extract(s) from the local current local development control approval

Extract(s) from the local current local development control approval that shows that the site was appropriately zoned prior to development approval

Eco-0 B Development zone map

Development zone map that shows that the site was appropriately zoned prior to development approval

Eco-0 C Confirmation from the relevant local council or consent authority

Confirmation from the relevant local council or consent authority stating that the site was not on land of high ecological value as defined in the Credit Criteria prior to purchase

Eco-4 A Completed change in ecology calculator

Completed Change in Ecology Calculator A copy of the Change in Ecology Calculator completed in accordance with supporting documentation

Emi-4 A Short report

Short report prepared by a suitable professional that describes how the Credit Criteria have been met by: -Providing a summary table listing all the insulation uses, the type and the ODP. The summary table must show where in each specification this item has been listed.

Emi-6.1 A Completed Sewerage Calculator

Completed Sewerage Calculator in accordance with supporting documentation

Emi-6.1 B Completed Potable Water Calculator

Completed Potable Water Calculator in accordance with supporting documentation

Fire Contractor**Man-2 A Commissioning report extracts**

Extract(s) from the commissioning reports (all services) demonstrating compliance with CIBSE Commissioning Codes

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) which includes the outcomes and changes made to the building as a result of the commissioning process, accounting for all recommendations.

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) which includes commissioning dates, records of all functional/commissioning testing undertaken, list any future seasonal testing, and include a written list of outstanding commissioning issues.

FireCont**Man-6 D Confirmation of subcontractor adherence to ISO14001 requirements**

Documentation included with the EMS or Project EMP showing that any subcontractors relevant to the project have adhered to applicable ISO14001 requirements.

Wat-5 A Short report

Short report from a suitable professional that describes how the Credit Criteria has been met, including: -The proposed fire protection system, its operation and testing requirements, justifying how the system design meets the Credit Criteria and how the collected water will be reused on site -Where the project has no fire sprinkler system, the report must state how the project meets the required fire safety standards outlined in the BCA

Wat-5 C As-built schematic fire suppression drawings

As-built schematic fire suppression drawings for each typical floor, and drawings of the water storage and reuse system(s)

GeoTech**IEQ-11 B Short report**

Short report by a suitable professional that describes how the Credit Criteria have been met

IEQ-11 C Hazardous materials survey

Hazardous materials survey detailing asbestos, lead and polychlorinated biphenyls report from a suitably qualified person

Eco-3 B Contamination report OR site assessment

Contamination report OR site assessment -Completed in line with NEPM guidelines -Current at the time of site purchase or otherwise reflective of the site condition at the time of purchase -Clearly documenting the contamination present on the site

Eco-3 C Certificate from an environmental auditor

Certificate from an environmental auditor or relevant authority confirming that the site has been correctly and appropriately decontaminated in accordance with the relevant state and federal legislation, dated prior to the commencement of the construction phase of the project

Graeme Thwaite**Man-2 A Commissioning report extracts**

Extract(s) from the commissioning reports (all services) which includes commissioning dates, records of all functional/commissioning testing undertaken, list any future seasonal testing, and include a written list of outstanding commissioning issues.

Man-3 A Building tuning contract with the contractor

Building Tuning contract signed by the building owner and the ICA showing the scope, timeframe, milestones and deliverables of the building tuning process. The contract must stipulate that a Building Tuning Report be generated by the building tuning team, and reviewed by the ICA, once the building tuning process has been finalised. The report must subsequently be made available to the building owner and other project team members.

Hydraulics Contractor**Man-2 A Commissioning report extracts**

Extract(s) from the commissioning reports (all services) which includes the outcomes and changes made to the building as a result of the commissioning process, accounting for all recommendations.

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) demonstrating compliance with CIBSE Commissioning Codes

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) which includes commissioning dates, records of all functional/commissioning testing undertaken, list any future seasonal testing, and include a written list of outstanding commissioning issues.

Man-2 F As-built drawings

Provide a complete set of hydraulic services as-built drawings

Man-3 A Building tuning contract with the contractor

Building Tuning contract signed by the building owner and the Hydraulic Contractor showing the scope, timeframe, milestones and deliverables of the building tuning process. The contract must stipulate that a Building Tuning Report be generated by the building tuning team, and reviewed by the Hydraulic Contractor, once the building tuning process has been finalised. The report must subsequently be made available to the building owner and other project team members.

HydrCont

Man-6 D Confirmation of subcontractor adherence to ISO14001 requirements

Documentation included with the EMS or Project EMP showing that any subcontractors relevant to the project have adhered to applicable ISO14001 requirements.

Wat-1 A Short report

Short report prepared by a suitable professional that describes how the Credit Criteria have been met by, and including: -Descriptions of all the water-efficient features in the building -Justifications of the predicted water savings, wherever not solely achieved by fittings/fixtures -Calculations undertaken for the Potable Water Calculator, including the capacity of all the water reuse, collection and storage systems -Where greywater, blackwater or rainwater systems are to be installed, and the contribution determined by the design team rather than using the simple calculators, then calculations demonstrating the reduction in potable water consumption must be submitted by a qualified and experienced consultant who has been involved in the design of such systems

Wat-1 C As-built schematic hydraulic drawings

As-built schematic hydraulic drawings showing the location of all water reuse, collection and storage systems

Wat-1 D Evidence of approval from the relevant authority

Evidence of approval from the relevant authority of the as-installed system, confirming compliance with the applicable local authority requirements

Wat-1 F Completed Potable Water Calculator

A copy of the completed Potable Water Calculator referencing the short report and supporting evidence

Wat-2 A Short report

Short report on water management prepared by the relevant qualified project team member describing how the Credit Criteria have been achieved: -Identifying the major water uses in the building -Describing how the water consumption data will be effectively monitored during the building's operation, including the function of the alert and leak detection systems

Wat-2 B As-built schematic hydraulics drawings

As-built schematic hydraulics drawings clearly showing the locations of all the water meters in the project and the associated water use

Wat-3 C As-built hydraulic drawings

As-built hydraulic drawings -Indicating the design, location and water supply of the irrigation system -Specifically showing that the tank size is consistent with calculations

Wat-4 C As-built hydraulic drawings

As-built hydraulic drawings highlighting: -The location and water supply of the water-based heat rejection systems -Any supplementary equipment that may be required to achieve the specified reduction in potable water consumption

Emi-6.1 C Short report

Short Report prepared by a suitably qualified professional describing how the Credit Criteria have been met by: -Describing the system, how it works and its treatment capacity compared with typical demand annually -Including how the annual percentage of water diverted from the sewer was calculated and calculations demonstrating capacity (under various rainfall conditions)

Emi-6.1 D As-built hydraulic drawings

As-built Hydraulic Drawing(s) showing the location and details of the treatment systems relative to the building including the location of water storage systems

Emi-6.1 F Evidence of approval from the relevant authority

Evidence of approval from the relevant authority of the as-installed system, confirming compliance with the applicable local authority requirements

ICA**Man-4 B Extracts from the commissioning report**

Extract(s) from the independent agent's commissioning report that summarises the major findings and recommendations of the commissioning process, and must include a statement by the ICA that states the level of involvement in the project.

IEQ-1 B Extracts from the commissioning report

Extracts from the commissioning report demonstrating that the HVAC systems of the building have been commissioned and operate as intended by the design, and indicating the minimum outside air rates supplied by each AHU.

IEQ-3 B Extracts from the commissioning report

verifying of the performance of the relevant controls and mechanical systems that satisfy the credit criteria

IEQ-9 E Extracts from the commissioning report

Extracts from the commissioning report demonstrating via commissioning results that the building has been commissioned and operates as intended by the design -For naturally ventilated spaces and MANV spaces, demonstrating that the building operates as a naturally ventilated office space in accordance with AS1668.2-2002 and requires no mechanical air-conditioning for occupancy

IEQ-12 B Extracts from the commissioning report

Extracts from the commissioning report showing the results of noise level testing (to be carried out by the builder) and outlining the conditions under which the tests were carried out. The Report must show that the commissioning agent was present at the time of the acoustic testing, and state that the plant was fully in operation when the tests were carried out

IEQ-15 D Extracts from the commissioning report

Extracts from the commissioning report showing the humidity levels in the ducts and in the office space for all modes of operation. The report must show that testing occurred using the range stated in the control system and demonstrate that all valves, dampers, fans, and the rest of the equipment, work as intended.

Ene-0 C Extracts from the commissioning report

Extracts from the commissioning report demonstrating (through supportive evidence) that the building has been commissioned and operates as intended by the design (i.e. as described in the energy modelling report)

Ene-2 H ICA Letter

Signed statement from the ICA to sign off the metering and interface with the BMCS.

Ene-4 B Extracts from the commissioning report

Extracts from the commissioning report demonstrating (through supporting evidence) that the lighting system has been commissioned and operates as intended by the design

Ene-5 B Extracts from the commissioning report

Extracts from the commissioning report demonstrating that the solution(s) have been commissioned and operate as intended by the design, appending relevant test data, and referencing the Operations and Maintenance (O&M) Manual

Wat-1 E Extracts from the commissioning report

Extracts from commissioning report: -Demonstrating that the relevant systems have been commissioned and operate as intended by the design -Referencing the Operations and Maintenance (O&M) Manual, clearly indicating that all the intended hydraulic fixtures and fittings and all water reuse, collection and storage systems have been installed

Wat-2 D Extracts from the commissioning report

Extracts from the commissioning report showing that all water meters and the monitoring system have been commissioned and are operating as intended by the design, and show that the water meter are reading correctly. Furthermore, a copy of the output report of the system

Wat-3 B Extracts from the commissioning report

Extracts from the Commissioning Report demonstrating that the system has been commissioned and operates as intended by the design, and expressed in the hydraulics report, and must show that the control strategies of the landscape irrigation work as intended

Wat-4 B Extracts from the commissioning report

Extracts from the commissioning report demonstrating that the installed system has been fully commissioned and operates as intended by the design

Wat-5 B Extracts from the commissioning report

Extracts from the commissioning report demonstrating that the fire protection system has been commissioned and operates as intended by the design

Emi-1 K Extract from the commissioning report

verifying the installation of the HVAC system

Emi-3 C Extracts from the commissioning report

Extracts from the Commissioning Report demonstrating that the HVAC systems have been commissioned and found to operate as intended by design

Emi-3 G Extracts from the commissioning report

Extracts from the Commissioning Report demonstrating that the HVAC systems have been commissioned and found to operate as intended by design

Emi-6.1 E Extracts from the commissioning report

Extracts from the commissioning report demonstrating (with appropriate evidence) that the systems (s) have been commissioned and operate as intended by the design

Emi-8 F Extracts from the commissioning report

Extracts from the commissioning report demonstrating that the HVAC system(s) have been commissioned and found to operate as intended by the design

LndscpArch**Wat-3 A Short report**

Short report by a suitably qualified engineer detailing: -The proposed landscape irrigation system and its water sources and operation - Providing calculations (and justifying values used) for the reference case -Demonstrating how the proposed system meets the Credit Criteria against the reference case -Referencing the as-built hydraulics drawings and the commissioning report extracts when necessary

Eco-1 B As-built architectural site plans

As-built architectural site plans of the project, indicating: -All surfaces in the development, with the hard surfaces clearly identified -The original and resulting location of topsoil, quantifying its volume - Where topsoil is separated stored on site, the storage location(s)

Eco-4 B Short report

Short Report by a suitably qualified member of the design team nominating the bioregion of the site and describing land types, with corresponding areas, in the 'before' and 'after' condition of the site. - Where the project claims to create land types with ecological value of 15 or greater, the report must identify the conditions and time period necessary for these areas to assume and perform their ecological function; -Based on the complexity and sensitivity of the proposed design, instalment and maintenance plans may be required to be developed and implemented by the building management, e.g. as part of the Operations and Maintenance (O&M) Manual -The short report may rely on additional evidence of ecosystem viability to demonstrate that the installed landscape will function as intended by the design

Eco-4 F Landscaping schedule

Landscaping schedule where planting and any requirements necessary to ensure that the landscaping functions as intended by the design are nominated

LndscpCont**Man-6 D Confirmation of subcontractor adherence to ISO14001 requirements**

Documentation included with the EMS or Project EMP showing that any subcontractors relevant to the project have adhered to applicable ISO14001 requirements.

Wat-3 D As-built site plans

As-built site plans for the entire site showing the use for all areas (including roofs) and demonstrating that landscape is provided

Eco-1 A Short report

Short report prepared by a suitable professional that describes how the Credit Criteria have been met by: -Quantifying the amount of topsoil on the site at time of purchase; all assumptions must be justified -Describing the scope and extent of the construction works, and how they will affect existing topsoil -Where topsoil is present and affected, describing how the integrity of the site's topsoil will be protected throughout construction works -Describing, with calculations and references to drawings, the 'before' and 'after' conditions that account for all topsoil on the site, and clearly confirming that no more than 5% of the site's topsoil will be covered by hard surfaces as a consequence of the design, and that at least 95% of the site's topsoil will remain productive.

Eco-4 E Confirmation from the contractor

Confirmation from the contractor that the landscape was installed in accordance with the design

Macquarie University

Man-2 G Extracts from O&M Manual

Extract(s) from the Operations and Maintenance (O&M) manual describing how the facility will be operated and by whom, as well as the desired level of training and orientation required for the building occupants to understand and use the building systems.

Man-2 H Details of training provided to building management staff

Confirmation that sufficient training is being or will be provided to ensure that building managers or staff members have all the information and understanding needed to operate and maintain the commissioned features and systems of the building. The training provided must include at a minimum:

Man-2 I Details of training provided to building management staff

Information provided in the design intent report (including energy and environmental features); • Review of controls set up, programming, alarms and troubleshooting; • O&M manuals; • Building operation (start up, normal operation, unoccupied operation, seasonal changeover, shutdown); • Interactions between systems; • Measures that can be taken to optimise energy efficiency; • Occupational Health & Safety (OH&S) issues; • Maintenance requirements and sourcing replacements; and • Occupant satisfaction feedback.

Mechanical Contractor**Man-2 A Commissioning report extracts**

Extract(s) from the commissioning reports (all services) demonstrating compliance with CIBSE Commissioning Codes

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) which includes commissioning dates, records of all functional/commissioning testing undertaken, list any future seasonal testing, and include a written list of outstanding commissioning issues.

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) which includes the outcomes and changes made to the building as a result of the commissioning process, accounting for all recommendations.

Man-2 C As-built drawings

Provide a complete set of as-built mechanical services drawings

Man-3 A Building tuning contract with the contractor

Building Tuning contract signed by the building owner and the Mechanical Contractor showing the scope, timeframe, milestones and deliverables of the building tuning process. The contract must stipulate that a Building Tuning Report be generated by the building tuning team, and reviewed by the Mechanical engineer, once the building tuning process has been finalised. The report must subsequently be made available to the building owner and other project team members.

MechCont**Man-6 D Confirmation of subcontractor adherence to ISO14001 requirements**

Documentation included with the EMS or Project EMP showing that any subcontractors relevant to the project have adhered to applicable ISO14001 requirements.

IEQ-1 A Short report

Short report prepared by a mechanical engineer that describes how the Credit Criteria have been met by: -Providing a schedule of all spaces within the building, indicating their ventilation mode(s) and areas as referenced in the as built drawings -Indicating the AHUs or fans that serve each area space, the minimum amount of outside-air rates supplied by each AHU or fan as evident in the commissioning and compared with the minimum requirements of AS1668.2-1991, and confirming that the minimum requirements of AS1668.2-1991 will be exceeded for at least 95% of the NLA. -The report must include the interpretation of minimum requirements of AS1668.2-1991 for the project.

IEQ-1 C As-built schematic mechanical drawings

AS-built schematic mechanical drawings for each typical mechanically air-conditioned spaces, indicating their area and nominating the outside-air supply rates.

IEQ-2 A Short report

A short report prepared by a suitable professional that describes how the credit criteria has been met by: -Describing the proposed system - Including a tabulated summary table that identifies all spaces in the building and their area, nominates compliant spaces, indicates their ventilation mode and how compliance is achieved and confirms that compliant spaces jointly account for at least the stipulated proportion of NLA

IEQ-2 B As-built drawings

As-built drawings for each typical naturally ventilated space, with ventilation openings, inlets and outlets clearly indicated and dimensioned

IEQ-2 C As-built schematic mechanical drawings

As-built schematic mechanical drawings of the installed HVAC system, marked up to clearly indicate key elements of the system

IEQ-3 A Short report

Short report that describes how the Credit Criteria have been met and referencing the attached as-built evidence: -Describing the configuration of the system and its method of operation -Providing a schedule of mixed mode ventilated, mechanically air-conditioned or MANV spaces in the building, their areas as referenced in the as-built drawings, the AHU(s) that serve each space, the minimum amount of outside-air rates supplied by each AHU as evident in the commissioning and compared with the minimum requirements of AS1668.2-1991, and confirming that the minimum requirements of AS1668.2-1991 will be exceeded for at least 95% of the NLA

IEQ-15 A Short report

Short report prepared by a mechanical engineer that describes how the credit criteria have been met: -Describing the active humidity control system

IEQ-15 B As-built mechanical system drawings

As-built mechanical system drawings showing humidity sensors installed in the ductwork

IEQ-15 C BMS point schedule

BMS point schedule showing humidity sensors installed in the ductwork

IEQ-16 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Describing how the tenant's exhaust riser is controlled and operated -Describing how the system is connected to the base building energy meter -Demonstrating that the risers have the capacity to serve all floors as required by the credit -Describing how it meets the requirements of the credit and referring to design drawings and specification -Clear calculations correlating per-floor air rates to the NLA, specifications and the drawings

IEQ-16 B As-built drawings

As-built exhaust riser drawings showing the location of the tenant's exhaust riser

Wat-4 A Short report

Short report prepared by a suitably qualified project team member, referencing as-built drawings and detailing: -The heat rejection system installed in the project -Describing the proposed water-based heat rejection system -Providing calculations (and justifying values used) for the reference case -Demonstrating how the proposed system meets the credit criteria against the reference case -Where no water-based heat rejection systems are installed, the report must describe the heat rejection system installed in the project

Emi-1 A Short report

Short Report prepared by a mechanical engineer that describes how the Credit Criteria have been met: -Referencing as-built/as-installed drawings -Describing the HVAC system and all its components -If several different types of systems are to be installed specify the type of refrigerant used in each piece of equipment, its ODP and the volume of refrigerant -Identifying all systems that contain refrigerant -Indicating all of the type of refrigerant(s) used in the system without any refrigerant loss to the atmosphere

Emi-1 G As-built schematic mechanical drawings

As-built schematic mechanical drawings of the HVAC systems, indicating location and type of all components containing refrigerant

Emi-1 H Confirmation from the suppliers

Confirmation from suppliers of the type and quantity of all the refrigerants supplied to the project, to include evidence that the refrigerants have an ODP of zero as determined from either HB 40.1-2001: The Australian Refrigeration and Air-conditioning Code of Good Practice (appendix 3 & 4) or AIRIAH Refrigerant Selection Guide 2003

Emi-1 I Confirmation from the contractor

Confirmation from the contractor of the HVAC system installed, indicating the location, type and volume of all refrigerants

Emi-1 J Extracts from the O&M Manual

Extracts from the O&M Manual that stipulates that only zero-ODP refrigerants can be used for any replacements

Emi-3 A Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Referencing as-built/as-installed evidence -Describing the HVAC system and all its components -Identifying all systems that contain refrigerants -Indicating all of the type and volume of refrigerant(s) used in the system(s) -Outlining the design and intended operation of the refrigerant leak detection system(s)

Emi-3 B As-built mechanical drawings

As-built mechanical drawings of the HVAC system(s), indicating location and type of all elements containing refrigerants and showing the enclosure around each of the HVAC systems containing refrigerants, with the location, size and intended operation of the sensors and openings identified

Emi-3 D Extracts from the O&M Manual

Extracts from the O&M Manual explaining the correct operation of the leak detection and recovery system

Emi-3 E Short report

Short report prepared by a suitable professional that describes how the credit criteria have been met by: -Referencing as-built/as-installed evidence -Describing the HVAC system and all its components -Identifying all systems that contain refrigerants -Indicating all of the type and volume of refrigerant(s) used in the system(s) -Outlining the design and intended operation of the refrigerant leak detection system(s) and if the additional point is claimed, of the recovery system(s)

Emi-3 F As-built mechanical drawings

As-built mechanical drawings of the HVAC system(s), indicating location and type of all elements containing refrigerants and showing the enclosure around each of the HVAC systems containing refrigerants, with the location, size and intended operation of the sensors and openings identified

Emi-3 H Extracts from the O&M Manual

Extracts from the O&M Manual explaining the correct operation of the leak detection and recovery system

Emi-3 L Confirmation from the contractor

Confirmation from the contractor of the HVAC system installed, indicating the location, type and volume of all refrigerants

Emi-8 D Short report

Short report prepared by a qualified project team member that describes how the Credit Criteria have been met by: -Describing the HVAC system and all its components -Referencing as-built drawings and the Commissioning Report -For mechanically air-conditioned, indicating the type of the HVAC system and if it requires refrigerants, their type(s) and volume

Emi-8 E As-built mechanical drawings

As-built mechanical drawings of the HVAC system, with components clearly nominated

PP-A**IEQ-4 C Final glazing schedule**

Final glazing schedule identifying all glazing within the project by application, properties, supplier and quantity.

IEQ-4 D As-built architectural drawings

As Built Architectural Façade, Roof, Plan, and Site Plan drawings

IEQ-5 B As-built facade drawings

As-built facade drawings of the building and any atriums marked up to show: -each typical glazing system in the design and its orientation - the glare control solutions used for each typical glazing system or atrium -the extent of fixed shading for that glazing system or atrium - wherever necessary, construction detail drawings of the glare control devices -where external shading is used, stereographic diagram at the working plane, 1.5m in from the centre of the glazing system, demonstrating that the point is shaded for at least 80% of standard working hours

IEQ-9 C As-built drawings

As-built drawings -Facade, roof and, wherever relevant, section drawings showing the materials in the design, including the type of glass supplied -For naturally ventilated spaces and MANV spaces, indicating and dimensioning all ventilation openings, inlets and outlets

Ene-0 D As-built drawings

As built drawings demonstrating that the facade details and materials are the same as described in the energy modelling report

Tra-1 C As-built drawings

As-built drawings of car parking provisions for the site showing the number of car parking spaces in the project

Tra-2 B As-built drawings

As-built drawings including the total number of all parking spaces with small parking spaces, moped/motorbike spaces, car-pooling participants and other alternative fuel vehicles clearly marked and dimensioned

Tra-3 B As-built drawings

As-built drawings of cyclist facilities showing: -The number and location of the cyclist facilities -The number and location of shower and locker facilities -Where the additional point is being claimed, the number and location of visitor bicycle parking

Wat-1 B Fixtures and Fittings Schedule

Fixtures and Fittings Schedule listing and describing all hydraulic fixtures and fittings in the project and their flow rates

Eco-2 A Short report

Short report from the project architect describing the built area on the site at the time of purchase, and providing calculations (with justification of all inputs used) of the proportion of the built area on the site

Eco-2 C Site documentation

Scaled site plans (with built area indicated and quantified) or aerial photographs generated at or prior to site purchase, showing the built area on the site

Eco-4 D As-built Architectural Site Plan

As-built Architectural Site Plan of the design clearly identifying all land types present on the site in accordance with the Calculator and indicating the area they occupy

QS**Mat-5 C Quantity surveyor report**

Quantity Surveyor report providing the total material value of the new concrete as a proportion of the project's total value

Mat-8 C Quantity surveyor report

Quantity surveyor report showing: -The total actual material cost of timber (existing timber if part of refurbishment) as a proportion of the project's total value -For refurbishment projects claiming this credit, the volume and market value of timber material retained within the existing building

Services Contractors**Man-2 B Short report on design intent**

Building Services Basic functions and operations of the following systems: - Ventilation; - Heating System; - Cooling System; - Electrical Systems; - Lighting; and - Domestic Hot Water (DHW).

Man-2 B Short report on design intent

Each referenced system must be accompanied by the following documentation: A simplified diagram of the system; Description of its intended operation and its conditions; A list of what the main components are (including controls) and the importance of their efficient use; Details on maintenance, including recommended frequency; and A list of likely tell-tale signs of system failure, system 'do's and don'ts', and notes on inefficient operation.

TTW**Mat-9 A Short report**

Short Report Short Report prepared by a suitable professional that describes how the Credit Criteria have been met by: -Outlining the overall approach -Identifying the elements designed for disassembly - Providing calculations and a summary table confirming that the stipulated proportion of the relevant elements is designed for disassembly

Mat-9 B As-built drawings

As-built drawings -Detail drawings of connections demonstrating that the relevant building elements can be disassembled without cutting, material change, or hindrance from adjacent materials -Elevation drawings of facades marked to identify elements designed for disassembly and the elements adjacent or consequential to the disassembly of these elements, as referenced in the disassembly plan - Floor plan drawings of each typical floor marked to identify elements designed for disassembly and the elements adjacent or consequential to the disassembly of these elements, as referenced in the disassembly plan -Roof drawings, sectional drawings or any other relevant drawings marked to identify elements designed for disassembly and the elements adjacent or consequential to the disassembly of these elements, as referenced in the disassembly plans

VertCont**Man-6 D Confirmation of subcontractor adherence to ISO14001 requirements**

Documentation included with the EMS or Project EMP showing that any subcontractors relevant to the project have adhered to applicable ISO14001 requirements.

Vertical Transport Contractor**Man-2 A Commissioning report extracts**

Extract(s) from the commissioning reports (all services) which includes the outcomes and changes made to the building as a result of the commissioning process, accounting for all recommendations.

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) which includes commissioning dates, records of all functional/commissioning testing undertaken, list any future seasonal testing, and include a written list of outstanding commissioning issues.

Man-2 A Commissioning report extracts

Extract(s) from the commissioning reports (all services) demonstrating compliance with CIBSE Commissioning Codes
