

Green Star

Building Users' Guide Template

September 2013

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| --- | --- | --- |
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About this template

This document has been developed to provide project teams a template for developing a Building User's Guide (BUG) for their project. The development of a BUG is a requirement of credit Man-5 'Building Users' Guide' (also referred to as 'Building Guides' in the Green Star - Education v1 and Green Star - Retail v1 rating tools). This BUG template can be used by project teams when targeting a point for the Building Users' Guide contained within this credit.

However, where a credit requires other documentation (such as a Building Maintenance Guide, or a Fitout Guide) to claim another point, these must be developed and submitted per the Submission requirements contained within the credit.

This template provides the structure of the BUG and provides example text to provide guidance on the type of information required under each heading. Please note, that the example text provided in this template is taken from various sources and together is not intended to represent an actual building in its entirety. The example text under each heading should be read in isolation and is provided to give projects teams a sample of information relevant to each section.

In order for the BUG to be an effective tool, the project must include building specific information throughout the document.

In addition to the information contained within this template, the following websites provide further guidance on the information to provide in a BUG.

* **Bobenhausen,C.(2008), Sustainable O&M Practices, Whole Building Design Guide** [www.wbdg.org/resources/sustainableom.php?r=health\_care](http://www.wbdg.org/resources/sustainableom.php?r=health_care)
* **Green Building Council Australia (2007), Clean Up Your Business Guide** [www.gbca.org.au/docs/2007\_Clean\_Up\_Business\_Tips[1].pdf](http://www.gbca.org.au/docs/2007_Clean_Up_Business_Tips%5B1%5D.pdf)
* **Queensland Government (2000), Ecologically Sustainable Office Fitout Guideline, Department of Public Works, Brisbane, Australia** [www.build.qld.gov.au/aps/ApsDocs/esdbody.asp](http://www.build.qld.gov.au/aps/ApsDocs/esdbody.asp)
* **SaveWater (2008), Fixing Leaks** [www.savewater.com.au/index.php?sectionid=603](http://www.savewater.com.au/index.php?sectionid=603)
* **State Government of Victoria (2002), Energy and Greenhouse Management Toolkit, Sustainable Energy Authority, Melbourne, Australia** [www.sustainability.vic.gov.au/www/html/1938-energy-and-greenhouse-management-toolkit.asp](http://www.sustainability.vic.gov.au/www/html/1938-energy-and-greenhouse-management-toolkit.asp)
* **Sustainable Energy Development Authority (2000), 'Tenant Energy Management Handbhook: Your guide to saving energy and money in the workplace** [www.nabers.com.au/downloadFile.aspx?file\_id=244](http://www.nabers.com.au/downloadFile.aspx?file_id=244)
* **Sydney Harbour Foreshore Authority (SHFA) (2008), Green Building User Guide: Enabling a Sustainable Future, Sydney, Australia** [www.shfa.nsw.gov.au](http://www.shfa.nsw.gov.au)

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| This document is being released as a draft for comment. GBCA encourages project teams to use this guide to develop their Green Star submissions. In addition, GBCA invites people to provide feedback on the guidance stated below.  |

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# <Building’s name> Building Users' Guide

## Building address

### Contact for Enquiries

If you have any questions regarding this document, please contact:

Name:

Role:

Phone:

### Record of Changes

| Version | Date | Nature of Amendment |
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<copyright information, if any>

# 1. Introduction

The efficient and safe operations of a building depend on the interactions of the tenants and occupants with the building. This Building Users' Guide (BUG) provides a guide to building occupants and building managers on how to operate the building in accordance with the design intent and in an efficient manner. The BUG also includes details of the sustainability initiatives incorporated in the design of the building, which when operated correctly will facilitate optimisation of the building’s environmental performance and identification of further tuning that may be needed to continuously improve the building’s performance.

To aid this ongoing interaction, this BUG has been developed as a simple and easy-to-use manual. The BUG includes:

* Targets for the reduction of energy, water and waste;
* A description of the buildings services and operational requirements for efficient and safe use of these systems;
* Building initiatives to reduce energy and water use;
* Monitoring provisions for energy, water and indoor environment quality;
* Transport facilities including car parking provisions, location of cyclist facilities and public transport information;
* Waste management strategy and provisions in place for use by tenants and building occupants; and
* Emergency contact information;
* Considerations for retrofitting or refurbishment; and
* References and further information.

## 1.1 Commitment to Sustainability

[Include details of any Environmental/ Energy or related policies and commitments of the building owner].

**Example:**

Green Star certified buildings contain a number of environmental benefits including the following:

* On average, Green Star certified buildings produce 62% fewer greenhouse gas emissions than average Australian buildings.
* On average, Green Star certified buildings produce 45% fewer greenhouse gas emissions than if they had been built to meet minimum industry requirements.
* On average, Green Star certified buildings use 66% less electricity than average Australian buildings.
* On average, Green Star certified buildings use 50% less electricity than if they had been built to meet minimum industry requirements.
* On average, Green Star buildings use 51% less potable water than average buildings.
* On average, Green Star As Built certified buildings recycled 96% of their construction and demolition waste.
* Since Green Star’s introduction to the market in 2003, more than 5.5 million square metres of building area have been Green Star certified.
* Green Star certified buildings save the equivalent of 76,000 average households’ electricity use annually.
* 37,600 truckloads of construction and demolition waste has been diverted from landfill due to good waste management practices when constructing Green Star certified buildings.
* The higher the Green Star certified rating of a building (4, 5 or 6 star) the greater the environmental savings across all key areas – greenhouse gas emissions, energy use, water consumption, and construction and demolition waste.

The most effective way to address the environmental impact of buildings, their construction and operation, is at the design stage. It is then that key decisions are made about passive and active systems to be incorporated into the building; of which materials and products are to be used and when space is allocated for initiatives and innovations that may be otherwise excluded from the design. The costs associated with incorporating various features and systems can be analysed over the life-cycle of the building to assess the effectiveness and feasibility of different initiatives.

Green Star was developed by the GBCA to:

* establish a common language
* set a standard of measurement for built environment sustainability
* promote integrated, holistic design;
* recognise environmental leadership;
* identify and improve life-cycle impacts; and
* raise awareness of the benefits of sustainable design, construction and urban planning.

It is conditional requirement of obtaining a Green Star - Office v3 rating that the base building’s predicted greenhouse gas emissions not exceed 110 kgCO2/m2/annum.

# 2. Key Personnel

The following are details of key personnel involved with the building:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name  | Position  | Responsibility  | Telephone number | Email address |
|  | Eg Facilities Manager  |  |  |  |
|  |  Eg Tenant Representative |  |  |  |

# 3. About Building and its Systems

[Provide a short description of the building including any other uses (such as retail, community facilities etc)]

## 3.1 Mechanical Systems (Heating, Ventilation and Cooling System)

[Provide a simple description of the HVAC system including the following:

* Provide a simplified diagram of the system]

**Example:**

The HVAC system is comprised of active chilled beams, with constant volume Air Handling Units in the plant rooms. The cooling system is served by high efficiency mechanical chillers located on the roof. The heating system is provided heating from gas fired boilers on the roof.

### 3.1.1 Intended Operation of the System

[Describe the intended operation of the system]

**Example:**

|  |  |
| --- | --- |
| Item  | Design Criteria |
| Design ambient conditions for air conditioning plant  | Summer:- 36.6 ºC dry bulb maximum 23.0 ºC wet bulb maximum Full solar load Winter:- 6.0 ºC dry bulb minimumZero solar load |
| Internal conditions for air conditioning plant | Summer: 23.0ºC +/- 1.5K dry bulb 50% Relative Humidity (Anticipated – Not controlled) Winter:- 21.0ºC +/- 1.5K dry bulb minimum |
| Ventilation  | In accordance with AS1668.2 – 1991 – plus 50% additional to meet Green Star requirements - Generally 11.25 l/s / person. |
| Etc  |  |

### 3.1.2 Components and Importance of Efficient Use

[List the main components (including control) and the importance of their efficient use]

**Example:**

The cooling and heating systems comprise of the following:

Four heat recovery variable refrigerant volume (VRV) systems consisting of high efficiency air cooled condensers located on the external roof deck connected via insulated refrigerant pipework to internal ducted fan coil units (FCU’s) located in the building's ceiling space.

Conditioned air from the FCU’s is delivered to the occupied spaces via insulated steel and flexible ductwork and ceiling mounted high induction radial swirl diffusers.

### 3.1.3 Maintenance Needs

[Detail maintenance needs]

**Example:**

|  |  |
| --- | --- |
| Item  | Frequency |
| Maintain air handling systems in accordance with requirements of the referenced Standards/Codes and Statutory Authorities | Every 3 months |
| Inspect air handling units and perform service work, as necessary to ensure the correct operation and performance of the plant  | Every 3 months |
| Check operation of internal lights and repair as necessary  | Every 3 months |

### 3.1.4 Signs of System Failure

[Outline tell-tale signs of system failure]

**Example:**

* Failure to meet energy targets for mechanical building systems;
* BMS logs of faults; and
* Loss of thermal comfort / excessive temperature fluctuations throughout the day;
* Excessive noise emanating from ceiling vents and / or plant items; and
* Time taken to reach set point temperatures in the morning warm up cycle.

## 3.2 Ventilation System

[Provide a simple description of the ventilation system including the following:

* Provide a simplified diagram of the system]

**Example:**

The ventilation systems within the building are designed to provide high quality air to a variety of spaces. These include providing dedicated fresh air intake fans to the heating and cooling systems on each floor to ensure that good indoor air quality is maintained by reducing the build-up of indoor air pollutants. A dedicated air supply system exists for the BMS to reduce the build-up of waste heat from the BMS.

Dedicated exhaust systems exist for each of the following:

* Tenant print and photocopy rooms;
* Toilets;
* Recycling waste storage room ; and
* Car park.

### 3.2.1 Intended Operation of the System

[Describe the intended operation of the system]

**Example:**

In order to improve air quality and in accordance with Green Star requirements the minimum code requires outside air quantities rates be improved by at least 50%.

### 3.2.2 Components and Importance of Efficient Use

[List the main components (including control) and the important of their efficient use]

**Example:**

* A car park exhaust system comprising of inline fan located within the ground floor bin store and sheet metal exhaust ductwork within the car park. The fan is complete with a variable speed drive (VSD) which is controlled by a carbon monoxide (CO) monitoring detection system throughout the car park. The system operates the fan at the lowest possible speed (and hence lowest energy use) whilst maintaining acceptable ventilation rates within the car park....etc

### 3.2.3 Maintenance Needs

[Detail maintenance needs]

**Example:**

|  |  |
| --- | --- |
| Ventilation systems | Frequency (months) |
| Maintain ventilation systems in accordance with requirements of the referenced Standards/Codes and Statutory Authorities  | Every 3 months |
| Inspect the system and perform service work, as needed to ensure the correct operation and performance of the plant | Every 3 months |
| Etc  |  |

### 3.2.4 Signs of System Failure

[Outline tell-tale signs of system failure]

**Example:**

* Excessive noise originating from ceiling vents, ventilation fans etc;
* Fault logs in the BMS;
* Ventilation systems operating in out-of-hours; and
* Discomfort, from a loss of ventilation.

## 3.3 Electronic Systems

[Provide a simple description of the electrical system including the following:

* Provide a simplified diagram of the system]

**Example:**

Incoming power is provided by the Electrical services utility. Space has been provided for the future installation of generators, should tenants wish to provide back up for their power supply.

### 3.3.1 Intended Operation of the System

[Describe the intended operation of the system]

**Example:**

The design of electrical services has been carried out in order to minimise greenhouse gas emissions associated with operational energy consumption and maximise potential operation efficiency of the base building services. All electrical lighting and power services have been selected and approved in consultation with the architect and developer with the aim of minimising energy consumption.

### 3.3.2 Components and Importance of Efficient Use

[List the main components (including control) and the important of their efficient use]

**Example:**

The following is a brief description of the Electrical Services in the Building:

* Electrical Substation: The electrical substation is located at the ground level of Building B. It consists of two (2) transformers feeding the Building Main Switchboard.
* Main Switchboards: The Main Switchboard is located in a dedicated Switchroom on the basement level.
* Power is distributed from the main switchboards to the rest of the building.
* Energy Metering: Energy metering is provided for mechanical plant, lifts general light and power, tenant floor light and tenant floor power and loads over 100kVA. The energy meters are connected to the building BMS system for ease of monitoring and collection of data

### 3.3.3 Maintenance Needs

[Detail maintenance needs]

**Example:**

|  |  |
| --- | --- |
| Item  | Frequency |
| Single Phase | Inspection and testing to BS 7671 |
| 3 Phase  | Inspection and testing to BS 7671 |

### 3.3.4 Signs of System Failure

[Outline tell-tale signs of system failure]

**Example:**

Where usage rates for the tenancy exceed those set out in the benchmark targets, it provides an indication that the associated systems are not operating correctly and consuming excess energy to that of the design intent.

## 3.4 Lighting Systems

[Provide a simple description of the lighting system including the following:

* Provide a simplified diagram of the system]

**Example:**

The Lighting Control is based upon maximum flexibility and giving control to provide a system that can be refit completely without the need to rewire, while providing control to each individual light fitting.

### 3.4.1 Intended Operation of the System

[Describe the intended operation of the system]

**Example:**

Lighting Controls: A programmable automatic control system has been employed throughout the Building. The typical open plan office floor lighting consists of high efficiency T5 luminaires in suspended ceilings with compact fluorescents downlights in lift lobbies and amenities.

Lighting to the open plan office floors is connected to the tenant distribution boards whilst lighting in amenities and lift lobbies is connected to the house distribution board.

A lighting control system is connected throughout the building that allows lighting areas to be automatically switched on and off or dimmed depending on inputs from the following:

* Local switches
* Motion detectors
* Daylight sensors
* Photocell detectors
* Floor override switches

### 3.4.2 Components and Importance of Efficient Use

[List the main components (including control) and the important of their efficient use]

**Example:**

Each level has been provided with its own individual lighting control – these installed control systems are flexible and as such the floor lighting configurations are adaptable to Tenants' requirements. The lighting is programmed to retain automatic dimming based on daylight levels and motion detection. Override switches/Light Switch Panels provided to each tenancy level may be used by cleaners to allow 100% lighting to the floor for a maximum preset time.
The lighting in toilets, stairwells and other transitional areas are automatically controlled.

### 3.4.3 Maintenance Needs

[Detail maintenance needs]

**Example:**

|  |  |
| --- | --- |
| Item  | Frequency |
| Tubular fluorescent Periodic clean and replacement | Lamp life of order of 10 000 hours (e.g. 3 years at 10 hours per day, 6 days per week) |
| Compact fluorescent Periodic cleaning and replacement | Lamp life of order of 8000 hours |
| High bay luminaires Periodic cleaning and lamp replacement  | Lamp life height 12 000 to 22 000 hours, depending on type  |
| Etc. |  |

###  3.4.4 Signs of System Failure

[Outline tell-tale signs of system failure]

**Example:**

|  |  |  |  |
| --- | --- | --- | --- |
| Activity | Form of identification | Affect on energy consumption | Potential energy saving measures |
| Greater than expected after hours lighting use | Security / lighting logs | Increased lighting load, particularly during non-office hours | * Review cleaning staff procedures for turning on / off lights
* Modify benchmark targets to reflect actual business operation
 |
| Poor lighting zoning | Inspection | Increased consumption, particularly after hours  | Re-check light zones against office layout |
| Etc  |  |  |  |

## 3.5 Hydraulic Systems

[Provide a simple description of the hydraulic system including the following:

* Provide a simplified diagram of the system]

**Example:**

Water saving fixtures and fittings were used along with a Greywater recycling system collecting water from the basins for reuse in toilet flushing.

### 3.5.1 Intended Operation of the System

[Describe the intended operation of the system]

**Example:**

Domestic hot water is supplied to amenities within the building by a gas hot water system located in the basement of the building. The hot water system is equipped with a water sub-meter on the mains feed into the hot water system and a hot water return from each level back to the hot water system in the basement.

### 3.5.2 Components and Importance of Efficient Use

[List the main components (including control) and the important of their efficient use]

**Example:**

The Hydraulic Services for this project generally consist of the following:

* Grey water Recycling System
* Sanitary Drainage
* Potable Hot and Cold Water Services
* Stormwater Drainage
* Natural Gas Service
* Fire Services

### 3.5.3 Maintenance Needs

[Detail maintenance needs]

**Example:**

|  |  |
| --- | --- |
| Item | Frequency |
| Check for water leaks, excessive water use, loose fitting  | Every month |
| Clean drains and drip trays  | Every 6 months |
| Etc. |  |

### 3.5.4 Signs of System Failure

[Outline tell-tale signs of system failure]

**Example:**

|  |  |  |  |
| --- | --- | --- | --- |
| Activity | Form of identification | Affect on energy consumption | Potential energy saving measures |
| Extended use  | Inspection  | Increased water consumption  | Education/ signage  |
| Leaks from fittings and fixtures  | Inspection | Increased water consumption | Regular inspectionsInstalling a leak detection system |
| Etc. |  |  |  |

## 3.6 Building Management and Control Systems

[Provide a simple description of the B<CS system including the following:

* Provide a simplified diagram of the system]

**Example:**

Electrical and water consumption will all be metered within the building and connected to the building management and control system (BMCS). It is expected that building managers will compile reports from the BMCS information to use in quarterly assessments of building performance.

### 3.6.1 Intended Operation of the System

[Describe the intended operation of the system]

**Example:**

The BMCS has the capability to generate reports on a monthly and/or as required basis for energy and water meters that can include the following information:

* Tenant / House / Use;
* Meter No, Billing Address and Contact;
* Monthly use;
* Graph of previous 12 months usage (rolling time scale);
* Average daily use;
* Actual versus target;; and
* Cost.

### 3.6.2 Components and Importance of Efficient Use

List the main components (including control) and the important of their efficient use

**Example:**

The BMCS shall also collate the building’s base energy consumption and provide this in a report format . The base building energy report includes the following:

* HVAC systems (VRV, mechanical vent, car park, bin store etc);
* Lifts;
* House / Common area lights and power (i.e. lobby, car park, external lighting, toilets);
* Monthly use (total and individual service);
* Graph of previous 12 months usage (rolling time scale);
* Average daily use (total and individual service);
* After hours use of each services;
* Peak Demand;
* Actual versus target consumption;
* Cost; and
* GST.

### 3.6.3 Maintenance Needs

[Detail maintenance needs]

**Example:**

The BMCS will be monitored regularly (at least quarterly) to ensure it is operating properly. These logs should be collated regularly (e.g. quarterly) and compared to benchmarks.

For the operation of the sub-meters, please refer to the instructions provided in the Operation and Maintenance manuals, to be provided by the contractors at practical completion.

### 3.6.4 Signs of System Failure

[Outline tell-tale signs of system failure]

**Example:**

During a power failure, most intelligent units rely on battery backup to retain program memory and time-clock information. However in the event of a system failure, the BMS systems will activate audible alarms or signals, or they will broadcast pre-recorded messages.

# 4. Energy Strategy

The building incorporates a range of initiative to reduce energy demand and to manage energy use in an efficient manner.

## 4.1 Benchmarks and targets

|  |  |
| --- | --- |
| Benchmark Energy Use  | [insert benchmark] watts/m2 or the ABGR Rating |
| Energy Reduction Target  |  |
| Greenhouse gas emissions saved resulting from energy reduction target | tonnes / year |
| Cost savings resulting from achieving energy reduction target | $ / year |

## 4.2 Description of building’s nominated systems

[Describe the nominated energy related systems in the building]

## 4.3 Energy Reduction Strategies

[Describe the initiatives incorporated in the design of the building to enhance energy efficiency and minimise greenhouse gas emissions. Include details of what building occupants should do to maximise benefits from the design strategies

**Example:**

The main energy saving features of the ventilation system are as follows:

* Active chilled beams: By passing water through the chilled beam coils, rather than using air as the primary cooling medium, air quantities are reduced by around 50%, with around 30% saving in fluid handling power.
Active chilled beams work best in open plan office environments with low humidity gain. This allows them to use the warmest possible supply air and get the greatest benefit from the use of water as a cooling medium.
* VSD’s and Pressure Control: All fans, even constant volume systems, are provided with Variable Speed Drives (VSD’s). This enables building operators to tune the speed of systems and air movement without wasting energy.
When used properly, VSD’s can reduce energy consumption by as much as 50%...etc

## 4.4 Energy Monitoring Strategy

[Briefly discuss how water will be monitored in the building. Provide details of the metering and sub-metering strategy to be used within the building and the locations of the water meters and sub-meters]

**Example:**

The features of the building electrical services related to metering and monitoring include:

* Sub Metering of tenant risers at the main switchboard.
* Separate Sub Metering of Base Building sections and Tenant sections of main switchboards
* Sub metering of mechanical plant.
* Sub Metering of Lifts Services
* Sub metering at base building distribution boards to individually monitor lighting consumption and power consumption
* Sub metering at tenant floor distribution boards to individually monitor lighting consumption and power consumption.
* Sub Metering loads over 100kVA

All meters to be linked to the BMS for ease of monitoring and collection of data. The BMS is used to provide a means to centrally monitor energy and also control the designated equipment installed on the site. Training and full documentation of the BMS interface is provided as part of the commissioning of this building.

In addition, there are separate meters per tenant area per floor that allow tenants to meter their lighting energy use and their power energy use separately. All meters are connected to a Building Management and Control System (BMCS) which allows for the effective monitoring of energy consumption data.

# 5. Water Strategy

The building incorporates a range of initiative to reduce water demand and to use water in an efficient manner.

## 5.1 Benchmarks and targets

|  |  |
| --- | --- |
| Benchmark Water Use  | [insert benchmark] L/person/day |
| Water Reduction Target  |  |
| Cost savings resulting from achieving water reduction target | $ /year |

## 5.2 Description of building’s nominated systems

[Describe the nominated water elated systems in the building]

## 5.3 Water Reduction Strategies

[Describe the initiatives incorporated in the design of the building to reduce water demand and to manage water efficiently during building operations. Include details of what building occupants should do to maximise benefits from the design strategies]

**Example:**

The project shall utilise high efficiency fixtures and fittings. Toilets shall be flushed with harvested rainwater.

Numerous water saving initiatives have been built into the project including: Wash basin taps –

* 84% - FX-44/45 - WELS 6 Star sensor tap (3.5 litre/min)
* 14% - FX-50 WELS 6 Star 4.5 Litre/min
* 2% - FX-49 WELS 1 star 16 Litre/min
* 90% WCs – FX-37 WELS 4 Star 3.5 litre / flush
* 10% WCs – FX-38 WELS 4 Star 3.5 litre / flush
* 100% Urinal – FX-39 WELS 6 Star (Waterless)
* 100% Showers– WELS 3 Star (9 litre/min)

## 5.4 Water Monitoring Strategy

[Briefly discuss how water will be monitored in the building. Provide details of the metering and sub-metering strategy to be used within the building and the locations of the water meters and sub-meters]

**Example:**

Water to base building amenities, cooling towers, hot water services, rainwater collection systems and each commercial tenancy and other high water uses will be individually metered via water sub meters and monitored by BMCS in accordance with green star requirements.

Maintenance procedures after practical completion include as a minimum:

* Monthly measurements and reporting of major water uses compared against predicted results in a simple to read format showing water consumption.
* As previously mentioned, metering shall be provided so that water measurements indicate separate water consumption for each floor and tenancy and for the following water uses as a minimum: domestic cold water, domestic hot water, irrigation, cooling towers, and rainwater.

# 6. Indoor Environmental Quality

People spend around 90% of their time indoors therefore providing a healthy and safe indoor environment is an important aspect of the design of this building.

|  |  |
| --- | --- |
| Indoor Environment Quality Reduction Target  |  |

## 6.1 Indoor Environment Quality Reduction Strategies

[Describe the initiatives incorporated in the building to reduce and avoid exposure to VOCs, formaldehyde and other indoor pollutants. Include details of what building occupants should do to avoid exposure to indoor pollutants during the building’s operations]

**Example:**

* Use of low VOC paints; and carpets and low emission formaldehyde;
* Mould prevention measures;
* Design and installation of tenant exhaust risers;
* Outside air rates 50% above Australian Standard requirement of 7.5 L/s/person;
* Computational Fluid Dynamics (CFD) modelling demonstrated that more than 98% of the commercial office NLA will achieve an Air Change Effectiveness (ACE) greater than 0.95;
* Design and installation of a CO2 monitoring and control system;
* 30% of the Net Lettable Area (NLA) achieves a Daylight Factor of >=2% at desk level;
* Fixed shading devices as well as internal blinds for daylight glare control on all three facades. Automated blinds along the north western and south western façade;
* High frequency ballasts installed to all fluorescent luminaires;
* Electric Lighting levels are no more than 400 Lux for 95% of the NLA measured at the working plane;
* Thermal comfort modelling demonstrated that the PMV levels of each office NLA area are between -0.5 and +0.5 for more than 98% of the year during air conditioned hours; and
* Base building services noise levels are designed to not exceed ‘satisfactory’ noise levels in accordance with the AS/NZS 2107:2000.

## 6.2 Indoor Environment Quality Monitoring Strategy

[Briefly discuss how Indoor Environment Quality will be monitored in the building]

**Example:**

Targets for maintaining a high quality indoor environment include:

Undertaking a building tuning on a quarterly basis for the first 12 months is an effective way of monitoring fresh air rates are as per the building’s design intent.

The building will also conduct a post occupancy evaluation (POE), to have a green maintenance plan in place to ensure non-toxic materials are used for maintenance, or to use the Green Star - Performance rating tool. The Green Star - Performance rating tool's Indoor Environment Quality category assesses the following key issues:

* Thermal comfort;
* Air quality;
* Acoustic comfort;
* Lighting; and
* Office layout .

# 7. Transport Facilities

## 7.1 Car Parking Provision

[Provide details of car parking provided and how to access these spaces. Also provide details of the fuel efficient car parking spaces and any car share or car-pool spaces provided.]

**Example:**

A total of XX car parks are provided for the building users. The car park is located in the basement level. This is approximately 50% less car parking than the local planning allowance. Out of these 10 are small car parks that complying with standard AS/ANZ 2890.2004. 5 motor cycle (MC) spaces have also been provided.

## 7.2 Cyclist Facilities

[Provide details of the cyclist facilities provided including bicycle parking spaces, changing facilities, showers and lockers. If there are any access issues, please include these details. Include the location of any visitor bicycle parking spaces]

**Example:**

Secure bicycle parking spaces have been provided as well as showers, lockers and changing facilities. These are located in the basement level.

A total of 50 secure bike spaces have been provided, with 10 showers. 50 lockers and change areas have been provided for male and female riders. The lockers are sized to allow for storage of business attire.

Access to these areas is provided through a swipe card.

15 additional visitors bicycle parking spaces are provided on-grade within 50 meters of the building entrance. They are signposted and weather protected.

## 7.3 Public Transport

[Include information related to public transport available to the building, the locations of stops/stations and walking routes. Provide timetable information or links to websites for timetable information. If a car-pool program is in place, provide details of this here including any website links wherever applicable]

**Example:**

The building is located near the following public transport stations:

* (LIST)

Insert map of walking route and distance to public transport stations and provide a link to website containing timetables.

## 7.4 Alternative Transport Programs

[If there are any other additional transport initiatives provided to occupants of the building, provide details. This may include carpooling and other car share programs]

# 8. Materials and Waste Strategies

|  |  |
| --- | --- |
| Waste Benchmark | [insert benchmark] m3 or kg/day, week, month or year |
| Waste Reduction Target | % diverted from landfill |
| Recycling Target  | % recycling |

## 8.1 Waste Management Strategy

[Outline the overall strategy to manage waste from the point of generation to the point of collection. Include the responsible parties involved in each step of the process. This should be the same strategy as outlined in Credit Mat-1 ‘Recycling Waste Storage’]

**Example:**

A central waste storage area has been provided in the basement. This location facilitates access by waste collection vehicles. As a minimum general waste, cardboard, paper and commingled waste (glass, plastic, and aluminium) will be collected separately from the office.

The recycling waste storage area is easily accessible by recycling collection vehicles. The area of recycling storage is 35 m² (based on a minimum requirement of 0.15% of GFA, with 25% additional space allowance as facilities are shared with general waste). The area provided is for recycling storage exclusively and excludes the general garbage area.

General waste is collected 2 times per week, paper and cardboard both weekly and commingled fortnightly. This is waste is collected on each floor in wheelie bins and then taken to the central waste storage area prior to being picked up by waste collection vehicles.

## 8.2 What can be recycled?

[Provide details of what can be recycled from the building]

**Example:**

Almost all office waste (aside from food/organic waste) can be recycled. Below is a list of products and materials you should recycle in your office:

* Paper recycling
* All types of office use
* Magazines
* Newspapers
* Manila folders
* Dividers
* Envelopes
* General recycling
* Toner cartridges
* Gloss bottles
* Plastic bottles
* Milk cartons
* Aluminium cans
* Any other container/materials displaying a ‘recyclable’ symbol.

## 8.3 Location of waste and recycling storage areas and collection frequency

This table is provided as a guide only, edit and amend based on the waste profile from your building

|  |  |  |
| --- | --- | --- |
| Material  | Location  | Collection frequency |
| Paper  |  |  |
| Plastics |  |  |
| Glass  |  |  |
| Aluminium  |  |  |
| Other office consumables (printer cartridges, electronic waste) |  |  |
| Garden (green) waste  |  |  |
| Food |  |  |
| Garbage  |  |  |

[Provide plans/ maps to highlight locations of storage areas as needed]

## 8.4 Policy for refurbishment works

[Outline any policies on future refurbishment works]

**Example:**

Any refurbishment undertaken will target a minimum of 5 star Green Star rating for Interiors or Office Interiors v1.1.

The building will also target a 4 star Green Star rating under Green Star - Performance. This is to ensure the building continues to operate as intended by the design.

# 9. Re-Fit and Expansion Considerations/ Fit-out Guide

In the event that the building undergoes a re-fit or expansion or some areas undergo a fit-out, the following provides guidance on how these can be undertaken in an environmentally responsible manner.

## 9.1 Green Star Rating

**Example:**

Any future works could consider certification through the Green Star rating tools. Please go to the GBCA website for further details on available rating tools and their applicability (<http://www.gbca.org.au/green-star/>).

More specifically, the project should consider the following strategies.

Management:

* Engaging a Green Star Accredit Professional to oversee and facilitate the adoption of sustainable building principles across the project.
* Building services impacted by the new works should be commissioned according to CIBSE Commissioning Codes or ASHRAE Commissioning Guideline 1-1996 (for mechanical services only) or CIBSE Commissioning Codes for other services.
* Employ a contractor with ISO 14001 accreditation one accredited to the NSW Environmental Management Systems Guidelines .
* Prepare and implement a Waste Management Plan that details how waste generated from the re-fit/expansion will be reused or recycled to achieve a waste diversion target of at least 90%

Indoor Environment Quality

* HVAC systems impacted by the re-fit/expansion should be designed to increase levels of fresh air intake.
* Maximise areas with access to natural light and views while controlling glare.
* Install energy efficient lights.
* Use only low VOC paints, sealants, adhesives, and carpets.
* Avoid the use of composite wood products containing formaldehyde.

Water

* Install water efficient fittings, fixtures and appliances.

Materials

* Select materials that have an environmental benefit – that is, reused, recycled content, FSC or PEFC certified.

Please note that these suggestions can be amended as needed by the Project Team, additionally the project team should look to incorporating project and site specific information for this section.

# 10. Emergency Information

## 10.1 Fire Exits and Escape Routes

[Outline the building’s fire exit and escape routes including plans]

## 10.2 Lift Evacuation Procedures/ Alarm System

## 10.3 Disabled Refuge Alarm System

## 10.4 Location of First Aid Kits

[Outline the location of the first aid kit(s) and provide a diagram of their location]

## 10.5 Emergency Contacts

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Department/job title | Contact details | Availability  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

# 11. References and Further Information

Green Building Council of Australia: [www.gbca.org.au](http://www.gbca.org.au)

Clean up Your Business Guide: <http://www.gbca.org.au/uploads/2007%20Clean%20Up%20Business%20Tips.pdf>

Australian Government’s energy rating scheme: [www.energyrating.gov.au](http://www.energyrating.gov.au)

Australian Government’s Department of Climate Change: [www.climatechange.gov.au](http://www.climatechange.gov.au)