Sample **Building Users' Guide** (BUG)

Project

Moreland City Council– Sample Building Users' Guide (BUG)

Client

Moreland City Council

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INDEX

1 INTRODUCTION 1

2 BUILDING OVERVIEW 2

2.1 Building Description 2
2.2 Building Location and Surrounding 2
2.3 Building Sustainability Targets 3
2.4 Environmental Policy & Practices 3
2.5 Additional Resources 3

3 PASSIVE DESIGN AND EFFICIENT SYSTEM USE 4

3.3 Passive Design 4
3.1 Heating, Ventilation and Air Conditioning (HVAC) System 7
3.2 Lighting Systems 8
3.3 Domestic Hot Water 9
3.4 Vertical Transport (Lifts) & Stairs 10

4 POTABLE WATER MANAGEMENT 11

4.1 Potable Water Reduction 11
4.2 Additional Resources 13

5 WASTE MANAGEMENT 14

5.1 Waste Reduction Targets & Hierarchy 14
5.2 Building Waste Facilities 14
5.3 Maintenance 17
5.4 Additional Resources 17

6 TRANSPORT 18

6.1 Cycling and End-of-Trip Facilities 18
6.2 Public Transport 20
6.3 Carparking and Car Charging Facilities 21
6.4 Additional Resources 23

1 Introduction

The purpose of the Building Users Guide (BUG) is to provide details on the everyday operations of building and made available to all occupants.

The BUG details sustainability initiatives incorporated into the design, which when operated correctly will facilitate a optimal occupant experience and efficient use of resources.

This Guide elaborates on the effective operations of Sustainability Initiatives targeted in the Project's Endorsed Sustainability Management Plan (SMP).

This BUG has been developed as a simple and easy-to-use manual with the aim to:

- Set targets and practices to improve/reduce energy, water and waste;
- Inform users on building services and operational requirements for efficient and safe use of systems;
- Encourage sustainable modes of transport;
- Reduce operational waste to landfill;
- Effective and safe rainwater reuse;
- Maintenance and refurbishment/replacement considerations

Separate Operation and Maintenance (O&M) manuals from the installing services trades provide more detail and technical information for contractors and building maintenance teams.

2 Building Overview

2.1 Building Description

[Provide a short description of the building including location, design features any other uses (retail, community facilities, etc) including building services provided (mechanical, electrical, hydraulic, fire, vertical transportation, civil, etc)]

The Bell Street development includes 16 apartments and 1 retail tenancy constructed over 7 levels. The building is fully electric allowing for the purchase of 100% green power unlocking the potential for all apartments to operate with zero emissions.

2.2 Building Location and Surrounding

[Provide descriptions of local characteristics and amenities]

Located at [Street Address] within the City of Moreland municipality, the project acknowledges that it is sited on the traditional lands of the Wurundjeri people.

Situated within a well-established neighbourhood there is ample access to many local amenities and public transportation options (refer to Section 6).

The Melbourne Central Business District (CBD) is only a short commute via public transportation for those working in the city or wishing to visit.

Numerous activity areas for shopping and entertainment are located along the nearby Lygon Street and Sydney Road. For those looking to get outdoors, there are excellent walking tracks along the creek trails along or local parks and reserves.

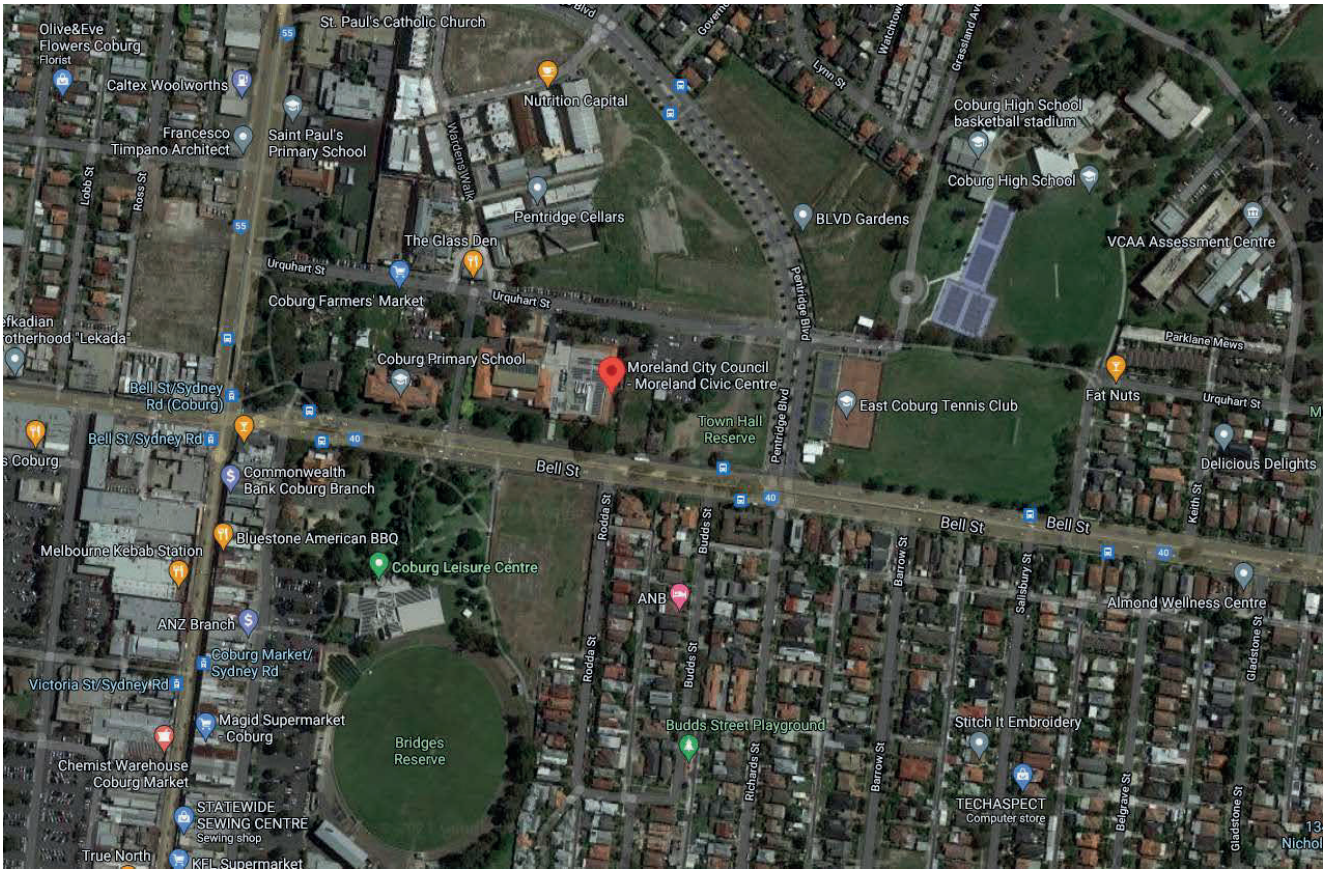


Figure 1 Project Location (Source: Google Maps)

2.3 Building Sustainability Targets

[Describe sustainability/environmental targets of the project which include resources (energy, water & waste) in addition to wellbeing initiatives and other operational items within the SMP]

Energy use per dwelling	≤ 10 kWh/day
Water per person	≤ 155L/day
Waste per dwelling (2 bed)	≤ 50L/week
Green Power Purchased	100%

2.4 Environmental Policy & Practices

Environmental Sustainability is the responsibility of all the community, including tenants and building occupiers within this building.

In addition, a Sustainability Strategy has been developed with our community which celebrates and integrates the breadth of activity around environmental and social responsibility issues.

2.5 Additional Resources

- Target 155 | Department of Environment, Land, Water and Planning, https://www.water.vic.gov.au/liveable-cities-and-towns/using-water-wisely/target-155-target-your-water-use
- Typical House Energy Use | CSIRO, https://ahd.csiro.au/other-data/typical-house-energy-use/
- Waste and Recycling in multi-unit developments | Sustainability Victoria: https://www.sustainability.vic.gov.au/recycling-and-reducing-waste/waste-systems-in-residential-commercial-and-industrial-buildings/multi-unit-developments
- Sustainable Moreland Action Group: https://www.moreland.vic.gov.au/my-council/council-and-committee-meetings/advisory-committees/moreland-environment-committee/
- Green Power Purchasing | GreenPower.gov, https://www.greenpower.gov.au/get-greenpower

3 Passive Design and Efficient System Use

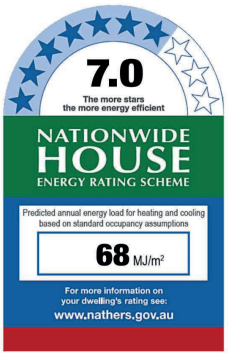
3.3 Passive Design

[Describe passive design measures applicable to the project]

The building has been designed & constructed to passive design principles, including passive heating, cooling and ventilation.

Building Fabric

The building's external fabric has been designed & constructed with a continuous insulation barrier and ensure that the building is fully insulated with consideration given to reducing air leakage to keep the cold out during winter and heat out during summer. This building has achieved an overall average Nationwide House Energy Rating Scheme (NatHERS) rating of 7.0 Stars which contributes to at least 20% energy savings annually when compared to the legislated minimum required energy rating.



Occupant-Activated Features

The building design has included multiple occupant-operated features that provide improved indoor environment quality at a minimal energy use. This includes operable external shadings, blinds, openable windows and ceiling fans.

Windows contribute to about 30% of a home's heating energy lost during winter and about 76% of sunlight that falls on windows enter the dwelling as excessive heat during hot day.[1]

To ensure that the building operates efficiently as intended the following actions should be taken by the Occupants:

<u>During Cold Days</u>

- Raise your blinds in the morning when sun is available to heat your room.
- Pulling your blinds down all the way during cold nights can slow heat loss.
- Using your ceiling fans on reverse to help keep your room warmer.

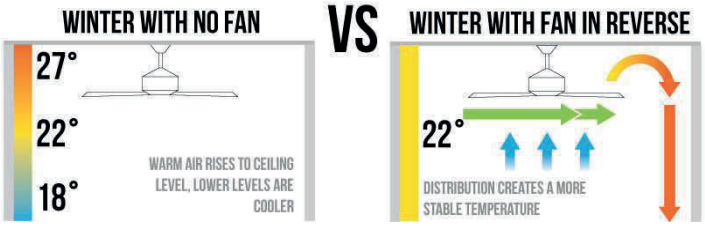


Figure 2 Winter fan operation (Source: fansonline.com)

[1] *Energy efficient window attachments | Department of Energy, https://www.energy.gov/energysaver/energy-efficient-window-attachments*

During Hot Days

- Open your windows when it is cooler outside to allow for natural cooling. In Moreland, the temperature can drop fast during the evenings, which creates the perfect opportunity to cool down your home during the summer.
- Using your ceiling fans before your air conditioning unit.
- Opening windows on opposite sides of a room assists with window crossing more area of the space.
- Slightly opening a window on the wind driven side of the building and opening a window on the leeward side will assist in moving air through a room to help reduce temperature in a room. (see following Guidelines for methods to induce effective cross ventilation).
- Pulling down your blinds when it is hot and sunny (see following Guidelines for optimal sun shade operational hours).

For Mild Weather

- Open your windows for fresh air and turn off any mechanical heating and cooling when the outside conditions are favourable.
- Rise binds in the morning to let in the sun for passive warming.
- Lower blinds in the afternoon on western facing windows to limit overheating on warm afternoons.

External Sun Shading Operation Guidelines

East and West facing glazing contributes to significant heat gain during hot days due to low-angled sun ingress. Each dwelling has been provided with external operable sun shading devices to north, east and west aspects to mitigate unwanted heat gain.

It is recommended that the sun shade is operated during high sun exposure hours as indicated in *Figure 3* for East and West facing dwelling to reduce energy use for cooling system during hot days.

General rule of thumb,

- External sun shades for East-facing windows should be operated between 6am – 10am during summer or excessive hot days.
- External sun shades for East-facing windows should be operated between 2pm – 7pm during summer or excessive hot days.

	MORNING (EASTERN ASPECT)									AFTERNOON (WESTERN ASPECT)								
	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	
Jan		39%	57%	72%	87%	71%	45%	0%	0%	0%	45%	71%	87%	72%	57%	39%		Jan
Feb			69%	85%	74%	53%	19%	0%	0%	0%	19%	53%	73%	85%	70%			Feb
Mar			84%	75%	56%	32%	0%	0%	0%	0%	0%	32%	56%	74%	85%			Mar
Apr				57%	37%	8%	0%	0%	0%	0%	0%	8%	37%	57%				Apr
May				43%	21%	0%	0%	0%	0%	0%	0%	0%	21%	43%				May
Jun					13%	0%	0%	0%	0%	0%	0%	0%	13%					Jun
Jul					16%	0%	0%	0%	0%	0%	0%	0%	16%					Jul
Aug				51%	30%	0%	0%	0%	0%	0%	0%	0%	30%	51%				Aug
Sep				67%	48%	21%	0%	0%	0%	0%	0%	21%	48%	67%				Sep
Oct			76%	84%	66%	44%	7%	0%	0%	0%	7%	44%	67%	84%	75%			Oct
Nov			61%	76%	83%	65%	36%	0%	0%	0%	37%	65%	84%	76%	61%			Nov
Dec		36%	53%	68%	83%	76%	52%	0%	0%	0%	52%	76%	83%	68%	53%	36%		Dec
	4:00	5:00	6:00	7:00	8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00	6:00	7:00	8:00	
	MORNING									AFTERNOON								

Figure 3: Optimal external sun shading operation hours for East-facing dwelling in Melbourne. (Source: susdesign.com)

Optimisation for Cross Ventilation Guidelines

A cross flow ventilation breeze path is provided to maximise natural ventilation and passive heating or cooling withing the dwelling. Where the breeze path travels through an internal door the door catch should be used.

Refer to your dwellings' plans for location of operable windows and effective cross ventilation breeze path.

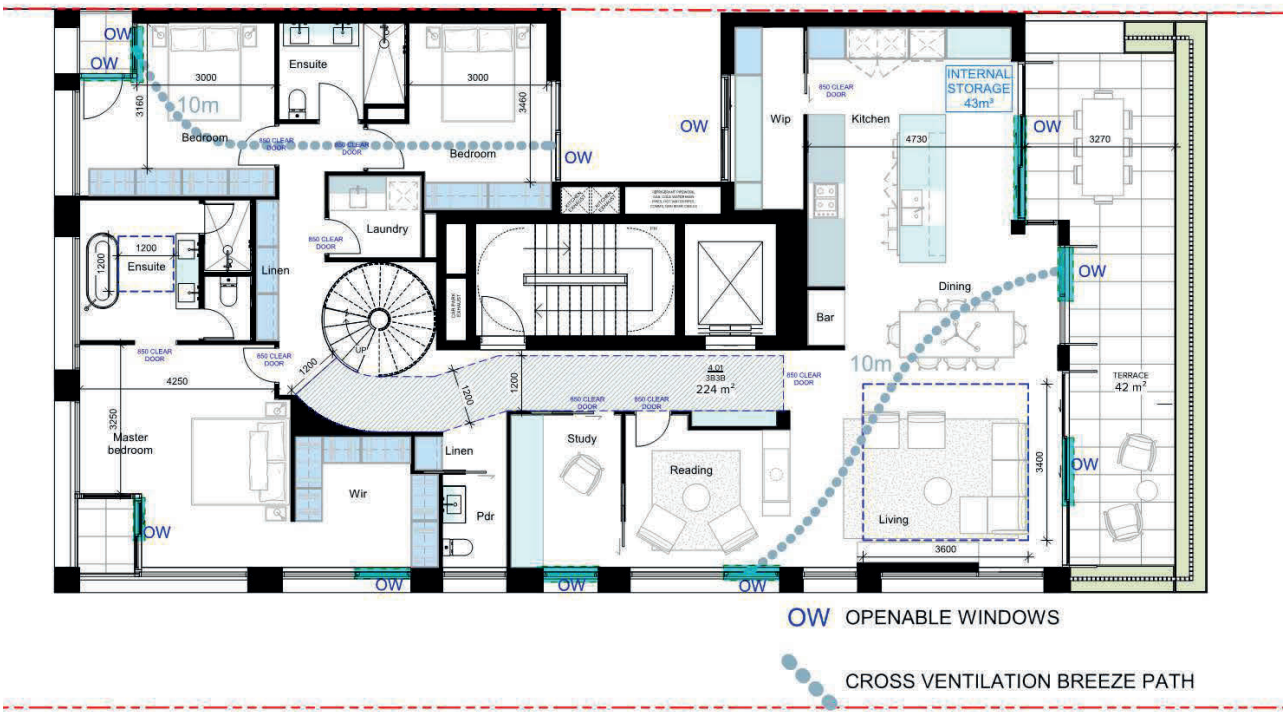


Figure 4 Typical cross-ventilation breeze path

Additional Resources

For further information on how to effectively operate a passive-design focussed dwelling, visit the following:

- Passive Design Australia's Guide to Environmentally Sustainable Homes | YourHome, https://www.yourhome.gov.au/passive-design
- Home Windows and Shading for Energy Efficiency | Sustainability Victoria, https://www.sustainability.vic.gov.au/energy-efficiency-and-reducing-emissions/building-or-renovating/windows-and-shading
- Energy Action Guide | Sustainability Victoria, Report-Energy-Households-Energy-Action-Guide.pdf (sustainability.vic.gov.au)

3.1 Heating, Ventilation and Air Conditioning (HVAC) System

Heating, Ventilation and Air Conditioning systems energy usage contributes to 40% of the total building energy usage and 70% of base building energy consumption[2]. It is important for Building Users to understand the type of HVAC system installed and ways to utilize the system as efficiently as possible to reduce energy footprint of the building.

HVAC System Controls

HVAC System	
System Description	Space heating and cooling in your dwelling is provided by [Reverse Cycle Split system with at least 5 Star Energy efficiency rated] Common area space heating and cooling system are provided by [Provide a brief description on who can adjust the temperatures on the main controls and how to and when to do so; and details of zone and or local user control settings such as TRVs on radiators, and detail optimum settings for efficient operation.]
Temperature set points	Residents can adjust the temperature set points to their acceptable comfort standards via the wall mount controller or remote controller provided. The recommended temperature set points for optimal energy efficiency while maintaining acceptable comfort level are: • For winter: 20-22℃ • For summer: 24-26℃

Did you know that changing the space temperature set point by 1°C affect the energy consumption of the HVAC system by 10%? [2]

Additional Resources

For further information on how to maintain efficient operations of HVAC system, visit the following:

- How to Run Your Air Conditioner Efficiently This Summer | Fujitsu, https://www.fujitsugeneral.com.au/help-centre/helpful-articles/details/how-to-run-your-air-conditioner-efficiently-this-summer
- Space Temperature Set Point and Control Bands | HVAC&R Nation, https://www.airah.org.au/Content_Files/HVACRNation/2015/08-15-HVACR-003.pdf

[2] *Space Temperature Set Point and Control Bands | HVAC&R Nation, https://www.airah.org.au/Content_Files/HVACRNation/2015/08-15-HVACR-003.pdf*

3.2 Lighting Systems

Lighting System Description

Description	
System Description	[Insert description of lighting] All lighting provided is highly efficient LEDs. Light switches are provided to all individual rooms and double GPOs for task lighting. Bedroom and living areas lightings has adjustable dimmer switches that can then be dimmed or increased pressing/turning the lower switch/knob. The common corridor lighting is programmed on sensor detection and when the corridor is vacated for a set period the lighting turns off. The external lighting is controlled via a PE cell/timeclock control. Lights will come on and turn off at a particular time of the day for a set period of time and/or when daylight fades/rises. Note: if external lighting is on during the daytime, notify strata management as this may be due to a fault.
Recommended Energy Efficient Operations by Building Operators/ Residents.	On/off lighting switches are provided to all room and spaces, residents are recommended to switch off lightings when leaving the room/space to reduce energy consumption.[3]

Did you know that installing energy-saving lighting technology such as LEDs saves up to $16 per globe per year? [3]

Additional Resources

For additional readings and reference on lighting systems, visit the following:

- Lighting | YourHome, https://www.yourhome.gov.au/energy/lighting
- Use Lighting Efficiently | Sustainability Victoria, https://www.sustainability.vic.gov.au/energy-efficiency-and-reducing-emissions/save-energy-in-the-home/lighting/use-lighting-efficiently

[3]Save with these Energy Efficient Products – Lighting | Victoria Energy Saver, https://www.victorianenergysaver.vic.gov.au/save-energy-and-money/victorian-energy-upgrades/save-with-these-energy-efficient-products/lighting

3.3 Domestic Hot Water

Electric Heat Pump Hot Water

Description	
System Description	[Insert description of DHW] The project utilises a central Domestic Hot Water system via an electric heat pump. Carbon emissions are minimised by supplying at least 30% of hot water energy needs through on-site renewable energy.
Recommended Energy Efficient Operations by Building Operators/ Residents.	Detect leaks early. Some are easy to fix while others may require a Plumer. [4]

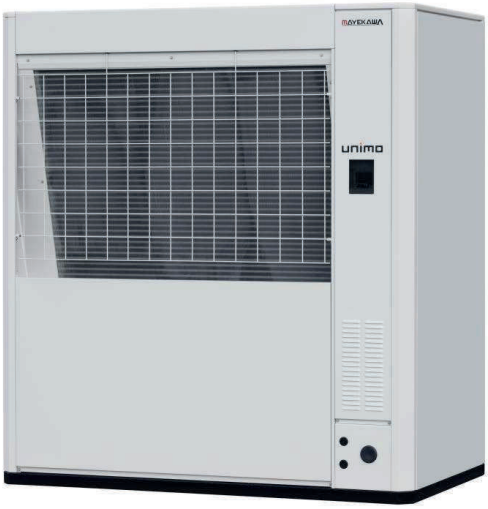


Figure 5 Rooftop located all electric heat pump (Eco-Cute CO2 Heat Pump)

Did you know that a tap dripping at a rate of 1 drip per second can waste up to 12,000 litres/yr? [4]

[4] Factsheets and Posters | Smart Approved Watermark, https://www.smartwatermark.org/Victoria/factsheets-and-posters/

3.4 Vertical Transport (Lifts) & Stairs

Lift System & Stairs

Description	
Lift numbers and locations	[insert description]
Lift Size	[insert description]
Stair locations	[insert description]

Energy Saving Initiatives

The building has been designed to WELL Standard for Interior Fitness Circulation – integrating aesthetically pleasing and easily accessible interior pathways and stairs to encourage residents/tenants to climb the stairs as part of energy saving and healthy ways to move around in the development.

Use of the stairs should be prioritise over use of lifts where feasible.

When lifts must be used, the lifts have been designed in accordance to the Energy Efficiency standards set by International Standards Organization for (ISO) to minimise energy usage.

[Provide floor plans highlighting location of common stairs and aesthetical features (artwork, music, biophilia, etc)]

Additional Resources

For additional readings and reference on Lifts, visit the following:

- Stairwell to Health | Welness Council of America, http://livewellsiouxfalls.org/images/uploads/main/Resource_Guide_-_Welcoa_Stairwell_to_Health.pdf
- Interior fitness Circulation | International Well Building Institute, https://standard.wellcertified.com/fitness/interior-fitness-circulation

4 Potable Water Management

In Australia, water has long been considered a precious and high-demand resource. Fresh water supplies are increasingly affected by a range of factors including catchment locations, contaminated sources, drought and rising demand.

To ensure that Australia's long term water supply is secured, this development is committed to reduce potable water usage by [%] annually. By using water responsibly at home or at work, you are playing a part in managing our potable water resources.

4.1 Potable Water Reduction

Base Building Water Fixtures & Maintenance

[Provide information on the water supply and management strategy, water metering, sub-metering and monitoring (BMS linked if applicable) and water saving/recycling features such as recycled grey water, and rainwater harvesting. Provide a description of internal and external landscaped areas, irrigation system/hand watering/plants and reliance on natural precipitation for zeroscaping.]

The building has been built to target a minimum [%] annual reduction in Potable water, all fittings and fixtures within your dwelling are rated with minimum WELS star ratings highlighted below to achieve the target.

To ensure the targeted reduction can be achieved, when replacing fixtures, fittings and appliances, products with the minimum WELS star ratings highlighted below shall be selected:

Fixtures & Fittings	Minimum WELS Rating
Toilets	4 Star rating
Showerheads	3 Star rating (>6.0 L/s but <=7.5 L/s)
Basins Taps	5 Star rating
Dishwashers	4 Star rating
Clothes Washing Machines	4 Star rating

Target 155

To play a part in Melburnian's joint movement in active water saving effort, the residents/tenants are recommended to Target 155, that is to meet a daily target of 155 Litres per person. To find out if you are meeting Target 155, look for the daily water use information on your water bill and see how it compares to the daily target of 155L per person.

See below for tips to minimise your potable water footprint:

Indoor:

- **Stick to four-minute showers –** this saves thousands of litres of water each year.
- **Install a water-efficient showerhead –** an efficient WELS 3 star rated showerhead uses as little as 5 litres every minute, compared to 15-20 litres per minute for an inefficient one.
- **Turn the tap off when brushing teeth –** a running tap can waste up to 16 litres of water every minute.
- **Install water efficient appliances and equipment –** find out more about water efficiency labelling and standards at waterrating.gov.au
- **Fit flow-controlled aerators to your taps –** these are inexpensive and can reduce water flow by 50%.
- **Fix leaky taps or toilets –** a leaky tap can waste 30-200 litres of water every day and a continuously running toilet can waste up to 60,000-96,000 litres of water every year.

Outdoor:

- **Put mulch on your garden beds –** this will reduce evaporation by up to 70%.
- **Water your plants with shower water –** keep a bucket in the shower to capture water whilst it warms up.
- **Install a drip irrigation system –** this will water plants more efficiently at the roots and help reduce weeds.
- **Install a rainwater tank –** your garden and back pocket will thank you.
- **Test your soil before watering –** if the soil is moist your plants don't need watering.

For more ways to save water outdoors visit our sustainable gardening page.

Rainwater Reuse

Your rooftops and terraces are being utilized to capture rainwater for toilet flushing re-use and irrigation. Refer to catchment plan below highlighting the rainwater capture areas.

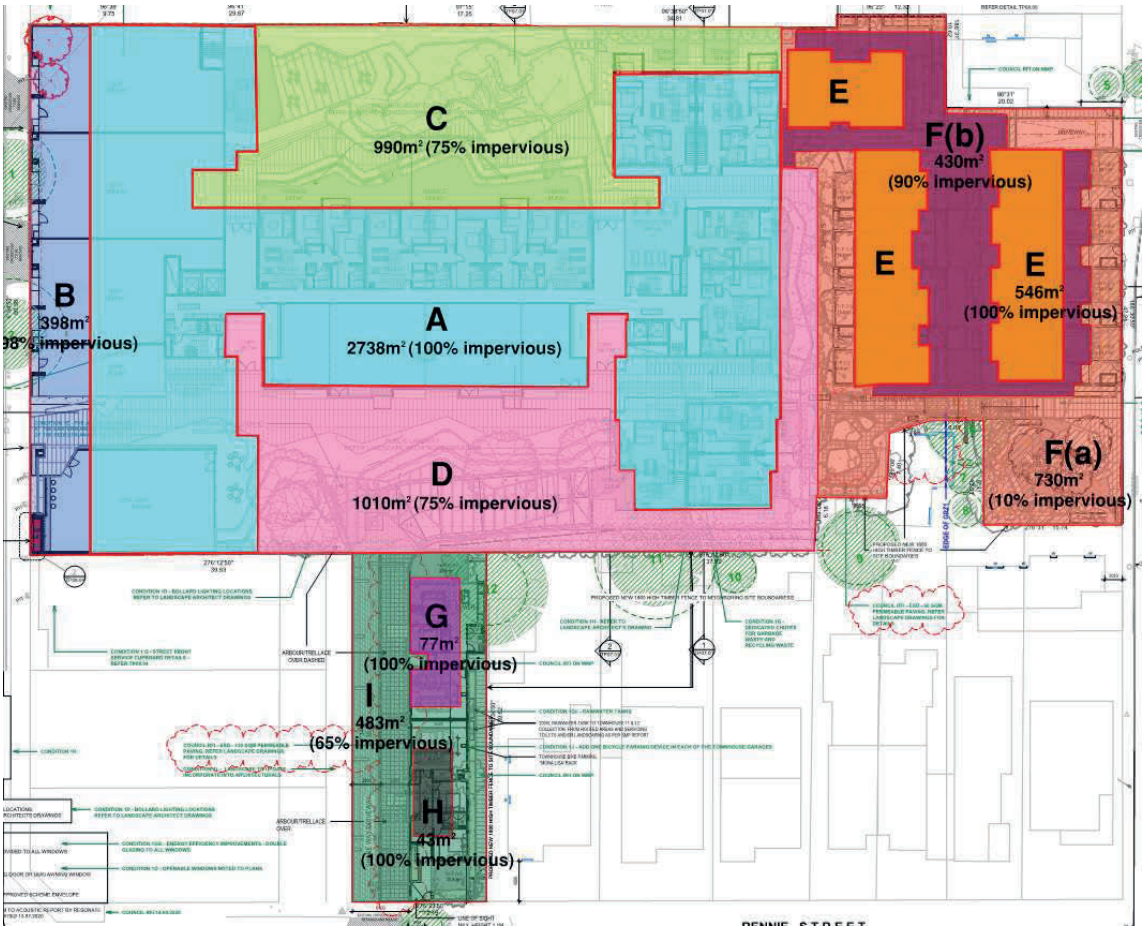


Figure 6 Rainwater Catchment Area

Figure 7 Signage to inform building users that rainwater is being captured off this area

Maintenance Guide (Building Manager)

The Appointed Building Manager shall be responsible for all on-going common Stormwater Management Assets including rainwater tank, raingardens, and bioretention areas. The stormwater treatments are maintained in accordance with the respective manufacturer's maintenance guidelines and/or Melbourne Water's WSUD maintenance Guidelines.

4.2 Additional Resources

For further readings and resources on how to play a part in saving potable water, visit the following resources:

- Target 155 | Department of Environment, Land, Water and Planning, https://www.water.vic.gov.au/liveable-cities-and-towns/using-water-wisely/target-155-target-your-water-use
- Saving Water at Home | Smart Approved Watermark, https://www.smartwatermark.org/smartwateradvice/saving-water-home/
- Factsheets and Posters | Smart Approved Watermark, https://www.smartwatermark.org/Victoria/factsheets-and-posters/
- WSUD Maintenance Manager's Guideline | Melbourne Water, https://www.melbournewater.com.au/sites/default/files/WSUD-Maintenance-manager-guidelines.pdf

5 Waste Management

5.1 Waste Reduction Targets & Hierarchy

The development is committed to divert at least [%] landfill waste annually. The following Waste Hierarchy highlights the most effective to the least effective waste reduction methods.

Figure 8 Waste Hierarchy (Source: NSW Environment Protection Authority)

There are simple steps that can be taken to reduce your waste footprint and maximise recycling/landfill diversion rates:

- Limit your use of single-use and disposable products and choose alternatives which can be used again.
- Source products with minimal packaging where possible.
- Refuse plastic bags when you don't need them. Keep reusable bags handy so you remember to take them to the shops. You can also use boxes or your own shopping trolley bag or backpack.
- When buying fruit and vegetables, put them into your trolley rather than plastic bags.
- If you don't read advertising mail, put a sign on your letterbox.
- Give unwanted clothes, household items, furniture or appliances to family or friends, or donate them to charities.
- Use washed takeaway containers as stackable containers for frozen food.
- Use glass jars to store food or other items, or pass them on to friends or groups who make jams.
- Use small plastic bags to wrap wet and smelly rubbish or to pick up after your pet.
- Putting the wrong materials in your recycling bin may lead to large amounts of recyclable material being sent to landfill because it's too difficult to separate them out.
- Recycle unwanted plastic bags or soft plastics including pasta and rice bags, shopping bags, net bags, cling and bubble wrap at most major supermarkets.
- Roll aluminium foil into a ball and place it in a recycling bin, even if it has food stuck to it.
- Compost your organic waste.

5.2 Building Waste Facilities

The building has been designed to enable occupants/residents to effectively manage and separate the waste source to reduce landfill waste with high recycling targets as part of creating a cleaner and more sustainable environment.

The building utilises a dual-chute system as the primary waste disposal point. The dual chute system allows the Users to effectively separate garbage and mixed recyclables. In addition, provisions of spaces to dispose bulky and e-wastes have been provided in the common bin room in Basement 1 and food and garden wastes can be processed on-site via the worm farm and compost bins located in various convenient location around the development.

Refer to plans below highlighting the location of the waste facilities.

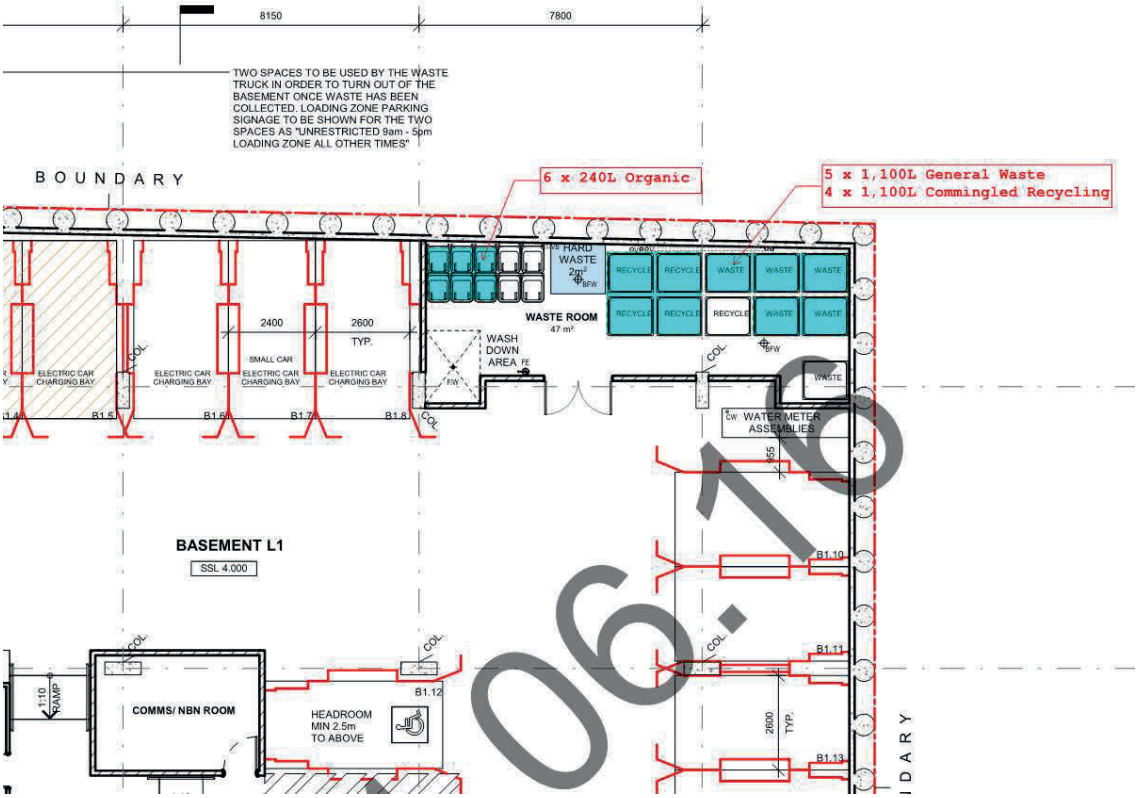


Figure 9 Plans highlighting location of waste facilities

The following sub-sections provide detailed explanation on how to correctly separate different waste materials.

Mixed Recycling

Labelled YELLOW, these bins are for almost all dry, food-free, materials. These materials are sorted off-site to ensure that the highest possible amount of recyclable material is retained.

Use these bins for:

- Paper
- Cartons
- Card
- Cans
- Plastic (containers, bags, bottles, etc)

Garbage (Non-Recyclable)

Labelled RED, these bins are for non-recyclable items like food packaging contaminated with liquids or food. These materials are incinerated and the heat they produce is used to generate energy.

Use these bins for:

- Contaminated packaging
- Chewing gum
- Wet items
- Polystyrene
- Chip/Food packets

Food and Garden Wastes

Labelled GREEN, these bins are for all food products, whether cooked or uncooked. These materials are taken off-site and broken down using an anaerobic digester.

Use these bins for:

- Fruit & vegetables
- Meat and fish
- Tea bags & coffee grounds
- Bread
- Dairy products
- Rice, pasta and beans
- Eggs and egg shells

[Compost / worm farm] These compost facilities are for food organics and garden organics. These materials are placed in a pile and decomposes naturally by earthworms, bacteria and other organisms that live in soil.

Use these bins for:

- Food scraps
- Grass cuttings
- Leaves
- Newspaper
- Egg shells
- Cooking oil (cold)

Did you know that two thirds of the food Victorian household throwaway could have been eaten? [5]

Glass Recycling

Labelled PURPLE, these bins are for glass. These materials are sorted off-site to ensure that the highest possible amount of recyclable material is retained.

Use these bins for:

- Glass bottles (soda, beer, wine, spirits, oil, vinegar and sauces)
- Jars (jam, marmalade, sauces, pickles, dips, chutney, baby food, chocolate spread or herbs)
- Any colour of **glass** can be **recycled** including clear, brown, amber, blue or green glass.

Hard Waste & E-Waste

Hard Waste - Hard waste collection will be managed by the Moreland City Council. Hard waste to be stored within individual dwellings and during collection periods, hard waste will be placed at a dedicated hard waste area by the Users and moved to kerbside by the Operator for collection in accordance with local council guidelines.

Electronic Waste - Owner can drop the E-waste to various Moreland area Resource Waste Recovery Stations. Refer to link for further information.

[5] Avoid food waste at home | Sustainability Victoria, https://www.sustainability.vic.gov.au/recycling-and-reducing-waste/at-home/avoid-waste/food-waste

5.3 Maintenance

The Building Manager is responsible for ensuring tenants/residents follow the Waste Management Plan procedures including the private waste collector requirements.

The Building Manager shall be responsible for reporting any stolen or damaged bins (i.e. missing wheels or lids and split body) to the appointed private collector for replacement or repair.

In addition, the Building Manager shall ensure that the bins are used in accordance to the relevant waste and recycling requirements and washed regularly to maintain good hygienic level.

5.4 Additional Resources

For additional reading and resources on how to effectively manage your wastes, refer to following resources:

- *Reducing Waste | Department of Industry, Science, Energy and Resources, https://www.energy.gov.au/households/reducing-waste*
- Recycling and reduce waste | Sustainability Victoria, https://www.sustainability.vic.gov.au/recycling-and-reducing-waste
- Victoria's Plan to Halve Food Waste | Sustainability Victoria, https://www.sustainability.vic.gov.au/about-us/our-mission/our-strategies/victorias-plan-to-halve-food-waste

6 Transport

6.1 Cycling and End-of-Trip Facilities

The building is designed to facilitate a reduction of the dependency of building users on private car use as an important means of reducing overall greenhouse gas emissions by encouraging cycling as primary mode of transport for the residents and tenants.

There are many benefits to cycling – It can be quicker to get around by bike than both driving and public transport. In addition, it is extremely low-cost, healthy and reduces your contribution both to the local air pollution.

Bicycle Parking Facilities

To promote sustainable transportation as primary means of transportation, the building includes bicycle facilities in convenient locations on ground level and secured bicycle parking spaces within the basement. End-of-trip facilities including showers and lockers are also provided for commercial tenants.

Refer to the general ground floor and basement plans below for information of the facilities provided for cyclists including parking spaces and shower.

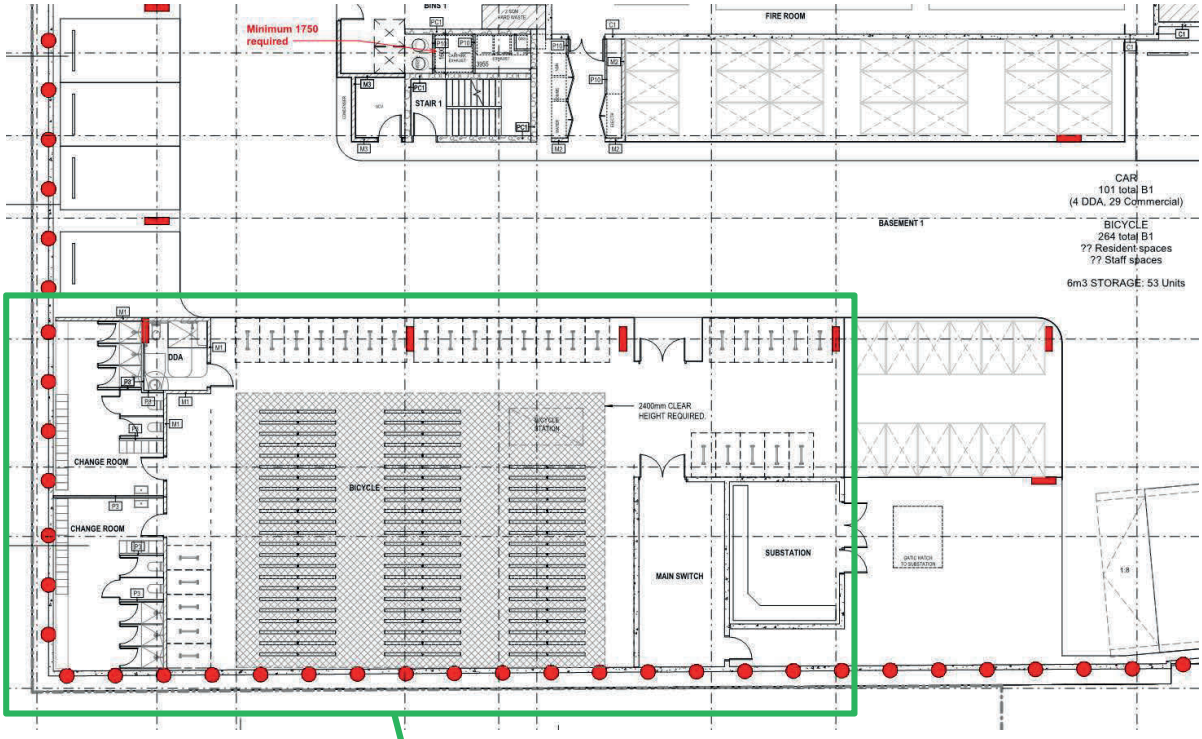


Figure 10: Location of bicycle parking spaces and End-of-Trip Facilities.

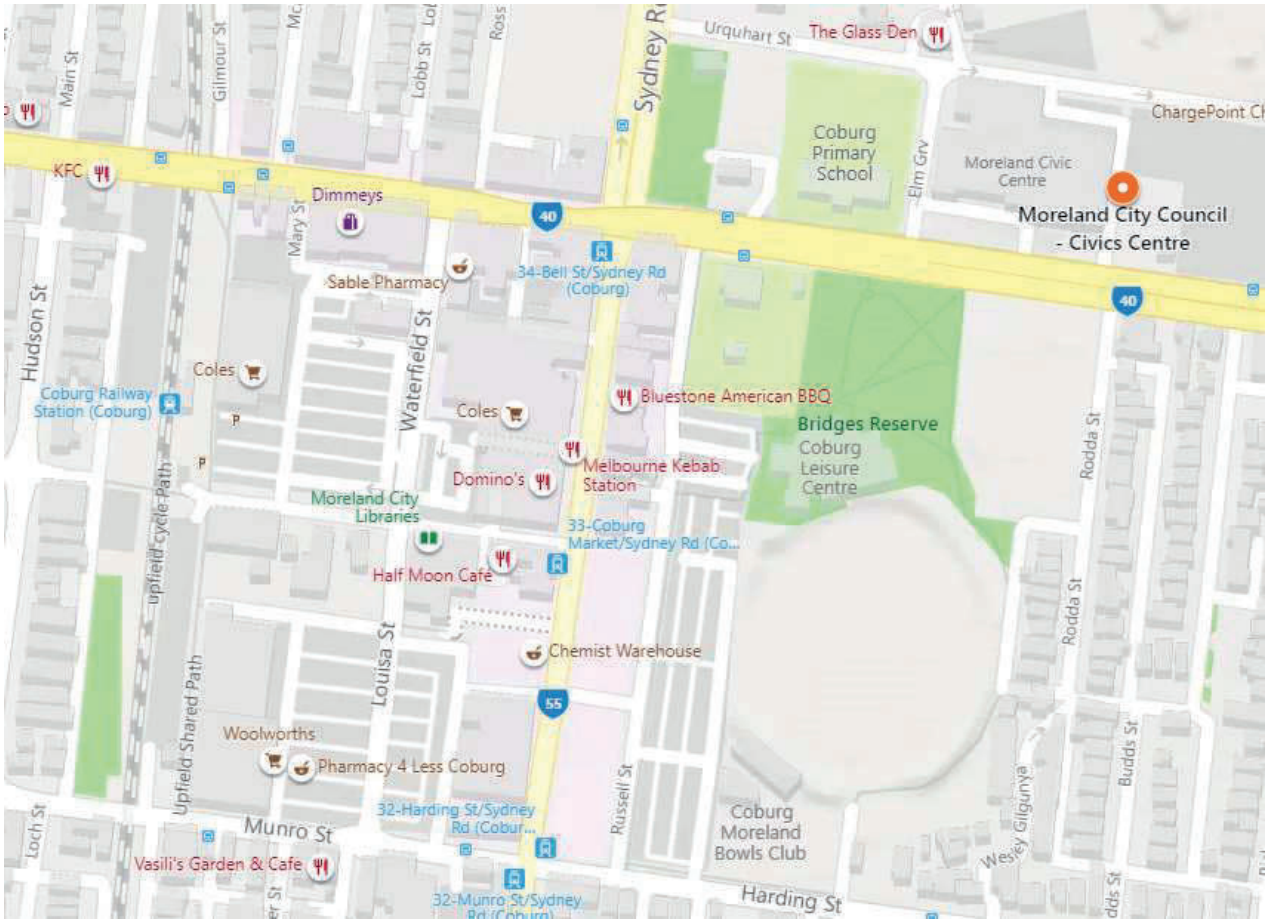
Note: Bikes are left at your own risk and you are responsible for security (i.e.; locking and insurance)

Cycling Route Options

Refer to Moreland's Cycling map below for bike path options within the local area.

6.2 Public Transport

There are two train lines, five tram services and sixteen bus routes that pass-through Moreland. [Provide details on options for public transport and provide map of local bus stop, tram stop or train station closest to the site]



Train Line

Coburg Railway Station (Coburg) approximately 400m – servicing the Upfield train line *(Visit: Public Transport Victoria's website, https://www.ptv.vic.gov.au/route/15/upfield/ for timetable and route information.)*

Tram Line

Stop 34 – Bell St/ Sydney Rd approximately 300m – servicing route 19 North Coburg – Flinders Street Station, City. *(visit: Public Transport Victoria's website, https://www.ptv.vic.gov.au/ for timetable and route information.)*

Bus Line

Bus Stop - Pentridge Bvd/Bell St approximately 300m – servicing the following Bus Routes:

- *513 Eltham-Glenroy Bus Route*
- *527 Northland SC-Gowrie*
- *561 Macleod-Pascoe Vale*
- *903 Mordialloc-Altona*

(Visit: Public Transport Victoria's website, https://www.ptv.vic.gov.au/ for timetable and route information.)

6.3 Carparking and Car Charging Facilities

Carparking

The building's Basement Level B1 consist of 24 car spaces available for residents/tenants including disabled car spaces. Refer to basement floor plan below:

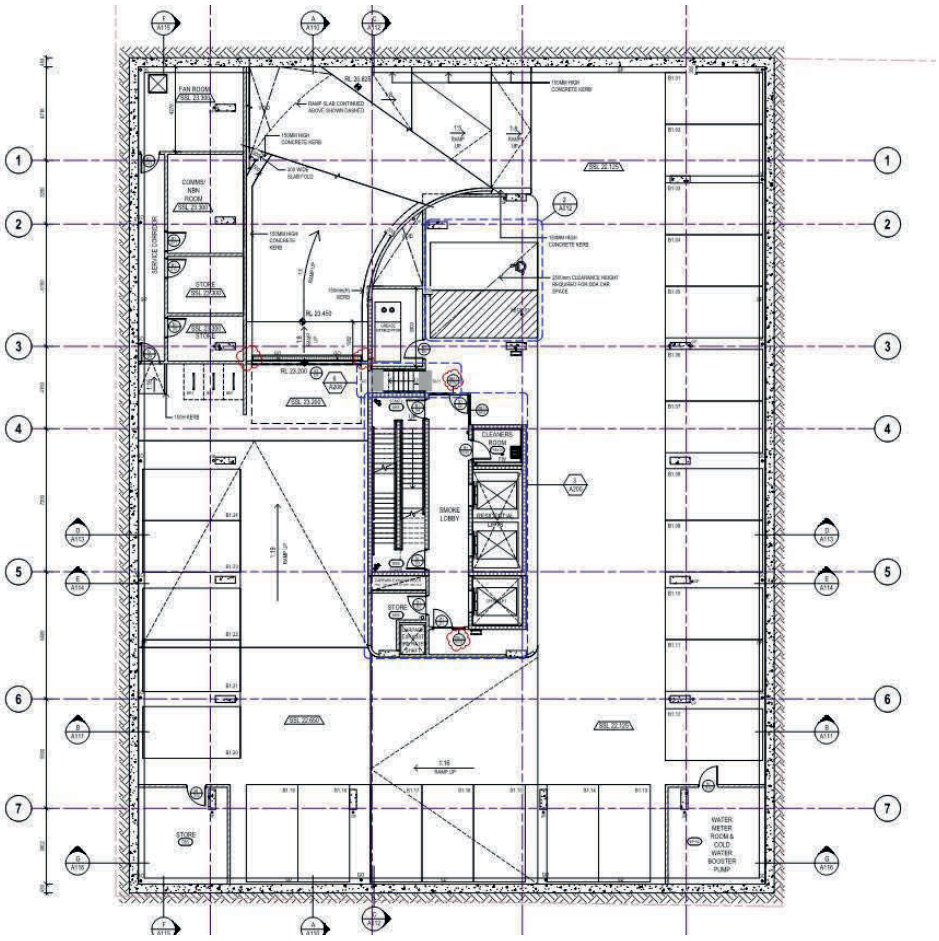


Figure 11 Basement Level 1 Plan

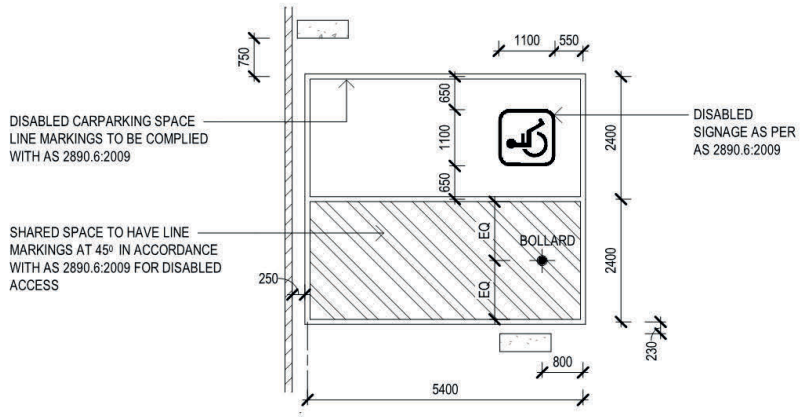


Figure 12 Disabled Car Space Details

Electric Vehicle (EV) Charging Facilities

The car space in Basement Level 1 has two available shared EV three phase fast-charging car spaces that is open to general public (visitors/residents/tenants).

Provisions for future installation of EV Power Charging Infrastructure by residents are available to all car spaces. Owners Corporation (OC) Power Distribution switchboards provided on each level of basement car parking will have sufficient power capacity to accommodate future installation of EV chargers. The occupants can connect their EV chargers to this switchboard via charging platform and appropriate cable carrier system to their allocated car parking space. Refer to the basement electrical layout plans below for location of dedicated EV distribution switchboard.

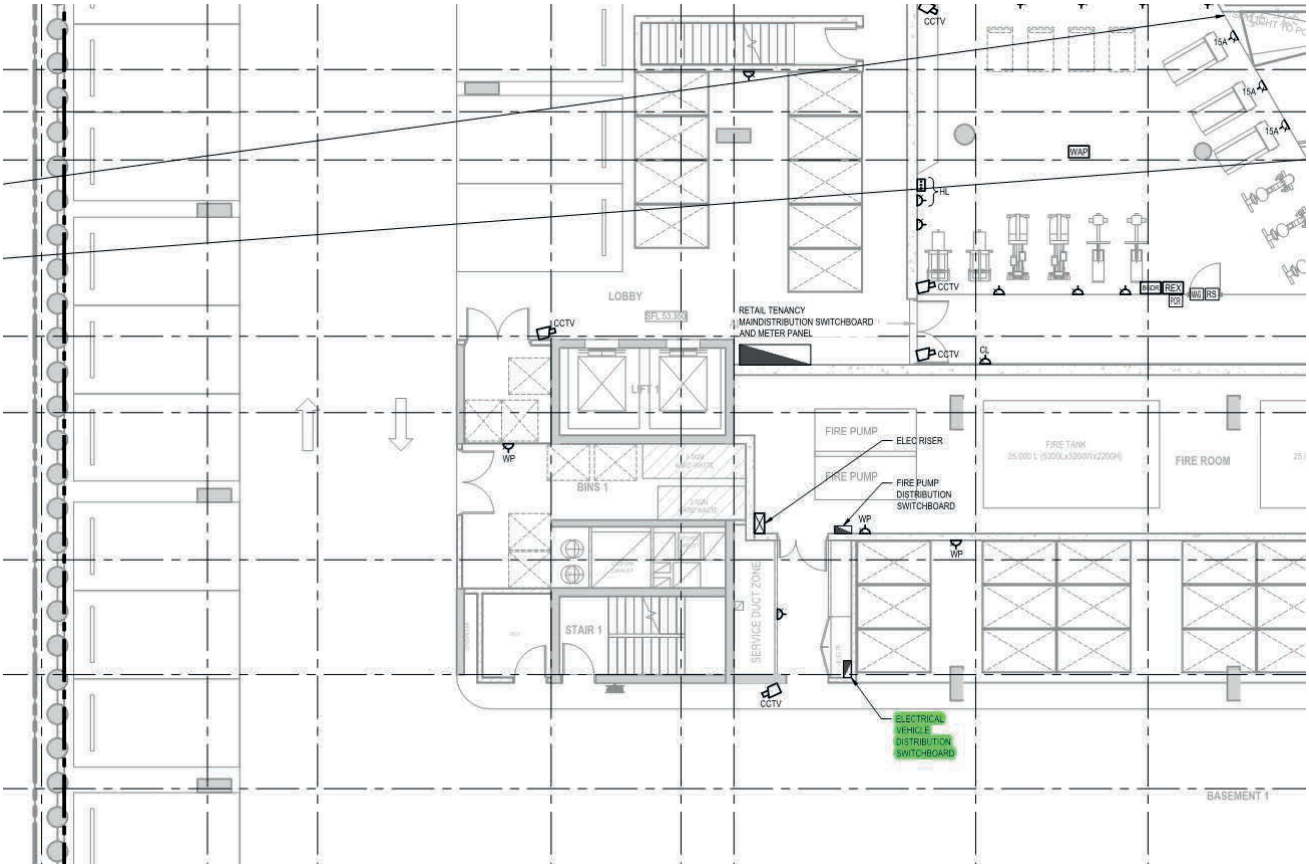


Figure 13 Basement Level 1 EV Distribution Switchboard

The nominated electrical services design engineer contact has been provided below should further information is required in relation to the EV charging switchboards and facilities.

JBA Consulting Engineers

Level 1 / 24 Albert Road, South Melbourne VIC 3205

(03) 9646 9144

6.4 Additional Resources

For additional readings and reference on Transportations, visit the following:

- *Electric Vehicle Charger Map | Electric Vehicle Council, https://electricvehiclecouncil.com.au/about-ev/charger-map/*
- *City of Moreland Cycle Map | Moreland City Council, https://www.moreland.vic.gov.au/globalassets/areas/transport/moreland-cycling-map.pdf*
- *Journey Planner | Public Transport Victoria, https://www.ptv.vic.gov.au/journey/*
- *EVC Local Government Resource Park | Electric Vehicle Council, https://electricvehiclecouncil.com.au/wp-content/uploads/2020/12/EVC-Local-Government-Resource-Pack.pdf*