



SUMMATION

Beeliar Shopping Centre

Sustainable Design Assessment Report

Prepared for: Place Fabric

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Executive Summary

This document has been prepared to outline the sustainability initiatives that are being considered for inclusion in the Beeliar Shopping Centre project located in Cockburn Central.

The following guidelines are acknowledged as applicable to the site:

- WA State Planning Policy 7.0 – Design of the Built Environment

“Good design optimises the sustainability of the built environment, delivering positive environmental, social and economic outcomes.”

It is acknowledged there are no other sustainability specific requirements applicable for this site.

Summation Pty Ltd has been engaged as the sustainability consultants for the project and will be responsible for the delivery of the sustainability objectives. The sustainability team for this project will be led by Prasanna Suraweera, who is a Director with Summation and a Green Star Accredited Professional with over 21 years of experience in delivery of sustainable developments. It is confirmed that Summation has been engaged to provide a wholistic review of the sustainability opportunities with the aim of adopting robust and appropriate initiatives accordingly.

The project has made a commitment to the following sustainability initiatives as outlined below:

- Energy Efficiency
- Water Sensitive Design
- Large Scale Solar PV
- Electrification – Hot Water, Space Heating and Cooking
- Heat Island and Heat Stress Mitigation
- Construction Waste Recycling
- Waste Minimisation
- Promoting EV Transition
- Low Embodied Emission Materials
- Vehicle Use Modal Shift -Bike and Scooter Parking
- Energy and Water Metering and Monitoring

Refer to Section 2 for further discussion of the proposed initiatives.



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Abbreviations/Glossary

Abbreviation	Description
ESD	Environmentally Sustainable Design
GBCA	Green Building Council of Australia
GSAP	Green Star Accredited Professional
KPI	Key Performance Indicators
EOT	End of Trip
NCC	National Construction Code
BMS	Building Management System



1 Introduction

1.1 Project Background

The proposed Beeliar project is located at 86-88 Lot 7 & 99 Hammond Rd, Cockburn Central, WA. The site location is shown in Figure 1 below.



Figure 1 – Site Location and Context

The project consists of a neighbourhood Shopping Centre with two Major tenants, a Mini Major, several smaller tenancies and pad sites for two fast-food tenancies and a service station. Associated carparking provided on site to service the centre.

1.2 Disclaimer

This report provides high level guidance regarding the sustainability commitments targeted for this project and the preliminary strategies and initiatives to be adopted therein.

The purpose of this report is to articulate the sustainability initiatives being committed by the project. Due care has been taken to ensure the initiatives are coordinated and achievable for the project, however, note that the specific strategies mentioned in this report are indicative and may evolve throughout the futures stages of design.



2 Proposed Initiatives

2.1 Summary of Initiatives

A summary and discussion of the key initiatives proposed are outlined below:

- Energy Efficiency
- Water Sensitive Design
- Large Scale Solar PV
- Electrification – Hot Water, Space Heating and Cooking
- Heat Island and Heat Stress Mitigation
- Construction Waste Recycling
- Waste Minimisation
- Promoting EV Transition
- Low Embodied Emission Materials
- Vehicle Use Modal Shift -Bike and Scooter Parking
- Energy and Water Metering and Monitoring

2.2 Energy Efficiency

Energy efficiency requires combination of high-performance building envelope together with efficient servicing strategy. The following fundamental concepts will be considered in the design of Beeliar Shopping Centre Project:

- High performance envelope including high-performance low 'e' single -glazing systems – suitable for retail glazing.
- All glazing to be provided with continuous awning shading to minimise direct solar gain.
- LED lighting throughout for light quality and efficiency
- Optimised roofing design withal insulation located at roof level:
 - Kingspan composite construction for the Major roof area
 - Metal deck with roof spacer and insulation for Mini major and other remaining smaller tenancies
 - No allowance for ceiling in the base build
 - Light-coloured roofing (e.g. Surfmist or equivalent) to reduce heat gain and support compliance / sustainability.



2.3 Water Sensitive Design

Water efficiency will be targeted through the selection of suitable fittings and fixtures. The following initiatives will be targeted:

- Waterwise landscaping to minimise dependence on potable water.
- High efficiency fittings and fixtures – High Water Efficiency Labelling and Standards (WELS) rated fittings:
 - Taps – 5 Star
 - Toilets – 4 Star rated dual flush toilets
 - Showers – 3 Star (7.5 l/min)

2.4 Large Scale Solar PV

Provision of renewables is critical to the sustainability performance of buildings. It is a key initiative for reducing carbon emissions and will also provide operating cost benefits to the residents.

The proposed commitment includes for the following:

- Commitment for 30kW Solar PV system to serve the minor tenancies and common areas via an embedded network arrangement. This represents an approximate total of 210sqm of roof area which has been allocated for Solar PV. The commitment is expected to yield ~45,000kWh/annum with an expected carbon savings are 22,000 kgCO₂e/annum.
- Further roof allocation for the Major and Mini-Major tenancies to install respective large scale renewable systems. Whilst finalised negotiations are ongoing with these tenants, there is an intention from them to have large Solar PV systems directly connected to their demands.

Refer below Figure 2 for details of the proposed Solar PV systems.



Figure 2 – Allocated Roof Area for Solar PV



2.5 Electrification – Hot Water, Space Heating and Cooking

Electrification is a key strategy for ongoing emissions improvement as the electricity grid continues to improve its carbon intensity. This is due to the ongoing ‘greening’ of the grid as the additional renewable’s capacity is realised. As an example, over the past 15 years, the grid emissions have improved by approximately 40% to 50% on the South-West Interconnected System (SWIS). This trend is expected to continue with further investment into renewable projects planned for the SWIS.

The project commits to all services (i.e. hot water, cooking and space heating) being provided by electricity-based systems.

By having all services and energy demands electrified, this project is well placed to achieve ongoing savings in carbon emissions alongside the grid.

2.6 Heat Island and Heat Stress Mitigation

The external colour of roof elements can have significant impact on the local microclimate, specifically temperature. Dark surfaces will absorb heat and can increase ambient temperatures by 5+ degrees. Light coloured roofs and surfaces will assist in minimising this impact, along with landscaped areas. The following strategies have been adopted to provide respite for shoppers in peak summer conditions.

- The Beeliar Shopping Centre project will adopt light coloured roofing materials to minimise its impact on the local microclimate.
- Provision of strong tree cover over parking areas to provide shade and amenity with introduction of 119 trees across the site.
- As well as having shade structures for the car park areas which typically are fully exposed.
- Extensive awnings over retail frontages (continuous awnings over glazing) to provide a degree of weather protection and amenity.



Figure 3 – Shade structures and tree canopy for carpark



2.7 Construction Waste Recycling

A minimum 80% of all construction waste will be diverted from landfill including ongoing monthly reporting. This will be specified in the Head Contractor obligations and in line with current industry best practice.

2.8 Waste Minimisation

The major tenancies will manage respective waste streams and associated recycling. For the minor tenancies and common areas appropriate waste sorting area has been determined based on the expected throughput of each waste streams, these have been located on the ground floor with safe efficient access by occupants and waste vehicles. Specific waste streams targeted include the following:

- General
- Comingled Recycling

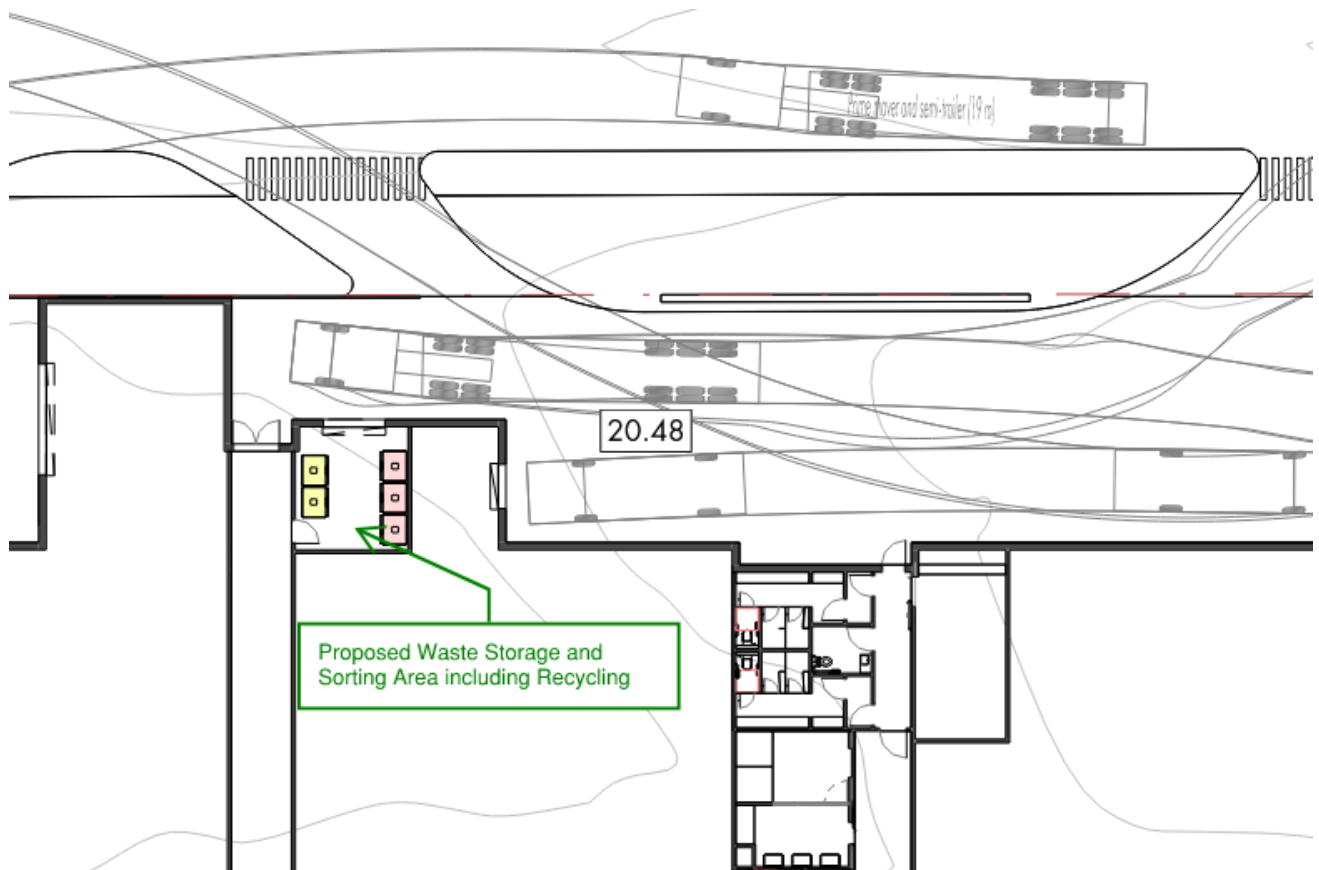


Figure 4 – Waste Storage Area including Recycling



2.9 Promoting EV Transition

The Electric Vehicle transition is a key strategy for reducing global emissions. Facilitating the EV transition for projects such as the Smith Street project involve provision of nominated charging bays to ensure residents have easy access to charging infrastructure should they wish to adopt EV.

The project commitment includes for the following:

- 4 off EV charging bays to be installed with priority parking allocation to entry.
- Future provision for additional bays to be converted in future (i.e. switchboard spatial allowance) base don demand from customers.



Figure 5 – Provision for Future EV Charging Bays

2.10 Low Embodied Emission Materials

Upfront carbon impacts from construction materials will be minimised through consideration of low embodied emissions materials. Key commitments include:

- Cement substitutions for footings, foundations, and ground slabs and landscape – target 10% reduction in conventional cement
- Exploration of recycled road base for any cut and fill
- Exclusion of ceiling in base build design to avoid wastage and demotion during fit out.



2.11 Vehicle Use Modal Shift –Bike and Scooter Parking

Reducing reliance on vehicle use is a key strategy for a low emission future. Provision of bike and scooter parking facilities will also promote healthy activities for occupants. The Beeliar project will include provisions for these facilities to promote this modal shift.

- Long term bike store
- EOT facilities for staff

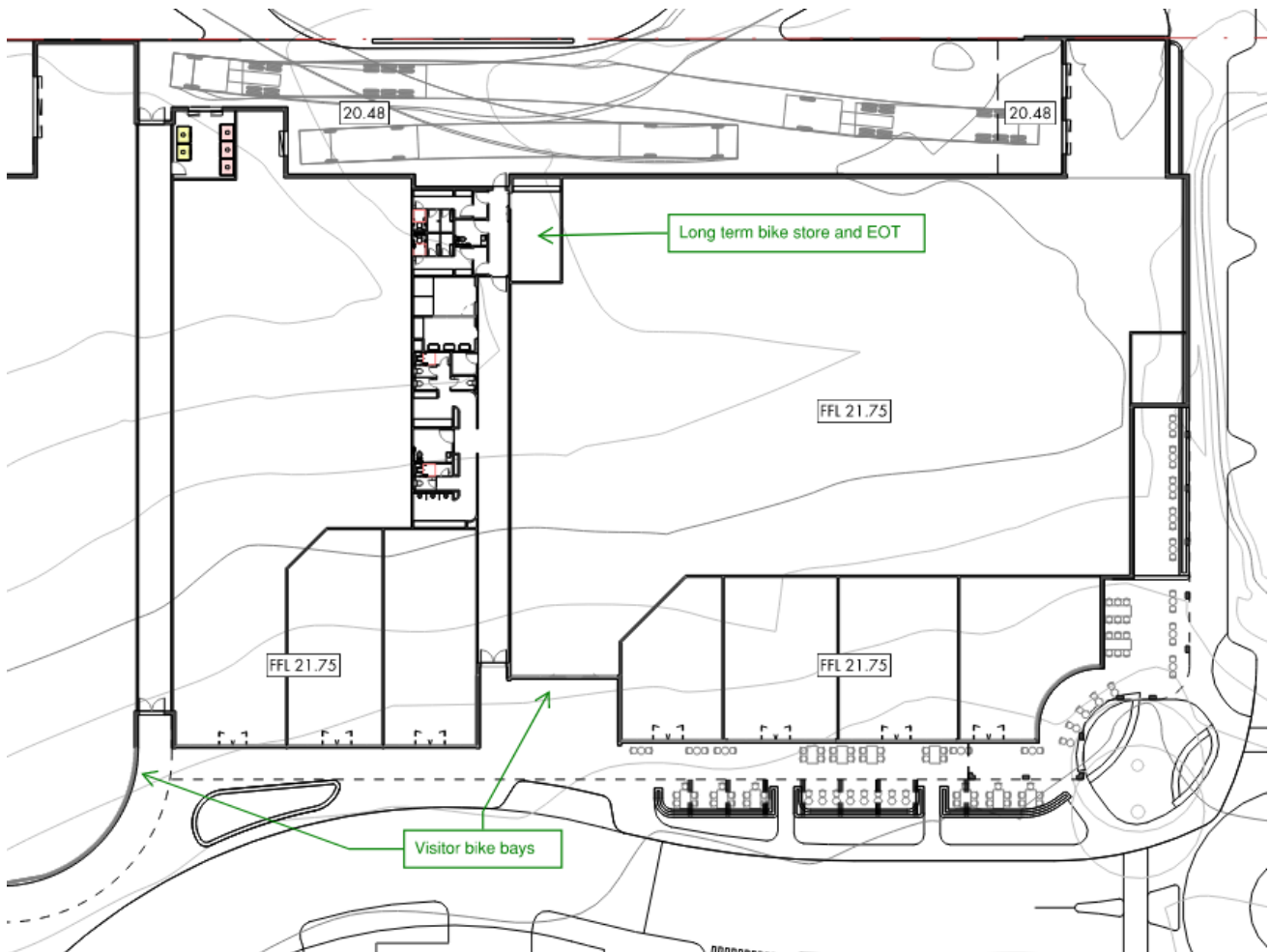


Figure 6 – Bike and Scooter Parking Facilities

2.12 Energy and Water Metering and Monitoring

Effective metering and monitoring are essential criteria to ensure the facility performance is optimised during the operations phase. To enable this, extensive metering and monitoring systems will be provided for all major end uses of energy and water consumption. This data collected from the metering system will be made available for the residents. This will facilitate tracking of performance, identification of anomalies as well as assist in fault finding and tuning.

This is in keeping with the requirements of the NCC Section J requirements.