



SSDA ESD REPORT

## Woolworths FP3

250 Victoria Street, Wetherill Park

PREPARED FOR  
Woolworths Group  
1 Woolworths Way  
Bella Vista NSW 2153

Tel: 02 8885 0000

Ref: SY210144-SER01  
Rev: 11  
Date: 15.07.2021

# SSDA ESD Report

## Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
27.04.2021	1	Draft Issue	R. McShane	E. Chan
07.05.2021	2	Revision	R. McShane	E. Chan
05.07.2021	3	Plan Revision	R. McShane	E. Chan
15.07.2021	4	SEARS Amend	R. McShane	E. Chan

### Northrop Consulting Engineers Pty Ltd

ACN 064 775 088 | ABN 81 094 433 100

Level 11, 345 George Street, Sydney NSW 2000

02 9241 4188 | [sydney@northrop.com.au](mailto:sydney@northrop.com.au) | [www.northrop.com.au](http://www.northrop.com.au)

© 2021 Northrop Consulting Engineers Pty Ltd. All rights reserved.

This document has been prepared on behalf of and for the exclusive use of Woolworths Group, and is subject to and issued in accordance with the agreement between Woolworths Group and Northrop Consulting Engineers. Northrop Consulting Engineers accepts no liability or responsibility whatsoever for it in respect of any use of or reliance upon this document by any third party. Copying this document without the permission of Woolworths Group or Northrop Consulting Engineers is not permitted.

## Table of Contents.

1. Executive Summary .....	3
2. Introduction .....	4
2.1 Sustainability Objectives .....	4
2.2 Response to Secretaries Environmental Assessment Requirements (SEARs) .....	4
2.3 Limitations .....	5
3. Sustainability Initiatives .....	6
3.1 Energy Usage.....	6
3.2 Energy Efficiency: .....	6
3.3 Energy Generation: .....	8
3.4 Indoor Environment Quality .....	8
3.5 Water Efficiency .....	8
3.6 Improved Ecology .....	9
3.7 Waste Management .....	9
4. Climate Change Projections .....	11
5. Green Star Framework .....	13
5.1 Overview .....	13
5.2 Management .....	13
5.3 Indoor Environment Quality .....	14
5.4 Energy .....	17
5.5 Sustainable Transport .....	18
5.6 Water .....	18
5.7 Materials .....	19
5.8 Land Use and Ecology .....	19
5.9 Emissions .....	20
5.10 Innovation .....	21
6. Conclusion .....	22

# 1. Executive Summary

---

This Sustainability Report outlines how the proposed Woolworths FP3 meets the Secretary's Environmental Assessment Requirements (SEARs) as a state significant development.

This report demonstrates how the following sustainability objectives are to be met:

- Address the Secretaries Environmental Assessment Requirements (SEARs);
- Incorporate additional sustainability initiatives to improve the environmental and operational performance of the building addressing both efficiency of the site and future climate related risks.

Specific sustainability initiatives proposed for the building include, but are not limited to:

- Space efficient building layout.
- High efficiency electrical systems
- Large scale on-site renewable energy generation
- Increased use of daylighting to reduce power usage
- Installation of a large-scale rainwater capture and reuse system
- Energy efficient heating, ventilation and air conditioning including natural ventilation to open spaces.
- Waste minimisation strategies.
- Summary of the 5 Star Green Star Certification that the project is seeking.
- Provisions for the likely future transition of the trucking fleet to 'Electric' and/or 'Plug in Hybrid Electric'.

## 2. Introduction

### 2.1 Sustainability Objectives

The Woolworth's Facility will be targeting the following sustainability objectives:

- Address the Secretaries Environmental Assessment Requirements (SEARs);
- Incorporate additional sustainability initiatives to improve the environmental and operational performance of the building addressing both efficiency of the site and future climate related risks.
- Achieve a 5 Star Green Star Design & As-Built Rating

### 2.2 Response to Secretaries Environmental Assessment Requirements (SEARs)

This report addresses how the proposed project addresses Items 12 and 13 of the SEARs. These requirements are outlined below alongside where the response to each can be found within this report;

Item for inclusion	Action to Address Requirement	Report Location
12.1 An assessment of the energy use of the proposal and all reasonable and feasible measures that would be implemented on site to minimise the proposal's greenhouse gas and carbon emissions (reflecting the Government's goal of net zero emissions by 2050).	This ESD report will assess the energy efficiency measures included in the proposal, as well as outlining the energy reduction to achieve Green Star Certification.	Section 3.1 & Section 5.4
13.1 A description of how the proposal will incorporate the principles of ecologically sustainable development in the design, construction, and ongoing operation of the development	This ESD report details how the project aims to address ESD Principles and their incorporation into the design and ongoing operation of the project.	Section 3 & Section 5
13.2 Consideration of the use of green walls, green roof and/or cool roof into the design.	A roofing material with a high Solar Reflectivity Index (SRI) should be used for the project.	Section 3.1.4
13.3 Demonstration of how the development will meet or exceed the relevant industry recognised building sustainability and environmental performance standards	The development will exceed sustainability standards across the industry and will be Green Star certified. This report will outline the Green Star framework and what makes it industry leading.	Section 3 & Section 5
A description of the measures to be implemented to minimise consumption of resources, especially energy and water.	The Sustainability initiatives integrated into the design and construction of the project outline the range of measures implemented to minimise resource consumption.	Section 3

### **2.3 Limitations**

Due care and skill have been exercised in the preparation of this report.

No responsibility or liability to any third party is accepted for any loss or damage arising out of the use of this report by any third party. Any third party wishing to act upon any material contained in this report should first contact Northrop for detailed advice, which will consider that party's requirements.

### 3. Sustainability Initiatives

---

The following section describes how ESD principles (as defined in clause 7(4) of Schedule 2 of the Environmental Planning and Assessment Regulation 2000) are being incorporated in the design and ongoing operational phases of the project. These initiatives illustrate how the project addresses the following.

- The precautionary principle – through the implementation of environmental management and an assessment of the building's operational maintainability, the project attempts to incorporate adaptability and resilience into the project design. The concepts behind the precautionary principle is to create spaces that can both; accommodate for changes, which may eventuate in the future, and avoid the risk of serious or irreversible damage to the environment.
- Inter-generational equity to ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations – through the inclusion of zero ozone depleting refrigerants, best practice PVC and low impact paints, sealants and adhesives, alongside a focus on providing greater vegetation and support for the buildings connection with nature, the project demonstrates a strong commitment to the preservation of environmental health, diversity and productivity of the local area.
- Conservation of biological diversity and ecological integrity – through the planting of native vegetation, improvement of stormwater runoff from the site and use of integrated landscaping, the project will act to improve, conserve, and support the local biological diversity and integrity.
- Improved valuation, pricing, and incentive mechanisms - the design process should involve significant input from the Quantity Surveyor who will be involved ensure that the project both remains on budget and effectively considers environmental factors in the valuation of assets and services. Furthermore, the project will look at maintainability and the operational costs associated with individual design initiatives and the overall design.

Through the inclusion of the above and the sustainability initiative outlined within this report the project clearly addresses the ESD Principles into the design, construction and operation of the building as defined in clause 7(4) of schedule 2 of the Environmental Planning and Assessment Regulation 2000. Further detail of the general sustainability initiatives is outlined below.

#### 3.1 Energy Usage

The site will seek to meet all aspects of the National Construction code, and surpass the Energy Efficiency requirements, reflected by the targeted 5-star Green Star Design and as Built Rating that is targeted. This reflects a commitment to reducing energy usage and Green House Gas emissions and is outlined in detail later in this report.

The expansion will also look to minimise the use of fossil fuels, in line with Woolworth's commitment to becoming net-zero emissions by 2050. This can be supported by a transition plan and power purchase agreements, resulting in an elimination of Greenhouse Gas Emissions from the facility in line with the Government's goal of net zero emissions by 2050.

#### 3.2 Energy Efficiency:

Energy efficiency will be considered throughout the design development process with the following improvements to be considered as part of the design process. It is expected that these measures, should they be implemented, could reduce the site's grid electricity demands greatly compared to a standard practice building.



### **3.2.1 Natural Ventilation of Tertiary Spaces**

The project incorporates significant logistic areas, where achievable areas for circulation and vehicles will be naturally ventilated or open air in the case of truck loading areas. These areas will be able to operate as naturally ventilated spaces exploiting the buoyancy of air to draw ventilation through the space. Central circulation spaces such as bathrooms and stairs should also look to incorporate natural ventilation and the use of spill air from adjacent spaces.

### **3.2.2 Airconditioning within the Warehouse Spaces**

Given the nature of the project, housing fresh produce, there is a need for air conditioning and refrigeration of the warehouse areas, using an efficient HVAC set-up the energy use for these spaces will be minimised. The Refrigeration units will make use of Ammonia and CO<sub>2</sub> as refrigerants due to their reduced environmental impact. Additionally, each of the conditioned warehouse will incorporate insulation to meet the requirements of the code and minimise heat gains into these spaces. As the detailed design of the HVAC system progresses it will incorporate further measures to optimise energy use and to provide flexibility of conditioning within the large warehouse spaces.

### **3.2.3 Improved building fabric and glazing performance**

The building envelope comprises several different façade types, with the proposed scheme using a combination of light-coloured metal finishes, prefabricated concrete and low-e glazing to lower heat gains throughout summer while maintaining good daylighting throughout of the building.

The use of well-designed glazing and building materials will also assist the projects targets for energy efficiency, acoustic performance, and thermal comfort.

### **3.2.4 Integration of Cool roofs**

To address heat islanding across the site and wider area the site should incorporate cool roofing with a high Solar Reflectivity Index (SRI 82) which will minimise the buildup of heat within the material and reduce load on the HVAC system.

### **3.2.5 HVAC System Control**

The proposed HVAC system incorporates individual area controls for thermal comfort conditions within the office spaces allowing building occupants to maintain comfort conditions suitable to the use and occupancy of spaces. This system assists in optimising the sites energy efficiency while maintaining comfortable conditions.

### **3.2.6 Energy Metering and Monitoring**

An energy metering and monitoring strategy is to be considered to effectively monitor the main energy uses within the building, alongside the lighting and small power use. This aims to provide fault detection and monitoring of the different areas of the building.

### **3.2.7 Improved outdoor air provision**

The project will aim to improve the outdoor air provided to regularly occupied spaces. This will minimise CO<sub>2</sub> build up within the office areas and improve comfort for the building occupants.

To address energy use concerns the design will also look to incorporate on an outdoor air economy cycle which will allow the building to exploit periods where the buildings external conditions can effectively provide thermal comfort in the space reducing the run times of the air-conditioning system.



### **3.2.8 Highly efficient lighting system**

The installation of LED lighting throughout the building will assist in the minimisation of lighting energy use. Improved lighting energy also reduces the heat loads within cooled spaces and therefore lowers the energy used to condition the building. The use of efficient controlled lighting within the warehouse areas will provide a significant improvement in energy use due to the high levels of automation within these areas.

### **3.2.9 Electric-Only Building**

By eliminating use of fossil fuels within the building itself, renewable electricity can be adopted in the interests of a net zero carbon operational energy. This should be achieved through both design and plans for fossil fuel elimination in the near future.

## **3.3 Energy Generation:**

With the above energy efficiency measures load within the facility will be reduced, allowing a large portion of the sites electrical energy demand to be met through the proposed inclusion of a large solar array. This will assist to both offset the sites energy use and minimise the sites daytime peak demand from the grid.

## **3.4 Indoor Environment Quality**

Indoor environment quality is always an important consideration in spaces that are regularly occupied such as the offices and ambient warehouse areas. The following considerations have been considered as part of the building design:

### **3.4.1 Daylight Access**

The design of the building should aim to allow good daylight penetration into both internal and external spaces. Daylighting can be achieved through skylights and other methods, whilst not sacrificing thermal transfer. This access to daylight throughout the building will both minimise energy used for lighting and will improve occupant connection to their external environment.

### **3.4.2 Interior noise level control**

Internal noise levels will be actively considered with the building layout and systems design considering how noise will reverberate through the building. The use of acoustic insulation and sound isolation will ensure that interior noise levels to be maintained below acceptable limits.

### **3.4.3 Material selection**

Materials selection for the project aims to improve the internal environment of the site with materials with low volatile organic compound and formaldehyde content preferred to help minimise respiratory issues for building occupants.

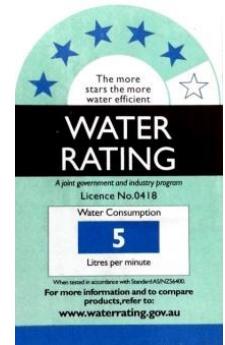
## **3.5 Water Efficiency**

A strong focus has been put on the effective management of water within the building with the following initiatives being included in the design in all areas throughout the project. It is expected that these initiatives will reduce the sites potable water demand by more than 50% compared to a standard practice building.

### 3.5.1 Water efficient fixtures and fittings

Water Efficient fixtures and fitting will reduce the water consumption of the site. As an indication, the following should be targeted:

- Wash hand basin taps 6-star WELS
- General taps 6-star WELS
- Toilets dual flush 4-star WELS
- Urinals 0.8 L per flush 6-star WELS
- Shower heads 7-9 L per minutes 3-star WELS



### 3.5.2 Water Sensitive Urban Design

The project will look to incorporate a strong focus on water sensitive urban design with the external landscape design assisting to minimise water use for irrigation. The inclusion within the design of landscaped area will also assist in the reduction of site stormwater discharge and assist in the management of the projects broader impact on urban stormwater flows.

### 3.5.3 Rainwater capture and reuse

A large (>250kL) rainwater capture and reuse system could be designed for installation to offset the sites water usage for washdown, cooling towers, toilet flushing and other facets of production. This system would have the ability to offset most of the sites potable water usage.

## 3.6 Improved Ecology

Through planting native vegetation and promoting improved interaction with the natural environment, the project will look to improve the site's ecology and minimise the ongoing environmental impact of the project. The project is currently implementing the following:

- Incorporation of a site vegetation.
- Minimisation of light spill from the facility which impacts on migratory animals and insects; and
- Reduced dissolved pollutants in stormwater discharged from the site.

## 3.7 Waste Management

Effective waste management throughout demolition, construction and operation of the site will help to promote resource efficiency and minimise the adverse environmental impacts of the project. The following are being considered as part of the design process.

### 3.7.1 Separated Waste and Recycling Streams

The provision of separated waste and recycling streams could allow for more effective recycling of the project's operation waste. Providing separate bins for cardboard/paper waste, glass, food wastes, comingled recycling and general waste will improve the buildings operational efficiency and result in significant environmental benefits.



### **3.7.2 Construction and Demolition Waste Minimisation**

The project should look to minimise the demolition and construction waste associated with the project and can aim to divert over 90% of waste from landfill to recycling or reuse facilities.

## 4. Climate Change Projections

As part of the Green Star Rating for the project the design team will develop a Climate Adaption Plan in accordance with the Australian Greenhouse Office (AGO), *Climate Change Impacts & Risk Management, A Guide for Business and Government* Guide (2006). This will address climate change scenarios over two timescales; to 2030 and 2040. These time scales will assess the mid-point of the building lifespan and help to understand and pre-empt possible impacts of the building at end of life. By identifying potential climate risks for the site at these two-time intervals, the tenants and the site owner, Woolworths, can prepare appropriate maintenance measures to retain building quality during the next 25 years of its life.

A risk assessment will be developed comprising the following three elements:

- Consequence: what will be the effect of the development should the impact occur?
- Likelihood: how likely is it that the impact will occur?
- Risk Rating: what is the associated risk of the development when the likelihood of it happening is measured against the possible consequence of the impact?

Key risks posed to the site which will be addressed as part of this process and high-level issues are outlined below with comment on how these are addressed within the current design; further detail will be developed within the projects detailed design development stages.

- Changing Surface Temperatures should be addressed through the;
  - Use of high reflectivity roofing to minimise heat gain and heat island effects
  - Integration of solar panels to provide shading to areas of the roof and provide increased power to the site when peak energy use for cooling is required.
  - Incorporation of heating, ventilation, air conditioning (HVAC) systems designed to modulate in the event of changing outside air temperatures. Equipment will be rated to continue operating during higher temperatures.
- An increase in rainfall intensity should be managed through the;
  - Inclusion of rainwater and stormwater storage systems to modulate flows exiting the site
  - Ability to provide increased finished floor level (FFL) designed to be 0.50 m above freeboard requirement to account for increased flooding potential at the site.
  - Inclusion of awnings to the entry access points to promote allow continued operation during adverse conditions.
- An increase to wind speed intensity should be addressed through;
  - The metal roof design incorporating roof bracing to fasten the roof onto the building structure to account for increasingly strong winds on site and prevent damage to the roof due to prevailing winds.
  - Improved structural integrity to ensure that the building is not significantly impacted in the event of high intensity wind loads. This includes wind loading on loading dock awnings and doors.
- Decrease in humidity and increased drought conditions will be addressed through;

- Additional non potable water supply for irrigation needs and the integration of native and drought tolerant vegetation.

Overall the current design incorporates significant measures to address key projections for climate change in the near term. The project will incorporate further initiatives to address all high and extreme risks posed to the site as per the Climate Adaption Credit within the targeted Green Star Design & As-Built Rating.

## 5. Green Star Framework

### 5.1 Overview

The Green Building Council of Australia's provides an internationally recognised system to assess sustainable outcomes throughout the life cycle of the built environment. It was developed by the Australian Building Industry through the Green Building Council of Australia (GBCA), which is now the nation's leading authority on sustainable buildings and communities.

This section provides a summary of the elements drawn from the Green Star tool being applied at Woolworths FP3. The Green Star system incorporates ESD principals across nine major categories:

- Management
- Indoor Environment Quality
- Energy
- Transport
- Water
- Materials
- Land Use and Ecology
- Emissions
- Innovation

It is noted that a Certified 5 Star Green Star Design & As-Built Rating is being targeted at this stage.

### 5.2 Management

The credits within the Management category promote the adoption of environmental principles from project inception, design, and construction phase, to commissioning, tuning and operation of the building and its systems. The following credits are currently being considered for incorporation.

#### 5.2.1 Accredited Professional

The project team have engaged with an accredited professional to provide advice, support and information related to sustainability principles and processes, at all stages of the project.

#### 5.2.2 Commissioning and Tuning

##### 5.2.2.1 Services and Maintainability Review

The project team will perform a comprehensive services and maintainability review led by the head contractor or the owner's representative (or the ICA) during the design stage and prior to construction.

The services and maintainability review is to facilitate input from the design team, the facilities manager and operations staff, and any relevant suppliers and subcontractors. The review looks to address the following aspects of the project:

- Commissionability;
- Controllability;
- Maintainability;
- Operability, including 'Fitness for Purpose'; and
- Safety.

#### **5.2.2.2 Building Commissioning**

The project team will demonstrate that the pre-commissioning and commissioning activities have been performed based on the approved standards and guidelines.

#### **5.2.2.3 Building Systems Tuning**

The project team will demonstrate a formal commitment to a tuning process for all nominated building systems. At a minimum, this includes quarterly adjustments and measurement for the first 12 months of occupation.

### **5.2.3 Adaption and Resilience**

#### **5.2.3.1 Implementation of a Climate Action Plan**

The project will consider the impacts of climate change through identifying and addressing all high and extreme risks posed over the expected lifecycle of Woolworths FP3. This will be done through the creation of a Climate Adaption Plan.

#### **Climate Adaption Plan**

The Climate Adaption Plan will contain as a minimum the following information:

- Summary of project's characteristics (site, location, climatic characteristics);
- Assessment of climate change scenarios and impacts on the project using at least two time scales, relevant to the project's anticipated lifespan. This must include a summary of potential direct and indirect (environmental, social and economic) climate change impacts on the project;
- Identification of the potential risks (likelihood and consequence) for the project and the potential risks to people. This risk assessment is to be based on a recognised standard;
- A list of actions and responsibilities for all high and extreme risks identified; and
- Stakeholder consultation undertaken during plan preparation and how these issues have been.

### **5.2.4 Metering and Monitoring**

The project team will include implementation of effective energy and water metering and monitoring systems, which will be at a minimum on a floor by floor basis. Items with energy usages greater than 5%, or 100 kW, will be independently metered.

## **5.3 Indoor Environment Quality**

### **5.3.1 Indoor Air Quality**

#### **5.3.1.1 Paints, Adhesives, Sealants and Carpets**

At least 95% of all internally applied paints, adhesives, sealants and carpets meet the below stipulated 'Total VOC Limits' (TVOC).

Maximum TVOC limits for paints, adhesives and sealants are detailed in the table below.

Table 1 Maximum TVOC Limits for Paints, Adhesives and Sealants



Product Category	Max TVOC content in grams per litre (g/L) of ready to use product
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

To demonstrate compliance for the use of carpets all products will be certified under a recognised Product Certification Scheme or other recognised standards. With the certification current at the time of specification.

#### **5.3.1.2 Engineered Wood Products**

At least 95% of all engineered wood products including: particleboard, plywood, Medium Density Fibreboard (MDF), Laminated Veneer Lumber (LVL), High-Pressure Laminate (HPL), Compact Laminate and decorative overlaid wood panels meet stipulated formaldehyde limits or no new engineered wood products are used in the building.

All engineered wood products used in the building will meet the relevant limits specified in the table below as per the specified test protocol or have product specific evidence that it contains no formaldehyde.

Table 2 Formaldehyde Emission Limit Values for Engineered Wood Products

Test Protocol	Emission Limit/Unit of Measurement
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1mg/ L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1mg/ L
AS/NZS 4357.4 - Laminated Veneer Lumber (LVL)	≤1mg/ L
Japanese Agricultural Standard MAFF Notification No.701 Appendix Clause 3 (11) - LVL	≤1mg/ L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1 mg/m <sup>2</sup> hr*
ASTM D5116 (applicable to high pressure laminates and compact laminates)	≤0.1 mg/m <sup>2</sup> hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419), applicable to high pressure laminates and compact laminates	≤0.1 mg/m <sup>2</sup> hr (at 3 days)
ASTM D6007	≤0.12mg/m <sup>3</sup> **
ASTM E1333	≤0.12mg/m <sup>3</sup> ***
EN 717-1 (also known as DIN EN 717-1)	≤0.12mg/m <sup>3</sup>
EN 717-2 (also known as DIN EN 717-2)	≤3.5mg/m <sup>2</sup> hr

\*mg/m<sup>2</sup>hr may also be represented as mg/m<sup>2</sup>/hr.

\*\*The test report must confirm that the conditions of Table 3 comply for the particular wood product type, the final results must be presented in EN 717-1 equivalent (as presented in the table) using the correlation ratio of 0.98.

\*\*\*The final results must be presented in EN 717-1 equivalent (as presented in the table), using the correlation ratio of 0.98.

### 5.3.2 Acoustic Comfort

To create an acoustically comfortable and appropriate space for occupants, the project will achieve the following standards.

- Internal ambient noise levels, in the nominated area, are no more than 5dB(A) above the "satisfactory" sound levels provided in Table 1 of AS/NZS 2107:2016.
- "Reverberation time in the nominated area must be below the maximum stated in the 'Recommended Reverberation Time' provided in Table 1 of AS/NZ 2107:2016"
- The partition between the spaces should be constructed to achieve a weighted sound reduction index (Rw) of at least 45.

### **5.3.3 Lighting Comfort**

#### **5.3.3.1 Minimum Lighting Comfort**

The project lighting design has ensured that all lights in internal spaces are flicker free and accurately address the perception of colour in the space.

Flicker-free lighting refers to luminaires that have either:

- A minimum Class A1 & A2 ballast;
- High frequency ballasts for all fluorescent lamps; or
- Electronic ballasts in High Intensity Discharge (HID) lighting.

#### **5.3.3.2 General Illuminance and Glare Reduction**

The project team has also ensured that, in the nominated area, lighting levels comply with best practice guidelines for Office Spaces; corresponding to Table 3.1 of AS 1680.2. and that glare is eliminated using baffles, louvers, translucent diffusers, ceiling design, or other means that obscures the direct light source from all viewing angles of occupants.

### **5.3.4 Thermal Comfort**

The project team will also ensure that the facility will provide a thermally comfortable space for occupants. This is achieved through meeting National Construction Code 2019: Section J JV3 compliance, and additional Green Star modelling.

## **5.4 Energy**

The 'Energy' category aims to facilitate reductions in greenhouse gas emissions by facilitating efficient energy usage and encouraging the utilisation of energy generated by low-emission sources.

### **5.4.1 Greenhouse Gas Emissions – Comparison to a Reference Building Pathway**

The current project design is targeting a 30% reduction in the predicted energy consumption and GHG emissions compared to a minimum code compliant building.

Prediction of the building performance against this benchmark is to be confirmed using building performance modelling that assesses potential energy use for building services systems including:

- Mechanical Services
- Electrical Services
- Communications, AV and security systems
- Hydraulic Services
- Vertical Transportation Systems

### **5.4.2 Peak Electricity Demand Reduction – Reference Building**

By using efficient systems and on-site generation sources the project is targeting a reduction in peak electricity demand by at least 20%. Peak electricity demand is the predicted annual peak calculated as the sum of all distribution boards (to include all miscellaneous loads) relevant to the building as shown in the as-installed electrical schematics.

## 5.5 Sustainable Transport

Sustainable transport criteria aim to provide design and operational measures that reduce the carbon emissions arising from occupant travel to and from the project, when compared to a benchmark building. In addition, it also promotes the health and fitness of commuters, and the increased accessibility of the location.

### 5.5.1 End of Trip Facilities

End of trip facilities will be provided within the facility for employees. The inclusion of these facilities will encourage commuters to consider cycling or walking to work. Bicycle storage is also to be provided, ensuring security for those who choose to cycle.

### 5.5.2 Parking Provisions

The Parking areas provided for employees will look to include provisions for electric charging, to encourage the transition to electric vehicles. The parking areas should also provide fuel-efficient car parking spaces, as well as parking space for car share vehicles.

## 5.6 Water

The aim of the credit is to encourage building design that minimises potable water consumption in operations. The potable water credit will be considered for implementation as follows.

### 5.6.1 Sanitary Fixture Efficiency

The project is looking to further improve fixture water efficiency to achieve WELS ratings within one star or those stated in the table below.

Table 3 Sanitary Fixture Efficiencies

Fixture / Equipment Type	WELS Rating
Taps	6 Star
Urinals	6 Star
Toilet	5 Star
Showers	3 Star (> 4.5 but <= 6.0)
Clothes Washing Machines	5 Star
Dishwashers	6 Star

### 5.6.2 Heat Rejection Water

A waterless heat rejection system is proposed on site, eliminating water usage for the purposes of air conditioning office spaces.

### 5.6.3 Water Harvesting System

Water Harvesting system provisioned to minimise potable water usage of Refrigeration system. This system is provision to serve approximately 65% of the water requirement of the Refrigeration system.

#### **5.6.4 Landscape Irrigation**

Rainwater supported drip irrigation with moisture sensor override is to be installed to minimise potable water used for the project irrigation.

### **5.7 Materials**

The aim of the materials credits is to reward projects that include building materials that are responsibly sourced or have a sustainable supply chain. Should these be targeted the project would need to consider.

#### **5.7.1 Life Cycle Impacts**

#### **5.7.2 Responsible Building Materials**

##### **5.7.2.1 Permanent Formwork, Pipes, Flooring, Blinds and Cables**

90% (by cost) of all cables, pipes, flooring and blinds in the project will either:

- Do not contain PVC and have an Environmental Product Declaration (EPD); or
- Meet Best Practice Guidelines for PVC.

#### **5.7.3 Construction and Demolition Waste – Percentage Benchmark**

This project should target 90% of the waste generated during construction and demolition being diverted from landfill. Compliance verification summaries should also be provided for the waste contractor and waste processing facilities.

### **5.8 Land Use and Ecology**

The 'Land Use & Ecology' category aims to reduce the negative impacts on sites' ecological value because of urban development and reward projects that minimise harm and enhance the quality of local ecology.

#### **5.8.1 Endangered, Threatened or Vulnerable Species**

At the date of site purchase or date of option contract, the project site did not include old growth forest or wetland of 'High National Importance' or did not impact on 'Matters of National Significance'.

#### **5.8.2 Heat Island Effect Reduction**

At least 75% of the whole site area (when assessed in plan view) comprises of one or a combination of the following:

- Vegetation;
- Roofing materials, including shading structures, having the following:
  - For roof pitched <15° – a three year SRI >64; or
  - For roof pitched >15° – a three year SRI >34.
- Only where the three year Solar Reflectance Index (SRI) for products is not available, use the following:
  - For roof pitched <15° – an initial SRI > 82; or
  - For roof pitched >15° – an initial SRI > 39.
- Unshaded hard-scaping elements with a three year SRI > 34 or an initial SRI > 39;

- Hard-scaping elements shaded by overhanging vegetation or roof structures, including solar hot water panels and photovoltaic panels;
- Areas directly to the south of vertical building elements, and areas shaded by these elements at the summer solstice.

## 5.9 Emissions

The 'Emissions' category aims to assess the environmental impacts of 'point source' pollution generated by projects. Negative impacts commonly associated with buildings include damage to the environment through refrigerant leaks or disturbances to native animals and their migratory patterns as a result of light pollution.

### 5.9.1 Stormwater

#### 5.9.1.1 Reduced Peak Discharge

The project is aiming to achieve a post-development peak event discharge from the site which does not exceed the pre-development peak event discharge using the design Average Recurrence Interval (ARI) that corresponds to the associated flooding risk identified in the Climate Change and Adaption Assessment undertaken as part of the Adaption and Resilience credit.

#### 5.9.1.2 Reduced Pollution Targets

Additionally, the project aims to demonstrate that all stormwater discharged from the site meets the pollution reduction targets in Table 4 below.

Table 4 Minimum Pollution Reduction Targets

Pollutant	Reduction Target (% of the Typical Urban Annual Load)
Total Suspended Solids (TSS)	80%
Gross Pollutants	85%
Total Nitrogen (TN)	30%
Total Phosphorus (TP)	30%
Total Petroleum Hydrocarbons	60%
Free Oils	90%

### 5.9.2 Light Pollution

#### 5.9.2.1 Light Pollution to Neighbouring Bodies

The project design ensures that all outdoor lighting on the project complies with AS 4282:1997 at all inhabited boundaries, apart from boundaries with roads.

#### 5.9.2.2 Light Pollution to Night Sky

Outdoor lighting has been designed to achieve control of upward light output ratio (ULOR) by demonstrating that no external luminaire on the project has a ULOR that exceeds 5%, relative to its actual mounted orientation.

### **5.9.3 Microbial Control**

The project would look to integrate no water-based heat rejection systems preventing the buildup of microbes in these systems.

## **5.10 Innovation**

The 'Innovation' category aims to recognise the implementation of innovative practices, processes and strategies that promote sustainability in the built environment.

### **5.10.1 Market Transformation**

The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in Australia or in the world. Through the targeting of world leading sustainability principles at Woolworths FP3 is contributing to a broader market transformation that repositions tenant health and well-being as a key indicator of sustainability.

### **5.10.2 Innovation Challenge – Financial Transparency**

This Innovation Challenge aims to encourage owners, developers, and operators to disclose the costs of sustainable building practices, and to agree to participate in a yearly report developed by GBCA that will inform the building industry on the true costs of sustainability.

### **5.10.3 Innovation Challenge – Microbial Control in Hot Water Systems**

The projects hot water systems can be designed to manage the risk of microbial contamination.



## 6. Conclusion

---

This Sustainability Report outlines how the proposed Woolworths FP3 Facility aims to meet the Secretary's Environmental Assessment Requirements (SEARs) as a state significant development and how the following sustainability objectives are to be met:

- Address the Secretaries Environmental Assessment Requirements (SEARs);
- Incorporate additional sustainability initiatives to improve the environmental and operational performance of the building addressing both efficiency of the site and future climate related risks.
- Achieve a 5 Star Green Star Design & As-Built Rating

Specific sustainability initiatives proposed for the building include, but are not limited to:

- Space efficient building layout.
- High efficiency electrical systems
- Large scale on-site renewable energy generation
- Increased use of daylighting to reduce power usage
- Installation of a large-scale rainwater capture and reuse system
- Energy Efficient heating, ventilation and air conditioning including natural ventilation to open spaces.
- Waste minimisation strategies.

Overall, through the implementation of the initiatives noted within this report the project clearly demonstrates the site's commitment to ESD principles throughout the design, construction, and operation. Additionally, the project design team has worked to optimise the sites energy performance and address key climate related risks posed to the site, work that will continue to be developed throughout the detailed design process.