

WOOLWORTHS LIMITED

WOOLWORTHS DISTRIBUTION CENTRE AUBURN

ECOLOGICALLY SUSTAINABLE DESIGN
CONCEPT REPORT

SEPTEMBER 2020



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Woolworths Distribution Centre Auburn Ecologically Sustainable Design Concept Report

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EXECUTIVE SUMMARY

The proposed development includes the construction of a new warehouse and distribution centre for Woolworths located at 13 Percy Street, Auburn, NSW.

This document has been prepared as part of the Environmental Impact Statement for the purposes of the State Significant Development Application (SSDA).

This Ecologically Sustainable Development (ESD) Concept Report details the initiatives that the proposed development will be implementing to deliver the objectives of the Secretary's Environmental Assessment Requirements (SEARS), Auburn Development Control Plan (DCP) 2010 and other policies influencing the development in the suburb of Auburn.

The project team have worked to ensure the development will reduce its energy and water consumption through onsite strategies. The development will also include other measures to ensure a holistic sustainable strategy for the development, such as:

- Implement energy efficiency measures to reduce greenhouse gas emissions;
- Highly efficient water fittings and fixtures to ensure water consumption is reduced as far as possible, and supplemented with rainwater harvesting;
- Procurement of materials that have low environmental impacts and/or reuse of existing site materials to reduce demolition waste;
- Optimisation of Indoor Environment Quality (IEQ) as appropriate to the function of the development;
- Enhanced site ecology through high quality landscape design;
- Encourage the use of public transport and active modes of transport; and,
- Design that mitigates or adapts to climate change impacts.

The first sections of the report describe the project proposal in more detail, along with detailing the planning policies which have helped shape the sustainability strategy for the development. The ESD concept strategy then provides an overview of measures and initiatives that are proposed for the building to deliver a high performing, highly sustainable development that meets policy compliance requirements.

As the Project progresses, the way that the targets are met may alter slightly to provide the best possible design outcomes for the development. At this early stage, however, the project team are satisfied that the ESD initiatives, which are beyond current best practice, are achievable within the scheme.



Figure 1 Architectural renders of the proposed development (provided by Nettleton Tribe)

1 INTRODUCTION

1.1 PURPOSE OF REPORT

This report describes the ESD strategy for the Woolworths Warehouse and Distribution Centre at 13 Percy Street, Auburn for the purposes of the State Significant Development Application (SSDA).

This report identifies the project goals for sustainable performance, key principles that underpin sustainability and the initiatives by which it is embedded in both the design and the proposed operation of the warehouse and distribution centre.

1.2 PROJECT DESCRIPTION

The proposed development includes the construction of a new warehouse and distribution centre for Woolworths located at 13 Percy Street, Auburn, NSW. It is approximately 20,000m² consisting of the following area types:

- Warehouse;
- Customer Fulfilment Centre;
- Office areas;
- Plant areas;
- Access roads; and
- Staff car parking.

1.3 SEARS REQUIREMENT

The current Secretary’s Environmental Assessment Requirements (SEARS) has been issued on 30/06/2020 for the Woolworths Warehouse and Distribution Centre Auburn project. Refer to Table 1.1 for a list of the requirements relating to the ecological sustainable development and a cross reference of where they are addressed in this report.

Table 1.1 SEARS Requirements

SECRETARY’S ENVIRONMENTAL ASSESSMENT REQUIREMENTS	REFERENCE IN THE ESD CONCEPT DESIGN REPORT
Description of how the proposal will incorporate the principles of ecologically sustainable development into the design, construction and ongoing operation of the warehouse and the associated office space.	Section 3
Consideration of the use of green walls, green roofs and/or cool roofs in the design of the development.	Section 3.7
Description of the measures to be implemented to minimise consumption of resources, especially energy and water.	Section 3.1 to 3.2

1.4 LIMITATIONS

The analysis is based on the best available information at the time of assessment.

Final performance of the building and its system will depend on its final design, implementation and operation.

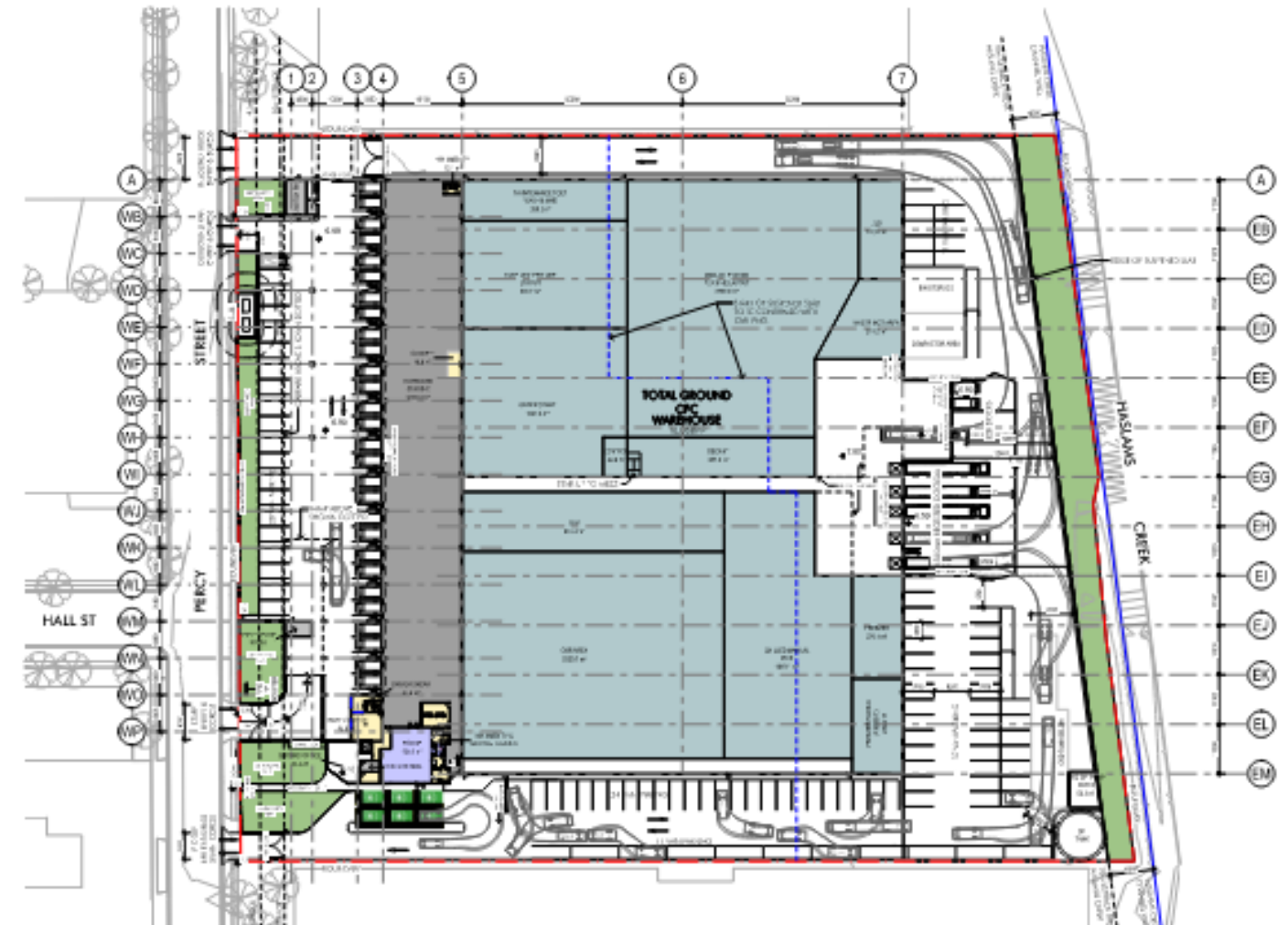


Figure 2 Ground Floor Plan of the proposed development (provided by Nettleton Tribe)

2 ESD POLICY AND DRIVERS

Several sustainability frameworks exist at a global, federal, state and local level that have been used to provide the context for goals, objectives and targets for the ESD approach for the project.

2.1 GLOBAL

2.1.1 UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS

The United Nations prioritises 17 Sustainable Development Goals as part of a Sustainable Development Agenda with the purpose of transforming our world by ending poverty, protecting the planet and ensuring prosperity for all. Each goal has specific targets to be achieved by 2030 with six of these seventeen goals advocating for climate change and resource demand reduction initiatives. To achieve these goals, change is sought for from governments, the private sector and civil society. The main goals relevant to the proposed development include:

- Goal 7: Affordable and clean energy

The project is implementing strategies to optimise its energy efficiency and reduce its greenhouse gas emissions through high performance façade, highly efficient services and potential for an on-site renewable energy source. Refer to Section 3.1.

- Goal 11: Sustainable cities and communities

The project is promoting sustainable strategies in its design, construction and operation as outlined in Section 3. The development is situated in a previously developed land and aims to improve its ecological value by promoting native landscaping. It also has convenient access to amenities and alternative form of transport.

- Goal 12: Responsible consumption and production

The project is implementing strategies to optimise its energy and water efficiency as per Sections 3.1 and 3.2. It also aims to re-use products and materials from the existing site where possible as well as procure products and materials with recycled content and/or sustainably certified as identified in Section 3.3.

- Goal 13: Climate action

The project is implementing strategies to optimise its energy efficiency and reduce its greenhouse gas emissions as outlined in Section 3.1. Further design adaptations are also currently considered in Section 3.8 and will be developed further at the detailed design stage.

2.1.2 THE PARIS AGREEMENT

The Paris Agreement is an international agreement with a central aim to:

“Strengthen the global response to the threat of climate change by keeping global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and to pursue other efforts to limit the temperature increase even further to 1.5 degrees Celsius.” (United Nations, 2017)”

The Paris Agreement came into force on 9th November 2016.

2.2 FEDERAL

Australia became a signatory to the Paris Agreement on 22 April 2016. Ratification occurred thirty days after the date that parties which make up an estimated 55% of the total global Greenhouse Gas (GHG) emissions chose to become signatories. Under the Paris Agreement, Australia has committed to reducing emissions to 26-28% on 2005 levels by 2030. The Australian government aims to meet these commitments by ‘Direct Action Policies’ created with the objective of reducing

emissions, increasing energy productivity and improving environmental health. These reduction targets have set the benchmark in which each state has developed their own climate positive strategies with an emphasis on either meeting or exceeding this target.

2.2.1 NCC 2019 SECTION J COMPLIANCE

To achieve the targets set-out by the Paris Agreement in 2016, Section J Energy Efficiency of the NCC has recently been revised and officially released in May 2019 to improve the efficiency of new development. A package of measures for Volume One focusses on delivering ~ 35% reduction in energy consumption across commercial buildings. The focus shifts from energy-based metrics to a GHG metric to provide a more holistic view of a building’s environmental impact.

The 2019 updates to Section J also include Green Star and NABERS pathway options for demonstrating NCC compliance to reflect the broad use of these rating tools and reduce the level of duplication of similar assessment processes across the industry. Section J Energy Efficiency is relevant to the Project and sets mandatory requirements for:

- The design of the building envelope and services, and provision of equipment and appliances to minimise energy use and GHG consumption;
- The design of the building envelope to maximise thermal comfort performance; and
- The provision of adequate facilities for energy monitoring.

Preliminary analysis against Section J compliance will be undertaken at the detailed design stage.

2.3 STATE

The policy framework for considering sustainability outcomes, at a state level, for the proposed development includes the following:

- NSW Climate Change Policy Framework, which seeks to achieve net zero emissions by 2050 and for NSW to be more resilient to a changing climate;
- Smart Cities Plan call for us to become smarter investors in our cities’ infrastructure through the coordination and driving of smarter city policy and smart technology to improve the sustainability of our cities and to drive innovation; and
- Future Transport strategy which sets the framework to working towards environmental sustainability, securing energy reliability and affordability, and managing a resilient transport system.

2.4 LOCAL

Cumberland City Council takes ecologically sustainable development principles as part of their decision-making processes and have policies and approaches currently in place that are applicable to the project. These include:

- Auburn Local Environment Plan 2010 (Auburn LEP 2010);
- Auburn Development Control Plan 2010 (Auburn DCP 2010); and
- Draft Cumberland Development Control Plan.

Note that at the time of preparing this report, the Cumberland Development Control Plan is still in draft form.

2.4.1 AUBURN LOCAL ENVIRONMENTAL PLAN 2010 (AUBURN LEP 2010)

Some of the aims of the Auburn LEP 2010 is to foster integrated, sustainable development that contributes to the area’s environmental, social and physical well-being and to integrate principles of ecologically sustainable development as set-out in the DCP.

The project is implementing initiatives as set out in Section 3 to deliver a highly sustainable development. These initiatives promote energy, water and resource efficiency, enhance site ecology and address climate change impacts.

2.4.2 AUBURN DEVELOPMENT CONTROL PLAN 2010 (AUBURN DCP 2010)

The Auburn DCP 2010 sets out objectives and controls to provide a framework for the application of ESD principles in the design, construction and operation of buildings across Auburn. Section 7 of the DCP details the specific areas that must be addressed by proposed industrial development to encourage high standard of environmental design. Implementing these principles means that the development will be designed and constructed so that it complies with the following objectives:

- Minimise energy use in buildings while creating a comfortable working environment – refer to Section 3.1 and 3.4;
- Give greater protection to the natural environment by reducing the amount of greenhouse gas emissions – refer to Section 3.1;
- Reduce the consumption of non-renewable energy sources for the purposes of heating water, lighting and temperature control – refer to Section 3.1; and
- Minimise potable water mains demand of non-residential development by implementing water efficiency measures – refer to 3.2.

2.4.3 DRAFT CUMBERLAND DEVELOPMENT CONTROL PLAN

The Cumberland Development Control Plan is a single plan which combines the controls for planning and development within the Cumberland City Local Government Area. It is currently in draft form at the time of writing thus the project is still under the requirements of the Auburn DCP.

The project is under Part D: Development in Industrial Zones and Part G: Miscellaneous Development Controls of the draft Cumberland DCP and these sections outline the following sustainability requirement:

- Promote energy efficiency and minimise the use of non-renewable energy in construction and operation;
- Minimise reliance on existing energy supplies through the use of renewable energy;
- Minimise the amount of exposed glazing to the eastern and western facades;
- Improve the efficiency of hot water systems;
- Install water saving devices;
- Incorporation of rainwater tanks or water reuse device into the stormwater drainage system; and,
- Minimise waste by separating at the source, reusing and recycling.

Strategies outlined in Section 3 address the requirements of the Draft Cumberland DCP.

3 ESD CONCEPT STRATEGY

The following section sets out the sustainability strategy for meeting the relevant requirement as outlined in the SEARS and Section 2. The strategies address the project’s aim to demonstrate high standard of environmental design and efficient operation as well as consideration on reducing environmental impact during construction.

3.1 ENERGY AND GHG EMISSIONS

The reduction of GHG emissions in the built environment is a major focus at global, federal, state, and local levels to curb the impacts of climate change. Improving energy efficiency leads to a reduction in carbon emissions and reduces the consumption of finite resources.

The strategy for emissions reduction is to follow a “Lean, Clean, Green” approach, balancing immediate environmental and economic performance with long term deep cut emissions potential. This approach has delivered opportunities to maximise development opportunities while minimising carbon footprint.

- **Lean** | Prioritising passive design, to mitigate the demand for resources through design of natural and passive lighting and ventilation
- **Clean** | Selection of efficient equipment to deliver further improvements
- **Green** | Selection of green technology to reduce remaining carbon emissions

The following initiatives are proposed to ensure the Project reduces its carbon emissions as far as possible with on-site measures:

- For the conditioned areas, high performance façade: optimisation of window to wall ration on NCC2019 compliance;
- High efficiency heating, ventilation and air-conditioning (HVAC) systems;
- High efficiency LED lighting (particularly relevant to the warehouse as lighting will be the main energy consumer);
- Roof mounted PV systems to offset grid energy and minimise peak energy demands;
- Implement sustainable strategies during construction, including procurement of green power electricity and construction and demolition waste recycling and recovery separation to minimise construction waste to landfill;
- Incorporation of commissioning, maintenance and building tuning into the project programme;
- Incorporation of ongoing monitoring trends from energy metering.

3.1.1 PHOTOVOLTAIC ANALYSIS

PV systems will be integral in minimising the energy consumption of the project, particularly with its energy intensive nature. PV panels can be installed on the roof of the warehouse. The roof pitch does not have optimum orientation for the PVs (which is north) however the PVs could be installed facing north at optimum tilt to maximise energy generation. There is currently 10,980m² available area with no overshadowing risk. The final inclusion of PVs will depend on detailed calculations and coordination with the architectural intent.

3.1.2 METERING

Electrical sub metering is to be provided for significant end uses. This may include plant rooms and large areas that require high intensity lighting. Metering of energy consumption can assist considerably in ensuring that energy used in operation is measured and monitored so that it can be reduced. The meters will be connected to a central BMS or similar logging system,

which will record the energy use and will produce reports (hourly, daily, monthly and annual) to enable the effective monitoring of energy consumption.

3.2 WATER

Water scarcity is a major concern for Australia’s growing population due to changing weather patterns that are occurring because of climate change. The water strategy for the building will be to first reduce consumption through maximised efficiency. The next step will be to include metering and monitoring to capture any leaks or unusual uses. The final step in the water strategy will be to supply non-potable uses with water from alternative sources, such as rainwater.

The following objectives are proposed to demonstrate policy compliance and to address the SEARS and Auburn DCP objectives.

- To achieve water efficiency there will be a heavy emphasis on the efficiency of the water fixtures and fittings. Recommended WELs ratings are provided in Table 3.1.

Table 3.1 Recommended water fixture and fittings efficiencies

FIXTURE	WELS RATING AND FLOW/FLUSH RATE
Toilets	4 Star – 3/4.5L dual flush
Urinals	6 Star – 0.8 L/flush
Kitchen and bathroom taps	6 Star – 4.5L/min
Showers	4 Star – no more than 7.5L/min
Dishwashers	5 Star

- Commit to the installation of a rainwater tank, from which rainwater can be feasibly collected and plumbed to appropriate end uses such as toilets and urinal flushing, landscape irrigation and washdown. The development has a very large roof area therefore there is a lot of potential to collect rainwater and simultaneously reduce run-off. The strategy for rainwater reuse can be addressed through detailed design, however space for the tank will need to be allowed for and dual reticulation piping throughout the building should be included for applicable uses. The optimal tank size taking into consideration roof area, available rainfall and climate change scenarios will be determined in detailed design.

3.2.1 METERING

- Meters will be installed for all major water uses in the buildings, such as irrigation systems, toilets, and other major uses.
- Water meters will be connected to a central BMS, which will record the water use and will produce reports (hourly, daily, monthly and annual) to enable the effective monitoring of water consumption.

3.3 MATERIALS

The targeted selection of materials with low environmental impacts can greatly contribute to sustainable outcomes and can also reduce total embodied carbon and improve indoor air quality for occupants.

The following initiatives are proposed for the Project.

- Encourage the re-use of products where possible including repairing and recovering if necessary;
- Use building materials, fittings and finishes that: have been recycled; are made from or incorporate recycled materials; and have been certified as sustainable or ‘environmentally friendly’ by a recognised third-party certification scheme.

3.4 INDOOR ENVIRONMENT QUALITY

Occupant comfort is a growing focal point of ESD policies both locally and internationally. ESD initiatives that support the improvement of indoor environment quality quite often go hand-in hand with ESD initiatives in other areas including energy, water and materials.

The following initiatives are proposed:

- Localised lighting control;
- Flicker free lighting that accurately addresses the perception of colour;
- Optimized building layout to ensure greater access to daylight and high-quality external views;
- Glare reduction from the installation of blinds or shading devices that can be controlled by the occupant;
- Provide high rates of outdoor air to reduce the level of indoor pollutants;
- Consider the use of natural or mixed mode natural ventilation where appropriate; and
- Use paints, sealants and floor coverings with low levels of volatile organic compounds (VOC) and wood products with low formaldehyde.

3.5 BIODIVERSITY

Appropriate landscaping can improve urban ecology and enhance the users experience of a space. It has been evidenced to support better health and wellbeing outcomes for occupants and visitors.

The following landscape design elements are proposed:

- Use native vegetation as opposed to exotic species in terraces and other applicable areas, which encourage native wildlife and have lower water requirements; and
- The implementation of vegetation to reduce the causes and impacts of the urban heat island effect, including efforts to retain tree canopy where possible and landscaped roof area for the office.

3.6 TRANSPORT

Reducing individual car use and promoting alternative means of transport leads to minimising GHG emissions, reducing traffic congestion, improving air quality and encouraging active transport as a means of mobility. The location of the development is suitable for alternative forms of transport due to its proximity to a range of public transport services such as bus routes and rail. In addition, the site is conveniently located to various cycling infrastructure, along with footpaths providing safe and efficient connections for pedestrians.

The following initiatives will be investigated in more detail at a later stage as a potential to support the increase of public transport use and active modes of transport:

- The building benefits from its proximity to Auburn train station and bus routes
- The building will include electric vehicle charging stations - or allow for their implementation at a later stage
- The development will provide active transport facilities such as bicycle storage, showers and lockers

3.7 GREEN ROOFS, GREEN WALLS AND/OR COOL ROOFS

As part of the project's SEARS, consideration of the green roofs, green walls and/or cool roofs are required. The following information provide a brief description of these initiatives and their benefits and drawbacks. Further consideration of these initiatives and their applicability to the development will be investigated in more detail at a later stage of the design development.

3.7.1 GREEN WALLS/ROOFS

Green walls and green roofs in a development is the integration of landscaping onto walls and roofs to offer a diverse range of spatial and microclimatic opportunities with consideration to the risks associated with water features. They provide thermal and noise insulation benefits, promote local biodiversity, improve heat island impacts and provide additional aesthetics to a development. Green roofs also assist in prolonging a development's roof lifespan and assist other on-site sustainable initiatives by minimising surface run-off and optimising rainwater collection and providing a cooler environment for solar panels to operate which improves their efficiency.

The main disadvantages of green walls and green roofs are the higher capital cost in construction and the recurring resource demand on maintenance. Green roofs are also heavier than a traditional roof therefore for this initiative to be implemented, structural consideration is required early in the design process to account for the additional weight load. Green roofs are best suited to a flat roof design and for this project with extensive pitched roof area, suitability will be reviewed further at the detailed design stage.

3.7.2 COOL ROOFS

Cool roofs are considered to be roofing materials which is capable of reflecting more heat than absorbing it. These roofing systems generally comes in lighter colours although available technology, such as heat reflective coating, allows for some increased solar reflectivity through the use of additives in darker coloured roofing materials.

Rooftop installed PV panels also contribute to a cool roof design, by providing additional shading while offsetting building energy demand.

There are many benefits to utilising cool roof systems:

- reducing the size of air-conditioning systems through better control of solar thermal loads;
- improving occupant comfort;
- promoting a cooler rooftop microclimate to improve performance of rooftop HVAC plant; and
- greatly reduced maintenance demand when compared to green roofs.

The project will explore the potential incorporation of cool roof and how this will impact its surrounding environment at the detailed design stage.

3.8 CLIMATE CHANGE

The impacts of climate change are starting to be seen and would become more extreme throughout the life of the development. Design adaptations are to be embedded to improve the resilience of the development to climate change, this includes initiatives such as those set out below:

- Low carbon building design, including future proofing strategies for replacement of plant and equipment with technologies that may become more efficient in future;
- Building design that is resilient to changing temperatures;
- Reducing the urban heat island effect of the building;

- Reduced use of resources and materials in the design of the building;
- Reduced consumption of potable water; and
- Diversion of operational waste from landfill to more productive uses and reuse.

4 CONCLUSION

This ESD SSDA Report has set out how the proposed development at 13 Percy Street, Auburn has considered sustainable design strategies from the outset of the project. This has been achieved through the holistic approach to sustainable design detailed in this report, with a strong focus on energy efficiency and low carbon design strategies, reduced water consumption and mitigating urban heat island impact. The proposed design is therefore targeting exceptionally high ESD standards as prescribed in the policies, plans and guidelines by the Cumberland City Council.



Project WoW CFC Percy St Auburn
Prepared by WSP
Date 16-09-20
Rev
Green Star Tool Green Star Design and As-Built v1.3

TOTAL TARGETED	TOTAL TBC	REF PROJECT TARGETED
60.0	16.0	70.5
Low risk		
Medium risk		
High risk		

4 Star - Best Practice - 45-59 points
 5 Star - Australian Excellence - 60-74 points
 6 Star - World Leadership - 75+ points

Credit Name	Points Available	Proposed pathway 5 stars	Points TBC	Targeted Points by Reference Project	Comments	
Management						
Green Star Accredited Professional	1.0	Accredited Professional	1	1.0	1.0	Continuous GSAP involvement from design stage to construction
Commissioning & Tuning	2.0	Environmental Modelled Targets	-	To be targeted	Targeted	Requires Design Intent Report
	2.1	Services and Maintainability Review	1	1.0	1.0	FM/ICA/Building owner to be involved in Services and Maintainability review during design stages and provide a report
	2.2	Building Commissioning	1	1.0	1.0	Air permeability testing required - cost impact. The reference project also targets the innovation point related to the air permeability testing.
	2.3	Building Systems Tuning	1	1.0	1.0	Good Practice
	2.4	Independent Commissioning Agent	1	0.0	1.0	1.0 ICA needs to be engaged before detailed design. Will be involved in 2.1, 2.2 and 2.3. Point added as TBC in the Auburn pathway, due to the potential high cost associated with the ICA engagement.
Adaptation & Resilience	3.0	Implementation of a Climate Adaptation Plan	2	2.0	0.0	Undertake design stage climate risk assessment and implement design mitigations for risk reductions.
Building Information	4.0	Building Information	1	1.0	1.0	A building user guide needs to be developed
Commitment to Performance	5.1	Environmental Building Performance	1	0.0	1.0	Operational benchmarking commitment e.g. Green Star Performance.
	5.2	End of Life Waste Performance	1	0.0	0.0	TBC if Green Star Performance will be pursued.
Metering and Monitoring	6.0	Metering	-	To be targeted	Targeted	Good Practice
	6.1	Monitoring strategy	1	1.0	1.0	Good Practice
Responsible Construction Practices	7.0	Environmental Management Plan	-	To be targeted	Targeted	
	7.1	Formalised Environmental Management System	1	1.0	1.0	Contractor to comply with EMS and site specific EMP
	7.2	High Quality Staff Support	1	1.0	0.0	Training for construction staff in relation to sustainability and promotion of mental and physical health through programs on site.
Operational Waste	8A or 8B	Performance Pathway: Specialist Plan	1	1.0	1.0	Waste management plan to be produced that meets Green Star requirements.
Total Number of Points			14	11.0	1.0	10.0

Indoor Environment Quality						
Indoor Air Quality	9.1	Ventilation system attributes	1	1.0	1.0	
	9.2	Provision of Outside Air	2	1.0	2.0	50% increase in outside air provision compared to AS1668 for 1 point, 100% increase required for 2 points.
	9.3	Exhaust of pollutants	1	1.0	1.0	The reference project is targeting the carbon dioxide sensor pathway, however it could lead to energy penalties and increased spatial requirements for services. As such, the additional point has been added as TBC for the Auburn pathway.
Acoustic Comfort	10.1	Internal Noise Levels	1	1.0	1.0	Applicable to the office space only. Acoustic consultant to confirm and provide an Acoustic Report outlining credit compliance.
	10.2	Reverberation	1	0.0	1.0	Point included as TBC in the Auburn pathway.
	10.3	Acoustic Separation	1	1.0	1.0	Applicable to the office space only. Acoustic consultant to confirm and provide an Acoustic Report outlining credit compliance.
Lighting Comfort	11.0	Minimum Compliance	-	To be targeted	Targeted	
	11.1	General illuminance	1	1.0	1.0	
	11.2	Surface Illuminance	1	0.0	0.0	
	11.3	Localised Lighting Control	1	1.0	1.0	Local lighting level controls at workstation scale e.g. manual dimming and switching controlled by individual occupants or digital control through app and network.
Visual Comfort	12.0	Glare Reduction	-	To be targeted	Targeted	Blinds to be provided to the office space.
	12.1	Daylight	2	0.0	2.0	Applicable to the office space only. Based on the proposed architectural drawings max 1 point could be achieved. Area definition will be required at the next stage to confirm if this point could be targeted.
	12.2	Views	1	1.0	1.0	Applicable to the office space only.
Indoor Pollutants	13.1	Paints, adhesives and sealants	1	1.0	1.0	Low-VOC paints, adhesives and sealants. Easily achievable.
	13.2	Engineered wood products	1	1.0	1.0	Engineering wood to be low-formaldehyde.
Thermal Comfort	14.1	Thermal comfort	1	1.0	0.0	Point achievable with building fabric designed to Section J NCC 2019.
	14.2	Advanced Thermal Comfort	1	0.0	0.0	
Total Number of Points			17	11.0	2.0	14.0

Credit Name	Points Available	Proposed pathway 5 stars	Points TBC	Targeted Points by Reference Project	Comments		
Energy							
Greenhouse Gas Emissions	15.0	Conditional Requirement	To be targeted	Targeted	The reference project has a 1.5MW solar PV.		
	15E	Modelled Building Pathway	20	8.0	4.0	15.0	Points added for Auburn pathway in TBC column, however the PV array needs to be confirmed and points achieved to be confirmed with modelling. 2 additional points can be achieved if the building uses electricity only (no gas use on site).
Peak Electricity Demand Reduction	16B	Modelled Performance Pathway: Reference Building	2	2.0		2.0	To be confirmed when preliminary modelling is undertaken. Points assume that PVs will be provided. Potential for additional innovation point can be achieved via a technical question for exceeding the Green Star benchmarks.
Total Number of Points			22	10.0	4.0	17.0	

Transport							
Sustainable Transport	17A or 17B	Performance Pathway OR Prescriptive Pathway	10	4.0	1.0	1.0	The GBCA released a Guidance for Insutrial Projects in August 2020. Based on this 2 points could be targeted based on provision of spaces for fuel efficient and electric vehicles and 2 points for provision of End of Trip facilities. 1 point may be targeted through the provision of public transport. The project would need to be registered with the GBCA to obtain the Transport calculator to confirm compliance.
Total Number of Points			10	4.0	1.0	1.0	

Water							
Potable Water	18A or 18B	Performance Pathway OR Prescriptive Pathway	12	5.0	1.0	11.0	Low flow fixtures and fittings, xeriscape gardens, rainwater recycling for toilets and irrigation. 11 points would potentially need blackwater treatment.
Total Number of Points			12.0	5.0	1.0	11.0	

Materials							
Life Cycle Assesment	19A	Performance Pathway – Life Cycle Assessment (LCA)	7	6.0		1.5	Performance pathway will be followed to target 6 points. The reference project is targeted the prescriptive pathway for water reduction in concrete mixes and rediced mass of steel framing.
Responsible Building Materials	20.1	Structural and reinforcing Steel	1	1.0		1.0	Requires steel makers to have ISO 14001 accreditation and be a member of a member of the World Steel Association's (WSA) Climate Action Programme (CAP) or all reinforcing bar and mesh is produced using energy-reducing processed in its manufacture, and steel fabricators must be a current member of the ASI's Environmental Sustainability Charter Group.
	20.2	Timber Products	1	1.0		0.0	
	20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1.0		1.0	
Sustainable Products	21.0	Product Transparency and Sustainability	3	1.0	1.0	1.0	At least 1 point can be targeted if steel has environmental product declaration, e.g. from Infrasteel or Bluescope
Construction and Demolition Waste	22.0	Reporting Accuracy	-	To be targeted		Targeted	
	22A or 22B	Fixed Benchmark or Percentage Benchmark	1	1.0		1.0	90% of the construction and demolition waste to be diverted from the landfill. Point typically achieved.
Total Number of Points			25	11.0	1.0	5.5	

Land Use and Ecology							
Land Use and Ecology	23.0	Endangered, Threatened or Vulnerable Species	Required	To be targeted		Not targeted	
	23.1	Ecological Value	3	0.0		0.0	800m2 of native vegetation would be required to achieve one point.
Sustainable sites	24.0	Conditional Requirement	Required	To be targeted		Targeted	
	24.1	Reuse of Land	1	1.0		0.0	Land currently developed
	24.2	Contamination and Hazardous Materials	1	0.0	1.0	0.0	TBC if there are hazardous materials on site
Heat Island Effect	25.0	Heat Island Effect Reduction	1	0.0	0.0	0.0	Point generally hard to achieve. 75% of the site area needs to comply including car park areas.
Total Number of Points			6	1.0	1.0	0.0	

Credit Name		Points Available	Proposed pathway 5 stars	Points TBC	Targeted Points by Reference Project	Comments	
Emissions							
Stormwater	26.1	Stormwater Peak Discharge	1	1.0	0.0	Civil engineer to confirm if point can be targeted.	
	26.2	Stormwater Pollution Targets	1	1.0	0.0	Civil engineer to confirm if point can be targeted.	
Light Pollution	27.0	Light Pollution to Neighbouring Bodies	Required	To be targeted	Targeted		
	27.1	Light Pollution to Night Sky	1	1.0	1.0		
Microbial Control	28.0	Legionella Impacts from Cooling Systems	1	1.0	1.0	Credit to be targeted if air cooled systems only are selected.	
Refrigerant Impacts	29.0	Refrigerant Impacts	1	0.0	1.0	Point TBC when mechanical design and system selection is finalised.	
Total Number of Points		5	4.0	1.0	2.0		
Innovation							
Innovation	30A	Innovative technology or process			1.0	3.0	The reference project is targeting these points through the installation of an extensive PV array and electric truck charging infrastructure. Electric truck charging infrastructure point added in Auburn pathway.
	30B	Market transformation		2.0	2.0		Areas that will be investigated are: additional point for Stormwater, on site PVs (each of them is worth up to 2 points).
	30C	Improving on Green Star benchmarks	10	1.0	0.0	4.0	Ultra Low VOC paints (1 point) - Achievable with the paints available in the market. The reference project is targeting these points through ultra low VOC paints, air permeability testing, bike repair station and air bridge integration and automation.
	30D	Innovation Challenge		0.0	1.0	3.0	Financial Transparency Innovation challenge - costs related to Green Star will need to be disclosed. The reference project is targeting these points through Financial Transparency and Local Procurement of both services and materials.
	30E	Global Sustainability		0.0			
Total Number of Points		10	3.0	4.0	10.0		
Totals			60.0	16.0	70.5		