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<p>Environmentally Sustainable Development Report</p>
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Woolworths Group, Mixed-Use Development

923-935 Bourke Street, Waterloo

Sustainability Report

Project No.	P01387
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Authorised by:

Engineering Lab NSW Pty Ltd

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Sustainability

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We recognise the Traditional Custodians of the land on which the proposed development will be constructed. We respect their enduring cultural and spiritual connections to the land and waters, and celebrate their knowledge, kinship, and values. We acknowledge that these connections to the land and waters have existed for millennia and will continue into the future. We respect the Elders who have gone before, together with those of today for their guidance on our shared journey. We recognise that we are, and always will be, on Aboriginal land.

Executive Summary

This Sustainability Report has been prepared by E-Lab Consulting to accompany a Development Application (DA) for the Mixed-Use Development at the address of 923-935 Bourke Street, Waterloo. This report outlines the sustainability initiatives and benchmarks of the proposed development including the following:

- **Net Zero Operational Carbon ready** by 2035 in line with the NSW commitment to reduce fossil fuel dependence.
- **Renewable Energy Procurement** equivalent to Net Zero Emissions for all retail and office (base building) energy demands.
- **5.5 Star NABERS Energy** Commitment Agreement (+25%) for **Office** uses greater than 1000m² NLA
- **4.0 Star NABERS Water** for **Office** uses greater than 1000m² NLA
- Maximum energy use intensity (EUI) of 45kWh/yr/m² GFA for **Retail** uses (base building only).
- Reduction in potable water use of **20%** compared to a reference building for **Retail** (demonstrated using the Green Star potable water calculator)
- Maximum energy use intensity (EUI) of 45kWh/yr/m² GFA for **Supermarket**
- Reduction in potable water use of **20%** compared to a reference building for **Supermarket** (demonstrated using the Green Star potable water calculator)
- Compliance with increased BASIX Energy, Water and Thermal Comfort targets including;
 - **Energy 60%**
 - **Water 45%**
 - Thermal Comfort:
 - 7 Star NatHERS Average
 - 6 Star NatHERS Minimum
- Supermarket **Operational Waste Management Plan (OWMP)** which embeds circularity principles into practice and demonstrates alignment with NSW government targets for waste reduction.
- Commits to attaining a Green Star Buildings rating with Exceptional Performance met for Credit 4 (or equivalent) for the **Supermarket**
- Embedding a range of sustainability initiatives across the development including:
 - On-site **renewable energy generation** through rooftop solar photovoltaics (PV)
 - Appropriately sized and **high efficiency centralised building services** including domestic hot water and mechanical HVAC
 - **Passive design principles** and features such as shading and a high-performance building fabric to balance daylight access and thermal exchange.
 - Use of materials which demonstrate a **lower environmental impact** and minimising the overconsumption and wastage of resources through construction and demolition.
 - Implementing **mitigation and resilience** strategies in response to climate change and the urban heat island effect.
 - High-quality indoor environments for building occupants including access to natural light and optimized acoustic comfort
 - Provisions for low-emission transportation alternatives including Electric Vehicle charging infrastructure to satisfy Annexure B of the VPA.
 - Capabilities for connection to a recycled water network for all toilets, washing machines, car washing, cooling towers and irrigation to reduce potable water demand.
 - Use of WSUD principles to mitigate impacts on local waterways and stormwater infrastructure.

1 Introduction

1.1 Purpose

This report supports an Integrated Development Application (DA) for the construction of a mixed-use development at 923 – 935 Bourke Street, Waterloo (the site). This DA is submitted to the City of Sydney (Council) and seeks approval for the demolition of all existing on-site structures, site remediation and the construction of a mixed-use development accommodating a subterranean supermarket with retail, commercial and residential land uses above ground. The proponent for the DA is Woolworths Group (Fabcot Pty Ltd).

The proposal aims to:

- Deliver a diverse housing supply including affordable housing and mix of non-residential uses within a desirable location, close to existing transport options, employment centres and amenities.
- Make a substantial contribution to achieving the recent National Housing Accord targets of 18,900 for City of Sydney by 2029.
- Increase convenience and amenity for the local Waterloo community, through the provision of a full-line supermarket and additional retail tenancies for shopping and dining.
- Provide additional commercial office space in Waterloo to facilitate increased economic growth and employment opportunities
- Provide a high-quality built form outcome accompanied by significant public benefits including a new public plaza, public domain upgrades to Bourke, Young and McEvoy Streets and through-site pedestrian links and active frontages.
- Incorporate substantial environmental measures and initiatives as agreed in the Voluntary Planning Agreement.

1.2 Background

Fabcot seeks to redevelop the site for a new mixed-use development that includes a full-line Woolworths supermarket, together with Direct-to-Boot pick up facility, specialty retail, new commercial office space and residential dwellings including dedicated affordable housing provided in perpetuity.

1.2.1 Planning Proposal

The City of Sydney Council prepared a Planning Proposal for the site in response to a request from Fabcot for amendments to the Sydney Local Environmental Plan 2012 (Sydney LEP 2012) and associated amendments to the Sydney Development Control Plan 2012 (Sydney DCP 2012).

The Planning Proposal received gateway determination on 20 January 2023 and was publicly exhibited from 12 April 2023 to 25 May 2023. On 22 March 2024 the Planning Proposal (Amendment 86) was formally gazetted as Clause 7.35 in the Sydney LEP 2012.

1.2.2 Design Alternatives Competition

Between 11 March and 1 May 2024, a Design Alternatives Competition was held for the site. Bates Smart was selected as the Winning Scheme and the Design Alternatives Competition Report will be finalised along the DA submission. As the proposal will be considered major development and has an estimated development cost of over \$30 million, the DA will be submitted to the City of Sydney and determined by the Central Sydney Planning Committee (CSPC).

1.3 Site Description

The site is located at 923 – 935 Bourke Street, Waterloo within the City of Sydney Local Government Area. The Site is located approximately 3.5km South of Sydney's Central Business District (CBD) and 1.3km Southwest of Moore Park. The Site is proximate to a number of key public transport links including Redfern Train Station (1.4km Northwest), ES Marks Light Rail Stop (1.4km Southeast), the Waterloo Metro Station (900m Northwest), with direct Bus service at the Bourke Street at McEvoy Street stand.

The site is legally described as SP22322 and lies between Young Street and Bourke Street, bookended by McEvoy Street situated in the south-east section of Waterloo. The site's area is approximately 6,534m². Existing uses on site comprise 3 low-rise strata-titled warehouse-type tenancies. The western boundary fronts Young Street, the northern boundary fronts McEvoy Street and the eastern boundary fronts Bourke Street.

There are multiple vehicular access points that exist on site, all of which are located along the Young Street frontage. Pedestrian access is also achieved along Young Street as well as the north-eastern juncture of the site at McEvoy Street and Bourke Street. A site aerial is shown in figure 1 below.



 The Site  Bus Stop

 NOT TO SCALE

Figure 1 Site Aerial Source: Nearmap, Ethos Urban

1.3.1 Overview of Proposed Development

This DA seeks approval for the demolition of all existing on-site structures and the construction of a mixed-use development accommodating a subterranean Woolworths supermarket with retail, commercial and residential land uses above ground. The ground plane is to provide through site links, footpath widening and public domain upgrades, and retail offerings with active street frontages to McEvoy Street and Bourke Street. Specifically, the development will comprise:

- Site preparation works including demolition of the existing structures, handstand and earthworks.
- Construction of a mixed use multi-storey building comprising:
 - 110 residential apartments, with a mix of dwelling types including affordable housing apartments
 - Commercial office and retail floor area
 - Direct-to-boot facilities, loading dock, ancillary storage, mezzanine and building plant.
- Construction of a 2-level basement for resident, staff and visitor use, incorporating car spaces, EV charging facilities, motorbike parking, bicycle parking, building services and storage.
- Publicly accessible areas and landscaping works, including:
 - A new public plaza and through site pedestrian links connecting Bourke Street to Young Street and McEvoy Street (at northern end of site);
 - A new through site pedestrian link connecting Bourke Street to Young Street (at southern end of the site);
 - Upgrades to footpaths along the street frontages to the site; and
 - Plantings and landscaping works.
- Substantial environmental measures and initiatives as agreed in the Voluntary Planning Agreement.

Refer to the Statement of Environmental Effects for a detailed description of the proposed development.

2 Governing ESD Frameworks & Policy

The development's guiding principles and overall performance has been designed in line with the following general requirements and documents:

- NSW Environmental Planning and Assessment (EPA) Regulation 2021
- National Construction Code (NCC) 2022 Volume 1, Section J
- State Environmental Planning Policy (SEPP), Sustainable Buildings, 2022
- NSW Department of Planning, Industry and Environment (DPIE), Net Zero Plan 2020-2030.
- City of Sydney Development Control Plan, 2012.
- City of Sydney Voluntary Planning Agreement – Reference: S153631

2.1 NSW EPA Regulation 2021

The principles of Ecologically Sustainable Development to which the development should generally adhere to are defined within Part 8, Division 5, clause 193 of the NSW EPA Regulation 2021 as.

(2) **The Precautionary Principle** is that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

(3) In applying the **precautionary principle**, public and private decisions should be guided by—

- (a) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and
- (b) an assessment of the risk-weighted consequences of various options.

Development Response: The project will employ relevant environmental protection measures and risk assessments to ensure no irreversible environmental harm is acted as a result of the construction or operation of the development.

(4) **Inter-generational Equity** is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.

Project Response: The project will ensure no irreversible environmental harm is acted as a result of the construction or operation of the development. The design team will address key elements such as energy, potable water and material use to do all which is within the project's control to ensure future generations have equal opportunity and access to the environment.

(5) **Conservation of Biological Diversity and Ecological Integrity** is that the conservation of biological diversity and ecological integrity should be a fundamental consideration.

Project Response: The site can be considered to have low-ecological value and biodiversity significance as it is already developed and within an urban area. In response to this, the project is committed to significant tree retention for existing mature trees around the perimeter of the site and to planting a high proportion of native vegetation to improve site ecology and managing stormwater runoff from the site to minimise onset impacts. The development intends to improve on the existing biological diversity and ecological integrity of the site.

(6) **Improved Valuation, Pricing and Incentive Mechanisms** is that environmental factors should be included in the valuation of assets and services, such as—

- (a) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,
- (b) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,
- (c) established environmental goals should be pursued in the most cost-effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.



Project Response: The project is committed to achieving a high construction waste diversion target of 90% from landfill as well as developed specific project waste management strategies. The project shall ensure the full life cycle impacts of goods and services employed throughout the project have been considered. Further, it will be designed to minimise operational energy and water consumption.

2.2 National Construction Code (NCC), 2022, Volume One, Section J (Energy Efficiency)

The development will ensure the energy use of proposed building adheres to the relevant minimum performance requirements as set out within Section J of the NCC, 2022. The development will manage energy use whilst maintaining a high degree of human comfort through the use of high-performance thermal fabric elements and efficient building service equipment. Refer to Section 3.8 for further details.

2.3 State Environmental Planning Policy (SEPP), Sustainable Buildings, 2022

Residential Development components of the project must adhere to Schedule 1 and Schedule 2 of the SEPP through demonstrating compliance with energy, thermal comfort, water and embodied emissions (materials index) reporting using the current NSW BASIX tool. Refer to the BASIX report for further detail.

Non-Residential Development components of the project must demonstrate design considerations which enable or integrate the following;

- (a) *Minimisation of waste from associated demolition and construction, including by the choice and reuse of building materials,*
- (b) *Reduction in peak demand for electricity, including through the use of energy efficient technology,*
- (c) *Reduction in the reliance on artificial lighting and mechanical heating and cooling through passive design,*
- (d) *Generation and storage of renewable energy,*
- (e) *Metering and monitoring of energy consumption,*
- (f) *Minimisation of the consumption of potable water.*

Quantification of the embodied emissions attributable to the development using the NABERS tool disclosed at development application and construction certificate stages.

In addition to the above, Large Commercial Development (offices > 1000m² NLA or hotel/motels >100 rooms) components of the project must demonstrate design considerations which enable or integrate the following;

- Minimises the use of on-site fossil fuels, as part of the goal of achieving net zero emissions in New South Wales by 2050.
- Capable of achieving the standards for energy and water use specified in Schedule 3.
- Capable of achieving a standard specified in Schedule 3 if there is a NABERS commitment agreement in place to achieve the standard.

Schedule 3:

1) *Energy use*

- (1) *The standard for energy use for development for the purposes of prescribed office premises is a **5.5-star NABERS energy** rating.*

2) *Water use*

*The standard for water use for large commercial development is a **3-star NABERS water** rating.*

Project Response: Compliance will be met for the residential portion of the development in line with the SEPP requirements, refer to the BASIX report prepared as part of this DA for further detail.

As the total proposed commercial office area is larger than 1000sqm NLA a NABERS Agreement to Rate (AR00064) for Energy and Water has been lodged demonstrating commitment to achieving these performance requirements.

2.4 NSW Department of Planning, Industry and Environment (DPIE), Net Zero Plan 2020-2030.

The development will be constructed and operated to contribute towards the net zero priorities as outlined within the DPIE, Net Zero Plan 2020-2030. This will be achieved through the prioritization of energy efficiency and on-site renewable energy generation capacity. The development is actively aiming to adhere to the Government's goal of net zero emissions by 2050 through a range of strategies discussed in following sections of this report.

The approach to minimising greenhouse gas emissions should always follow a reduction first – outcomes-based approach to decarbonisation which in turn will provide an approach to net zero emissions. This approach generally involves:

- **Avoid:** Identify carbon intensive activities and sources that can be avoided or eliminated from the development.
- **Reduce:** Reduce the carbon intensity of activities and sources through improved technology or process.
- **Transition:** Transition to renewable electricity.

In support of this, the development has in place a Net Zero transition strategy which outlines the required retrofit and offset works required to achieve full electrification and enable Net Zero emissions by 2035

2.5 City of Sydney Development Control Plan, 2012. Section 3 – General Provisions

The relevant driving objectives and provisions as outlined within the City of Sydney DCP are as follows.

Section 3.6.1) Energy efficiency in non-residential developments

Provisions:

- (1) The energy performance standard for a prescribed **shopping centre** shall be:
Maximum energy use intensity 55kWh/yr/m² GFA **or** 4-star NABERS Energy Commitment Agreement **or** certified Green Star Buildings rating achieving the 'minimum expectation' in Credit 22: Energy Use, **or** equivalent

Section 3.6.2) Water efficiency in non-residential developments

Provisions:

- (1) All new water fittings and fixtures are to be the highest Water Efficiency Labelling Scheme (WELS) star rating available at the time of development.
- (2) Installation of a rainwater collection and storage system plumbed to appropriate end-uses.
- (3) Connection to a dual reticulation system (purple pipe and the like) should be allowed for where possible to non-potable uses such as toilet flushing, car washing, irrigation, etc.
- (4) Irrigation water supply should be from a reclaimed/recycled non-potable source
- (5) Separate water meter for major uses such as cooling towers, swimming pools & irrigation.

Section 3.6.5) Materials and building components

Provisions:

- (1) *Paints and floor coverings with low levels of volatile organic compounds (VOC) and low formaldehyde wood products are to be used where possible.*
- (2) *Where possible, use building materials, fittings and finishes that:*
 - a. *have been recycled;*
 - b. *are made from or incorporate recycled materials; and*



- c. have been certified as sustainable or 'environmentally friendly' by a recognised third party certification scheme.*
- (3) Design building components, including the structural framing, roofing and facade cladding for longevity, adaptation, disassembly, re-use and recycling*
- (4) Reduce the amount of materials used in the construction of a building wherever possible. Examples of potential methods include:*
 - a. exposing structures to reduce the use of floor, ceiling and wall cladding and finishes;*
 - b. naturally ventilating buildings to reduce ductwork;*
 - c. providing waterless urinals to reduce piping and water use;*
 - d. using prefabricated components for internal fit outs; and*
 - e. providing only one bathroom for every two bedrooms in residential developments.*

2.6 City of Sydney Development Control Plan, 2012. Section 6 – Specific Sites; 6.3.27 923-935 Bourke Street, Waterloo.

Section 6.3.27.8) Sustainable transport and infrastructure

Objectives:

- a) Encourage alternatives to private motor vehicle use and support sustainable transport, such as public transport, walking or cycling.

Provisions:

- 1) Provide end of trip and bicycle parking facilities on-site that are weather protected and secure for employees, visitors and other users of any retail and commercial development. Facilities are not to be located on through-site link land and footpath widening areas.

Section 6.3.27.10) Ecologically sustainable development and green infrastructure

Provisions:

- 1) Incorporate passive design measures
- 2) Capable of achieving net zero emissions via demonstration of;
 - i. A maximum energy use intensity (EUI) of 45kWh/yr/m² of GFA for **retail** uses
 - ii. A 5.5 Star NABERS Energy Commitment Agreement (+25%) for **office** uses over 1000sqm NLA.
 - iii. All energy must be procured from a renewable energy source for all **retail** and **office** uses equivalent to net zero emissions. Sources may be a combination of on and off site. Off-site procurement of renewable energy must be demonstrated by a GreenPower (or equivalent) power purchase agreement for a period of at least 5 years.
- 3) Sufficient sub-metering
- 4) Low GWP refrigerants
- 5) Capable of achieving a 3.5 Star NABERS Water rating for **retail** uses
- 6) Capable of achieving a 4 Star NABERS Water rating for **office** uses over 1000sqm NLA.
- 7) Sufficient provision of electric vehicle charging infrastructure. EV chargers are required to be individually metered and supplied by renewable energy through a GreenPower (or equivalent) power purchase agreement for a period of at least 5 years.
- 8) Where there is a commitment to provide a recycled water network, all buildings are to be constructed to be capable of providing a dual reticulation water system for water services and be capable of fully connecting to a non-potable recycled water network and configured to supply all toilets, washing machine taps, car wash bays, cooling towers and irrigation usage.

Section 6.3.27.11) Circular economy and waste management

Provisions:

- 1) Demonstrate best practice site-wide resource recovery for operational waste and recycling systems.
- 2) **Supermarket** development is to submit an operational waste management plan (OWMP) that, at minimum:
 - (a) Establishes targets that match or exceed the NSW government targets, including:
 - (i) more than 50% recovery of food organics;
 - (ii) 80% resource recovery rate from all waste streams; and
 - (iii) Australia's 2025 National Packaging Targets.
 - (b) Specifies design and operational measures required to meet targets.
 - (c) Commits to attaining Green Star Performance with "exceptional performance" under Responsible Resource Management.
 - (d) Specifies how the development embeds core circular economy principles, including:
 - (i) designing out waste and pollution;
 - (ii) keeping products and materials in use; and
 - (iii) regenerating natural systems.
 - (e) Specifies strategies and actions to encourage public recycling for 'return and earn' containers and small household problem waste such as batteries, light bulbs, mobile phones and small electronics.

Project Response: Compliance with the requirements of the DCP met or exceeded via the VPA as demonstrated in the following section.

2.7 City of Sydney Voluntary Planning Agreement – Reference: S153631

The following table outlines the requirements as prescribed in the respective site-specific Voluntary Planning Agreement (VPA), Annexure C.

Item	Requirement	Project Response
Pre-Development Consent	1.1 (a) The Development is designed and constructed to reduce the need for active heating and cooling by incorporating passive design measures including design, location and thermal properties of glazing, natural ventilation, appropriate use of thermal mass and external shading, including vegetation;	Passive design measures have been implemented to contribute towards overall energy performance targets. For further detail refer to section 3.1
	1.1 (b) Residential uses in the Development are designed and constructed to achieve BASIX compliance plus 5 points, being an achievement of energy (40) and water (45) based on assessment using the BASIX Online Tool v3.0 and BASIX Thermal Comfort Protocol dated 27 November 2020;	Deemed compliant using latest BASIX assessment tool, refer to section 3.7 and the BASIX report prepared as part of this DA submission.
	1.1 (c) Commercial and retail premises must be capable of achieving a 4-star NABERS water rating;	A NABERS Agreement to Rate has been lodged (Ref #: AR00064) for the Commercial Office Base Building for Energy and Water. As at the time of preparing for this DA submission there is no eligible NABERS Water rating tool specific for retail tenancies. In response to this and to demonstrate the developments



		<p>commitment to delivering a sustainable outcome and reduce potable water demand, a target of a 20% reduction in potable water consumption compared to a reference case has been set, to be demonstrated using the Green Star potable Water calculator.</p> <p>Best practice water saving initiatives which will support the development in achieving these performance requirements are further detailed in section 3.2</p>
1.1 (d)	All plant and equipment in the Development uses natural refrigerants with a low global warming potential, where suitable systems are available;	Refer to the services engineer documentation and section 3.6 for further detail.
1.1 (e)	In all multi-tenant or strata-subdivided areas of the Development, electricity sub-metering for lighting, air-conditioning and power is provided within each tenancy or strata unit;	Refer to the services engineer documentation and section 3.1 for further detail.
1.1 (f)	Electricity sub-metering is provided in the Development for significant end uses that will consume more than 10,000 kWh/annum;	Refer to the services engineer documentation and section 3.1 for further detail.
1.1 (g)	The Development incorporates onsite rainwater capture and re-use for non-potable purposes, with all buildings capable of providing a dual reticulation water system for water services and connecting to a non-potable recycled water network configured to supply all toilets, washing machine taps, car wash bays, cooling towers and irrigation usages;	<p>Rainwater reuse for non-potable purposes will be incorporated subject to further detailed design stages.</p> <p>Refer to the services engineer documentation and section 3.2 for further detail.</p>
1.1 (h)	The Development demonstrates best practice site-wide resource recovery for operational waste and recycling systems.	<p>Sufficient allocation of dedicated waste area has been catered to enable effective source separation.</p> <p>Refer to the Architectural documentation and section 3.4 for further detail.</p>
1.2	The Developer and Landowner must demonstrate in the Development Application how the sustainability commitments set out in section 1.1, above, have or will be achieved, including referencing all design, performance and features in the 'City of Sydney Design and Environmental Performance Template' submitted with the Development Application.	Submitted as part of this DA.
Pre-Construction Certificate	<p>2.1 (a) Supermarkets must establish targets that match or exceed the targets set out in the NSW Waste and Sustainable Materials Strategy 2042 administered by the NSW Department of Planning and Environment, including:</p> <p>(i) more than 50% recovery of food organics.</p>	A dedicated Operational Waste Management Plan (OWMP) which aligns with the required national resource recovery targets shall be prepared and signed-off by a suitably qualified professional. See section 3.4 for additional detail.

	<p>(ii) 80% resource recovery rate from all waste streams; and</p> <p>(iii) Australia's 2025 National Packaging Targets</p>	
2.1 (b)	Supermarkets must specify design and operational measures required to meet those targets;	As above. The OWMP shall be developed in line with the supermarket design and operational planning.
2.1 (c)	Supermarkets must commit to attaining a Green Star Buildings rating with 'exceptional performance' in credit 4: responsible resource management (or equivalent)	<p>A Green Star Buildings (or most applicable tool) pathway tailored to the supermarket shall be developed and coordinated with the design team prior to construction. Noting that under the latest Green Star Buildings rating tool, Credit 4; Responsible Recourse Management is a minimum expectation and does not offer an exceptional performance credit option.</p> <p>The project shall also be registered with the GBCA (pending eligibility) in order to attain a certified rating.</p>
2.1 (d)	<p>Supermarkets must specify how it embeds core circular economy principles, Including:</p> <p>(i) designing out waste and pollution;</p> <p>(ii) keeping products and materials in use; and</p> <p>(iii) regenerating natural systems;</p>	<p>The OWMP and Green Star rating shall extend to include and reward circularity initiatives where applicable.</p> <p>During detailed design stages a suitably qualified professional shall be engaged to provide guidance on circular opportunities across the development in construction and operation.</p>
2.1 (e)	Supermarkets must specify strategies and actions to encourage public recycle for 'return and earn' containers and small household problem waste such as batteries, light bulbs, mobile phones, and small electronics.	As above.
2.2	The Developer and Landowner must provide the operational waste management plans that comply with the requirements of section 2.1 above to the City for review and approval	Compliance shall be demonstrated prior to Construction Certificate
2.3	The Developer and Landowner must amend the operational waste management plans where required by the City, as part of the review and approval process	As above.
2.4	The Developer and Landowner must identify all sub-meter locations, to meet the requirements set out in sections 1.1(e) and 1.1(f) above, on the plans submitted with the Construction Certificate	As above.



<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Pre-Occupation Certificate</p> <p>3.1 (a)</p> <p>For retail uses (base building only), either:</p> <p>(i) minimum 5 Star NABERS Energy Commitment Agreement; or</p> <p>(ii) certified Green Star Buildings rating with 'exceptional performance' in credit 22: energy use (or equivalent); or</p> <p>(iii) a maximum of 45 kWh/yr/m² of GFA</p> <p>and</p> <p>(iv) renewable energy procurement equivalent to <u>Net Zero Emissions</u>.</p>	<p>The following targets have been set to demonstrate best practice energy management and performance:</p> <ul style="list-style-type: none"> ▪ Net Zero Operational Carbon ready by 2035 in line with the NSW commitment to reduce fossil fuel dependence. ▪ Renewable Energy Procurement equivalent to Net Zero Emissions for all retail and office (base building) energy demands. ▪ Maximum energy use intensity (EUI) of 45kWh/yr/m² GFA for Retail uses (base building only). ▪ Maximum energy use intensity (EUI) of 45kWh/yr/m² GFA for Supermarket (base building only). <p>Refer to section 3.1 for further detail.</p>
<p>3.1(b)</p> <p>For office uses over 1,000 square metres net lettable area (base building only), either:</p> <p>(i) minimum 5. 5 Star NABERS Energy Commitment Agreement + 25%; or</p> <p>(ii) certified Green Star Buildings rating with 'exceptional performance' in credit 22: energy use (or equivalent); or</p> <p>(iii) a maximum of 45 kWh/yr/m² of GFA;</p> <p>and</p> <p>(iv) renewable energy procurement equivalent to <u>Net Zero Emissions</u>.</p>	<p>The following targets have been set to demonstrate best practice energy management and performance:</p> <ul style="list-style-type: none"> ▪ Net Zero Operational Carbon ready by 2035 in line with the NSW commitment to reduce fossil fuel dependence. ▪ Renewable Energy Procurement equivalent to Net Zero Emissions for all retail and office (base building) energy demands. ▪ 5.5 Star NABERS Energy Commitment Agreement (+25%) for Office uses greater than 1000m² NLA ▪ A NABERS Agreement to Rate has been lodged (Ref #: AR00064) for the Commercial Office Base Building for Energy and Water <p>Refer to section 3.1 for further detail.</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Post-Occupation Certificate</p> <p>4.1 (a)</p> <p>The Developer and Landowner must provide evidence to the City of the achievement of the Net Zero Emissions requirements, including:</p> <p>Where a NABERS certification was proposed:</p> <p>(i) evidence that the NABERS rating has been achieved;</p> <p>(ii) a copy of the Energy Efficient Review; and</p>	<p>A NABERS Agreement to Rate has been lodged (Ref #: AR00064) for the Commercial Office Base Building for Energy and Water.</p> <p>Post Occupation data shall be provided demonstrating alignment of the performance requirements.</p>

	(iii) a copy of 12 months of sub-metering data for energy and water that informed the NABERS rating;	
4.1 (b)	Where a Green Star Buildings rating was proposed, evidence that the Green Star Buildings rating has been achieved;	To be provided.
4.1 (c)	Where a maximum of 45 kWh/yr/m2 of GFA was proposed, consumption data that demonstrates that the usage level was not exceeded; and	Post Occupation data shall be provided demonstrating alignment of the performance requirements.
4.1 (d)	Documentation to confirm the renewable energy procurement requirement	To be provided.
4.2	The Developer and Landowner must provide evidence to the City of the achievement of 4-star NABERS water rating for the commercial and retail premises by way of a third-party verification statement.	<p>A NABERS Agreement to Rate has been lodged (Ref #: AR00064) for the Commercial Office Base Building for Energy and Water.</p> <p>Post Occupation data shall be provided demonstrating alignment of the performance requirements.</p>

3 Sustainable Design Initiatives

The only path to a low carbon economy and achieving a “2°C world” where the average global temperature is kept to less than 2°C above pre-industrial levels is through comprehensive and complete consideration of how the development consumes resources. The proposed strategy focusses on energy, water, and materiality to ensure resource use is appropriate.

3.1 Energy & Greenhouse Gas Emissions

The energy efficiency strategy generally follows the energy efficiency hierarchy strategy in figure 3 below. The development will prioritize in the first instance to reduce the demand for energy consumption through the optimization and sizing of active systems in tandem with implementing passive design principles. The use of energy can then be made more efficient through integrating efficiencies into high demand systems such as heating, cooling, hot water, ventilation, lighting and other appropriate building services.

Once the development has reduced the demand of energy-consuming elements as much as feasible and introduced efficiency measures, renewable energy sources (both on and off site) shall be considered to supply the development with the required remaining energy. Considering spatial limitations on the roof levels, solar photovoltaics will be sized to maximize on-site renewable energy generation potential. Only after all the above major steps have been completed should offsets be investigated to close the gap in order to achieve operational carbon neutrality.

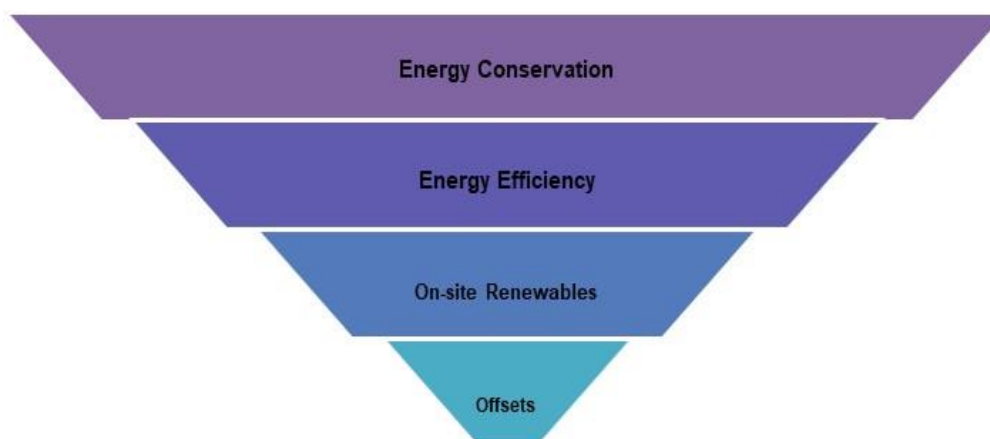
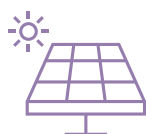


Figure 2: Energy Hierarchy

To achieve the above, the following initiatives are being sought to be implemented:



Renewable Energy – Exposed roof area across site provides an excellent opportunity for the installation of a solar photovoltaic system(s). An appropriately sized system will allow the development to generate renewable electricity to offset demand and minimise stress on the grid. PV will be installed at a rate that maximises the coverage of the non-trafficable roof area. The detail of the system size will be confirmed during subsequent stages of design and coordinated with the services strategy.



Net Zero Transition Plan – The development has been designed to become fully electrified to enable operational net zero through the procurement of renewable electricity after remedial electrification works have been undertaken. Currently, a small allowance for gas has been proposed for use within retail kitchens.



Efficient Lighting Systems – High efficiency LED lighting throughout, including common areas with efficiency controls. Controls will include motion and daylight sensors, timers and zoned switching which will help reduce the unnecessary consumption of energy. Lighting power density should be designed to at least 10% below that required by Section J of the NCC.



Controls, Energy Metering and Monitoring – Energy meters and monitoring systems will be provided to comply with NCC 2022 Section J Part J8 and NABERS sub-metering and validation requirements. The extent of sub-metering should be for lighting, HVAC and power for each distinct tenancy. The automated control of applicable centralised systems will assist to further reduce unnecessary energy consumption and allow energy demands to be better managed across the development.



Passive Design – The balance between daylight access and thermal exchange will be a priority of the design team to ensure occupant comfort and energy performance is maximized. Building massing, form, orientation, shading analysis and high-performance building fabric elements should all be considered to achieve the required energy performance targets. Proper sealing of the envelope through construction practices and verification will also be considered to ensure undesirable energy flows are minimized.



Hot Water – Hot water will be provided by energy efficient heat pump systems and individual instantaneous three phase units. Both systems are highly efficient which will allow users to reduce their energy consumption. Showers and taps with a high WELS rating should be used to reduce water demand from hot water fixtures across the development.



Appliances & Equipment – Appliances and centralised equipment will be selected with a high energy efficiency/performance to ensure reduced energy consumption.



Low emission Transportation – To encourage low-emission transport alternatives bicycle parking and ancillary end-of-trip facilities shall be provided in a highly convenient location. Pedestrian access to nearby public transport networks such as bus and rail will be maximised. Sufficient Electric Vehicle (EV) charging infrastructure shall be provided to satisfy Annexure B of the VPA.

3.2 Water

To achieve responsible water consumption and water sensitive urban design, best practice water-saving initiatives will need to be implemented across the project.

The following initiatives will be explored to achieve the potable water targets:

Sanitary Fixtures – By implementing low-flow water fixtures, the consumption will be significantly reduced. All sanitary fixtures are to be provided with the highest Water Efficiency Labelling Scheme (WELS) star rating available as per Section 3.6.2 (1) of the DCP and to support the required performance targets.



Landscape Irrigation – Efficient irrigation systems will be implemented, including sub-surface drip systems, moisture sensors, and the prioritization of native plants. Native plants have evolved to thrive in the Australian environment and are typically more resilient than their exotic counterparts, they typically require less water and are more likely to survive the predicted increase in extreme drought conditions due to climate change. Native vegetation also stores a significant amount of carbon, further helping to mitigate the effects of climate change.



Rainwater – The development will supply irrigation demand from an on-site rainwater tank (sizing to be refined during detailed design stages). Rainwater will be captured from roof areas across the development to reduce reliance on mains water for reasonable non-potable applications such as irrigation.





Recycled Water – The development is capable of providing dual reticulation water system for connection to a recycled water supply network (purple pipe) to all toilets, washing machine taps, car wash bays, cooling towers and irrigation usages.



WSUD & Stormwater Management – An integrated stormwater strategy will be developed for the site considering the impacts of future flood predictions under climate projections and in-line with council planning requirements. Stormwater quality (pollutant loading) and volume discharged from site will be a key consideration in future design stages to ensure the development has minimal environmental impact on local waterways, council infrastructure and ecology compared to the pre-development baseline.



3.3 Climate Resilience & Urban Heat Island

Resiliency planning with respect to science-based climate projections is a crucial tool in decision making for any proposed development to ensure the investment in social and community infrastructure is secure and assets can operate effectively for years to come. The proposed development should undertake a risk assessment of the potential impacts of climate change (such as flooding, drought, extended periods of high temperature, rising utility infrastructure costs etc.) and include design response which specifically address identified risks deemed to be of high or extreme significance. Design responses should include; HVAC sizing and substation load allowance to accommodate anticipated extreme weather events, ample stormwater drainage and flood management systems to minimize localised flooding which may cause failure of critical systems/infrastructure and access/egress of site, operable facades and access to ventilation for occupied spaces in the event of a blackout. Undertaking a climate risk assessment during early design stages will improve the development's ability to respond to the threats imposed by climate change and improve operational resiliency whilst also addressing the requirements for the EPA such as Inter-generational Equity and the Precautionary Principle.

The Urban Heat Island Effect must also be addressed to reduce the excessive retention of solar heat within and around external environments. General provisions such as site greening through on-grade canopy cover and rooftop landscaping, high solar reflectance finishes, precinct reflectivity studies, passive shading and solar photovoltaic systems shall all be prioritized across the development to reduce the impact of the effect and associated localised increases in air temperature.

Currently, the site is identified as experiencing a high level of urban heat island impact compared to its surroundings. The figure below shows that the site experiences temperatures in excess of **5.97°C** above the local baseline surface air temperatures due to the urban heat island effect. It is therefore critical that mitigation strategies such as those proposed above be in place across the development.



Figure 3: Urban Heat Island Effect, SEED Database.

3.4 Resources & Materials

In line with the principals of sustainability outlined above, the project shall have a significant focus on the life cycle impacts of material use and responsible procurement. At a high level and subject to further design stages, the use of materials for the development will consider:

Waste Management – A target of 90% of construction and demolition waste is to be diverted from landfill. This diverts and ensures reuse or recycling of a high portion of site waste.

Integration of an Operational Waste Management Plan (OWMP) for each of site users (with overlap where appropriate) to ensure waste will be appropriately sorted, separated, and recycled and best practice site-wide waste management is employed. A specific OWMP must be developed for the **supermarket** which outlines specific measures to meet or exceed the resource recovery targets established in section 2.1 of the VPA and in support of section 6.3.27.11 of the DCP.

This will assist ongoing diversion from landfill for the development. Inclusion of sufficient bins and appropriate separation systems to ensure waste is minimised and effective recycling is enabled.



Circularity – Circularity refers to ‘closing the loop’ of systems and challenging linear approaches to recognise the impacts and opportunities present to increase usability and minimise waste or products and materials. Consideration of the full life cycle of components procured for the proposed development should become a key underlying principle for how all construction materials and products are sourced, used and managed at end of use. The preparation of a robust decommissioning strategy/disassembly guide should be considered for the development, highlighting opportunities for localised reuse and recycling.



During the operation of the development, circular practices shall be enabled via the provision of a recycling station(s) for otherwise difficult household waste items such as e-waste. .

Sustainable Certifications & Credentials – Products and materials selected for the project should hold third-party verified environmental declarations (or equivalent certification) to allow for life cycle reporting and quantification of embodied impacts. Products with high recycled content, opportunities for re-use and low embodied emissions will support the sustainable delivery of the development.



Materials such as steel and concrete which inherently have higher embodied carbon, and environmental impact should be the main priority for the development to considerably reduce total impact. Substitutions such as fly-ash and blast-furnace slag should be considered to reduce the embodied carbon of concrete.

Low VOC and Low Formaldehyde Materials – Ensuring paints, adhesives, sealants, floor coverings, carpets and engineered wood are selected appropriately to provide a healthier indoor environment.



FSC/PeFC Timber – All timber, including virgin and engineered timber used during construction (i.e. formwork) and as part of finished elements shall be sourced from certified sustainable forestry or reused. This ensures the timber provided to site is of the highest standard and sourced from renewable suppliers.



3.5 Comfort & Quality

To ensure the best quality for users and visitors inside the space, the following key initiatives will be sought to be provided;

- **Acoustic Excellence** – Deliberate material selection, acoustic attenuation and designing the shape of the building and openings accordingly to achieve acoustic comfort. Sufficient acoustic separation of spaces ensuring acoustic privacy between tenancies.
- **Thermal Comfort** – Appropriate mix of vernacular design, overhangs, high-performance windows, and mechanical systems to deliver the users optimised thermal



- **Lighting Comfort** – Use of high colour rendering index (CRI > 85) LED lighting. Low-glare lighting with baffles or louvres to limit UGR.
- **Landscaping** – Greenery through natural planting throughout assists in a connection to nature for occupants. It also has a cooling effect, reducing the Urban Heat Island Burden on the project.

3.6 Management & Society

To provide a socially responsible outcome that provides the maximum benefit to both the users and the local area, the following response has been completed:

- **Head Contractor to follow strict sustainability protocols** – As a minimum contract requirement, the head contractor will be required to meet ISO14001 and have a project-specific EMP and EMS in place. This will be maintained throughout the job to ensure the lowest impact to the Environment is achieved and highest quality for the community and workers.
- **Low GWP & ODP Refrigerants** – All refrigerants required across the development must be of low global warming potential (GWP) and ozone depleting potential (ODP). A refrigerant leakage detection system should also be investigated to further minimise the potential emission of harmful chemicals into the environment.
- **Low Levels of Light Pollution** – All external lights are pointed downwards, or designed to strike a hard surface (i.e., awning or wall). This limits light spill into the night sky, assisting with bird migratory patterns and wasted energy

3.7 BASIX Commitments (Residential)

BASIX is a legislative requirement for all residential dwelling types within NSW. It sets water and greenhouse gas reduction targets relative to the NSW average benchmark for per person potable water consumption & greenhouse gas emissions within the residential sector. BASIX also sets the minimum performance levels for thermal comfort (through NatHERS modelling) of each dwelling.

This proposal will achieve the following BASIX targets, through the initiatives detailed in Sections 2.1 & 2.2.

The residential components of the development must adhere to the following Energy, Water & Thermal Comfort targets;

- **Energy 60%**
- **Water 45%**
- Thermal Comfort:
 - **7 Star NatHERS Average**
 - **6 Star NatHERS Minimum**

Additionally, as of October 2023, BASIX requires developments to quantify and report on the embodied emissions of associated materials and construction typologies used.

Refer to the BASIX report and certificate prepared as part of this development application for further detail.

3.8 NCC Section J (2022) Part J4, Building Fabric - (Non-Residential)

A preliminary Section J, Part J4 review has been undertaken for the development to indicate the Deemed-to-Satisfy (DtS) performance requirements of the thermal envelope including glazing units, external and internal walls and spandrel panels which make up the defined thermal envelope.

Element	DtS Performance*
Exposed Roofs/Ceiling Construction (Exposed to Outside Air or Unconditioned Spaces - Heat Flow Downward)	R3.7
Concrete Slab on Ground or suspended above unconditioned space (With No In-slab Heating or Cooling System - Heat Flow Downward)	R2.0

Internal Wall Construction (Separating Internal Conditioned Spaces from the Unconditioned Internal Spaces)	R1.4
External Wall Construction (Separating Internal Conditioned Spaces from the Outside Air)	R1.0
Spandrel Construction (GLCB) (Separating Internal Conditioned Spaces from the Outside Air)	R1.0
Glazing Specifications**	
<i>BCA Class 5 – Commercial Office</i>	Total System U-Value = 3.2
	Total System SHGC = 0.35
<i>BCA Class 6 – Retail</i>	Total System U-Value = 3.2
	Total System SHGC = 0.35

*R-value represents total system performance, inclusive of the effect of thermal bridging, air gaps, bulk insulation and metal-on-metal contact.

**Glazing performance values are total system values, inclusive of the impact of framing.

To demonstrate compliance with Section J, a J1V3 performance verification approach or detailed DtS assessment is required to be undertaken prior to construction to demonstrate that the proposed building exceeds the energy and therefore greenhouse gas performance of a DtS reference building. Ongoing coordination with the Architect and relevant engineering disciplines will be undertaken to ensure the building envelope and facade system contributes to reducing energy demand without compromising visual amenity and daylight access.

3.9 Green Star Buildings

Green Star is a rating system that rates buildings, interiors, and communities against a range of environmental impact categories that align with broader sustainable development goals. The Green Star Buildings rating system ranges from four to six stars with, four stars reflecting Best Practice and is the minimum threshold for certification while six stars reflects World Leadership in green building design and operation.

The **Supermarket** of the proposed development shall be designed to achieve a Green Star Buildings rating. Points are awarded across 7 core categories as shown in figure 5 with additional points awarded for specific innovative strategies. The target star rating for the supermarket is to be determined following coordination in upcoming design stages. To satisfy section 2.1(c) of the VPA credit 4 '*Responsible Resource Management*' must be achieved which is a Minimum Expectation in the rating tool.



Figure 4: Green Star points allocation per category

3.9.1 Minimum Expectations

All Green Star Buildings ratings must meet a set of Minimum Expectations which do not award points but aim to ensure all Green Star rated buildings meet a basic definition of a green building (energy efficient, water efficient, good healthy spaces, built responsibly, and on sites that are not highly sensitive areas). Green Star Buildings minimum expectations continue to grow over time and will increase in the complexity of their requirements.

The Climate Positive Pathway sets mandatory requirements across credits within the Positive category based on when the project was registered and the targeted star rating.

Credits	Criteria	2020*	2023*	2026*	2030**
Energy source	Renewable electricity	6 star	5 star	All registrations	All certifications
	Renewable energy	6 star	5 star	All registrations	All certifications
Energy use Reductions over typical building	10% reduction	All ratings			All certifications
	20% reduction	6 star	5 star	All registrations	All certifications
	30% reduction				
Upfront carbon emissions Reductions over a typical building	10% reduction	All registrations			All certifications
	20% reduction	6 star	5 star	All registrations	All certifications
	40% reduction			6 star	All certifications
Other carbon emissions	Scope 1 eliminated or offset (refrigerants and fossil fuels)	6 star	5 star	All registrations	All certifications
	All remaining emissions offset (embodied carbon and other under control)		6 star	5 star	All certifications

* Denotes year of registration
** Denotes year of completion

Figure 5: Green Star Buildings, Climate Positive Pathway

4 Conclusion

This report summarises the sustainability targets and commitments for the proposed development at 923-935 Bourke Street, Waterloo, NSW, 2017. The recommendations and proposed initiatives outlined in this report will be investigated and subjected to further detailed design coordination to ensure the development achieves the requirements of the governing ESD frameworks and policies including;

- NSW Environmental Planning and Assessment (EPA) Regulation 2021
- National Construction Code (NCC) 2022 Volume 1, Section J
- State Environmental Planning Policy (SEPP), Sustainable Buildings, 2022
- NSW Department of Planning, Industry and Environment (DPIE), Net Zero Plan 2020-2030.
- City of Sydney Development Control Plan, 2012.
- City of Sydney Voluntary Planning Agreement – Reference: S153631

In response to the above, the ESD initiatives and commitments which will be implemented for the development include the following:

- **Net Zero Operational Carbon ready** by 2035 in line with the NSW commitment to reduce fossil fuel dependence.
- **Renewable Energy Procurement** equivalent to Net Zero Emissions for all retail and office (base building) energy demands.
- **5.5 Star NABERS Energy** Commitment Agreement (+25%) for **Office** uses greater than 1000m² NLA
- **4.0 Star NABERS Water** for **Office** uses greater than 1000m² NLA
- Maximum energy use intensity (EUI) of 45kWh/yr/m² GFA for **Retail** uses (base building only).
- Reduction in potable water use of **20%** compared to a reference building for **Retail** (demonstrated using the Green Star potable water calculator)
- Maximum energy use intensity (EUI) of 45kWh/yr/m² GFA for **Supermarket**
- Reduction in potable water use of **20%** compared to a reference building for **Supermarket** (demonstrated using the Green Star potable water calculator)
- Compliance with increased BASIX Energy, Water and Thermal Comfort targets including;
 - **Energy 60%**
 - **Water 45%**
 - Thermal Comfort:
 - 7 Star NatHERS Average
 - 6 Star NatHERS Minimum
- Supermarket **Operational Waste Management Plan (OWMP)** which embeds circularity principles into practice and demonstrates alignment with NSW government targets for waste reduction.
- Commits to attaining a Green Star Buildings rating with Exceptional Performance met for Credit 4 (or equivalent) for the **Supermarket**
- Embedding a range of sustainability initiatives across the development as outlined in section 3.

We trust this report provides a sufficient overview of the project's commitment to sustainability and adherence to the relevant governing ESD requirements and planning policy.

