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ROTHERLOWMAN

**SUSTAINABILITY
MANAGEMENT PLAN**

331 - 335 ST KILDA
ROAD, ST KILDA

wsp

AUG 2021

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Sustainability Management Plan
331 - 335 St Kilda Road, St Kilda

Rothe lowman

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1	21/06/2019	Preliminary Review – Draft
2	12/09/2019	Update for TP
2.1	12/09/2019	Minor amendment to update for TP
3	24/09/2019	Issue for TP
4	19/10/2020	Update for TP
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TABLE OF CONTENTS

EXECUTIVE SUMMARY	III
1 INTRODUCTION	4
1.1 PROJECT BACKGROUND	4
1.2 THE CITY OF PORT PHILLIP ESD REQUIREMENTS.....	5
1.3 SUSTAINABLE BENCHMARKING TOOLS	5
1.3.1 GREEN STAR RATING DESIGN AND AS-BUILT V1.2	5
1.3.2 NATHERS RATING	5
1.3.3 NATIONAL CONSTRUCTION CODE (NCC SECTION J).....	5
2 ESD INITIATIVES.....	6
2.1 INDOOR ENVIRONMENT QUALITY	6
2.1.1 NATURAL VENTILATION	6
2.1.2 REDUCED EXPOSURE TO POLLUTANTS.....	6
2.1.3 INDOOR AIR QUALITY	7
2.1.4 ACOUSTIC COMFORT	8
2.1.5 LIGHTING COMFORT.....	9
2.1.6 VISUAL COMFORT.....	10
2.1.7 THERMAL COMFORT	10
2.2 ENERGY EFFICIENCY AND PERFORMANCE.....	10
2.2.1 THERMAL EFFICIENCY OF BUILDING FABRIC	11
2.2.2 LIGHTING SYSTEMS.....	12
2.2.3 HVAC SYSTEMS.....	13
2.2.4 HOT WATER SYSTEMS	13
2.2.5 ADDITIONAL ENERGY INITIATIVES.....	14
2.3 WATER EFFICIENCY	15
2.3.1 WATER EFFICIENT FIXTURES AND FITTINGS.....	15
2.3.2 HEAT REJECTION.....	15
2.3.3 LANDSCAPE IRRIGATION	16
2.3.4 FIRE SYSTEM TEST WATER.....	16
2.4 TRANSPORT	16
2.4.1 SUSTAINABLE TRANSPORT	17
2.5 LAND USE & ECOLOGY.....	18
2.5.1 ECOLOGICAL VALUE.....	18
2.5.2 SUSTAINABLE SITES.....	19
2.5.3 HEAT ISLAND EFFECT	19
2.6 CONSTRUCTION & BUILDING MANAGEMENT	20
2.6.1 COMMISSIONING & TUNING.....	20
2.6.2 BUILDING INFORMATION.....	22
2.6.3 COMMITMENT OF PERFORMANCE	22
2.6.4 METERING AND MONITORING	23
2.6.5 RESPONSIBLE CONSTRUCTION PRACTICES	23



2.7	BUILDING MATERIALS & WASTE MANAGEMENT	24
2.7.1	CONCRETE	ERROR! BOOKMARK NOT DEFINED.
2.7.2	STEEL	25
2.7.3	TIMBER	24
2.7.4	PERMANENT FORMWORK, PIPES, FLOORING, BLINDS AND CABLES	25
2.7.5	SUSTAINABLE PRODUCTS	25
2.7.6	OPERATIONAL WASTE MANAGEMENT	26
2.7.7	CONSTRUCTION AND DEMOLITION WASTE	26
2.8	EMISSIONS	27
2.8.1	STORMWATER - WSUD	27
2.8.2	LIGHT POLLUTION	27
2.8.3	MICROBIAL CONTROL	28
2.9	INNOVATION	28

EXECUTIVE SUMMARY

The proposed development at 331 – 335 St Kilda Road, St Kilda will be constructed within the City of Port Phillip. Sustainability initiatives included in the development are as follows:

Whole Development	<ul style="list-style-type: none"> — Australian Excellence ESD - Green Star Benchmarking – 5 Star Green Star Design and As-built v1.2. — Achievement of Best Practise water sensitive urban design (WSUD) — Primarily native planting onsite to help improve the ecological value of the development.
Apartments	High Efficiency Building thermal envelope reflected by target for average 7-star NatHERS rating.
Retail & Café	A commitment to achieve an improved Building Thermal envelope, targeting a 15% improvement in the Deemed-to-Satisfy (DTS) provisions of Section J.

The 5-star Green Star Design and As-built v1.2 benchmark provides the City of Port Phillip with confidence that this development has been designed at an ‘*Australian Excellence*’ level of Environmentally Sustainable Design.

The intent of this report is to demonstrate compliance with the Best Practice methodologies of the City of Port Phillip Council.

1 INTRODUCTION

1.1 PROJECT BACKGROUND

The 331 – 335 St Kilda Road development in St Kilda, designed by Rothe Lowman will incorporate an ‘Australian Excellence’ level of sustainable design within its commercial & residential components. A breakdown of the development structure can be seen below:

FLOOR	DETAILS
Basement	<ul style="list-style-type: none"> — 114 Carparks; with <ul style="list-style-type: none"> — 94 for residents — 10 for visitors — 10 for retail & café — Among the total of 114 carparks, <ul style="list-style-type: none"> — 2 carparks allocated to small cars; and — 6 carparks allocated for electric vehicles with charging stations supplied — 5 Motorbikes parking spaces — 63 Wall-mounted bike racks for residents — 20 Floor mounted bike racks for residents; with <ul style="list-style-type: none"> — 4 with gpos for electric bikes — 16 Wall-mounted bike racks for retail & café staff
Ground Floor (Retail and facilities)	<ul style="list-style-type: none"> — 12 external bike racks for visitors — EOT facilities for retail & café employees — Café/Retail – 548.3 m²
Ground Floor to Level 6 (Apartments)	<ul style="list-style-type: none"> — 74 Apartments: <ul style="list-style-type: none"> — 3 x 1 bedroom apartments; — 55 x 2 bedroom apartments; and — 16 x 3 bedroom apartments.

This report has been developed to summarise the sustainability strategy for the 331 – 335 St Kilda Road development and to demonstrate its intention to meet the City of Port Phillip sustainability planning requirements. The report identifies the sustainability initiatives, addresses the council’s best practice and mandatory requirements followed by the development’s design response which incorporates the use of various rating tools and methodologies. Specifically, this Sustainability Management Plan (SMP) seeks to:

- Provide a detailed assessment of the development, utilising Green Star, NatHERS and STORM to demonstrate a pathway for achieving the required ESD initiatives;
- Identify achievable environmental performance outcomes that meet the City of Port Phillip; and
- Provide context and reporting to demonstrate that the building has the design potential to achieve the relevant environmental performance outcomes.

The architectural drawing set issued for information by Rothe Lowman 22 July 2021 (P17) have been used for the development of this Sustainability Management Plan.

The 331-335 St Kilda Road development is committed to achieving a 5 Star Green Star Benchmark using the Green Star Design and As Built v1.2 tool. This report includes ESD initiatives that can be targeted in order to achieve the 60 points for a 5 Star benchmark. There are some initiatives that are specified as TBC, from which project team will select the correct number of credits in a later stage in the project to achieve the 5 Star Green Star benchmark.

1.2 THE CITY OF PORT PHILLIP ESD REQUIREMENTS

The sustainability pathway for the 331 – 335 St Kilda Road development has been developed in response to:

City of Port Phillip Planning Clauses:

Stormwater Management (WSUD) – 22.12;

Environmentally Sustainable Development - 22.13;

Energy and resource efficiency - 15.02-1S;

Apartment Developments – 58.04, 58.05, 58.07.

1.3 SUSTAINABLE BENCHMARKING TOOLS

An in-depth assessment of the environmental performance of this development has been undertaken to determine strategies to best minimise the impact of the development on the surrounding environment and in response to matters such as climate change and occupant experience. The following are the sustainable benchmarking tools which have been used to assess the 331 – 335 St Kilda Road development.

1.3.1 GREEN STAR RATING DESIGN AND AS-BUILT v1.2

331 – 335 St Kilda Road development has committed to Green Star 5-star Design & As-Built benchmarking using v1.2 rating tool. Green Star is an internationally recognised rating system that delivers independent verification of sustainable outcomes throughout the life cycle of the built environment. The use of Green Star rating tools for town planning requirements is recognised by the City of Port Phillip to prove that the development will meet an ‘*Australian Excellence*’ level of sustainability. Through this pathway, Rothe Lowman and the Project team have undertaken appropriate analysis and planning to meet this outcome – and whilst the final pathway may vary as the design is developed – the commitment to this rating will not.

1.3.2 NATHERS RATING

Nationwide House Energy Rating Scheme (NatHERS) is a ten-star rating system that rates thermal efficiency of dwellings based on materials, design, solar exposure and orientation. The City of Port Phillip’s planning policy outlines that residential apartments must achieve an NCC compliant average NatHERS rating of 6.5-star, with no apartment scoring under 5.0-star. To achieve energy credits in Green Star, an average 7.0-star NatHERS rating must be achieved, with no apartment scoring under 5.5-star.

1.3.3 NATIONAL CONSTRUCTION CODE (NCC SECTION J)

The retail, café and conditioned communal spaces within the development will be required to meet and exceed the minimum deemed-to-satisfy (DTS) requirements of the NCC 2019 Section J Energy Efficiency, this includes building fabric and glazing performance minimums to ensure good passive design principles and Section J compliance are met.

2 ESD INITIATIVES

The following section of the report summarises the selection of environmentally sustainable initiatives to be incorporated in the development.

2.1 INDOOR ENVIRONMENT QUALITY

Improving Indoor Environment Quality (IEQ) generally enhances the well-being of occupants and reduces the building impacts on health. Implementation of passive design principles can lead to an overall energy saving due to the reduction of energy demands required for heating, cooling and artificial lighting. Initiatives of the proposed building design that address IEQ criteria are described in the following sections.

2.1.1 NATURAL VENTILATION

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<i>Apartments</i> Port Phillip Planning Scheme Clause 58.07-4	Design to encourage natural ventilation of apartments, with apartments to maximise openable windows, doors in external walls. 40% of dwellings have access to effective natural ventilation as per clause 58.07-4. Breeze paths will be installed with magnetic door stops and windows placement/size has been considered to maximise effectiveness.
<i>Common Areas</i>	Corridors have access to at least one source of natural ventilation & in turn daylight access.
Responsible Parties	Architect

2.1.2 REDUCED EXPOSURE TO POLLUTANTS

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<i>Whole Development</i> Green Star – 13.1 Paints, Adhesives, Sealants and Carpets	The development team has committed to ensuring that the design complies with the TVOC content requirements listed in the Green Star Design & As-Built v1.2 Technical Manual Table 13.1.1. Retail and café tenancies that are not fitted out will include requirements in tenancy lease agreements.
<i>Whole Development</i> Green Star – 13.2 Engineered Wood Products	95% of all engineered wood products used in the development are to meet the stipulated formaldehyde limits in Table 13.2B of the Green Star Design & As-Built v1.2 Technical Manual.
Responsible Parties	Architect/ Project Manager / Builder & Contractors

2.1.3 INDOOR AIR QUALITY

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star – 9.1 Ventilation System Attributes</p>	<p>Minimum distances between pollution sources and outdoor air intakes as per ASHRAE standards. The mechanical ventilation system must be easy to access for maintenance. Ductwork must be cleaned prior to use to recognised standards.</p>
<p><i>Whole Development</i></p> <p>Green Star – 9.3 Exhaust or Elimination of Pollutants</p>	<p><i>Restaurant & Café</i></p> <p>All kitchens must be enclosed with opening no larger than 2.5m², and ventilated in accordance with AS1669.2-2012 with a separate exhaust system.</p> <p><i>Apartments</i></p> <p>All apartments kitchens require non-recirculating range hoods which will directly exhaust outside.</p> <p><i>Car park</i></p> <p>All pollutants from vehicles in enclosed basement carparks are required to be exhausted to a dedicated riser or directly outside in accordance with AS 1668.2-2012.</p>
<p>Responsible Parties</p>	<p>Mechanical Engineer & Contractor/Architect</p>

2.1.4 ACOUSTIC COMFORT

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star – 10.1 Internal Noise Levels (TBC)</p>	<p>The below initiatives are to be co-ordinated with the Acoustics team with aims to achieve the following:</p> <ul style="list-style-type: none"> — Internal noise levels within apartments to be no more than 5dB(A) above the satisfactory noise levels provided in AS/NZ 2107:2016 inclusive of all internal and external noise sources. — Internal noise levels within the apartment bedrooms are to be no greater than 35dB(A) assessed as an $L_{Aeq,8h}$ from 10pm to 6am. Living areas are to be no greater than 40dB(A) assessed as $L_{Aeq,16h}$ from 6am to 10pm. <p>Acoustic consultant would need to provide noise measurement and documentation to demonstrate achievement of these levels.</p>
<p><i>Whole Development</i></p> <p>Green Star – 10.3 Acoustic Separation (TBC)</p>	<p>The development will have full height walls and well-sealed doors. Partitions between enclosed spaces should achieve:</p> <ul style="list-style-type: none"> — a weighted sound reduction index (R_w) of at least 45 (partitions including glazed partitions); and — a weighted sound reduction index (R_w) of at least 35 for partitions containing doors. <p>Alternatively, sound insulation between enclosed spaces should comply with ($D_w + LA_{eq} T > 75$).</p> <p><i>Apartments</i></p> <p>Apartments are to comply with:</p> <ul style="list-style-type: none"> — The inter-tenancy apartment construction to habitable areas results in noise isolation standard of $R_w + C_{tr} > 55$; — All inter-tenancy walls including Discontinuous Construction as defined by the NCC; — Walls between apartments and public corridors result in airborne noise isolation of $R_w > 55$; — Floor construction above habitable rooms and wet areas result in impact isolation standard of $L_{n,w} + C_1 < 55$; and — Apartment entry doors include acoustic seals and achieve an acoustic rating of R_w 30.
<p>Responsible Parties</p>	<p>Architect / Acoustic Engineer</p>

2.1.5 LIGHTING COMFORT

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star – 11.0 Minimum Lighting Comfort</p>	<p>Flicker free lighting to be incorporated with a CRI \geq 80. All apartments to have LED lighting.</p>
<p><i>Whole Development</i></p> <p>Green Star – 11.1 General Illuminance and Glare Reduction</p>	<p>Sufficient lighting levels to be provided throughout the development to meet best practice general illuminance levels within each space type. Lighting modelling to be conducted by Electrical Engineer.</p> <p>Glare from lamps limited throughout the development by fitting bare light sources with baffles, louvres, translucent diffusers, or some other means to obscure direct view of the light source.</p> <p><i>Apartments</i></p> <p>For apartment living spaces, kitchen, bathrooms and bedrooms the following requirements must be met:</p> <ul style="list-style-type: none"> — Lighting design to include fixed lighting that provides good maintained illuminance values for entire room; and — Installed fittings have a rated colour variation not exceeding 3 MacAdam Ellipses (excluding decorative fittings)
<p><i>Whole Development</i></p> <p>Green Star – 11.3 Localised Control</p>	<p>Throughout the development occupants must have ability to control lighting in their immediate environment.</p> <p><i>Apartments</i></p> <p>Occupants to have access to localised lighting controls within the apartments, including controls to adjust light levels. Appropriate task lighting required for kitchens and bathrooms. Additional power outlets are required for apartment owners to provide lamps (generally two per bedroom and living space).</p>
<p>Responsible Parties</p>	<p>Architect / Electrical Engineer</p>

2.1.6 VISUAL COMFORT

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<i>Apartments</i> — Clause 58.07-2	Apartments will aim to meet the council's best practice depth requirements: <ul style="list-style-type: none"> — 5m room depth (south); — 8m room depth (all other facades); and Single aspect habitable rooms should not exceed 2.5 times ceiling height. Achievement of appropriate room depths to be confirmed once window placement and room layout confirmed.
<i>Whole Development</i> Green Star – 12.0 Glare Reduction	Glare to be reduced from sunlight through all viewing facades to be reduced from a combination of blinds (with VLT \leq 10%), screens, fixed devices.
<i>Whole Development</i> Green Star – 12.2 Views	At least 60% of the regularly occupied spaces to have a clear line of sight to a high quality internal or external view. All floor area within 8m from a compliant view meets this requirement.
Responsible Parties	Architect / Façade Consultant

2.1.7 THERMAL COMFORT

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<i>Whole Development</i> Green Star – 14.1 Thermal Comfort	All spaces to have a high degree of thermal comfort, with Predicted Mean Vote (PMV) levels between -1 and +1 achieved for 98% of the year. For apartments, an average NatHERS rating of 7.0-star has been achieved.
Responsible Parties	Architect / Mechanical Engineer / ESD Consultant / Builder

2.2 ENERGY EFFICIENCY AND PERFORMANCE

The City of Port Phillip Planning Scheme is heavily focused on overall energy efficiency and performance of buildings with aims to implement efficient and effective passive design principals i.e. north-facing orientation or high-performance glazing solutions. Initiatives that 331 – 335 St Kilda Road development aims to achieve are summarized in the following table, and the Greenhouse Gas Calculator v1.2 is included in Appendix D to demonstrate 4.2 points is achieved with these energy reduction measurements.

2.2.1 THERMAL EFFICIENCY OF BUILDING FABRIC

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE																				
<p><i>Apartments</i></p> <p>Apartments will be required to achieve an average 7.0-star NatHERS rating using NCC Section J requirements; (minimum requirement 5.5-star for Green Star).</p>	<p>The development has committed to achieving an average 7.0-star NatHERS rating or above (with a minimum NatHERS rating of 5.5-star for an individual apartment) this will enable a high Green Star outcome.</p> <p>Please refer to Appendix B for further information.</p>																				
<p><i>Apartments</i></p> <p>Cooling loads below 30 MJ/m²/annum as per Port Phillip Planning Scheme Clause 55.01-1.</p>	<p>Further comment on achievability of this requirement can be provided on completion of the preliminary FirstRate/NatHERS modelling.</p> <p>Shading should be consideration on north, east and west facing apartments. This will assist in reducing impacts of the NatHERS cooling load requirements on the SHGC of the glazing systems.</p> <p>Please refer to Appendix B for further information.</p>																				
<p><i>Retail, cafe and Conditioned Common Areas</i></p> <p>NCC Section J DTS compliance</p>	<p>Green Star requirement for 15% increase on minimum required R-values in NCC:</p> <table border="1" data-bbox="644 969 1444 1559"> <thead> <tr> <th data-bbox="644 969 932 1099">BUILDING ENVELOPE ELEMENT</th> <th data-bbox="936 969 1187 1099">MINIMUM DTS INSULATION LEVELS</th> <th data-bbox="1192 969 1444 1099">GREEN STAR REQUIRED INSULATION LEVELS</th> </tr> </thead> <tbody> <tr> <td data-bbox="644 1106 932 1171">Roof</td> <td data-bbox="936 1106 1187 1171">R3.2 W/m²</td> <td data-bbox="1192 1106 1444 1171">R3.7 W/m²</td> </tr> <tr> <td data-bbox="644 1178 932 1243">External Wall</td> <td data-bbox="936 1178 1187 1243">R2.8 W/m²</td> <td data-bbox="1192 1178 1444 1243">R3.2 W/m²</td> </tr> <tr> <td data-bbox="644 1249 932 1379">Internal Wall between conditioned and unconditioned spaces</td> <td data-bbox="936 1249 1187 1379">R1.8 W/m²</td> <td data-bbox="1192 1249 1444 1379">R2.1 W/m²</td> </tr> <tr> <td data-bbox="644 1386 932 1451">Floor (above carpark)</td> <td data-bbox="936 1386 1187 1451">R2.0 W/m²</td> <td data-bbox="1192 1386 1444 1451">R2.3 W/m²</td> </tr> <tr> <td data-bbox="644 1458 932 1559">Floor above unconditioned spaces</td> <td data-bbox="936 1458 1187 1559">R1.0 W/m²</td> <td data-bbox="1192 1458 1444 1559">R1.2 W/m²</td> </tr> </tbody> </table> <p>Minimum glazing performance requirements to be confirmed with Section J Glazing Calculator with updated plans.</p>			BUILDING ENVELOPE ELEMENT	MINIMUM DTS INSULATION LEVELS	GREEN STAR REQUIRED INSULATION LEVELS	Roof	R3.2 W/m ²	R3.7 W/m ²	External Wall	R2.8 W/m ²	R3.2 W/m ²	Internal Wall between conditioned and unconditioned spaces	R1.8 W/m ²	R2.1 W/m ²	Floor (above carpark)	R2.0 W/m ²	R2.3 W/m ²	Floor above unconditioned spaces	R1.0 W/m ²	R1.2 W/m ²
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<p>Responsible Parties</p>	<p>Architect / ESD Consultant / Builder</p>																				

2.2.2 LIGHTING SYSTEMS

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Apartments</i></p> <p>NCC Section J requirements</p> <p>Green Star – 15 Greenhouse Gas Emissions</p>	<p>Apartments will seek to achieve the following:</p> <ul style="list-style-type: none"> — Apartments will seek a 30 - 50% reduction in lighting energy (NCC) through high efficiency LED lighting selections and daylight dimming.
<p><i>Retail, café and Conditioned Common Areas</i></p> <p>NCC Section J requirements</p> <p>Green Star – 15 Greenhouse Gas Emissions</p>	<p>Commit to achieving a 30% - 50% reduction in lighting power density targets through high efficiency LED lighting selections and daylight dimming.</p> <p>Intelligent lighting control systems are to be provided to all common spaces. We note that the size of the individually switched lighting zones should not exceed 100m².</p> <p>We recommend the following measures:</p> <ul style="list-style-type: none"> — Occupancy sensors to dim lighting to 20% or less when zones are unoccupied (excluding decorative lighting); — Daylight sensors for perimeter lighting; and — Localised controls.
<p>Responsible Parties</p>	<p>Architect / Electrical Engineers / Builder / Contractor</p>

2.2.3 HVAC SYSTEMS

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Apartment</i></p> <p>Green Star – 15 Greenhouse Gas Emissions - TBC</p>	<p>The air-conditioning units for all apartments aims to achieve the following:</p> <ul style="list-style-type: none"> — The minimum cooling system energy star rating for the air conditioning equipment is at least 3-star as per AS3823.2-2011; and — The rated capacity of the air-conditioning equipment does not exceed the design heating load by more than 20% and the design cooling load by more than 10%.
<p><i>Retail, café and Conditioned Common Areas</i></p> <p>Green Star – 15 Greenhouse Gas Emissions - TBC</p>	<p>HVAC system of retail and café will be provided by tenants. The following requirements are required to be included in the future Tenancy Agreements:</p> <ul style="list-style-type: none"> — The installed fan motor power and pump power, is at least 15% less than the maximum fan motor power and pump power defined in Table J5.2 and J5.4a. — The required minimum energy efficiency ratio for packaged air conditioning equipment and refrigerant chiller is at least 15% higher than specified in: <ul style="list-style-type: none"> — NCC Table J5.4d and J5.4e; or — MEPS, where Section J does not apply to the equipment capacity.
Responsible Parties	Mechanical Engineers / Contractor / Owner

2.2.4 HOT WATER SYSTEMS

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star - 15 Greenhouse Gas Emissions</p>	<p>Centralised Hot Water System to be served by a condensing gas boiler with a minimum efficiency of 93%.</p> <p>Or</p> <p>Removal/reduction of unsustainable fossil fuels from the development by implementing a high efficiency electric heat pump hot water system. The system could be offset with solar/green power however; will need to be explored further to ensure there is available plant space onsite.</p>
Responsible Parties	Hydraulic Engineer / Hydraulic Contractor

2.2.5 ADDITIONAL ENERGY INITIATIVES

<i>Requirements / ESD Commitments</i>	<i>Design Response</i>
<p><i>Lifts</i></p> <p>Green Star – 15 Greenhouse Gas Emissions</p>	<p>The following is to be provided for apartment lift energy efficiency:</p> <ul style="list-style-type: none"> — VVVF drive; — Regenerative drives; — Lifts will be enabled with standby and shut down modes for low usage periods.
<p><i>Car Park</i></p> <p>Green Star – 15 Greenhouse Gas Emissions</p>	<p>Strategy to be developed with project team. Recommended that all mechanical ventilation to be VSD with relevant controls.</p> <p>The car park exhaust should incorporate an efficient ventilation system with associated controls such as sensors and time clocks.</p> <p>Sensors and carpark exhaust operation to be in accordance with AS1668.2 requirements.</p>
<p><i>Energy Efficient Appliances</i></p> <p>Green Star – 15 Greenhouse Gas Emissions</p>	<p>All installed appliances to be selected within one star of best available (refer www.energyrating.gov.au). This would apply to the following if applicable:</p> <ul style="list-style-type: none"> — Dishwashers; — Refrigerators/freezers; — Clothes washers; and — Clothes dryers.
<p><i>Embedded Network</i></p> <p>Green Star – 15 Greenhouse Gas Emissions – GreenPower®</p>	<p>Single utility grid supply purchase point to be considered with on selling to tenants within the development via individual apartment metering. The system will facilitate Green Power purchase, a minimum of 20% for the development which will be sold on to residents for a similar rate to standard electricity.</p> <p>Arrangements will be set up to also facilitate re-investments in the development for sustainable purchases – solar, battery storage, communal facilities etc.</p>
<p><i>Solar PV</i></p> <p>Green Star – 15 Greenhouse Gas Emissions</p>	<p>20kW of solar PV will be included in the development.</p> <p>Spatial allowance should be made in the basement / services areas for future battery connection with cables installed to facilitate connection.</p>
<p><i>Responsible Parties</i></p>	<p>Architect / Mechanical Engineer / Electrical Engineer / Builder</p>

2.3 WATER EFFICIENCY

The 331 – 335 St Kilda Road development aims to conserve Victoria’s fresh-water supply via implementation of the following initiatives:

2.3.1 WATER EFFICIENT FIXTURES AND FITTINGS

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>The whole development is required to meet the WELS efficiencies listed in the design response section.</p> <p>Green Star - 18 Potable Water – 18B.1 Sanitary Fixture Efficiency</p>	<p>Potable Water (Credit 18) within Green Star Design & As Built to be targeted through the following water fixture requirements:</p> <ul style="list-style-type: none"> — Toilets 3.0 L half / 4.5 L full flush (Average flush 3.0 L) (WELS 5 star); — Showers 7.5 L/min (WELS 3 star); — Basin Taps 6.0 L/min (WELS 5 star); — Kitchen Taps 6.0 L/min (WELS 5 star); — Urinals 1.0 L/ discharge (WELS 5 Star); — Clothes washing machines (WELS 4 Star); — Dishwashers (WELS 5 Star); and — Should bathtubs be installed they should be specified as less than 160 litre capacity.
Responsible Parties	Hydraulic Engineer / Architect / Builder

2.3.2 HEAT REJECTION

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star - 18 Potable Water – 18B.3 Heat Rejection</p>	<p>HVAC systems will not use water for heat rejection.</p>
Responsible Parties	Mechanical Engineer / Hydraulic Engineer / Architect

2.3.3 LANDSCAPE IRRIGATION

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star - 18 Potable Water – 18B.4 Landscape Irrigation</p>	<p>Landscaping to prioritise plant selections with improved water efficiency benefits. Landscape irrigation will not use potable water and will have subsoil drip irrigation with moisture sensor override controls installed.</p>
<p>Responsible Parties</p>	<p>Mechanical Engineer / Hydraulic Engineer / Architect</p>

2.3.4 FIRE SYSTEM TEST WATER

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star - 18 Potable Water – 18B.5 Fire System Test Water</p>	<p>The development must aim to meet one of the following:</p> <ul style="list-style-type: none"> — The fire protection system does not expel water for testing; or — The fire protection system includes temporary storage for 80% of the routine fire protection system test water and maintenance drain-downs for reuse on-site calculated on the basis that any single zone is drained down annually. Note that this option would require additional space for another storage tank; — If sprinkler systems are installed, each floor must be fitted with isolation valves or shut-off points for floor-by floor testing.
<p>Responsible Parties</p>	<p>Fire Services Engineer</p>

2.4 TRANSPORT

The proposed 331 – 335 St Kilda Road development in St Kilda has good access to public transport scoring a transit score of 81 points and walk score of 97 via www.walkscore.com refer Figure 2.1. Walkscore is an external tool that considers walkable access to amenities and proximity to transit. The development aims to reduce the use of private transport through initiatives such as active transport facilities and provision of carpark spaces for electric vehicles with charging stations.

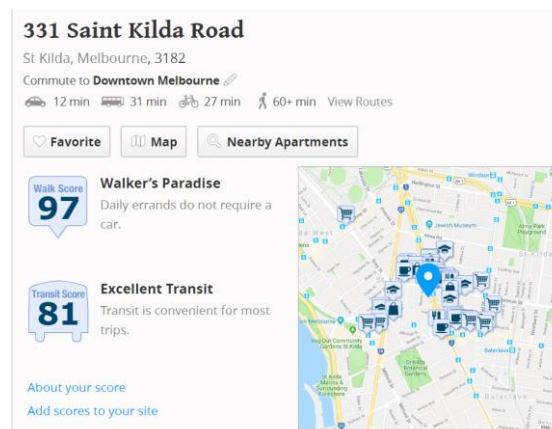


Figure 2.1: 331 – 335 St Kilda Road Development - Walk score - www.walkscore.com

2.4.1 SUSTAINABLE TRANSPORT

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Reduce Car Parking Provision</p>	<p>The development to provide the following reduced car parking provisions.</p> <p>Maximum number of car parks allowed for 0.5 points:</p> <p>Retail: 26 (8 Provided)</p> <p>Cafe: 6 (2 provided)</p> <p>Residential: 105 (94 +10 provided)</p>
<p><i>Whole Development</i></p> <p>Green Star - 17. B.3 Low Emission Vehicle Infrastructure</p>	<p>Car-Parking strategy:</p> <ul style="list-style-type: none"> — 5% allocation for electric vehicles with charging stations supplied – approximately six (6) spaces; <p>The above parking spaces are based on the development’s current allocation of 114 parking spaces.</p>
<p><i>Whole Development</i></p> <p>Green Star - 17.B.4 Active Transport Facilities</p>	<p>The development is currently providing based on 22/07/21 drawings:</p> <ul style="list-style-type: none"> — 83 secure bicycle parks for residents; — 16 secure bicycle parks for retail & cafe; — 12 external bike racks for visitors; — 2 cafe & retail end of trip (EOT) showers and 20 lockers <p>The project is required to achieve both planning (Clause 52.34) and Green Star Active Transport Facilities credit, therefore the greater number of the two is adopted. The requirements to meet both above requirements are outlined in the Table 1 below. Note that these numbers are based on the current building NLA breakdown and occupancy rates per NCC 2019.</p>
Responsible Parties	Architects / Electrical Engineer

Table 1: Green Star Sustainable Transport / Clause 52.34 minimum requirements

	REGULAR OCCUPANTS			VISITOR
	Secure Bicycle Spaces	Showers/change rooms	Lockers	Bicycle Spaces
<i>Residential</i>	67	-	-	8
<i>Café & Retail</i>	12	2	20	2

2.5 LAND USE & ECOLOGY

2.5.1 ECOLOGICAL VALUE

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
Whole Development Green Star - 23 Ecological Value	The development will incorporate a minimum of 100m ² of planted native vegetation or; minimum 100m ² native and 200m ² exotic vegetation.
Responsible Parties	Architect/ Landscape Architects / ESD Consultants

The existing site is currently developed and ecological value is very low as seen in Figure 2.2 with small sections of exotic vegetation includes lawns and non-native gardens. The proposed development will enhance the ecological value of the site via new landscaped areas. The carefully designed natural elements will not only add biodiversity, but also provide psychological health benefits to occupants and public visitors alike by introducing more opportunity to interact with nature within Melbourne’s outer city precincts. The current site demonstrates small extents of vegetated areas, as seen in the below Google Earth screenshot.



Figure 2.2: Existing site at 331 – 335 St Kilda Road demonstrating current vegetated areas (left) and proposed vegetation (right)

2.5.2 SUSTAINABLE SITES

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star – 24.2 Contamination and Hazardous Materials</p>	<p>A comprehensive hazardous materials survey to be carried out on any existing buildings or structures on the development site in accordance with relevant Environmental and Occupational Health and Safety (OH&S) legislation.</p> <p>Any materials composed of lead, asbestos, polychlorinated biphenyls (PCBs) must be removed or stabilised in accordance with relevant legislation.</p>
Responsible Parties	Architect/ ESD Consultants

2.5.3 HEAT ISLAND EFFECT

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star – 25 Heat Island Effect Reduction</p>	<p>Vegetation to be used throughout the development as a tool to reduce the heat island effect – aim to have 10-15% of the total project site area to incorporate landscaping elements (e.g. vegetation or green roofs).</p> <p>Consideration for paved areas and other impervious surfaces to be selected with light coloured finishes. Minimum of 75% of area in total to comply with Green Star requirements. This can include:</p> <ul style="list-style-type: none"> — Vegetation; — Green roofs; — Roofing materials (including shading structures): <ul style="list-style-type: none"> — For roof pitched <15°- a three-year SRI of minimum 64; or — For roof pitched >15°- a three-year SRI of minimum 34; — Unshaded hard-scaping elements with a three-year SRI of minimum 34 or an initial SRI of minimum 39; — Hardscaping elements shaded by overhanging vegetation or roof structures, including solar hot water panels and photovoltaic panels; — Areas directly to the south of vertical building elements, including green walls and areas shaded by these elements at the summer solstice.
Responsible Parties	Architect/ Landscape Architects / ESD Consultants

2.6 CONSTRUCTION & BUILDING MANAGEMENT

Minimisation of environmental impacts during building construction is a key part in creating a sustainable built environment. The following initiatives are to be implemented by the contractors during the construction of the 331 – 335 St Kilda Road development.

2.6.1 COMMISSIONING & TUNING

<i>Requirements / ESD Commitments</i>	<i>Design Response</i>
<p><i>Whole Development</i></p> <p>Green Star – 2.0 Environmental Performance Targets</p>	<p>Project team is to develop a Design Intent Report that describes the following:</p> <ul style="list-style-type: none"> — Intended operation and maintenance requirements; — Energy and water consumption targets of all nominated building systems; and — Energy and water metering and monitoring principals.
<p><i>Whole Development</i></p> <p>Green Star – 2.1 Services and Maintainability Review</p>	<p>A comprehensive services and maintainability review, led by the head contractor or the owner’s representative, to be carried out during the design stages and prior to construction. Review to address all nominated building systems with regards to Commissionability, Maintainability, Operability, Controllability and Safety.</p>
<p><i>Whole Development</i></p> <p>Green Star – 2.2 Building Commissioning</p>	<p>Project team to develop a commissioning specification to be included in the contractual tender. The contractors will need to develop a commissioning plan and commission systems to relevant standards (CIBSE, ASHRAE, AIRAH or BSRIA). This will include detailed commissioning reports for all pumps, mechanical systems, lighting, metering and building controls.</p> <p>A suitably qualified practitioner (as per Green Star definition) to be engaged to carry out an air permeability test in accordance with approved standards. The test results must not exceed the ‘maximum’ air permeability rates outlined in Table 2.2.1 of the Green Star Design & As-Built v1.2 Technical Manual.</p>
<p><i>Whole Development</i></p> <p>Green Star – 2.3 Building Systems Tuning</p>	<p>The electrical, mechanical and hydraulic service contractors must provide a 12-month tuning and recommissioning service.</p> <p>The building owner must confirm that there is a requirement for a building tuning process and responsibilities are assigned to have all nominated building systems tuned after practical completion</p> <p>The commitment must include at least the following:</p> <ul style="list-style-type: none"> — Operating and Maintenance Manuals have been developed in accordance with approved standards and guidelines as per Green Star Credit criteria;

	<ul style="list-style-type: none"> — A building tuning manual, or a building tuning plan, has been developed in accordance with the approved standards and guidelines; — A building tuning team has been created including the facilities manager, the owner's representative. The head contractor and the services design professionals are available to address specific tuning issues where required; and — The owner has engaged parties to tune the nominated systems. This engagement includes requirements for; <ul style="list-style-type: none"> — Verification that nominated systems are performing to their design potential at full and part load conditions; — Reviews of environmental performance against the environmental targets; — Collection of user feedback to match the system performance with the occupant's needs; — Adjustment of all the systems to account for all deficiencies discovered; and — Management, communication, and assignment of responsibilities for the tuning process within the team
<p><i>Whole Development</i></p> <p>Green Star – 2.4 Independent Commissioning Agent</p>	<p>Independent Commissioning Agent (ICA) to be appointed to advise, monitor, and verify the commissioning and tuning of the nominated building systems throughout the design, tender, construction, commissioning and tuning phases.</p>
<p><i>Responsible Parties</i></p>	<p>Services Engineers / Contractors / Building Owner</p>

2.6.2 BUILDING INFORMATION

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star – 4 Building Information</p>	<p>Comprehensive operations and maintenance information, and building log book to be made available to facilities management/body corporate. The building log book should be developed in line with the CIBSE TM31: <i>Building Log Book Toolkit</i>. The building log book should be a simple, easily accessible summary of a building and its intended operation, and should also provide a means to record energy use and maintenance of the building services.</p> <p>A Building Users guide will be generated for the project and distributed to owners / tenants at the time of purchase / lease or be available via central intranet.</p>
Responsible Parties	Contractor / Developer

2.6.3 COMMITMENT OF PERFORMANCE

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star – 5.1 Environmental Building Performance</p>	<p>For 80% of the GFA (excluding carpark):</p> <p><i>Apartments</i></p> <p>Commitment will be set for two types of environmental targets (GHG emissions/Energy & Water) for apartments. Needs targets and measuring and reporting procedures established for the Owners Corporation.</p> <p><i>Retail/Café</i></p> <p>Commitments will be set for the following environmental targets (GHG emissions/Energy & Water) for commercial tenancies with targets, monitoring and reporting procedures established in the lease with the tenant.</p>
<p><i>Whole Development</i></p> <p>Green Star – 5.2 End of Life Waste Performance</p>	<p>The owner's corporation will commit to extending the life of the finishes to all common areas to at least 10 years, and seek to supply finishes with warranties exceeding 10 years, inclusive of take back schemes. A formal commitment will be explored to recycle the building at end of life.</p>
Responsible Parties	Design Team / Architect / Builder / Owners Corporation

2.6.4 METERING AND MONITORING

<i>Requirements / ESD Commitments</i>	<i>Design Response</i>
<p><i>Whole Development</i></p> <p>Green Star – 6.0 Metering</p>	<p>Energy, hot water and water to be sub-metered to all major uses in the development and to all apartments. Each tenancy to be sub-metered. All major uses of gas will be sub-metered.</p> <p>If a single load is over 100kW or more than 5% of total energy use it must be independently metered. If a water end use consumes 10% of project’s water use it must be independently metered.</p> <p>Meters commissioned and validated in accordance with ‘Validating Non-Utility Meters for NABERS Rating’ protocol. Meters must be capable of producing alerts if any inaccuracies in the meter network are found.</p>
<p><i>Whole Development</i></p> <p>Green Star- 6.1 Monitoring Systems</p>	<p>The Project Team will develop a monitoring strategy for the development for energy and water uses.</p> <p>An automatic monitoring system to be included that is capable of capturing and processing the data produced by the installed meters. It should accurately and clearly present data consumption trends.</p>
<i>Responsible Parties</i>	Services Engineers / Services Contractors/ Builder / Owners Corporation

2.6.5 RESPONSIBLE CONSTRUCTION PRACTICES

<i>REQUIREMENTS / ESD COMMITMENTS</i>	<i>DESIGN RESPONSE</i>
<p><i>Whole Development</i></p> <p>Green Star – 7.0 Environmental Management Plan</p>	<p>Environmental Management Plan (EMP) is to be developed with best practice guidelines and implemented by the contractor from the beginning of construction works.</p>
<p><i>Whole Development</i></p> <p>Green Star – 7.1 Formalised Environmental Management System</p>	<p>Project team is to demonstrate that a formalised systematic and methodical approach to planning, implementing and auditing is in place during construction to ensure compliance with the EMP. Process to be aligned with best practice AS/NZS ISO 14001 standards.</p>
<p><i>Whole Development</i></p> <p>Green Star – 7.2 High Quality Staff Support</p>	<p>Tender requirement for head contractor to implement high quality support practices that:</p> <ul style="list-style-type: none"> — Promote positive mental and physical health outcomes of site activities and culture of site workers, through programs and solutions on site in accordance with 7.2.1 of the credit criteria; and — Enhance site workers’ knowledge on sustainable practices through on-site, off-site, or online education programs in accordance with 7.2.2 of the credit criteria.
<i>Responsible Parties</i>	Head Contractor / ESD Consultants

2.7 BUILDING MATERIALS & WASTE MANAGEMENT

This section outlines initiatives currently being considered to reduce material use and encourage recycling. We note that the final materials will be subject to detailed design, procurement availability and constructability concerns at the time of construction. Therefore, many of the initiatives within this section are being targeted but are subject to availability. If specific material targets are not achieved, the Green Star targets will still be achieved by adjusting our approach in other areas of sustainable design to compensate.

2.7.1 CONCRETE

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<i>Whole Development</i> Green Star - 19B.1 Lifecycle Impacts – Concrete	<p>The development aims to reduce Portland cement content, measured by mass across all concrete used in the project, by substituting with supplementary cementitious materials.</p> <p>Portland cement content to be reduced by 30%, measured by mass across all concrete used in the project compared to the reference case.</p> <p>Mix water for all concrete to be made up of a minimum of 50% captured or reclaimed water. - TBC</p> <p>At least 25% of fine aggregate (sand) used in concrete to be sourced as manufactured sand. - TBC</p>
Responsible Parties	Structural Engineers / Project Manager / Contractor

2.7.2 TIMBER

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<i>Whole Development</i> Green Star - 20.2 Timber	<p>95% of all timber used within project (by cost) must comply with responsible building materials. To demonstrate compliance timber used must be either:</p> <ul style="list-style-type: none"> — Certified by a forest certification scheme (e.g. the Forest Stewardship Council (FSC) or the Programme for the Endorsement of Forest Certification (PEFC)) with timber accompanied by relevant Chain of Custody (CoC) certificates; or — From a reused source (timber produced from 100% post-consumer recycled timber without the incorporation of any virgin timber).
Responsible Parties	Architect / Structural Engineers / Project Manager / Contractors

2.7.3 STEEL

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star - 19B.2 Steel</p>	<p>The development is committed to achieving a 5% reduction in the mass of steel framing and reinforcing steel used in the building compared to standard practice.</p>
<p><i>Whole Development</i></p> <p>Green Star – 20.1 Responsible Building Materials – Structural and Reinforcing Steel</p>	<p>95% of the buildings steel (by mass) is sourced from a Responsible Steel Maker, with a current valued and certified ISO 14001 Environmental Management System (EMS) in place and member of the World Steel Association (WSA) Climate Action Programme.</p> <p>Steel framed building:</p> <p>At least 60% of fabricated structural steelwork is supplied by a steel fabricator/steel contractor accredited to the Environmental Sustainability Charter of the Australian Steel Institute (ASI).</p>
<p>Responsible Parties</p>	<p>Structural Engineers / Project Manager / Contractor</p>

2.7.4 PERMANENT FORMWORK, PIPES, FLOORING, BLINDS AND CABLES

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star - 20.3 Permanent Formwork, Pipes, Flooring, Blinds and Cables</p>	<p>90% (by cost) of all permanent formwork, pipes, flooring, blinds and cables must either:</p> <ul style="list-style-type: none"> — Not contain PVC and have a recognised product declaration (safety data sheet or environmental product declaration); or — Meet the GBCA’s <i>Best Practice Guidelines for PVC</i> in accordance with 20.3B.
<p>Responsible Parties</p>	<p>Architect / Structural Engineers / Project Manager / Contractors</p>

2.7.5 SUSTAINABLE PRODUCTS

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star - 21.1 Sustainable Products</p>	<p>A minimum of 3% of the total project's value is to be sourced as recycled / sustainable products. This includes reused products, products with recycled content, products with Environmental Product Declarations or Third-Party Certification or stewardship programs.</p> <p>Products which will be focused on include plasterboard (partitions and ceilings), insulation, joinery, furniture, flooring and blinds.</p>
<p>Responsible Parties</p>	<p>Architect / ESD Consultant / Contractors</p>

2.7.6 OPERATIONAL WASTE MANAGEMENT

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star – 8A Operational Waste Performance Pathway: Specialist Plan.</p> <p>Waste consultant to prepare an Operational Waste Management Plan (WMP) in accordance with best practice approached.</p>	<p>The WMP will address all Green Star requirements including but not limited to:</p> <ul style="list-style-type: none"> — Set targets for reducing waste generated (by weight) as well as monitoring and measurement procedures; — Outline methods for encouraging separation of waste streams or recycling in public areas; — Identify waste storage areas; — Identify safe methods for vehicle access and transfer of waste; and — Outline best practice safety requirements for waste collection. <p>Waste room to allow for one of:</p> <ul style="list-style-type: none"> — Green/composting waste; — Coffee cups; — E-waste; — Batteries; or — Charity recycling
Responsible Parties	Waste Professional / Contractor / Owner's Corporation

2.7.7 CONSTRUCTION AND DEMOLITION WASTE

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>22 Construction & Demolition Waste</p> <p>22B Percentage Benchmark</p>	<p>A target is set for 90% of all waste generated during construction and demolition to be diverted from landfill during the development of this site.</p> <p>Construction Waste Contractor to hold a 'Compliance Verification Summary' confirming compliance with the <i>Green Star Construction and Demolition Waste Reporting Criteria</i> or a 'Disclosure Statement'.</p>
Responsible Parties	Construction Waste Contractor / Head Contractor

2.8 EMISSIONS

2.8.1 STORMWATER - WSUD

The City of Port Phillip council enforces water efficient buildings as outlined in clause 22.12. To minimise the use of mains water for toilet use, council encourages buildings to install rainwater tanks on-site and use water for toilet flushing and irrigation purposes.

REQUIREMENTS / ESD COMMITMENTS	INNOVATIVE DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star – 26.1 Stormwater Peak Discharge & 26.2 Stormwater Pollution Targets</p>	<p>The 331 – 335 St Kilda Road development will implement a 40kL rainwater tank for connection to toilets in cafe, restaurant, and all apartments within the development and for irrigation use & bin wash down. All non-trafficable roof area (a minimum of 1,550m²) will be connected to the rainwater tank. The rainwater tank will include appropriate filtration should trafficable areas be used to collect rainwater – currently no trafficable areas are going to tank. See Appendix C for water balance and STORM Report.</p> <p>The development will incorporate an appropriately sized detention tank that will be installed to slow the flows of stormwater leaving the site and into the council’s stormwater drains. The development will aim for no exceedance of pre-development peak ARI event discharge.</p>
<p><i>Responsible Parties</i></p>	<p>Civil Engineers / Hydraulic Engineer / Landscape Architect / ESD consultants</p>

2.8.2 LIGHT POLLUTION

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
<p><i>Whole Development</i></p> <p>Green Star – 27.0 Lighting Pollution to Neighbouring Bodies & 27.1 Light Pollution to Night Sky</p>	<p>The 331 – 335 St Kilda Road development will comply with the AS 4282:1997 <i>Control of the obtrusive effects of outdoor lighting</i> as a minimum requirement for light pollution to neighbouring bodies.</p> <p>In addition to this, the development is targeting to reduce light pollution to the night sky by either:</p> <ul style="list-style-type: none"> — Ensuring no external luminaire on the project has a Control of Upward Light Output Ratio (ULOR) that exceeds 5%, relative to its actual mounted orientation; or — Demonstrating that the direct illuminance from external luminaries on the building produces a maximum initial point illuminance value no greater than 0.5 Lux to the site boundary and 0.1 Lux to the 4.5m beyond the site into the night sky.
<p><i>Responsible Parties</i></p>	<p>Electrical Engineer / Architect</p>

2.8.3 MICROBIAL CONTROL

REQUIREMENTS / ESD COMMITMENTS	DESIGN RESPONSE
Whole Development Green Star – 28 Microbial Control	The building has a waterless heat-rejection system with no water used or contained in the system.
Responsible Parties	Mechanical Engineer

2.9 INNOVATION

The development aims to adapt an innovative approach and principals to the design. The 331 – 335 St Kilda Road development has committed to targeting 7 points from the innovation categories as detailed below.

Requirements / ESD Commitments	Innovative Design Response
<i>eWater Cleaning System</i> Green Star - 30.A Innovative Technology or Process	Alternative healthy cleaning systems could be introduced for the development such as eWater systems - http://www.ewatersystems.com/ which largely reduces chemicals used for cleaning. The development will explore the implementation of an eWater System allows for cleaning without harsh chemicals. This cleaner uses electrolysis to create highly effective and safe solutions (alkaline for cleaning and acidic for antimicrobial sanitising).
<i>Indoor Pollutants</i> Green Star - 30.C Improving on Green Star Benchmarks – Ultra-low VOC paints	Commitment to use more than 50% of paints (by volume) with a maximum TVOC content <5 g/L or zero, to exceed the Green Star benchmark for Credit 13 Indoor Pollutants.
<i>Community Benefits</i> Green Star - 30.D Innovation Challenge	Opportunities for community connection to be facilitated in communal areas of development – community vegetable garden, community gathering space, public art, sharing schemes etc.
<i>Integrating Healthy Environments</i> Green Star - 30.D Innovation Challenge	Undertake collaborative process with public health professionals and community to promote positive consequences on health. Dependent on outcomes of stakeholder engagement, initiatives implemented may include conveniently located and visible stairs for everyday use, exercise facilities, and creating pedestrian-friendly outdoor areas.
<i>Creative, Innovative & Dynamic</i> Green Star - 30.D Innovation Challenge	Encouraging innovative design solutions and the use of public art to be an integral component of the development proposals and environmental design.
<i>Financial Transparency</i> Green Star - 30.D Innovation Challenge	331 – 335 St Kilda Road development aims to disclose the cost of the sustainable building practices within the development and agree to participate in a yearly report developed by the GBCA with an aim to inform the building industry on the true costs of sustainability.
<i>Marketing Excellence</i> Green Star - 30.D Innovation Challenge	Implementation of an innovative marketing strategy will assist the site developers in providing information on the benefits of sustainability in a public and prominent way. The information will be aimed towards potential investors and future tenants of the 331 – 335 St Kilda Road development.
<i>High Performance Site Offices</i> Green Star - 30.D Innovation Challenge	331 -335 St Kilda Road aims to improve the quality of site offices to improve health of onsite staff and environmental impacts at construction through the provision of staff office. An occupant survey

	will be carried out to assess the satisfaction of the occupants of the site office during its use, and where issues were found, they have been addressed.
<i>Public/Indigenous art & Reconciliation Action Plan</i> Green Star - 30.D Innovation Challenge	The 331 – 335 St Kilda Road development could explore the possibility to include some public art to encourage building occupants develop a sense of belonging. It is recommended that the development consult Indigenous organisations and local community in developing pieces of aboriginal art to enhance a sense of identity. Potential for development, to develop a Reconciliation Action Plan in consultation with Indigenous organisations and meet 80% of RAP targets in first reporting cycle.
<i>WELL Building Standard – Restorative Spaces</i> Green Star - 30.E Global Sustainability	The WELL Building Standard is focused exclusively on human health & wellness. The WELL Feature Restorative Spaces (outdoor) requires designated outdoor space to be available to all regular building occupants. It should meet: <ul style="list-style-type: none"> a. Is designated exclusively for contemplation, relaxation and restoration (not to be used for work). b. Is a minimum of 7 m² plus 0.1 m²] per regular building occupant, up to a maximum of 74 m². Space may be broken up into multiple smaller spaces that total the required amount. c. Encourages contemplation, relaxation and restoration, in consideration of the design criteria below: <ul style="list-style-type: none"> — Accessible design. — Intrusive noise and sound masking (e.g., water feature, wind chimes). — Thermal comfort (e.g., availability of both sun-exposed and shaded areas). — Seating arrangements that accommodate a range of user preferences and activities (e.g., movable lightweight chairs, outdoor or weatherproof cushions, mats). — Nature incorporation. — Visual privacy — Calming colours, textures and forms. d. Is maintained on a weekly basis, at minimum. e. Education materials or resources are available to occupants explaining the purpose of the space(s) and how to make use of it.
Responsible Parties	All parties involved

APPENDIX A

GREEN STAR PATHWAY

Scorecard

Project:	331 - 335 St Kilda Road	Core Points Available	Total Score Targeted	Total Points TBC
Targeted Rating:	5 Star - Australian Excellence	99	62.2	5.6

CATEGORY / CREDIT	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS TARGETED	POINTS TBC
Management			14		
Green Star Accredited Professional	1.0	Accredited Professional	1	1	
	2.0	Environmental Performance Targets	-	Complies	
Commissioning and Tuning	2.1	Services and Maintainability Review	1	1	
	2.2	Building Commissioning	1	1	
	2.3	Building Systems Tuning	1	1	
	2.4	Independent Commissioning Agent	1	1	
Adaptation and Resilience	3.1	Implementation of a Climate Adaptation Plan	2	0	
Building Information	4.1	Building Information	1	1	
Commitment to Performance	5.1	Environmental Building Performance	1	1	
	5.2	End of Life Waste Performance	1	1	
Metering and Monitoring	6.0	Metering	-	Complies	
	6.1	Monitoring Systems	1	1	
Responsible Building Practices	7.0	Environmental Management Plan	-	Complies	
	7.1	Formalised Environmental Management System	1	1	
	7.2	High Quality Staff Support	1	1	
Operational Waste	8A	Performance Pathway - Specialist Plan	1	1	
	8B	Prescriptive Pathway - Facilities	-		
Total			14	12	0

Indoor Environment Quality		16		
Indoor Air Quality	9.1 Ventilation System Attributes	1	1	
	9.2 Provision of Outdoor Air	2	0	
	9.3 Exhaust or Elimination of Pollutants	1	1	
Acoustic Comfort	10.1 Internal Noise Levels	1	0	1
	10.2 Reverberation	0	0	
	10.3 Acoustic Separation	1	0	1
Lighting Comfort	11.0 Minimum Lighting Comfort	-	Complies	
	11.1 General Illuminance and Glare Reduction	1	1	
	11.2 Surface Illuminance	1	0	1
	11.3 Localised Lighting Control	1	1	
Visual Comfort	12.0 Glare Reduction	-	Complies	
	12.1 Daylight	2	0	
	12.2 Views	1	1	
Indoor Pollutants	13.1 Paints, Adhesives, Sealants and Carpets	1	1	
	13.2 Engineered Wood Products	1	1	
Thermal Comfort	14.1 Thermal Comfort	1	1	
	14.2 Advanced Thermal Comfort	1	0	
Total		16	8	3

Greenhouse Gas Emissions	15A.0 Conditional Requirement: Prescriptive Pathway	-		
	15A.1 Building Envelope	-		
	15A.2 Glazing	-		
	15A.3 Lighting	-		
	15A.4 Ventilation and Air-conditioning	-		
	15A.5 Domestic Hot Water Systems	-		
	15A.6 Accredited GreenPower	-		
	15B.0 Conditional Requirement: NatHERS Pathway	-	Complies	
	15B.1 NatHERS Pathway	16	4.2	2
	15C.0 Conditional Requirement: BASIX Pathway	-		
	15C.1 BASIX Pathway	-		
	15D.0 Conditional Requirement: NABERS Pathway	-		
	15D.1 NABERS Energy Commitment Agreement Pathway	-		
	15E.0 Conditional Requirement: Reference Building Pathway	-		
	15E.1 Comparison to a Reference Building Pathway	-		
Peak Electricity Demand Reduction	16A Prescriptive Pathway - On-site Energy Generation	-		
	16B Performance Pathway - Reference Building	2	2	
Total		18	6.2	2

Transport		10		
	17A.1 Performance Pathway	0		

Sustainable Transport	17B.1 Access by Public Transport	3	2	
	17B.2 Reduced Car Parking Provision	1	0.5	
	17B.3 Low Emission Vehicle Infrastructure	1	1	
	17B.4 Active Transport Facilities	1	1	
	17B.5 Walkable Neighbourhoods	1	1	
Total		7	5.5	0

Water		12		
Potable Water	18A.1 Potable Water - Performance Pathway	0		
	18B.1 Sanitary Fixture Efficiency	1	1	
	18B.2 Rainwater Reuse	1	0	
	18B.3 Heat Rejection	2	2	
	18B.4 Landscape Irrigation	1	1	
	18B.5 Fire System Test Water	1	1	
Total		6	5	0

Materials		14		
	19A.1 Comparative Life Cycle Assessment	0		
	19A.2 Additional Life Cycle Impact Reporting	4		
	19B.1 Concrete	3	1	0.5

Life Cycle Impacts	19B.2	Steel	1	1	
	19B.3	Building Reuse	4	0	
	19B.4	Structural Timber	4	0	
Responsible Building Materials	20.1	Structural and Reinforcing Steel	1	1	
	20.2	Timber Products	1	1	
	20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1	
Sustainable Products	21.1	Product Transparency and Sustainability	3	1	
Construction and Demolition Waste	22A	Fixed Benchmark	-		
	22B	Percentage Benchmark	1	1	
Total			12	7	0.5

Land Use & Ecology			6		
Ecological Value	23.0	Endangered, Threatened or Vulnerable Species	-	Complies	
	23.1	Ecological Value	3	1	
Sustainable Sites	24.0	Conditional Requirement	-	Complies	
	24.1	Reuse of Land	1	1	
	24.2	Contamination and Hazardous Materials	1	1	
Heat Island Effect	25.0	Heat Island Effect Reduction	1	1	
Total			6	4	0

Emissions			5		
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Stormwater	26.1	Stormwater Peak Discharge	1	1	
	26.2	Stormwater Pollution Targets	1	1	
Light Pollution	27.0	Light Pollution to Neighbouring Bodies	-	Complies	
	27.1	Light Pollution to Night Sky	1	1	
Microbial Control	28.0	Legionella Impacts from Cooling Systems	1	1	
Refrigerant Impacts	29.0	Refrigerants Impacts	1	0	
Total			5	4	0

Innovation			10		
Innovative Technology or Process	30A	Innovative Technology or Process		1	
Market Transformation	30B	Market Transformation			
Improving on Green Star Benchmarks	30C	Improving on Green Star Benchmarks	10	1	
Innovation Challenge	30D	Innovation Challenge		7	
Global Sustainability	30E	Global Sustainability		1	
Total			10	10	0

TOTALS	AVAILABLE	TARGETED	AWARDED
CORE POINTS	99	51.7	5.6
CATEGORY PERCENTAGE SCORE		52.2	
INNOVATION POINTS	10	10.0	
TOTAL SCORE TARGETED		62.2	

APPENDIX B

FIRSTRATE SAMPLE

To comply with Section J of the BCA 2019, all apartments within the building must achieve a minimum 5.0 Star and an average NatHERS rating of 6.5 Stars. The Green Star Design and As-built Tool v1.2 and Councils SDAPP requirements require 6.5 stars - the development will be aiming for an average of 7.0 Stars.

The requirements to achieve this minimum performance have been determined based on NatHERS modelling of a range of apartments using software package FirstRate5 version 5.2.7 (3.13). The analysis outlined in this document is based on architectural drawing set by Rothe Lowman. The relevant BCA climate zone for the project is climate zone 6.

FirstRate5 models have been built for a sample of typical apartments – representing the majority of typical apartments but including proportionally more examples of worst-case apartments.

B1.1 MODELLING PARAMETERS

The following parameters have been used in the modelling:

- External walls and walls separating apartments from unconditioned spaces (e.g. car park) – added R2.8 bulk insulation
- Roofs – added bulk insulation of R4.0 to top level and roofs adjoining common areas
- Floors adjoining unconditioned spaces apartments and the carpark:
 - Added soffit R1.5 for apt G01-G03
 - Added soffit R1.0 for apt G04-G07
- Adjoining walls between apartments – No insulation modelled
- All external doors have been modelled as weather-stripped
 - Floor coverings: living/kitchen – floating timber
 - Bedrooms – carpet
 - Laundry/bathrooms – tiles
- All laundries, kitchens and bathrooms have been modelled with 1 sealed exhaust vent
- No vented downlights have been modelled

Glazing Specification Requirement (Total system value)

- Light Grey – values as TBC
 - U value = 3.22
 - SHGC = 0.4

B1.2 MODELLING PARAMETERS

A summary of the NatHERS results is provided in Table 1. The following assessment has been completed with the window heights and widths as per the architectural drawings issued 22/07/21.

APARTMENT NUMBER	RATING (STARS)	HEATING LOADS (MJ/M ²)	COOLING LOADS (MJ/M ²)
G01	6.5	93.8	4.1
G03	6.1	105.9	5.3
G06	5.7	97.8	26.9
103	5.7	108.6	15.1
110	7.8	46.1	14.9
202	7.7	48.8	13.7
306	7.8	46.8	12.8
405	7.7	48.8	13.2
501	7.4	59.1	9.9
605	6.2	84.0	24.5
	Average Star Rating	7.2 Stars	
	Total Number of Apartments Modelled	10	

The NaHERS modelling displays compliance with Green Star requirements of 7-star average rating and a 5.5-star minimum. There are no apartments that exceed a cooling load of 30 MJ/m², which complies with the City of Port Phillip requirements. Please note that further design changes to glazing extent, building fabric or major changes to apartment layouts will likely influence the NatHERS rating and would need to be retested for compliance. Any further changes will need to be reassessed prior to final modelling.

APPENDIX C

STORMWATER

C1.1 STORMWATER OBJECTIVES

Impervious surfaces from the proposed site impact the quality and quantity of stormwater leaving the site to council's stormwater drains and local waterways. Existing stormwater systems are generally not designed to improve the quality of stormwater leaving the site – they move the stormwater as quickly as possible from the area and generally discharge into waterways. With increased development in cities and effects of climate change, increased frequency in intense storm events, council's stormwater systems are often overwhelmed in areas where sites connected to the systems have no installed Best Practise WSUD onsite.

C1.2 CITY OF PORT PHILLIP - WSUD REQUIREMENTS

Port Phillip City Council has recognised the importance of stormwater management and the effects on the surrounding environment. Sustainable water management needs to bring together water conservation, stormwater quality, wastewater reductions and groundwater quality to achieve the best long term results for Melbourne. WSUD provides the approach and tools to deliver these goals on the ground. A sustainable water management hierarchy is set out that encompasses the city as a catchment approach of managing water within the local area before drawing from beyond local boundaries. As a principle, all water saving projects should encompass stormwater treatment measures and vice versa.

- *Urban Stormwater – Best Practice Environmental Management Guidelines*, Victorian Stormwater Committee 1999 (as amended). Currently, these water quality performance objectives are:
 - Suspended Solids - 80% retention of typical urban annual load
 - Total Nitrogen - 45% retention of typical urban annual load
 - Total Phosphorus - 45% retention of typical urban annual load
 - Litter - 70% reduction of typical urban annual load

Table 2 WSUD Treatment for Surfaces onsite

SURFACES	AREA OF ZONES REQUIRING TREATMENT (M ²)	REQUIRED TREATMENT
Roof area connected to tank (non-trafficable areas)	1,550 m ² (minimum)	Runoff from the all non-trafficable roof areas of the building will be directed to a 40kL rainwater tank. The stored water will be used for flushing toilets in the cafe, restaurants and all apartments, and for irrigation. With this water ultimately being directed to the sewer.

		Overflow from the tank will be directed to detention tank prior to being sent to the legal point of discharge.
Roof areas, terrace and impervious surfaces not connected to tank	588 m ²	Rainwater collected from the remaining roof area will be directed to a detention tank prior to being directed to the legal point of discharge (LPD).

All non-trafficable roof areas (minimum of 1,550 m²) at the 331 – 335 St Kilda Road development will be used for rainwater harvesting. A rainwater tank sizing study has established that a rainwater tank with a total capacity of 40kL will be utilised for toilet flushing (ground floor café & restaurant, EOT, and apartments) and general irrigation.

Figure 2.3 below demonstrates the area breakdown of the development, with the yellow area signifying the roof area that is connected to the rainwater tank. This area is intended to be used for rainwater harvesting purposes. All the trafficable areas including terrace, balcony and other impervious surfaces (totalling 588m²) will not be connected to the rainwater tank.

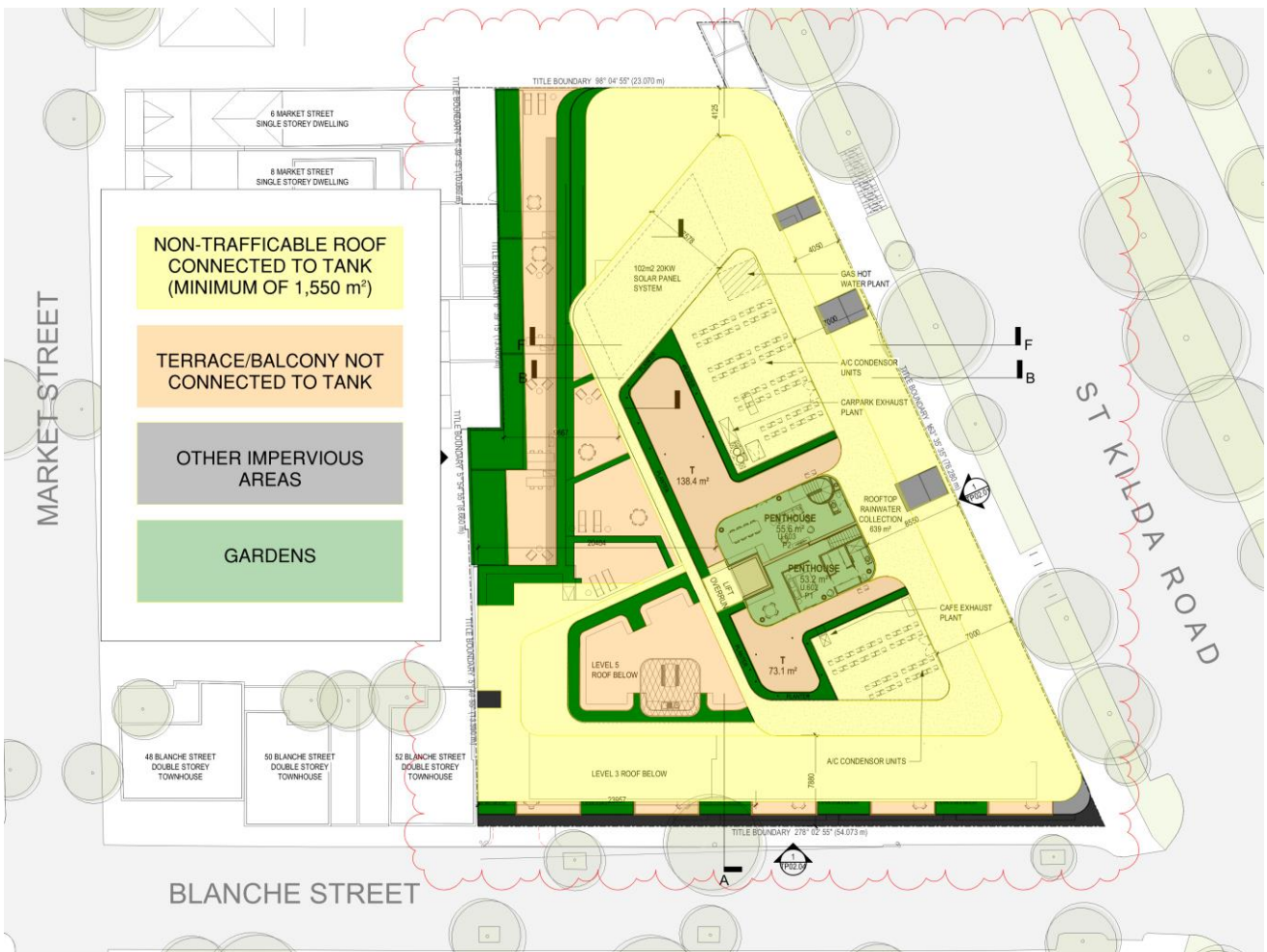


Figure 2.3: Example of the rainwater collection areas – 331 – 335 St Kilda Road Development – Yellow areas indicating areas which rainwater will be collected from and orange and grey area are those connected directly to detention.

C1.3 STORM MODELLING

For compliance with Water Sensitive Urban Design (WSUD) requirements, 331 – 335 St Kilda Road has undergone preliminary STORM modelling to enhance its stormwater management strategy. The online STORM calculator is recognised by the City of Port Phillip council as an acceptable stormwater modelling tool and can be used as a submission to statutory authorities. A snapshot of the STORM outcome for 331-335 St Kilda Road and some of the key inputs can be seen in the figure below.



STORM Rating Report

TransactionID: 1182431
 Municipality: PORT PHILLIP
 Rainfall Station: PORT PHILLIP
 Address: 331-333 St Kilda Road

St Kilda
 VIC 3182

Assessor: WSP
 Development Type: Residential - Mixed Use
 Allotment Site (m2): 2,540.00
 STORM Rating %: 104

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof connected to tank	775.00	Rainwater Tank	20,000.00	80	167.70	80.00
Roof connected to tank2	775.00	Rainwater Tank	20,000.00	80	167.70	80.00
Terrace / Balcony	498.00	None	0.00	0	0.00	0.00
Other impervious	58.00	None	0.00	0	0.00	0.00
Roof uncollected	397.00	None	0.00	0	0.00	0.00

one 40kL tank

Figure 2.4: 331 – 335 St Kilda Road Development - Preliminary STORM model

APPENDIX D

GREENHOUSE GAS EMISSION CALCULATOR

Green Star Design & As Built

Greenhouse Gas Emissions Calculator

 Developed by the
Green Building Council of Australia



User Input Cells

This calculator addresses criterion '15B GHG Emissions Reduction - NatHERS Pathway' and '16A Prescriptive Pathway - Onsite Energy Generation'.

15B NatHERS Pathway

Conditional Requirement

Targeted Green Star Rating **5 Star** Stars

Project input

Legislated Minimum Development Average Rating	6	star
Legislated Minimum Worst-Case Apartment Rating	5	star
Project Average Energy Intensity	88.5	MJ/m ²
Project Worst-Case Energy Intensity	124.7	MJ/m ²
NatHERS Climate Zone	62	
Ventilation and Comfort strategy	Mechanical Heating/Cooling	
Which is provided? Heating, cooling or both?	Both	
If Mixed, proportion of apartments with nat vent		
Building total nominal occupancy	316	

Benchmark Building Information

Minimum Average Benchmark	6.5	star
Minimum Worst-Case Benchmark	5.5	star
Benchmark Energy Intensity	108.0	MJ/m ²
Worst Case Energy Intensity Benchmark	144.0	MJ/m ²
Energy Intensity at NatHERS 10-star	1.0	MJ/m ²

Energy Intensity Conditional Requirement met?

PASS

Worst Case Unit Conditional Requirement met?

PASS

Performance Improvement

18%

BUILDING SERVICES SPECIFICATION

Lighting

Lighting power density is reduced by at least 10% below the requirement of BCA Part J6 for sole-occupancy units of Class 2 buildings, and in all communal areas accessible by residents

Yes

Independent light switching to each room of each sole-occupancy unit (including separation of kitchen and living area in open-plan living/dining areas).

Yes

All common area lighting with automatic lighting control

Yes

Ventilation and Air-Conditioning

Mechanical cooling

Yes

Minimum cooling system Energy Star rating

3

star

Installed equipment capacity no more than 10% greater than design cooling capacity

No

Mechanical heating provided? (only assessed if cooling is not provided)

Yes

Minimum heating system Energy Star rating

3

star

Installed equipment capacity no more than 20% greater than design heating capacity

No

Natural Ventilation

No

Compliance is achieved with IEQ Indoor Air Quality credit

No

Cross ventilation pathway in all naturally ventilated apartments

No

Ceiling fan installed in all naturally ventilated apartments	No
Domestic Hot Water	
DHW non-renewable fuel source	Natural Gas
Installed solar thermal heating system capacity (total RECs)	
Appliances and Equipment	
Refrigerators achieve a minimum Energy Rating of 1 star below the maximum available rating	NA
Washing machines achieve a minimum Energy Rating of 1 star below the maximum available rating	NA
Clothes dryers achieve a minimum Energy Rating of 1 star below the maximum available rating	NA
Dishwashers achieve a minimum Energy Rating of 1 star below the maximum available rating	Yes
Accredited GreenPower®	
Percentage GreenPower®	20%
Length of GreenPower contract period (in years)	10
CREDIT SCORE	
Energy Intensity Reduction	1.5
HVAC	0.0
Lighting	1.3
Domestic Hot Water	0.5
Appliances and Equipment	1.0
Accredited GreenPower®	0.0
TOTAL POINTS ACHIEVED	4.3
TOTAL POINTS AVAILABLE	16.0

15.0 Conditional Requirement for Minimum points threshold

Conditional Requirement Met