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Date: 27 August 2026

Sustainability Management Plan

Thornbury House

ACKNOWLEDGEMENT OF COUNTRY

We respectfully acknowledge that every project enabled or assisted by HIP V. HYPE in Australia exists on traditional Aboriginal lands which have been sustained for thousands of years.

We honour their ongoing connection to these lands, and seek to respectfully acknowledge the Traditional Custodians in our work.

WHO WE ARE

HIP V. HYPE provides advice that is commercially grounded, yet ambitious. We pursue exceptional outcomes that are socially, economically and environmentally sustainable and enable action across government, institutions and organisations.

We seek to partner with those who are willing to think strategically to achieve better. We lead, collaborate and support others to deliver impact and build Better Cities and Regions, Better Buildings and Better Businesses.

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Project Overview

Project Name	Thornbury House
Address	716 High Street, Thornbury
Traditional Custodians	Wurundjeri Woi-wurrung
Client	Antipodean Land Developments
Project Manager	Ten:Eight
Architect	Austin Maynard Architects
Sustainability	HIP V. HYPE
Development Summary	Retail: 266 sq.m (Internal) Apartments: 47 total



Conceptual Render by Austin Maynard Architects.

Executive Summary

Thornbury House is envisaged to bring high-performance, sustainable apartment living to the heart of Thornbury.

The mixed-use project is comprised of both residential and commercial spaces. The ground floor retail tenancy open up onto both High Street and Rossmoyne Street, creating new opportunities to connect and engage with the Thornbury community.

KEY INITIATIVES

The following key initiatives have been adopted by the project team and underpin the design approach:

- Passive design to target a minimum average NatHERS rating of at least 7.5-Stars, minimising the need for active energy systems
- No fossil fuels including natural gas. 100% all-electric building
- Maintain comfortable internal temperatures passively, using little or no energy, providing comfortable living spaces year round and protecting inhabitants from extreme weather events
- Create healthy homes, including reduction in the use of harmful VOCs in glues, sealants and paints, and protection from dust and other external airborne pollutants
- Cost effective design that provides a sustainable outcome, avoiding over engineering and providing for simple maintenance over time
- Minimise consumption of natural resources, including water and raw materials
- Minimise environmental impacts through operation, including energy consumption, waste creation and discharge of pollutants

BESS ASSESSMENT

Thornbury House has achieved an overall score of 71% within BESS, meeting the industry ‘Excellence’ standard.

CATEGORY	SCORE
MANAGEMENT	99%
WATER	57%
ENERGY	65%
STORMWATER	100%
IEQ	82%
TRANSPORT	77%
WASTE	67%
URBAN ECOLOGY	55%
INNOVATION	40%
TOTAL BESS SCORE	71%

Statutory Requirements

This section provides an overview of the statutory requirements outlined in City of Darebin’s Planning Scheme. 716 High Street responds to Environmental Sustainable Development Clause 15.01-2L-01.

CLAUSE 15.01-2L-01 ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT	
Energy Performance Reduce both energy use and energy peak demand through design measures such as: - Building orientation - Shading to glazed surfaces - Optimising glazing to exposed surfaces - Inclusion of or space allocation for renewable technologies	Transport - Design development to promote the use of walking, cycling and public transport, in that order; and minimise car dependency - Promote the use of low emissions vehicle technologies and supporting infrastructure
Integrated Water Management - Reduce total operating potable water use through appropriate design measures such as water efficient fixtures, appliances, equipment, irrigation and landscaping - Encourage the appropriate use of alternative water sources (including greywater, rainwater and stormwater) - Incorporate best practice water sensitive urban design to improve the quality of stormwater runoff and reduce impacts on water systems and water bodies	Waste Management - Promote waste avoidance, reuse and recycling during the design, construction and operation stages of development - Encourage use of durable and reusable building materials - Ensure sufficient space is allocated for future change in waste management needs, including (where possible) composting and green waste facilities
Indoor Environment Quality - Achieve a healthy indoor environment quality, including thermal performance and access to fresh air and daylight, prioritising passive design over mechanical heating, ventilation, cooling and lighting - Reduce indoor air pollutants by encouraging the use of low-toxicity materials - Minimise noise levels and noise transfer within and between buildings and associated external areas	Urban Ecology - Protect and enhance biodiversity by incorporating natural habitats and planting indigenous vegetation - Reduce urban heat island effects through building design, landscape design, water sensitive urban design and the retention and provision of canopy and significant trees - Encourage the provision of space for productive gardens, particularly in larger residential developments

Our responsibility is to leave our cities and regions in a better condition than we found them.

Management

Effective management practices can improve the sustainability performance of a project by influencing areas where decision-making is critical. Projects should prioritise the implementation of processes and strategies that support positive sustainability outcomes during construction.

PROJECT RESPONSE

Thornbury House responds to these requirements through fundamental integration of a number of measures. These include:

Pre-application Meeting

- HV.H will be involved/have input to a pre-application meeting with Local Council and/or DTP/OVGA, and also contributing a summary report prior to the planning submission

Thermal Performance Modelling

- Preliminary NatHERS modelling has been undertaken. Refer Appendix A
- Preliminary facade assessment has been undertaken. Refer Appendix B

Metering

- Sub-meters will be provided to all apartments, with retail space also separately metered
- All common area lighting and power will be separately metered

Building User’s Guide

- A building user’s guide with information on how to most efficiently operate all active systems will be provided through a resident welcome pack



Site Inspection at Ferrars & York, South Melbourne. Photography by Kim Landy.

Water Efficiency & Management

Water is an increasingly important natural resource. Well managed, it can provide for a multitude of uses critical to our day to day lives, while also sustaining the environment on which we fundamentally depend.

However, there are increasing demands placed on our water sources, and unsustainable water management practices are common.

A building's design has a significant impact on the water consumption of its occupants, along with the way water leaves the site through the sewer and stormwater systems. Minor changes to design can have long lasting benefits.

PROJECT RESPONSE

The development has applied the following key design measures in relation to water use:

Fittings & Fixtures

- During documentation the project will specify the following minimum WELS ratings for fittings and fixtures:
 - + Showers: 4-star (<7.5L/min)
 - + Toilets: 4-star
 - + Taps: 5-star
 - + Dishwashers: 5-star
 - + Washing machine: Occupant to install

Landscape

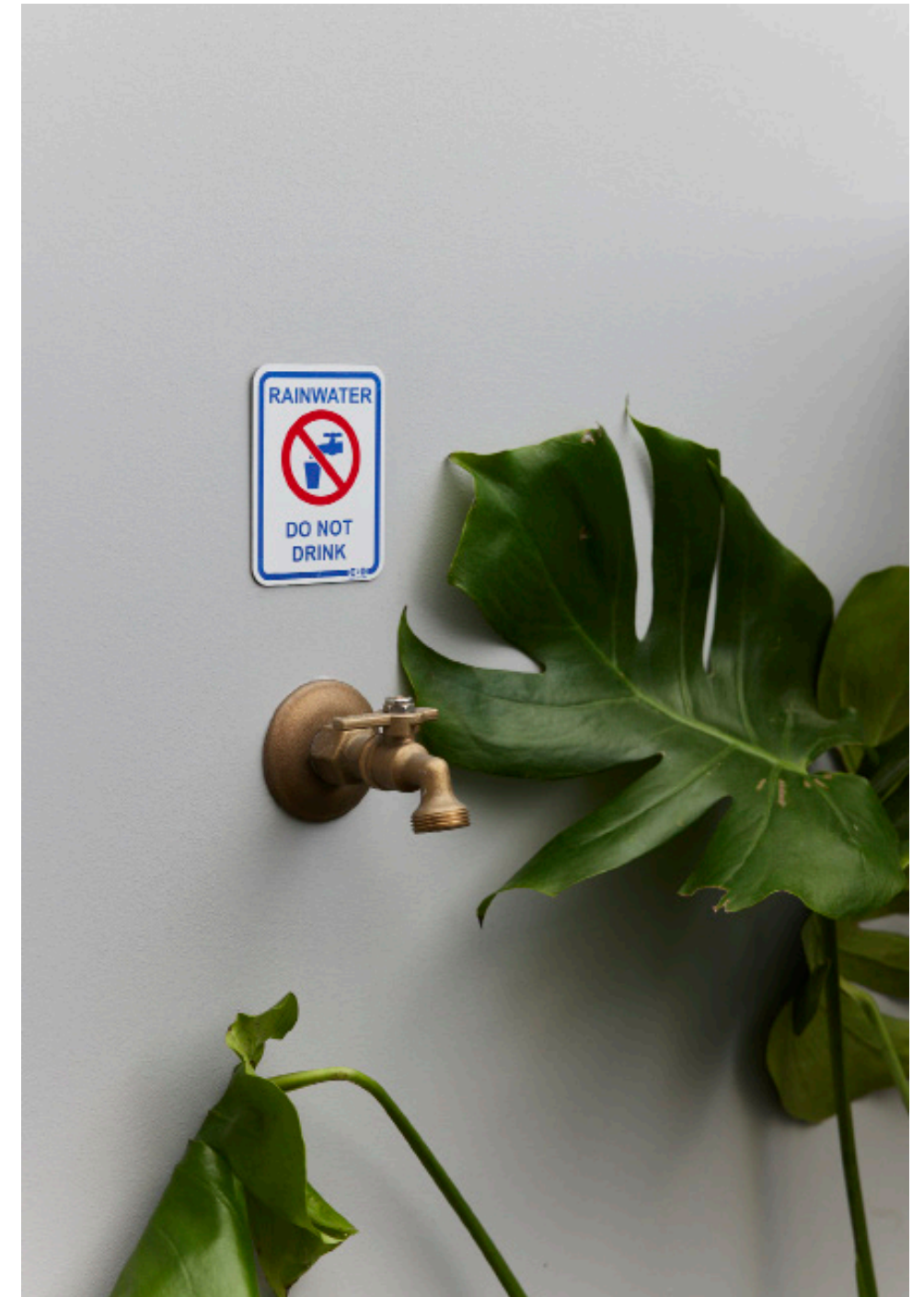
- Where appropriate drought tolerant plant species will be specified for landscaping
- Water efficient landscaping will be installed

Building Services

- Mechanical building systems will be air-cooled rather than water-cooled
- Water used in fire test system will be collected and reused for another fit-for purpose use

Rainwater & Stormwater Management

- Clean roof areas from the building will be directed to 10,000L rainwater tanks for use in toilet flushing
- Refer Appendix C for WSUD Assessment



Rainwater connections to balcony taps at Ferrars & York.
Photography by Kim Landy.

Energy Efficiency

Energy efficient design is the product of an effective response to environmental factors, early strategic thinking in design and a considered approach to construction.

Achieving a highly energy efficient building doesn't require a significant additional upfront cost. Often, it's just ensuring basic principles of passive design are integrated early on, and that ongoing energy use is considered when selecting building services and appliances.

PROJECT RESPONSE

Thornbury House responds to these requirements through fundamental integration of a number of measures. These include:

Thermal Performance

- An average thermal performance target for all residences of at least 7.7-Star NatHERS
- Glazing placement and sizing carefully managed to reduce unwanted heat gain and heat loss, while providing natural light to habitable spaces
- High-performance, double glazed window systems to all apartments

A preliminary sample of NatHERS ratings has been undertaken; the outputs are included in Appendix A.



External operable blinds. Photography by Kim Landy.

Energy Efficiency

An effective approach to energy efficiency is also often the simplest, cheapest way to reduce greenhouse gas emissions and ongoing operational costs.

Energy Efficiency

- All exposed floors and ceilings in non-residential areas demonstrate a minimum 10% improvement in required NCC2022 insulation levels (total R-value downwards)
- Heating and cooling systems are within 85% of the most efficient equivalent capacity unit available
- Electric Instantaneous hot water generation units provided for all apartment.

Efficient Systems and Appliances

- All internal lighting will be provided at 20% better than that required by NCC2022 Table J7D3a.
- Electric induction cooktops will be provided for all apartments
- All apartments will have a master save-switch at the entry to enable all non-essential power to be switched off when leaving the apartment

Renewable Energy

- A minimum 12.1kWp solar photovoltaic system will be installed, offsetting residential and commercial power usage and supplementing domestic hot water systems.
- Solar calculations and the PV array are provided in Appendix D



Induction cooktops at Ferrars & York. Photography by Kim Landy.

Indoor Environment Quality

Best practice design for Indoor Environment Quality means that building occupants can enjoy a comfortable space with high air quality, adequate daylight and ventilation. Indoor environment quality is affected by building orientation and layout, window sizes and specification, shading devices, products used for construction and fit-out and neighbouring structures.

PROJECT RESPONSE
Thornbury House responds to these requirements through fundamental integration of a number of measures. These include:
Ventilation
– Glazing placement and sizing carefully managed to reduce unwanted heat gain and heat loss, while providing natural ventilation to habitable spaces – All apartments will be provided with 100% effective natural ventilation – 100% increase in outdoor air above AS 1668:2012 will be provided to all retail/commercial tenancies – CO2 concentrations are monitored and maintained at 800ppm

Natural Daylight
– All apartment living rooms and bedrooms have access to a view and daylight – Designed to exceed BESS requirements for daylight into all living rooms and commercial and retail spaces – Refer Appendix E for Daylight Assessment
Thermal Comfort
– All apartments will have high quality double glazed windows contributing to high thermal comfort outcomes
Acoustics
– All apartments will be acoustically separated from adjacent apartments and external spaces – All apartments will have high quality double glazed windows contributing to high acoustic performance
Shading
– Effective shading will be provided for 100% of the east, west, and north glazing in non-residential areas.
Air quality
– All paints, sealants and adhesives comply with the maximum total indoor pollutant emission limits – All carpets comply with the maximum total indoor pollutant emission limits – All engineered wood products comply with the maximum total indoor pollutant limits

Material Selection

All materials used in construction have an environmental and social impact. This varies dramatically depending on the raw materials used, manufacturing process, the application and ongoing maintenance requirements.

Careful consideration in selecting materials can significantly reduce the overall environmental and social impact of the project. Materials that have lower embodied energy, use recycled content and renewable resources, exclude harmful substances such as Volatile Organic Compounds (VOCs) and are more durable will result in a more sustainable, longer lasting and safer building.

PROJECT RESPONSE

Thornbury House responds to these requirements through fundamental integration of a number of measures. These include:

- The selection of materials will focus on durability with the aim of extending replacement times
- During the project's Detailed Design phase all materials will be evaluated regarding their potential toxicity. This will result in the specify of low VOC materials, adhesives and finishes throughout wherever practical
- The project will specify zero to low VOC paints
- The project will minimise the use of MDF
- The project will minimise specification of PVC materials and finishes to limit off gassing exposure
- All structural timber used in construction will be FSC or AFS certified products
- Locally manufactured products will be utilised where possible
- Prioritising low embodied carbon materials
- Utilising recycled materials where possible



Recycled and repurposed materials from Ferrars & York, Revival Sustainable Practice. Photography by Kim Landy.

Sustainable Waste Management

New buildings and infrastructure generate waste during both construction and operation. With considered thinking and minor changes during design, both can be significantly reduced. Similarly, approximately 47% of household waste is organic (including food and garden waste). When this goes to landfill methane emissions are released which account for around 3% of Australia’s greenhouse gas emissions. However, if diverted to an organic waste treatment system, this waste can be productively reused in productive gardens while avoiding these methane emissions. Poor waste practices and treatment of the environment in the past have not only led to a degradation of our water, air and land resources but also represent a big financial burden to current and future generations. Simple design decisions can influence the amount of construction waste being produced and operational waste streams being separated.

PROJECT RESPONSE

Thornbury House responds to these requirements through fundamental integration of a number of measures. These include:

Waste Generated During Construction

- The builder and/or waste management contractor’s contract will include a requirement for 80% by mass of construction waste to be diverted from landfill (i.e. reused or recycled). Prior to recycling soil, the contractor will ensure a soil test is conducted and soil is only reused in the absence of contamination

Waste During Operation

- Separated waste streams will be built into kitchen joinery, making it easy for residents to divert as much waste from landfill as possible
- Facilities for food, organics, and green waste will be incorporated into the building design



Kitchen joinery bin separation. Photography by Kim Landy.

Sustainable Transport

The sustainability of transport modes is related to both environmental, social and economic factors. Buildings, infrastructure and behaviour conducive to sustainable transport modes can lead to reduced greenhouse gas emissions, less air pollution, lower living costs and improved health and well-being.

PROJECT RESPONSE

Each project has the capacity to influence the future travel habits of occupants. By making a conscious decision to incentivise sustainable transport modes long lasting benefits can be created for the occupants and wider society.

Thornbury House responds to these requirements through fundamental integration of a number of measures. These include:

Access to Public Transport

- Proximity to forms of public transport which connect it to the city where metropolitan Melbourne and outer suburbs can be accessed
- The project is a 4-minute walk to the High St/Clarendon St bus stop, a 1-minute walk to the Number 86 tram on High Street, and a 6-minute walk to Thornbury train station

Active Transport

- 54 secure bicycle parking spaces are provided for residents, along with additional bike maintenance facilities, and 10 bicycle spaces are allocated for residential visitors.
- 1 bicycle space is provided for commercial use, and 3 bicycle spaces for commercial visitors.
- The site's location means that many services will be accessible on foot or by bicycle
- Residents will be provided with a resident's welcome pack containing detailed information on public transport, cycling routes and local shopping
- All bike parking facilities for the residents are located at entry level.

Electric Vehicles

- At least 1 EV charge points will be provided from day 1



Integrated EV charging in Ferrars & York car stacker.
Photography by Kim Landy.

Urban Ecology

The impact of urban development on land use and biodiversity, and the best way to have a positive impact on this, varies dramatically according to context. Urban ecology is also critical to human health and to establishing resilience to urban heat impacts and the extreme heat that climate change is already bringing.

PROJECT RESPONSE

Thornbury House responds to these requirements through fundamental integration of a number of measures. These include:

Communal Spaces

- Outdoor communal roof terraces will be provided for residents to share and enjoy
- Rooftop communal garden will be provided for all residents and regular occupants to benefit

Vegetation

- The design improves the existing site through incorporation of landscaping, including measures in the private and public realm to assist in minimising local urban heat impacts and preserving biodiversity value
- Locally indigenous, native or adaptive species which will be used to reduce maintenance requirements associated with upkeep, irrigation, and pest management
- Rooftop planting elements included within the landscape design

Private Open Space- Balcony/ Courtyard Ecology

- A tap and floor waste will be provided on each balcony to encourage plants to be grown on balconies



Rooftop productive gardens at Burwood Brickworks.
Photography by Kim Landy.

Thornbury House is adopting a number of innovative strategies and programs that should be used as an exemplar within the Darebin Council.

PROJECT RESPONSE

Thornbury House responds to these requirements through fundamental integration of a number of measures. These include:

No street-wall setbacks

This project will adopt a no street-wall setback approach, meaning the building façade will be positioned directly along the property boundary without a recessed frontage. This design strategy contributes to sustainability and energy efficiency in two key ways:

- Lower Embodied Carbon – By eliminating the need for a transfer structure typically required to support upper levels over a setback, the building reduces the use of high-carbon materials such as concrete and steel, thereby minimizing its overall embodied carbon footprint.
- Improved Thermal Performance – A continuous street-wall reduces the number of exposed surfaces and thermal bridging points, enhancing insulation performance and reducing heat loss or gain. This leads to greater energy efficiency, supporting thermal comfort and reducing the building’s operational energy demands.

Embedded network

Thornbury House will adopt 100% renewable electricity, with at least 5% generated on-site from sources like solar, promoting sustainability and reducing carbon emissions. These regulations also ensure consumer protections and provide residents with a choice of energy retailer, addressing previous concerns about limited options and price gouging.

Key benefits include cost savings through bulk electricity purchasing and shared infrastructure, easier integration of solar

panels and battery storage, and improved energy efficiency by enabling energy sharing within buildings. A single provider manages electricity distribution, simplifying infrastructure, billing, and administration while offering consolidated bills that include various utilities and EV charging. Additionally, centralized smart metering allows real-time energy monitoring, supports demand response programs, and enhances overall energy efficiency, reducing peak demand costs.

Appendix A: Preliminary NatHERS Assessment

Modelling Assumptions

A preliminary NatHERS assessment has been completed on a sample of dwellings

The following table describes the modelling parameter assumptions made for this analysis.

ITEM	ASSUMPTION VALUES	FURTHER COMMENTS
EXTERNAL WALLS	– Metal clad wall with R2.7 insulation for Level 7 – Brick wall with R2.7 insulation for all other levels	Walls have been built and assigned based on the following assumptions. Updated plans and wall build up will be reflected in final modelling and may affect the energy rating.
PARTY/INTERNAL WALLS	Lightweight plasterboard stud with R2.7 insulation	
ROOF AND EXPOSED CEILING	– Roof : metal skillion, with R4.00 insulation – Exposed Ceiling: R3.65 insulation	
CEILING/FLOOR BETWEEN APARTMENTS	– 250mm ground floor Concrete slab on ground – 200mm slab between all levels – No added insulation	
FLOOR ABOVE UNCONDITIONED SPACES	All exposed: R2.0	
GLAZING PERFORMANCE	Window Glazing – Fixed : U2.58 SHGC 0.49 – Sliding: U3.10 SHGC 0.44 – Awning: U2.91 SHGC 0.37 – Casement: U2.78 SHGC 0.49 – Hinged door: U2.95 SHGC 0.49	Window sizes, types and locations have been modelled based on the GA Plans.

Modelling Results

Based on the modelling assumptions outlined above, the following results have been obtained.

RESULTS SUMMARY				
APARTMENT NO.	HEATING LOAD (MJ/M²)	COOLING LOAD (MJ/M²)	TOTAL (MJ/M²)	NATHERS RATING
G01	32.7	5.9	38.6	8.3
G03	32.0	7.5	39.5	8.2
G04	35.5	11.7	47.2	7.8
102	7.3	17.8	25.0	8.9
105	54.3	12.2	66.5	6.8
108	48.1	15.1	63.2	6.9
204	26.5	14.2	40.7	8.2
209	13.8	8.9	22.6	9.2
304	38.0	10.9	48.9	7.7
305	36.5	10.6	47.1	7.8
404	52.7	13.5	66.2	6.8
405	36.5	10.1	46.6	7.8
601	52.2	16.6	68.9	6.6
602	46.0	18.3	64.3	6.9
603	31.4	15.4	46.8	7.8
701	25.3	21.3	46.7	7.8
702	42.3	18.1	60.4	7.1
TOTAL AVERAGE	35.9	13.4	49.4	7.7

Appendix B: NCC Section J DTS Assessment

Preliminary Energy Efficiency Assessment

A preliminary Energy Efficiency assessment of the building thermal envelope for the communal areas of the apartment buildings has been conducted following the Deemed-to-Satisfy method.

The final Section J may be conducted following either a DTS or a Verification Method or a combination of the two.

ENERGY EFFICIENCY ASSESSMENT

A preliminary Energy Efficiency assessment has been conducted to advise on the thermal performance requirements of the building thermal envelope for the communal areas of the apartment buildings in order to meet Council ESD expectations and to ensure that the development has the design potential to achieve its sustainability ambitions.

The following table outlines the assumptions that have been used as part of the preliminary assessment.

FABRIC ELEMENT	REQUIREMENT
External walls	R _T 1.4
Internal walls	R _T 1.4
Floors	R _T 2.2
Roofs	R _T 3.6
Glazing	U _w 4.0 SHGC _w 0.30

SPECKEL RESULTS

The Speckel software has been used to complete this preliminary assessment as provided below.

716 High Street, Thornbury



J4D6 Walls and glazing (Method 2)

Each building class has been assessed against J4D6 Walls and glazing (Method 2)

Class 6 Retail

To meet the acceptance criteria, the area-weighted aspects must achieve:

- a wall-glazing Total U-value less than or equal to 2.00
- a wall Total R-Value greater than or equal to 1.00
- an air-conditioning energy value less than or equal to 42.72

A total surface area of 373.28 m² was assessed, **meeting** the acceptance criteria.

	Performance	Requirement	Pass
Wall-glazing U-value (W/m²K°)	1.72	2.00	✓
Wall R-value (m²K°/W)	1.20	1.00	✓
AC value	40.22	42.72	✓

Appendix C: Water Sensitive Urban Design

Introduction

This report provides an overview of the water sensitive urban design (WSUD) strategy for the 716 High street, Thornbury within the municipal boundaries of the Darebin City Council. This is in response to Clause 15.01-2L-01– Environmentally Sustainable Development, Clause 53.18-5 Stormwater Management Objectives and Clause 53.18-6 Site Management.

CLAUSE 15.01-2L-01 ENVIRONMENTAL SUSTAINABLE DEVELOPMENT

Integrated Water Management

- Reduce total operating potable water use through appropriate design measures such as water efficient fixtures, appliances, equipment, irrigation and landscaping.
- Encourage the appropriate use of alternative water sources (including greywater, rainwater and stormwater).
- Incorporate best practice water sensitive urban design to improve the quality of stormwater runoff and reduce impacts on water systems and water bodies.

CLAUSE 53.18-5 STORMWATER MANAGEMENT OBJECTIVES

The overarching objective is:

- To encourage stormwater management that maximises the retention and reuse of stormwater.
- To encourage development that reduces the impact of stormwater on the drainage system and filters sediment and waste from stormwater prior to discharge from the site
- To encourage stormwater management that contributes to cooling, local habitat improvements and provision of attractive and enjoyable spaces
- To encourage stormwater management that maximises the retention and reuse of stormwater
- To ensure that industrial and commercial chemical pollutants and other toxicants do not enter the stormwater system

Standard W2

The stormwater management system should be designed to::

- Meet the current best practice performance objectives for stormwater quality as contained in the Urban stormwater management guidance

- Minimise the impact of chemical pollutants and other toxicants including by, but not limited to, bunding and covering or roofing of storage, loading and work areas
- Contribute to cooling, improving local habitat and providing attractive and enjoyable spaces.

CLAUSE 53.18-6 SITE MANAGEMENT

The overarching objective is:

- To protect drainage infrastructure and receiving waters from sedimentation and contamination
- To protect the site and surrounding area from environmental degradation prior to and during construction of subdivision works

Standard W3

An application should describe how the site will be managed prior to and during the construction period and may set out requirements for managing:

- Erosion and sediment
- Stormwater
- Litter, concrete and other construction waste
- Chemical contamination

Compliance

The project is designed to meet the objectives and standards of Clause 53.18-5 and 53.18-6, addressing both stormwater management and site management requirements.

Rainwater Tank Flow Modelling

The rainwater tank flows have been modelled using daily rainfall data, with a methodology that closely estimates usage due to occupants, inflows from rainfall events (actual data) and other relevant inputs to confirm potential for rainwater contribution.

TANK FLOW MODELING	
This model also includes landscape irrigation, and has the potential to include other systems such as greywater and blackwater, though these are not relevant to this project. All relevant inputs and factors are shown below.	
Key Information:	
ITEM	SUMMARY
Development Summary	47 residential apartments, 30m² per person
Usage Type	WC: 2 half flush, 0.5 full flush per day Basin: 3 uses per day for 0.15 mins Shower: 1 use per day for 5 mins Laundry: 1 kg/day per person, 8kg/load and 70L per load Kitchen: 6 tap uses per day for 1.0 mins plus 1 dishwasher use per day Consumed: 5 cups per person per day
Irrigation	Deep soil planters: 115m² On-structure planters: 72m² 10% undercover; Crop co-efficient: 0.5; Subsurface drip-type irrigation
Rainwater Reuse	Rainwater is used for toilet flushing only.



Habitat Regeneration at Gillies Hall, Monash University.
Photography by Kim Landy

Stormwater Calculations

Melbourne Water’s Stormwater Treatment Objective – Relative Measure (STORM) Calculator is a simple analysis method for stormwater treatment and water sensitive urban design (WSUD). It rates the performance of treatment measures such as rainwater tanks, wetlands, and infiltration systems relative to best practice targets, and calculates a weighted average score. A STORM score of 100 or greater indicates that treatment measures are of sufficiently high standard.

In order to demonstrate compliance, a score of 100% must be achieved using the Stormwater Treatment Objective – Relative Measure (STORM) tool, demonstrating that the following has been achieved:

- Suspended solids: 80% retention of typical urban load
- Total Nitrogen: 45% retention of typical urban load
- Total Phosphorous: 45% retention of typical urban load
- Litter: 70% reduction of typical urban load

A provisional STORM rating has been carried out, based on the following WSUD measures:

- Collection from non-trafficable roof area of 745m²
- Storage in a 10kL rainwater tank for the development.
- The rainwater collected will be reused for toilet flushing only.

Note: No rainwater is to be collected and re-used from planter boxes or landscaped areas under any circumstance.

The development achieves a STORM rating of 109%.

Project # D8264A23
Thornbury House
sujan dev - sujan@hipvhype.com
716 High St, Thornbury VIC 3071, Australia
27 August 2026 11:36 a.m.



Thornbury House

Nitrogen reduction target has been met, and a small low-risk project is deemed to comply. Higher risk projects need to meet all targets.



Project details

Name	Thornbury House
Project ID	D8264A23
Street address	716 High St, Thornbury VIC 3071, Australia
Municipality	Darebin
Site area	1225 m ²
Planning Number	

Results

Item	Result	Target
Total suspended solids (%)	51%	>80%
Total phosphorus (%)	50%	>45%
Total nitrogen (%)	49%	>45%
Total gross pollutants (%)	66%	>70%
Mean annual runoff volume harvested or evapotranspired (%)	48%	>27%
Mean annual runoff volume infiltrated or filtered (%)	0%	>9%

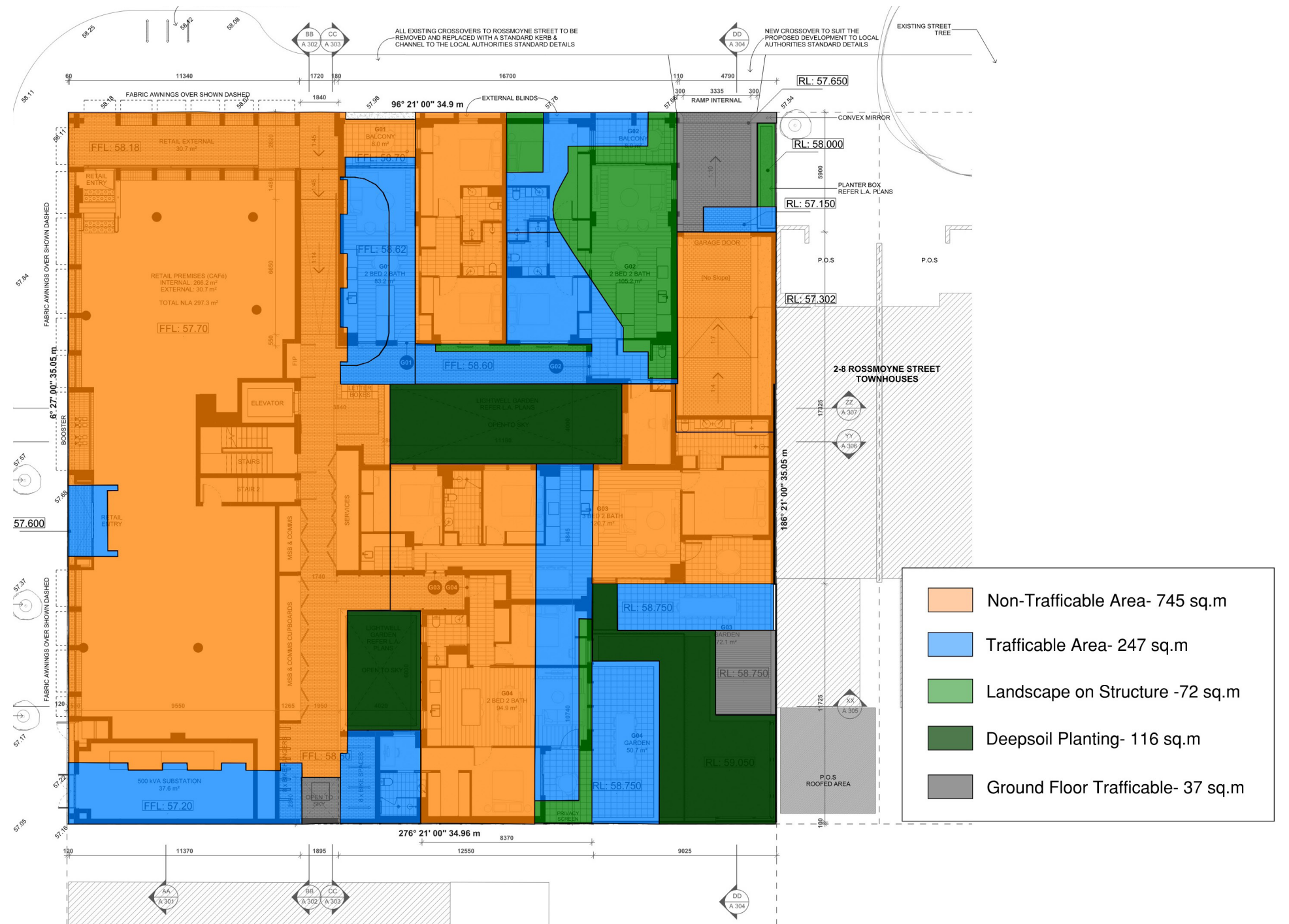
For small low-risk sites, Total Nitrogen has been used as a proxy for other pollutants indicating compliance has been adequately met for many years. This has meant that if the Blue Factor score meets 100% based on Nitrogen, the Responsible Authority has the discretion to accept stormwater management design responses that do not meet all the individual pollutant load reduction targets on small low-risk sites.

Larger, high-risk projects, with roads, car parks or activities that may yield higher than typical pollutant loads, must meet all water quality targets fully. All projects should manage flow volume reductions through harvesting and evapotranspiration as well as infiltration to a level that is reasonably practicable.

Additional considerations

Flow and other pollutant load reductions should also be considered. The EPA Urban stormwater management guidelines (EPA - Publication [1739.1](#)) are referenced in the VPPs as a policy document and support compliance with the General Environmental Duty.

Stormwater Collection Areas



Rainwater Tank Maintenance Plan

This manual lists the key tasks required to maintain a domestic rainwater tank and the recommended frequency of each task. This manual can be submitted with planning permit applications for developments that include the installation of a domestic rainwater tank. Once endorsed, the property owner is responsible for continuous implementation of rainwater tank maintenance, in accordance with the guidance in this manual.

Rainwater tanks are an exceptional tool for environmental protection. They collect and store roof water for use inside and outside the home. This simultaneously reduces the demand on our precious potable mains water and limits the amount of stormwater pollutants that enter our sensitive Bay.

Maintenance of rainwater tanks is relatively easy however it is important to do the following key tasks to ensure the quality of water is high:

- Stop leaf litter and debris entering the tank.
- Prevent bird droppings and dust building up in the gutters.
- Prevent mosquitoes and other animals entering the tank.

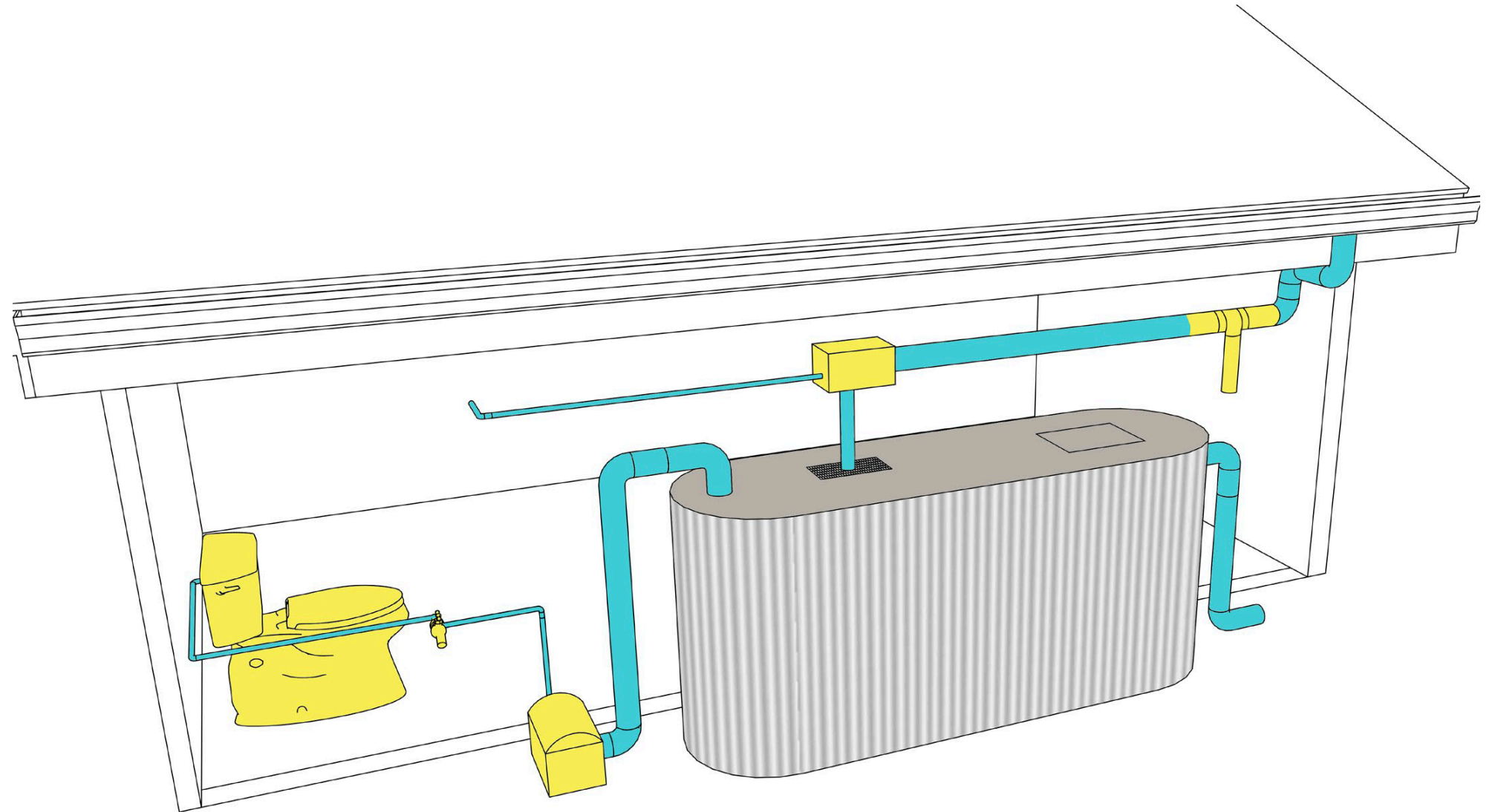
KEY INFORMATION	
Tank connected to	Toilet flushing
Tank location	Ground Floor
Drawing number	A101
Tank construction date	TBC
Date of final building inspection	TBC
Tank volume	10kL RWT in total



Rainwater tanks at The Cape, Cape Paterson. Photography by Kim Landy.

Rainwater Tank Maintenance Plan

1. Rainwater enters the tank from the roof gutters - keeping these clear from leaf litter and debris will improve the quality of water entering the tank.
2. Rainwater passes through a first flush diverter, this device reduces the risk of contaminants (bird droppings etc.) entering the tank.
3. This system has internal household uses therefore a potable mains backup will be required to ensure that water is always available.
4. Collected rainwater flows through a protective mesh cover before entering the tank. The mesh filters sediment and debris from the water and keeps mosquitoes and other animals out of the tank.
5. Rainwater is stored in the tank until used.
6. A pump transfers rainwater from the tank into the distribution network. At this point, the rainwater is passed through a treatment system, including filters and UV light to ensure it is fit for use in the building.
7. Pipes and taps are used to distribute rainwater for internal (e.g. toilet and laundry) uses and external (e.g. garden).
8. When the tank is full, water is discharged to the local stormwater network via the tank overflow system.



Rainwater Tank Maintenance Plan

The property owner is responsible for checking the maintenance items in this checklist at the recommended frequency at the bottom of the table. The maintenance log at the bottom of the page should be filled in once each maintenance check is complete. Upkeep of this maintenance log should continue throughout the life of the rainwater tank.

MAINTENANCE CHECKLIST

Item	Rainwater tank element	Inspection Item	Y/N	Likely maintenance task
1	Roof gutters and downpipes	Is there leaf litter or debris in the gutters?		Remove by hand and dispose responsibly.
2	First flush diverter	Is there anything blocking the first flush diverter (leaves etc)?		Remove by hand and dispose responsibly.
3	Potable mains back up device	Is the potable mains back up switch operating correctly?		Repair or replace device. Consider a manual switching device.
4	Mesh cover	Has the mesh cover deteriorated or have any holes in it?		Replace mesh cover.
5	Tank volume	Is there large amounts of sediment or debris sitting in the bottom of the tank, reducing the volume available in the tank to store water?		Remove sediment and dispose responsibly.
6	Pump	Is the pump working effectively? Have you heard it on a regular basis?		Check the potable mains back up is not permanently on. Repair or replace pump.
7	Pipes and taps	Are pipes and taps leaking?		Repair as needed.
8	Overflow	Is the overflow clear and connected to the stormwater network?		Remove blockages and/or restore connections to stormwater.
9	Supporting base	Are there any cracks or movement?		Empty tank to reduce weight then repair base.

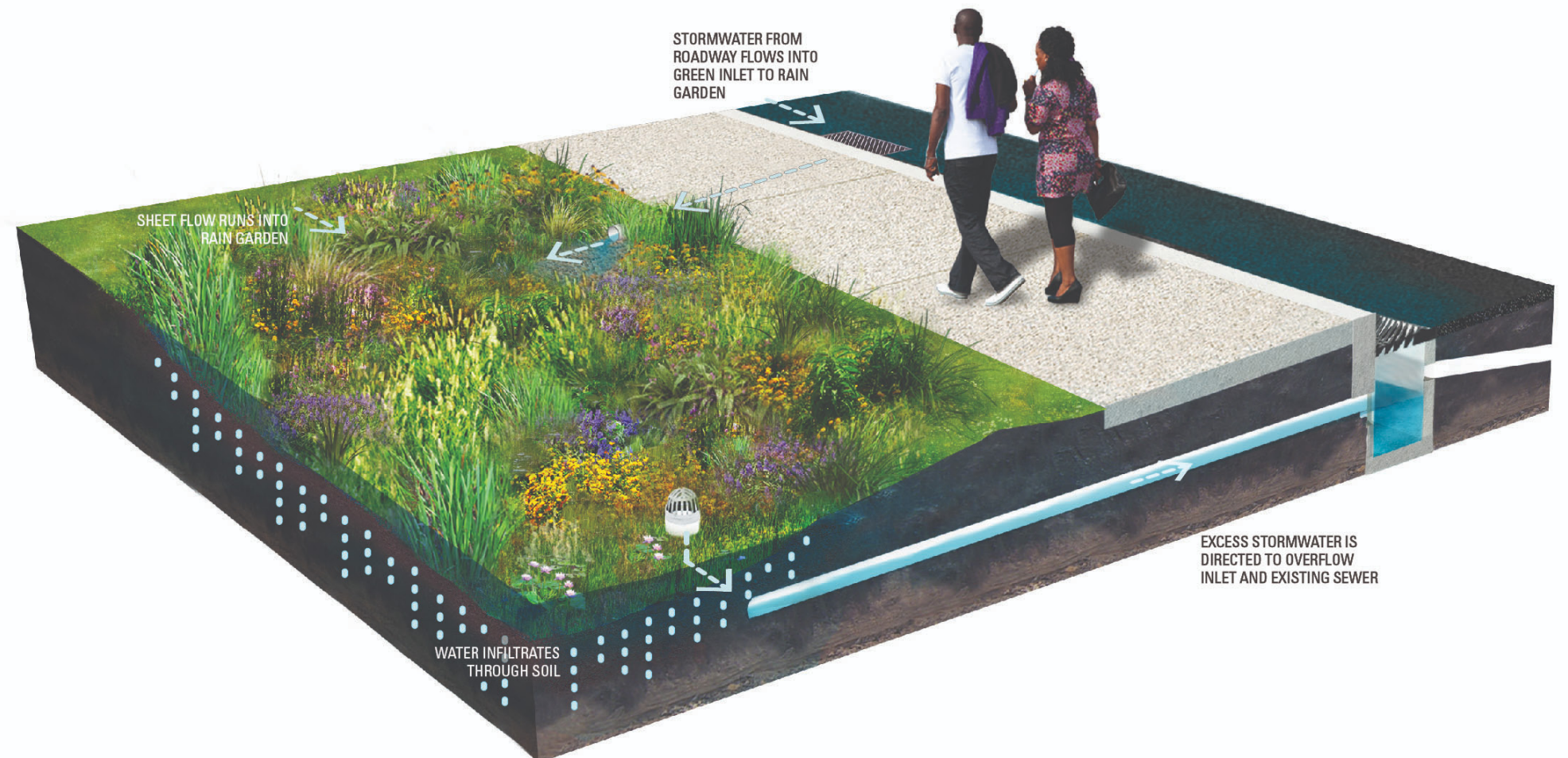
MAINTENANCE LOG

Maintenance Date	Maintenance Undertake

Rainwater Tank Maintenance Plan

1. Water enters the raingarden from a downpipe, rainwater tank overflow or nearby paved surfaces (e.g. driveway or path).
2. The raingarden is slightly lower than the surrounding area (~200mm) or raised edges are provided to allow water to pond.
3. Plants and roots help to remove pollutants from stormwater and allow water to filter through media easily
4. The flat surface of the well-draining raingarden system ensures no long term ponding of water or mosquito issues.
5. Water temporarily ponds in the depressed raingarden before it filters through the planting media.
6. Water filters through special planting media which helps to neutralise pollutants.
7. Once the water level in the raingarden gets too high it enters an overflow pit or pipe instead of flooding the property. Typically the overflow pipe will be 150mm higher than the raingarden surface level.
8. Treated water leaves the raingarden via a slotted drainage pipe that sits in a gravel drainage layer below the planting media.
9. Treated water enters the local stormwater network and is transported away from the property
10. An impermeable liner prevents water from the raingarden impacting nearby structures / foundations.

Note: It is important not to add fertiliser, compost or floatable mulch to a raingarden as the nutrients will pass through the raingarden and pollute Waterways. The plants best suited to raingardens will grow well in the planting media and take nutrients for their growth from the water entering the raingarden.



Construction Site Management Plan

A stormwater pollution reduction strategy will be contractually required to be adopted by the Main Contractor as part of its overall Environmental Management Plan (EMP). The strategy should prevent construction debris and littering entering the stormwater systems. The EMP will be required to specifically address the following in respect to stormwater:

OBJECTIVES

- 1. No impact on offsite surface or ground water due to construction activities
- 2. Site stormwater to be managed such that no contaminated water is discharged from site

GENERAL

- 1. Materials and waste to be stored at least 2m away from drainage lines
- 2. All inadvertent chemical spills to be cleaned up immediately
- 3. Application and inclusion of a range of mitigation measures for soil depositing on roads, stormwater, dust and noise

STORMWATER

- 1. Installation of hay bales around stormwater drains to minimise sediment entering stormwater
- 2. Installation of crushed rock to frequently used tracks / haul roads that may produce sediment



Construction site visit at Ferrars & York. Photography by Kim Landy.

Appendix D: Solar PV Calculations

Solar PV Calculations

The solar photovoltaic system will be located on the roof, ensuring uninterrupted solar access. The electricity generated will offset residential power usage and supplement centralised services energy demands.

SYSTEM REQUIREMENTS

A minimum 12.1 kWp PV installation consisting of approximately 24 x 505W panels, each panel measuring roughly 1134mm x 2093mm shall be installed.

The PV array is proposed to be installed in an northerly direction in an effort to more closely match the expected demand profile of the residential apartments.

Final PV capacity will be confirmed following further development and spatial coordination between services and structure.

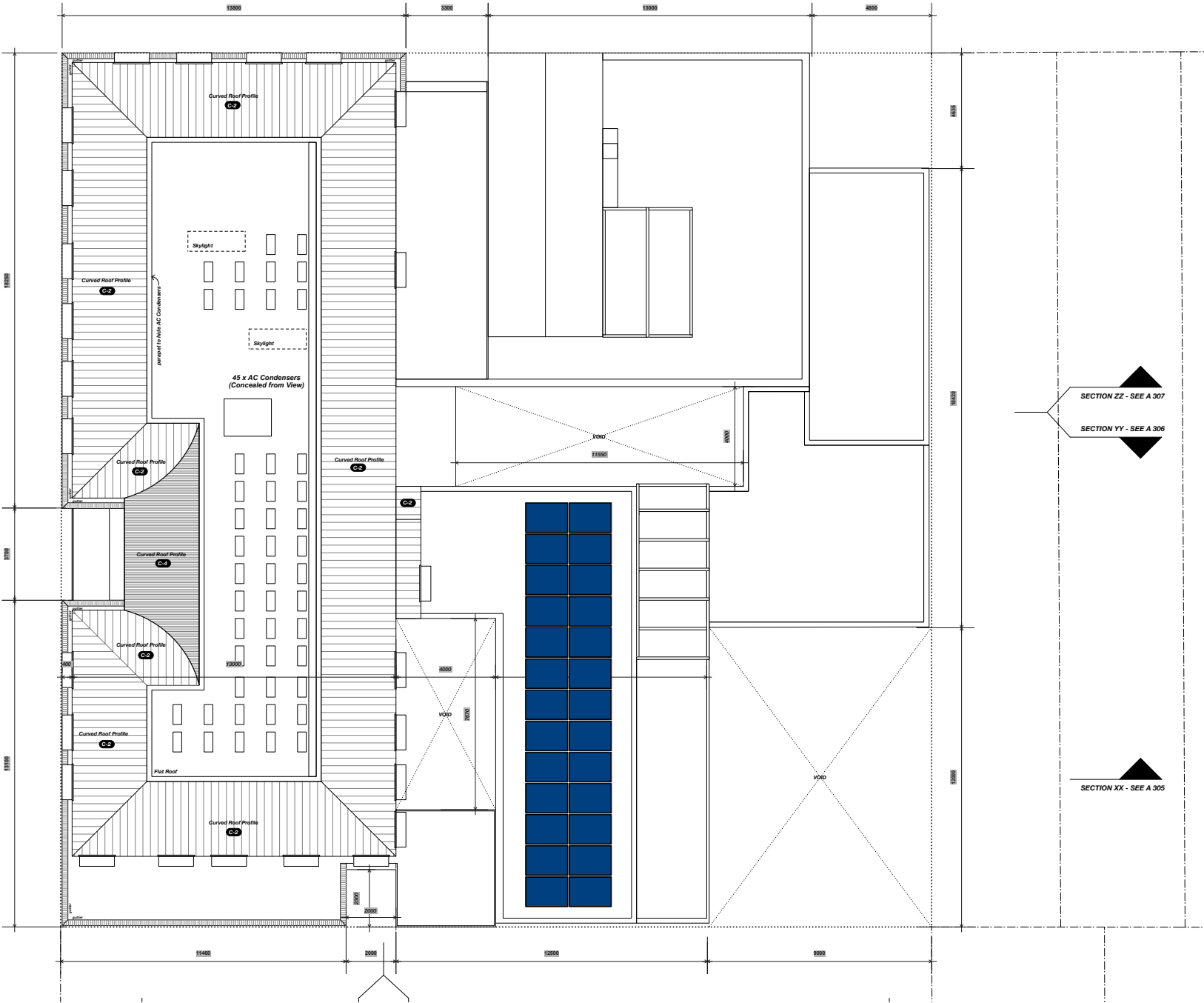
KEY INFORMATION	
Proposed Installation	24 x 505W photovoltaic panels (12.1kWp)
Panel Orientation	East orientation
Panel Incline	10 degrees
System Losses	14.08%
Annual Generation	14,178 kWh/annum



Rooftop Solar PV at Cape Paterson. Photography by Kim Landy.

SECTION ZZ - SEE A 307
SECTION YY - SEE A 306

SECTION XX - SEE A 305



SECTION ZZ - SEE A 307
SECTION YY - SEE A 306

SECTION XX - SEE A 305

Appendix E: Preliminary Daylight Assessment

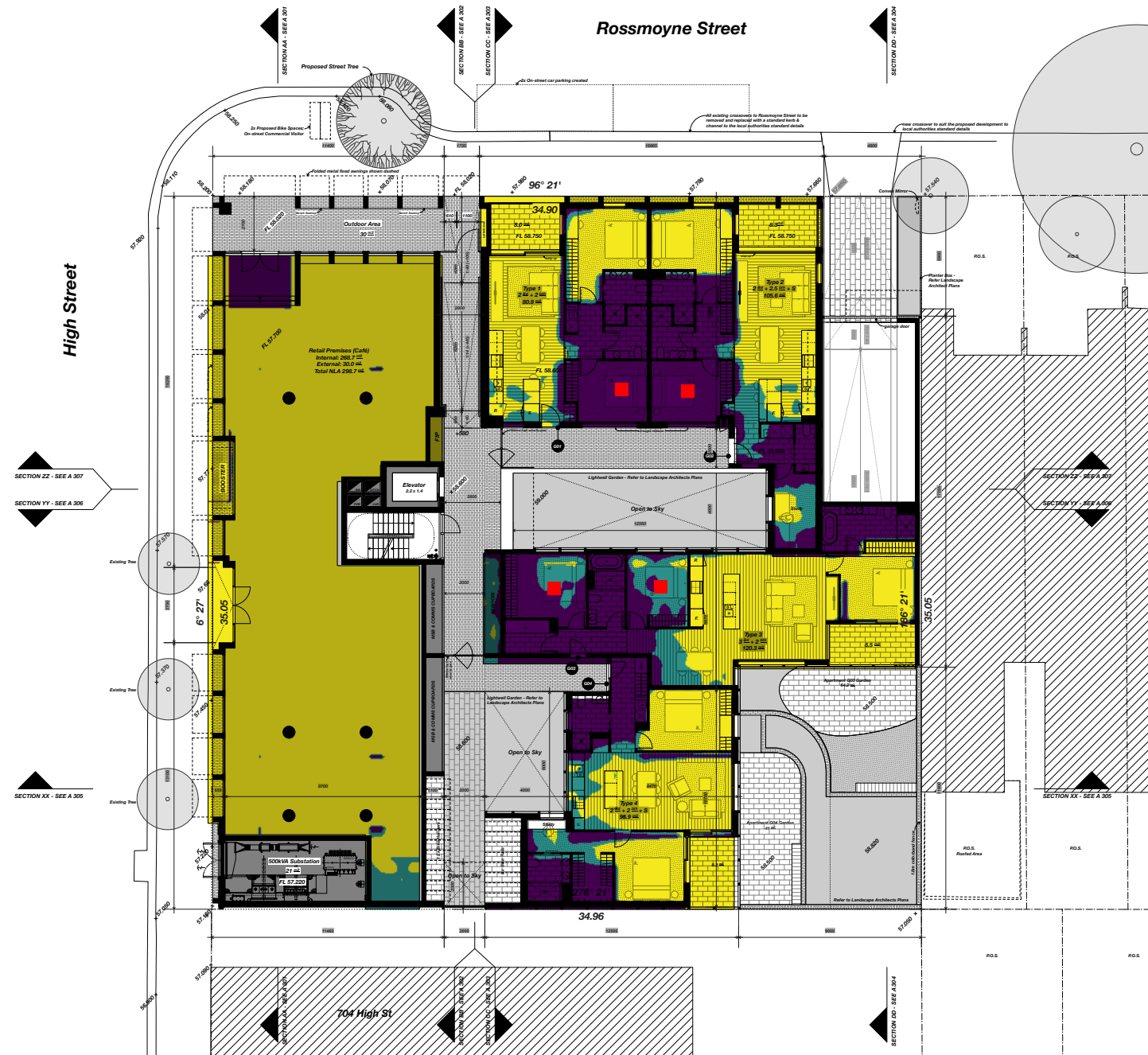
Methodology

The daylight study is being conducted using the Daylight Factor method, which calculates the ratio of light levels inside a building to the light levels outside the building. The higher the daylight factor, the better the daylight provision to the indoor space. Daylight Factor calculations rely on a standard overcast sky model and is not dependant on time, season or location-based inputs.

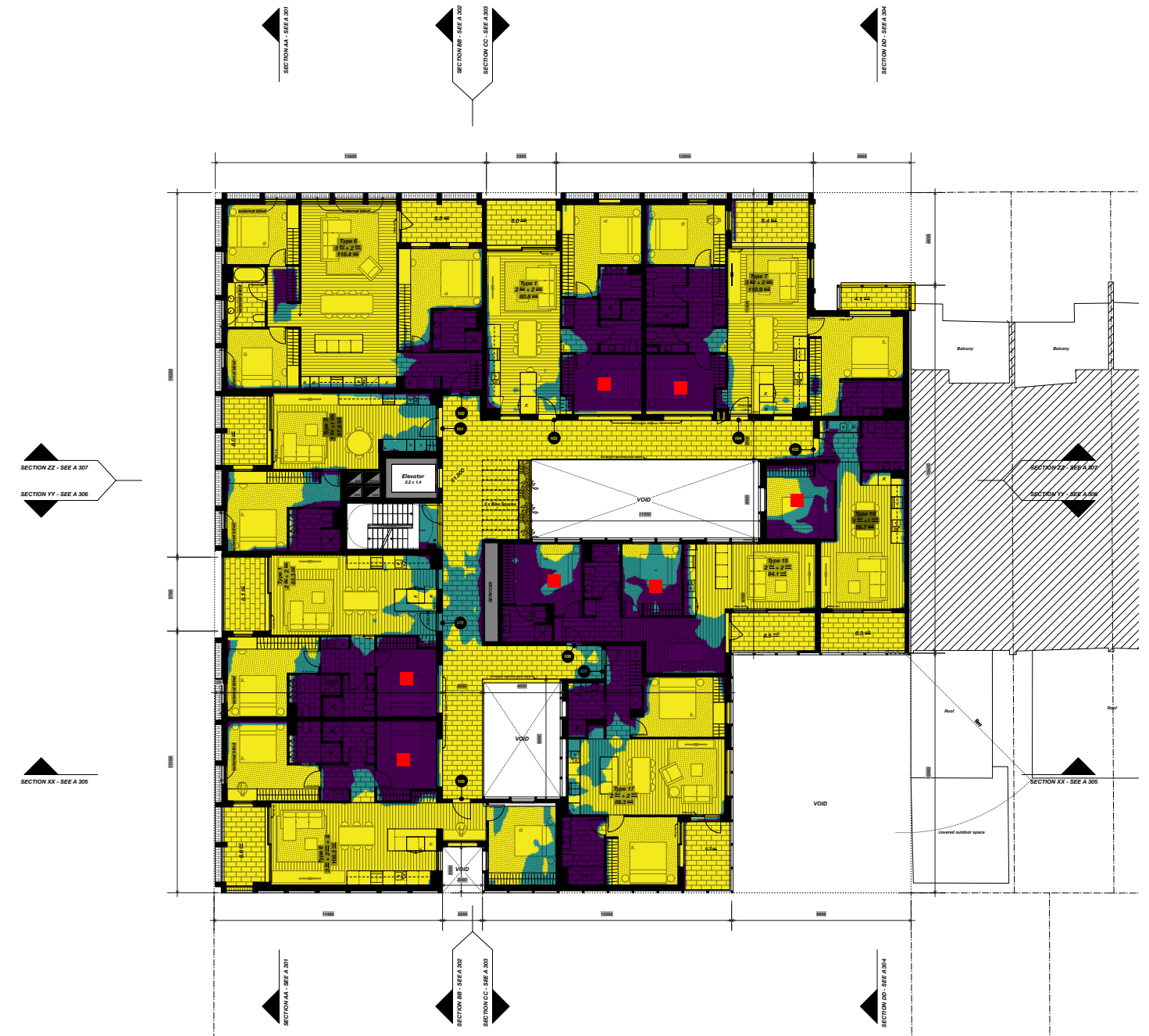
Daylight modelling is being conducted using Climate Studio plug-in for Rhino which uses the Radiance daylight simulation engine to model daylight factor results.

INPUTS & ASSUMPTIONS	
The following table outlines the inputs and assumptions used in the daylight modelling analysis	
ITEM	PARAMETER
Architectural drawings	Town Planning Amendment
Apartment floor to ceiling heights	3.1m
Living area glazing extent	Varied (40-60%)
Glazing visible light transmissivity	70% VLT
Floor reflectance	52% Light coloured timber floors
Wall reflectance	80% Light coloured walls
Ceiling reflectance	85% White painted ceiling
Daylight Analysis Surface	Floor level
Overshadowing	Adjacent property and buildings
Sky	10,000 lux CIE Overcast Sky, where the ground ambient light level ≈ 10,000 Lux
Exclusions	Robes, cupboards, toilets, bathrooms, joinery and circulation space have been excluded from the analysis.

Daylight Results



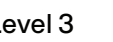
Ground Level



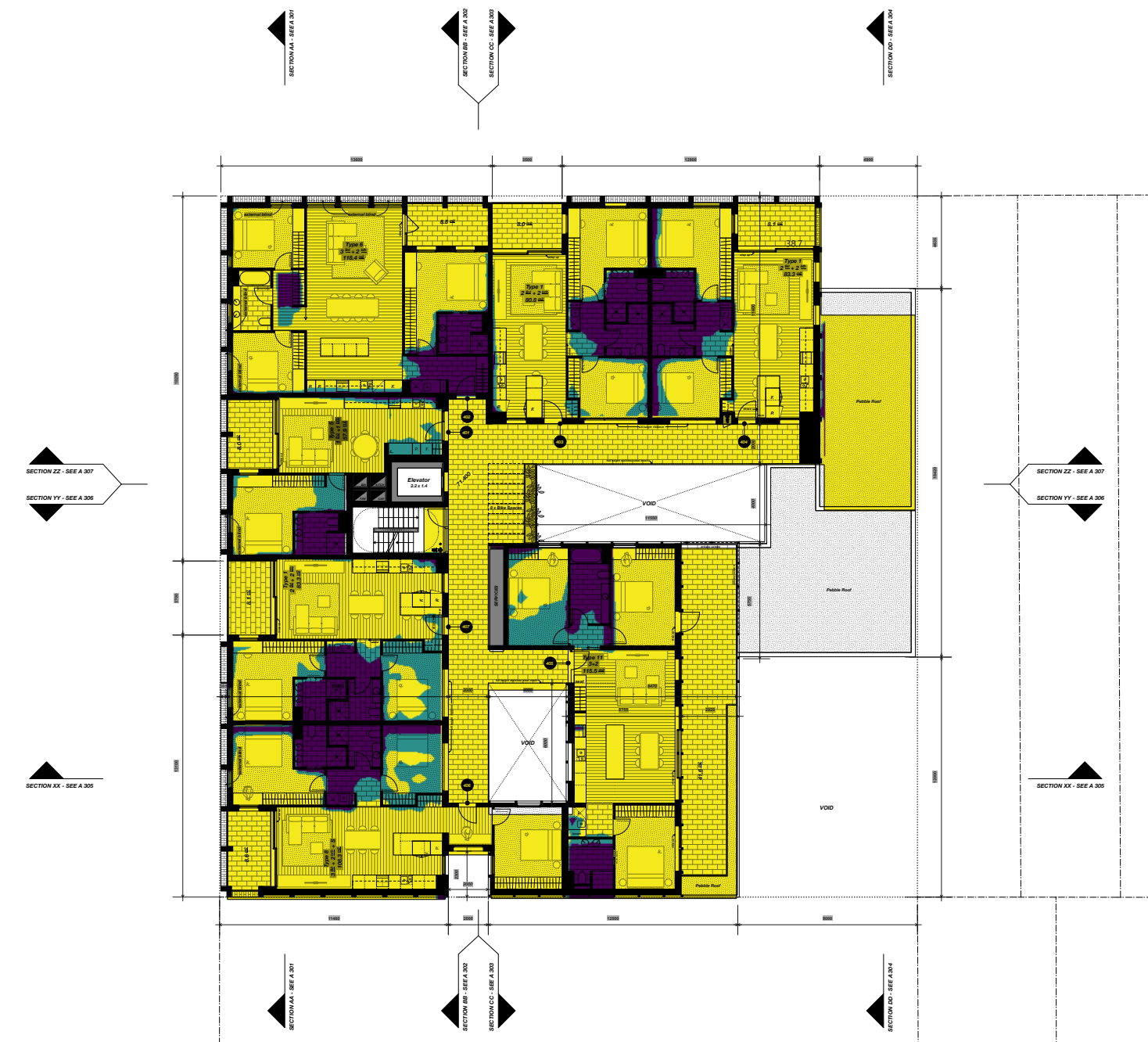
Level 1



HIP V. HYPE



Daylight Results

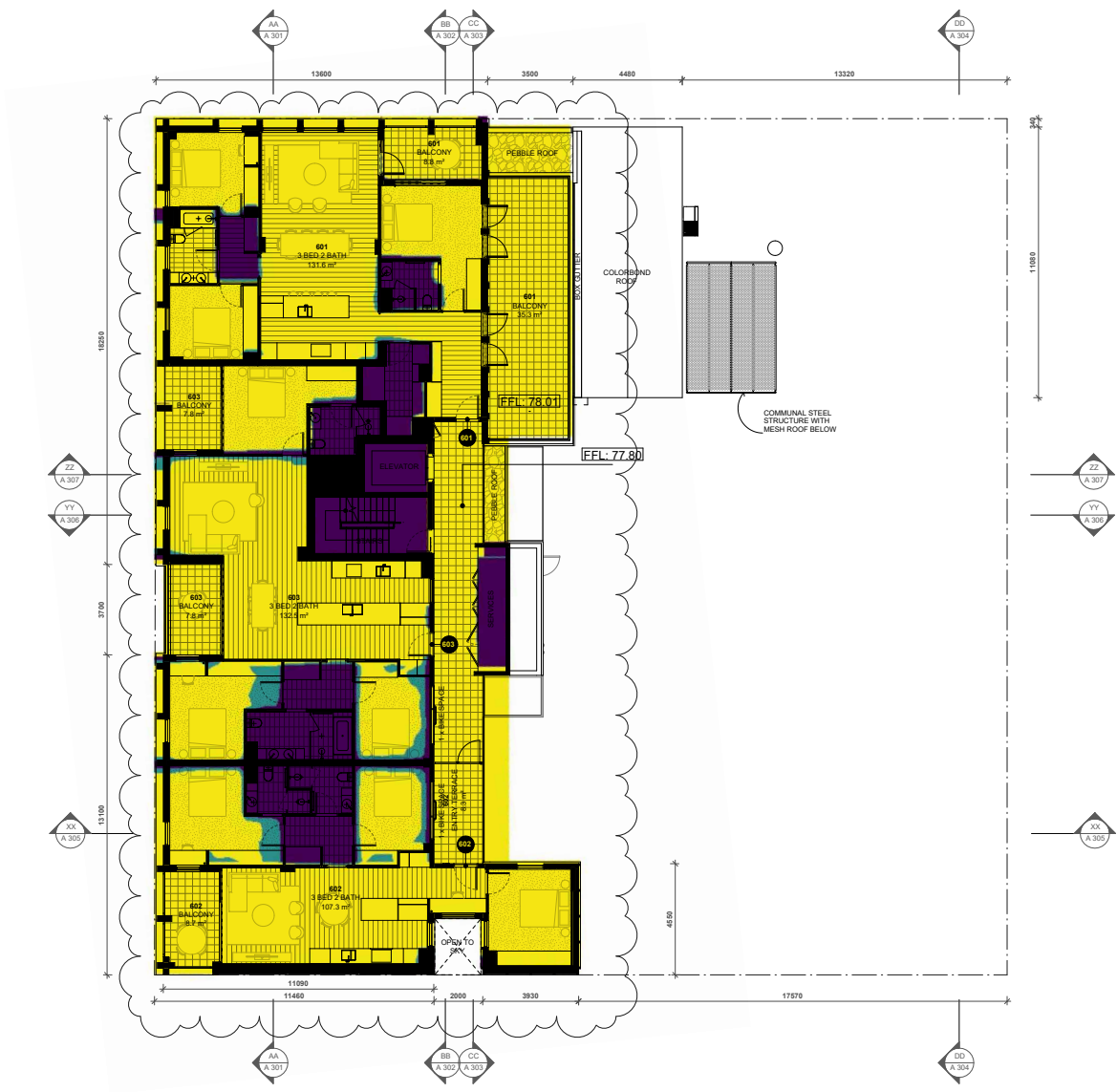


Level 4

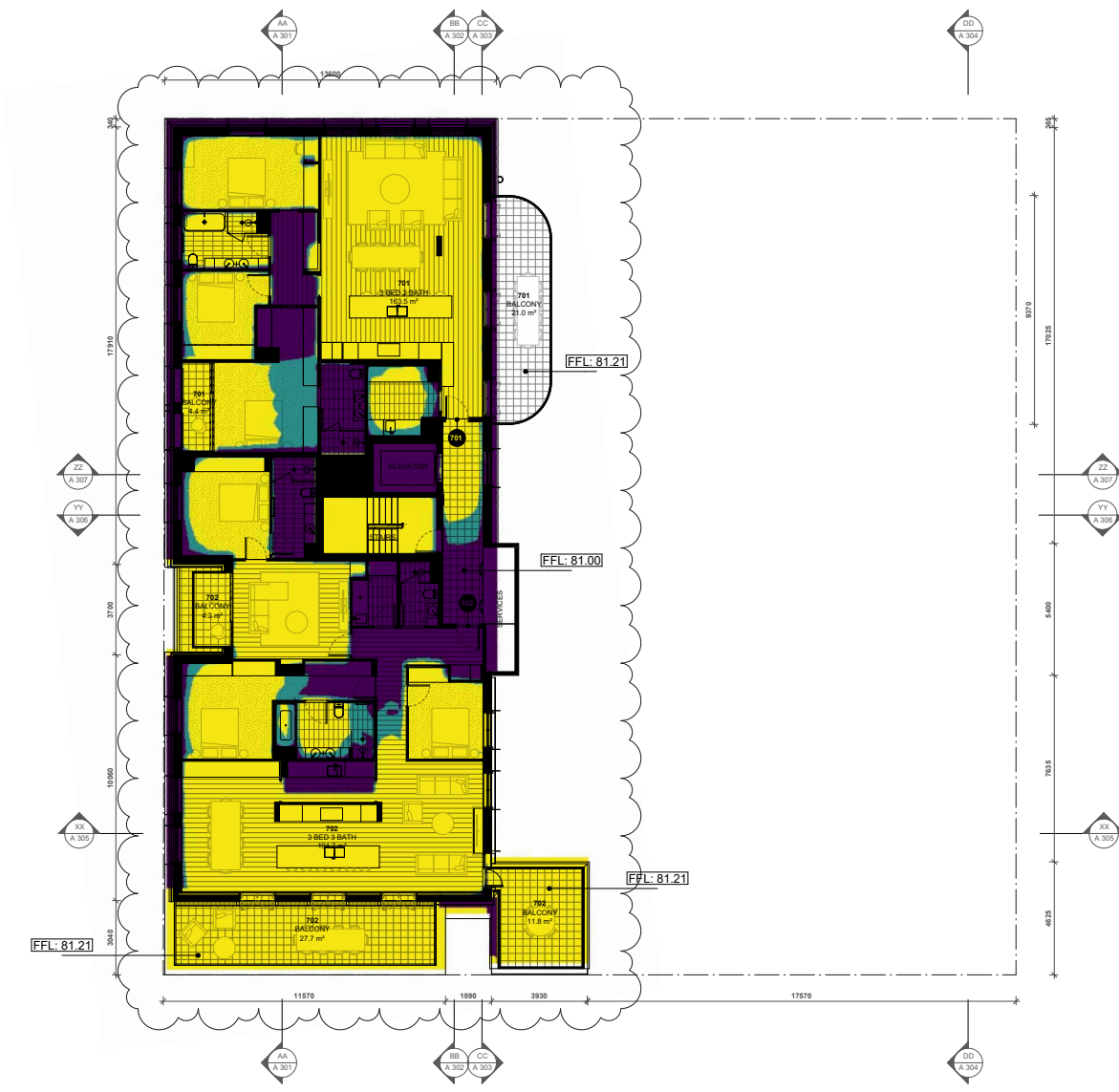


Level 5

Daylight Results



Level 6



Level 7

Results

The daylight analysis conducted on a sample of typical levels demonstrates that the development provides minimum expectation of daylight access to occupants with 100% of living areas receiving high levels of daylight and the bedrooms receives 82% of daylight which is compliant.

RESIDENTIAL RESULTS SUMMARY

The following tables summarise the preliminary daylight assessment results for the Living Areas and Bedrooms.

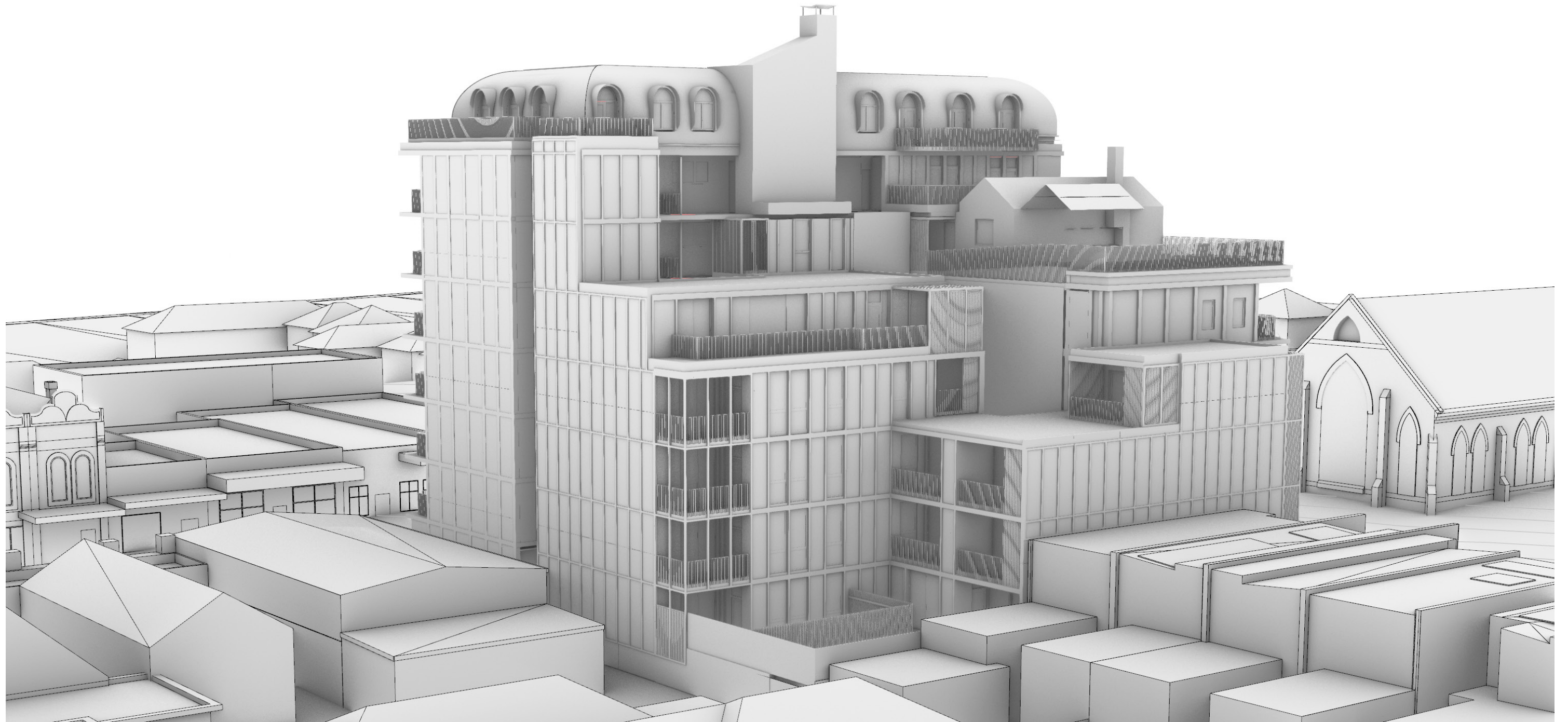
LEVEL	NO. OF ASSESSED LIVING ROOMS	NO. OF ASSESSED BEDROOMS	NO OF COMPLIANT LIVING ROOMS	NO. OF COMPLIANT BEDROOMS
Ground Level	4	9	4	5
Level 01	9	19	9	12
Level 02	9	19	9	14
Level 03	8	17	8	14
Level 04	7	16	7	16
Level 05	5	11	5	11
Level 06	3	9	3	9
Level 07	2	6	2	6
Percentage above threshold			100%	82%

NON-RESIDENTIAL RESULTS SUMMARY

The following tables summarise the preliminary daylight assessment results for the non-residential space.

SPACE	%DF>2.0
Retail	100
Percentage above threshold	100

3D Model



Appendix F: BESS Assessment

BESS Buildings Report

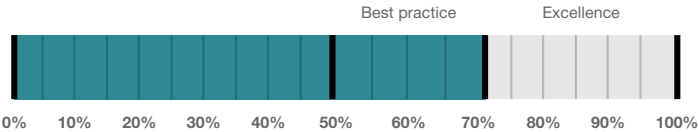
Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 716 High St Thornbury Victoria 3071. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Darebin City Council.

Note that where a Sustainability Management Plan is required, the BESS report must be accompanied by a report that further demonstrates the development's potential to achieve the relevant environmental performance outcomes and documents the means by which the performance outcomes can be achieved.

Your BESS Score



71%

Project details

Name	716 High St, Thornbury VIC 3071, Australia
Address	716 High St Thornbury Victoria 3071
Project ID	E465C4CC-R14
BESS Version	BESS-8
Date	27 August 2026
Software version	2.3.0-B.655

Site type	Mixed use development
Account	david@hipvhype.com
Application no.	
Site area	1,225 m ²
Building floor area	4,832 m ²



Performance by category

● This project ● Maximum available

Category	Weight	Score	Pass
Management	5%	99%	●
Water	9%	57%	✓
Energy	28%	65%	✓
Stormwater	14%	100%	✓
IEQ	17%	81%	✓
Transport	9%	77%	●
Waste	6%	66%	●
Urban Ecology	6%	54%	●
Innovation	9%	40%	●

Project composition



Buildings

Name	Height	Footprint	% of total footprint
Building 1	7	820 m²	100%

Dwellings & Non Res Spaces

Dwellings

Name	Quantity	Area	Building	% of total area
Apartment				
Type 1	12	83.3 m²	Building 1	20%
Type 6	5	118 m²	Building 1	12%
Type 8	5	108 m²	Building 1	11%
Type 5	5	57.4 m²	Building 1	5%
702	1	195 m²	Building 1	4%
Type 15	2	120 m²	Building 1	4%
Type 7	2	109 m²	Building 1	4%
701	1	164 m²	Building 1	3%
Type 4	2	95.9 m²	Building 1	3%
Type 3	2	84.1 m²	Building 1	3%
603	1	132 m²	Building 1	2%
602	1	107 m²	Building 1	2%
601	1	132 m²	Building 1	2%
Type 16	2	56.7 m²	Building 1	2%
Type 11	1	116 m²	Building 1	2%
Type 9	1	124 m²	Building 1	2%
Type 2	1	106 m²	Building 1	2%
Type 10	1	59.5 m²	Building 1	1%
Type 4	1	85.6 m²	Building 1	1%
Total	47	4,566 m²	94%	

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Shop				
Retail Spaces	1	266 m²	Building 1	5%
Total	1	266 m²	5%	

Supporting Evidence

Shown on Floor Plans

Credit	Requirement	Response	Status
Management 3.1	Annotation: Individual utility meters to be provided to all individual dwellings		-
Management 3.2	Annotation: Individual utility meters to be provided to all individual commercial tenancies		-

Credit	Requirement	Response	Status
Management 3.3	Annotation: Sub-meters to be provided to all major common area services (list each)		-
Water 3.1	Annotation: Water efficient garden details		-
Energy 4.2	Location and size of solar photovoltaic system		-
Stormwater 1.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)		-
IEQ 1.1	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.		-
IEQ 1.2	If using BESS daylight calculator, references to floorplans and elevations showing window sizes and sky angles.		-
IEQ 1.5	Floor plans with compliant bedrooms marked		-
IEQ 2.1	Dwellings meeting the requirements for being 'naturally ventilated'		-
Transport 1.1	Location of residential bicycle parking spaces		-
Transport 1.2	Location of residential visitor bicycle parking spaces		-
Transport 1.3	Residential bicycle parking spaces at ground level		-
Transport 1.4	Location of non-residential bicycle parking spaces		-
Transport 1.5	Location of non-residential visitor bicycle parking spaces		-
Transport 2.1	Location of electric vehicle charging infrastructure		-
Waste 2.1	Location of food and garden waste facilities		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 1.1	Location and size of communal spaces		-
Urban Ecology 2.1	Location and size of vegetated areas		-
Urban Ecology 2.2	Location and size of green roof		-
Urban Ecology 2.4	Location of taps and floor waste on balconies / courtyards		-

Supporting Documentation

Credit	Requirement	Response	Status
Management 2.2	Preliminary NatHERS assessments		-
Management 2.3a	Section J glazing assessment		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.6	Average lighting power density and lighting type(s) to be used		-
Energy 3.7	Average lighting power density and lighting type(s) to be used		-
Energy 4.2	Specifications of the solar photovoltaic system(s)		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 1.1	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.		-
IEQ 1.2	If using an alternative daylight modelling program, a short report detailing assumptions used and results achieved.		-
IEQ 1.4	A short report detailing assumptions used and results achieved.		-
IEQ 1.5	A list of compliant bedrooms		-
IEQ 2.1	A list of naturally ventilated dwellings		-

Credit summary

Management Overall contribution 4.5%

		99%
1.1 Pre-Application Meeting		100%
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
2.3 Thermal Performance Modelling - Non-Residential		50%
3.1 Metering - Residential		100%
3.2 Metering - Non-Residential		100%
3.3 Metering - Common Areas		100%
4.1 Building Users Guide		100%

Water Overall contribution 9.0%

		Minimum required 50%	57%	✓ Pass
1.1 Potable Water Use Reduction			40%	
3.1 Water Efficient Landscaping			100%	
4.1 Building Systems Water Use Reduction			100%	

Energy Overall contribution 27.5%

		Minimum required 50%	65%	✓ Pass
1.1 Thermal Performance Rating - Non-Residential			37%	
1.2 Thermal Performance Rating - Residential			65%	✓ Achieved
2.1 Greenhouse Gas Emissions			3%	
2.2 Peak Demand			100%	
2.6 Electrification			100%	
2.7 Energy consumption			100%	
3.1 Carpark Ventilation			0%	
3.2 Hot Water			100%	
3.4 Clothes Drying			0%	
3.6 Internal Lighting - Apartments			100%	
3.7 Internal Lighting - Non-Residential			100%	
4.1 Combined Heat and Power (cogeneration / trigeneration)			N/A	✦ Scoped Out
No cogeneration or trigeneration system in use.				
4.2 Renewable Energy Systems - Solar			100%	
4.4 Renewable Energy Systems - Other			N/A	✦ Scoped Out
No other (non-solar PV) renewable energy is in use.				

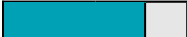
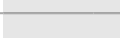
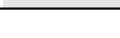
Stormwater Overall contribution 13.5%

		Minimum required 100%	100%	✓ Pass
1.1 Stormwater Treatment			100%	

IEQ Overall contribution 16.5%

		Minimum required 50%	81%	✓ Pass
1.1 Daylight Access - Living Areas			100%	
1.2 Daylight Access - Bedrooms			66%	
1.3 Winter Sunlight			0%	
1.4 Daylight Access - Non-Residential			100%	✓ Achieved
1.5 Daylight Access - Minimal Internal Bedrooms			100%	
2.1 Effective Natural Ventilation			100%	
2.3 Ventilation - Non-Residential			66%	✓ Achieved
3.4 Thermal comfort - Shading - Non-Residential			100%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential			0%	
4.1 Air Quality - Non-Residential			100%	

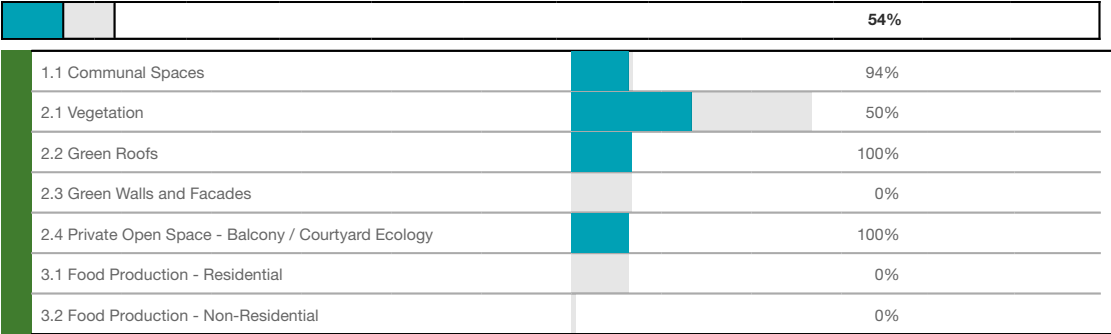
Transport Overall contribution 9.0%

			77%	
1.1 Bicycle Parking - Residential			100%	
1.2 Bicycle Parking - Residential Visitor			100%	
1.3 Bicycle Parking - Convenience Residential			100%	
1.4 Bicycle Parking - Non-Residential			100%	
1.5 Bicycle Parking - Non-Residential Visitor			100%	
1.6 End of Trip Facilities - Non-Residential			0%	
2.1 Electric Vehicle Infrastructure			100%	
2.2 Car Share Scheme			0%	
2.3 Motorbikes / Mopeds			0%	

Waste Overall contribution 5.5%

			66%	
1.1 - Construction Waste - Building Re-Use			0%	
2.1 - Operational Waste - Food & Garden Waste			100%	
2.2 - Operational Waste - Convenience of Recycling			100%	

Urban Ecology Overall contribution 5.5%



Innovation Overall contribution 9.0%



Credit breakdown

Management Overall contribution 4.5%

	99%
--	-----

1.1 Pre-Application Meeting		100%
Score Contribution	This credit contributes 37.5% towards the category score.	
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?	
Annotation	ESD and daylight assessment materials were provided to OVGA during the project's pre-application stages.	
Question	Criteria Achieved ?	
Project	Yes	
2.2 Thermal Performance Modelling - Multi-Dwelling Residential		100%
Score Contribution	This credit contributes 23.6% towards the category score.	
Criteria	Have preliminary NatHERS ratings been undertaken for all thermally unique dwellings?	
Question	Criteria Achieved ?	
Apartment	Yes	
2.3 Thermal Performance Modelling - Non-Residential		50%
Score Contribution	This credit contributes 1.4% towards the category score.	
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2022 Section J4D6?	
Question	Criteria Achieved ?	
Shop	Yes	
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2022 Section J (Energy Efficiency), NABERS or Green Star?	
Question	Criteria Achieved ?	
Shop	No	
3.1 Metering - Residential		100%
Score Contribution	This credit contributes 11.8% towards the category score.	
Criteria	Have utility meters been provided for all individual dwellings?	
Question	Criteria Achieved ?	
Apartment	Yes	
3.2 Metering - Non-Residential		100%

	Score Contribution	This credit contributes 0.7% towards the category score.	
	Criteria	Have utility meters been provided for all individual commercial tenants?	
	Question	Criteria Achieved ?	
	Shop	Yes	
3.3 Metering - Common Areas			100%
	Score Contribution	This credit contributes 12.5% towards the category score.	
	Criteria	Have all major common area services been separately submetered?	
	Question	Criteria Achieved ?	
	Apartment	Yes	
	Shop	Yes	
4.1 Building Users Guide			100%
	Score Contribution	This credit contributes 12.5% towards the category score.	
	Criteria	Will a building users guide be produced and issued to occupants?	
	Question	Criteria Achieved ?	
	Project	Yes	

Water Overall contribution 9.0%

		Minimum required 50%	57%	✓ Pass
--	--	-----------------------------	------------	---------------

Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
Fixtures, fittings & connections profile	
Showerhead: All	4 Star WELS (≥ 6.0 but ≤ 7.5)
Bath:	
Type 1	Scope out
Type 2	
Type 4	
Type 5	
Type 7	
Type 8	
Type 9	
Type 10	
Retail Spaces	
Type 15	
Type 16	
Type 4	
601	
602	
603	
701	
702	
Type 3	Medium Sized Contemporary Bath
Type 6	
Type 11	
Kitchen Taps: All	≥ 5 Star WELS rating
Bathroom Taps: All	≥ 5 Star WELS rating
Dishwashers: All	≥ 5 Star WELS rating
WC: All	≥ 4 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency: All	Occupant to Install
Which non-potable water source is the dwelling/space connected to?: All	Apartments

Non-potable water source connected to Toilets:			
Type 1	Yes		
Type 2			
Type 3			
Type 5			
Type 6			
Type 7			
Type 8			
Type 9			
Type 10			
Type 11			
Retail Spaces			
Type 15			
Type 16			
Type 4			
601			
602			
603			
701			
702			
Type 4	No		
Non-potable water source connected to Laundry (washing machine):		All	No
Non-potable water source connected to Hot Water System:			
All No			
Rainwater tank profile			
What is the total roof area connected to the rainwater tank?:			
Apartments	745 m ²		
	-		
Tank Size:			
Apartments	10,000 Litres		
	-		
Irrigation area connected to tank:			
Apartments	0.0 m ²		
	-		
Is connected irrigation area a water efficient garden?:			
Apartments	No		
	-		
Other external water demand connected to tank?:			
Apartments	0.0 Litres/Day		
	-		
1.1 Potable Water Use Reduction			40%

Score Contribution	This credit contributes 71.4% towards the category score.
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.
Output	Reference
Project	7430 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	6004 kL
Output	Proposed (including rainwater and recycled water use)
Project	5551 kL
Output	% Reduction in Potable Water Consumption
Project	25 %
Output	% of connected demand met by rainwater
Project	63 %
Output	How often does the tank overflow?
Project	Never / Rarely
Output	Opportunity for additional rainwater connection
Project	2974 kL
3.1 Water Efficient Landscaping	
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Will water efficient landscaping be installed?
Question	Criteria Achieved ?
Project	Yes
4.1 Building Systems Water Use Reduction	
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems?
Question	Criteria Achieved ?
Project	Yes

Energy Overall contribution 27.5%

		Minimum required 50%	65%	✓ Pass
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	Use the BESS Deem to Satisfy (DtS) method for Non-residential spaces?:	Yes
	Do all exposed floors and ceilings (forming part of the envelope) demonstrate meeting the required NCC2022 insulation levels (total R-value upwards and downwards)?:	Yes
	Does all wall and glazing demonstrate meeting the required NCC2022 facade calculator (or better than the total allowance)?:	Yes
	Are heating and cooling systems within one Star of the most efficient equivalent capacity unit available, or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the CoP & EER of the most efficient equivalent capacity unit available?:	Yes
	Are water heating systems within one star of the best available, or 85% or better than the most efficient equivalent capacity unit?:	Yes
	Dwellings Energy Approach	
	What approach do you want to use for Dwellings?:	Use the built in calculation tools
	Are you installing any solar photovoltaic (PV) system(s)?:	Yes
	Are you installing any other renewable energy system(s)?:	No
	Energy Supply:	All-electric
	Dwelling Energy Profiles	
	Building: All	Building 1
	Below the floor is: All	Another Occupancy
	Above the ceiling is: All	Another Occupancy
	Exposed sides:	
	Type 1	2
	Type 2	
	Type 3	
	Type 4	
	Type 5	
	Type 6	
	Type 7	
	Type 8	
	Type 9	
	Type 10	
	Type 11	
	Type 15	
	Type 16	
	Type 4	
	603	
	601	3
	602	
	701	
	702	

NatHERS Annual Energy Loads - Heat:	
Type 1	1.0 MJ/sqm
Type 2	
Type 3	
Type 4	
Type 5	
Type 6	
Type 7	
Type 8	
Type 9	
Type 10	
Type 11	
Type 15	
Type 16	
Type 4	
601	11.5 MJ/sqm
602	46.0 MJ/sqm
603	31.4 MJ/sqm
701	25.3 MJ/sqm
702	42.3 MJ/sqm
NatHERS Annual Energy Loads - Cool:	
Type 1	1.0 MJ/sqm
Type 2	
Type 3	
Type 4	
Type 5	
Type 6	
Type 7	
Type 8	
Type 9	
Type 10	
Type 11	
Type 15	
Type 16	
Type 4	
601	11.6 MJ/sqm
602	18.0 MJ/sqm
603	15.4 MJ/sqm
701	21.3 MJ/sqm
702	18.1 MJ/sqm
NatHERS star rating: All	7.8
Type of Heating System: All	Reverse cycle space
Heating System Efficiency: All	3 Stars (2019 MEPS)
Type of Cooling System: All	Refrigerative space
Cooling System Efficiency: All	3 Stars (2019 MEPS)
Type of Hot Water System: All	Electric Instantaneous
% Contribution from solar hot water system: All	0 %
Is the hot water system shared by multiple dwellings?: All	No

Clothes Line: All		No drying facilities	
Clothes Dryer: All		Occupant to install	
Solar Photovoltaic system profile			
System Size (lesser of inverter and panel capacity):			
Apartments		10.0 kW peak	
Retail Spaces		2.1 kW peak	
Orientation (which way is the system facing)?:			
Apartments		North	
Retail Spaces		North	
Inclination (angle from horizontal):			
Apartments		10.0 Angle (degrees)	
Retail Spaces		10.0 Angle (degrees)	
Which Building Class does this apply to?:			
Apartments		Apartment	
Retail Spaces		Shop	
1.1 Thermal Performance Rating - Non-Residential			37%
Score Contribution		This credit contributes 2.5% towards the category score.	
Criteria		What is the % reduction in heating and cooling energy consumption against the reference case (NCC2022 Section J)?	
1.2 Thermal Performance Rating - Residential			65% ✔ Achieved
Score Contribution		This credit contributes 16.4% towards the category score.	
Criteria		What is the average NatHERS rating?	
Output		Average NATHERS Rating (Weighted)	
Apartment		7.8 Stars	
2.1 Greenhouse Gas Emissions			3%
Score Contribution		This credit contributes 16% towards the category score.	
Criteria		What is the % reduction in annual greenhouse gas emissions against the benchmark?	
Output		Reference Building with Reference Services (BCA only)	
Apartment		96,168 kg CO2	
Output		Proposed Building with Proposed Services (Actual Building)	
Apartment		105,016 kg CO2	
Output		% Reduction in GHG Emissions	
Apartment		-10 %	
2.2 Peak Demand			100%
Score Contribution		This credit contributes 0.3% towards the category score.	
Criteria		What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?	
2.6 Electrification			100%

Score Contribution	This credit contributes 17.3% towards the category score.
Criteria	Is the development all-electric?
Question	Criteria Achieved?
Project	Yes
2.7 Energy consumption	100%
Score Contribution	This credit contributes 23.1% towards the category score.
Criteria	What is the % reduction in annual energy consumption against the benchmark?
Output	Reference Building with Reference Services (BCA only)
Apartment	865,084 MJ
Output	Proposed Building with Proposed Services (Actual Building)
Apartment	444,773 MJ
Output	% Reduction in total energy
Apartment	48 %
3.1 Carpark Ventilation	0%
Score Contribution	This credit contributes 5.8% towards the category score.
Criteria	If you have an enclosed carpark, is it: (a) fully naturally ventilated (no mechanical ventilation system) or (b) 40 car spaces or less with Carbon Monoxide monitoring to control the operation and speed of the ventilation fans?
Question	Criteria Achieved ?
Project	No
3.2 Hot Water	100%
Score Contribution	This credit contributes 0.3% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?
3.4 Clothes Drying	0%
Score Contribution	This credit contributes 5.5% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) from a combination of clothes lines and efficient driers against the benchmark?
Output	Reference
Apartment	21,300 kWh
Output	Proposed
Apartment	21,300 kWh
Output	Improvement
Apartment	0 %
3.6 Internal Lighting - Apartments	100%

Score Contribution	This credit contributes 5.5% towards the category score.	
Criteria	Is the maximum illumination power density (W/m2) in at least 90% of the relevant building class at least 20% lower than required by clause J7D3(1)(a) and Table J6.2a of the NCC 2022 Vol 1 (Class 2-9)?	
Question	Criteria Achieved ?	
Apartment	Yes	
3.7 Internal Lighting - Non-Residential		100%
Score Contribution	This credit contributes 0.6% towards the category score.	
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J7D3a of the NCC 2022 Vol 1?	
Question	Criteria Achieved ?	
Shop	Yes	
4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A ✦ Scoped Out
No cogeneration or trigeneration system in use.		
This credit was scoped out	No cogeneration or trigeneration system in use.	
4.2 Renewable Energy Systems - Solar		100%
Score Contribution	This credit contributes 5.8% towards the category score.	
Criteria	What % of the estimated energy consumption of the building class it supplies does the solar power system provide?	
Output	Solar Power - Energy Generation per year	
Apartment	12,118 kWh	
Shop	2,545 kWh	
Output	% of Building's Energy	
Apartment	9 %	
Shop	8 %	
4.4 Renewable Energy Systems - Other		N/A ✦ Scoped Out
No other (non-solar PV) renewable energy is in use.		
This credit was scoped out	No other (non-solar PV) renewable energy is in use.	

Stormwater Overall contribution 13.5%

	Minimum required 100%	100%	✔ Pass
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Which stormwater modelling software are you using?:	Melbourne Water STORM tool
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1.1 Stormwater Treatment		100%
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Score Contribution	This credit contributes 100% towards the category score.
Criteria	Has best practice stormwater management been demonstrated?
Question	STORM score achieved
Project	109
Output	Min STORM Score
Project	100

IEQ Overall contribution 16.5%

		Minimum required 50%	81%	✓ Pass
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Use the BESS Deemed to Satisfy (DtS) method for daylight to Dwellings?:		No
What approach do you want to use for daylight to Dwellings?:		Provide our own calculations
1.1 Daylight Access - Living Areas		100%
Score Contribution	This credit contributes 25% towards the category score.	
Criteria	What % of living areas achieve a daylight factor greater than 1%	
Question	Percentage Achieved ?	
Apartment	100 %	
1.2 Daylight Access - Bedrooms		66%
Score Contribution	This credit contributes 25% towards the category score.	
Criteria	What % of bedrooms achieve a daylight factor greater than 0.5%	
Question	Percentage Achieved ?	
Apartment	82 %	
1.3 Winter Sunlight		0%
Score Contribution	This credit contributes 8.3% towards the category score.	
Criteria	Do 70% of dwellings receive at least 3 hours of direct sunlight in all Living areas between 9am and 3pm in mid-winter?	
Question	Criteria Achieved ?	
Apartment	No	
1.4 Daylight Access - Non-Residential		100% ✓ Achieved
Score Contribution	This credit contributes 2.9% towards the category score.	
Criteria	What % of the nominated floor area has at least 2% daylight factor?	
Question	Percentage Achieved?	
Shop	100 %	
1.5 Daylight Access - Minimal Internal Bedrooms		100%
Score Contribution	This credit contributes 8.3% towards the category score.	
Criteria	Do at least 90% of dwellings have an external window in all bedrooms?	
Question	Criteria Achieved ?	
Apartment	Yes	
2.1 Effective Natural Ventilation		100%
Score Contribution	This credit contributes 25% towards the category score.	
Criteria	What % of dwellings are effectively naturally ventilated?	
Question	Percentage Achieved?	
Apartment	100 %	
2.3 Ventilation - Non-Residential		66% ✓ Achieved
Score Contribution	This credit contributes 2.9% towards the category score.	

Criteria	What % of the regular use areas are effectively naturally ventilated?	
Question	Percentage Achieved?	
Shop	0 %	
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?	
Question	Percentage Achieved?	
Shop	50 %	
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?	
Question	Value	
Shop	800 ppm	
3.4 Thermal comfort - Shading - Non-Residential		100%
Score Contribution	This credit contributes 1.5% towards the category score.	
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?	
Question	Percentage Achieved?	
Shop	100 %	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential		0%
Score Contribution	This credit contributes 0.5% towards the category score.	
Criteria	What percentage of regular use areas in tenancies have ceiling fans?	
Question	Percentage Achieved?	
Shop	-	
4.1 Air Quality - Non-Residential		100%
Score Contribution	This credit contributes 0.5% towards the category score.	
Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?	
Question	Criteria Achieved ?	
Shop	Yes	
Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?	
Question	Criteria Achieved ?	
Shop	Yes	
Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?	
Question	Criteria Achieved ?	
Shop	Yes	

Transport Overall contribution 9.0%

		77%
1.1 Bicycle Parking - Residential		100%
Score Contribution	This credit contributes 21.1% towards the category score.	
Criteria	How many secure and undercover bicycle spaces are there for residents?	
Question	Bicycle Spaces Provided ?	
Apartment	54	
Output	Min Bicycle Spaces Required	
Apartment	47	
1.2 Bicycle Parking - Residential Visitor		100%
Score Contribution	This credit contributes 21.1% towards the category score.	
Criteria	How many secure bicycle spaces are there for visitors?	
Question	Visitor Bicycle Spaces Provided ?	
Apartment	10	
Output	Min Visitor Bicycle Spaces Required	
Apartment	10	
1.3 Bicycle Parking - Convenience Residential		100%
Score Contribution	This credit contributes 10.6% towards the category score.	
Criteria	Are bike parking facilities for residents located at ground or entry level?	
Question	Criteria Achieved ?	
Apartment	Yes	
1.4 Bicycle Parking - Non-Residential		100%
Score Contribution	This credit contributes 1.2% towards the category score.	
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Shop	Yes	
Question	Bicycle Spaces Provided ?	
Shop	1	
1.5 Bicycle Parking - Non-Residential Visitor		100%
Score Contribution	This credit contributes 0.6% towards the category score.	
Criteria	Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50% (or a minimum of 1 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Shop	Yes	
Question	Bicycle Spaces Provided ?	
Shop	3	
1.6 End of Trip Facilities - Non-Residential		0%

Score Contribution	This credit contributes 0.6% towards the category score.
Criteria	Where adequate bicycle parking has been provided. Is there also: * 1 shower for the first 5 employee bicycle spaces plus 1 to each 10 employee bicycles spaces thereafter, * changing facilities adjacent to showers, and * one secure locker per employee bicycle space in the vicinity of the changing / shower facilities?
Question	Number of showers provided ?
Shop	-
Question	Number of lockers provided ?
Shop	-
Output	Min Showers Required
Shop	1
Output	Min Lockers Required
Shop	1
2.1 Electric Vehicle Infrastructure	100%
Score Contribution	This credit contributes 22.4% towards the category score.
Criteria	Are facilities provided for the charging of electric vehicles?
Question	Criteria Achieved ?
Project	Yes
2.2 Car Share Scheme	0%
Score Contribution	This credit contributes 11.2% towards the category score.
Criteria	Has a formal car sharing scheme been integrated into the development?
Question	Criteria Achieved ?
Project	No
2.3 Motorbikes / Mopeds	0%
Score Contribution	This credit contributes 11.2% towards the category score.
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?
Question	Criteria Achieved ?
Project	No

Waste Overall contribution 5.5%

		66%
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1.1 - Construction Waste - Building Re-Use		0%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used?	
Question	Criteria Achieved ?	
Project	No	
2.1 - Operational Waste - Food & Garden Waste		100%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are facilities provided for on-site management of food and garden waste?	
Question	Criteria Achieved ?	
Project	Yes	
2.2 - Operational Waste - Convenience of Recycling		100%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are the recycling facilities at least as convenient for occupants as facilities for general waste?	
Question	Criteria Achieved ?	
Project	Yes	

Urban Ecology Overall contribution 5.5%

		54%
1.1 Communal Spaces		94%
Score Contribution	This credit contributes 11.2% towards the category score.	
Criteria	Is there at least the following amount of common space measured in square meters : * 1m ² for each of the first 50 occupants * Additional 0.5m ² for each occupant between 51 and 250 * Additional 0.25m ² for each occupant above 251?	
Question	Common space provided	
Apartment	115 m ²	
Shop	0.0 m ²	
Output	Minimum Common Space Required	
Apartment	78 m ²	
Shop	26 m ²	
2.1 Vegetation		50%
Score Contribution	This credit contributes 44.7% towards the category score.	
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?	
Question	Percentage Achieved ?	
Project	16 %	
2.2 Green Roofs		100%
Score Contribution	This credit contributes 11.2% towards the category score.	
Criteria	Does the development incorporate a green roof?	
Question	Criteria Achieved ?	
Project	Yes	
2.3 Green Walls and Facades		0%
Score Contribution	This credit contributes 11.2% towards the category score.	
Criteria	Does the development incorporate a green wall or green façade?	
Question	Criteria Achieved ?	
Project	No	
2.4 Private Open Space - Balcony / Courtyard Ecology		100%
Score Contribution	This credit contributes 10.6% towards the category score.	
Criteria	Is there a tap and floor waste on every balcony and courtyard (including any roof terraces)?	
Question	Criteria Achieved ?	
Apartment	Yes	
3.1 Food Production - Residential		0%

Score Contribution	This credit contributes 10.6% towards the category score.	
Criteria	What area of space per resident is dedicated to food production?	
Question	Food Production Area	
Apartment	-	
Output	Min Food Production Area	
Apartment	27 m²	
3.2 Food Production - Non-Residential		0%
Score Contribution	This credit contributes 0.6% towards the category score.	
Criteria	What area of space per occupant is dedicated to food production?	
Question	Food Production Area	
Shop	-	
Output	Min Food Production Area	
Shop	7 m²	

Innovation Overall contribution 9.0%

		40%
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Innovations		
Description:		
Embedded Network	The project will adopt 100% renewable electricity, with at least 5% generated on-site from sources like solar, promoting sustainability and reducing carbon emissions. These regulations also ensure consumer protections and provide residents with a choice of energy retailer, addressing previous concerns about limited options and price gouging. Key benefits include cost savings through bulk electricity purchasing and shared infrastructure, easier integration of solar panels and battery storage, and improved energy efficiency by enabling energy sharing within buildings. A single provider manages electricity distribution, simplifying infrastructure, billing, and administration while offering consolidated bills that include various utilities and EV charging. Additionally, centralized smart metering allows real-time energy monitoring, supports demand response programs, and enhances overall energy efficiency, reducing peak demand costs.	
No street-wall Setbacks	We have challenged the local planning set backs to achieve benefits for 1. Lower embodied carbon due to reduced transfer structure 2. Thermal Performance improvements due to less exposed surfaces and thermal bridging.	
Points Targeted:		
Embedded Network	2	
No street-wall Setbacks	2	
1.1 Innovation		40%
Score Contribution	This credit contributes 100% towards the category score.	
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?	

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For additional information, questions unturned, collaboration opportunities and project enquiries please get in touch.

BRUNSWICK VIC
SOUTH MELBOURNE VIC
SYDNEY NSW
NEWCASTLE NSW
PERTH WA

T. (03) 8060 1252
wedesevbettr@hipvhype.com
hipvhype.com
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