BLUE BEE
SUSTAINABLE SERVICES

Sustainability Management Plan

For the: Mount Atkinson Primary School
Cnr. Sentinel Parade and Clara Avenue, Truganina

Presented to: Melton City Council

Contents

Revision History:

Author	Revision	Date	Content/Changes
Jessica Daaboul	0-Draft	11.04.2024	Draft issue
Jessica Daaboul	1	17.05.2024	Issue to council
Jessica Daaboul	2	04.06.2024	Updated landscape

Executive Summary

This Sustainability Management Plan (SMP) is prepared for the proposed school buildings development located at Cnr Sentinel Parade and Clara Avenue, Truganina and is based on the drawing set prepared by LAW Architects, dated June 2024, Project No. 2024-20.

This report outlines the development's Environmentally Sustainable Design (ESD) initiatives and assesses their equivalence to current best practice. The environmentally sustainable development requirement of Melton City Council Planning Scheme is to demonstrate best practice environmental performance.

This project is committing to demonstrating:

- BESS sustainability tool achieving or exceeding best practice (50%)
- STORM rating achieving or exceeding 100%
- Consideration of clauses 15.01-2S of the planning scheme

A summary of the project's key ESD commitments is included below:

Commitment	Implication	Relevant to
Management		
Fabric	A preliminary facade assessment has been undertaken in accordance with the NCC	ESD Consultant
Water		
Sanitary Fixtures	WELS star rating to be greater than: Kitchen taps: 5*, bathroom taps: 6*, WC: 4*, urinals: 5*; showerheads: 4* (>= 4.5 but <= 6.0), and washing machine: 4*	Architect
Rainwater	10kL Rainwater tank for admin/ELC and 10kL Rainwater tank for learning community building provided, tanks are servicing the irrigation system	Hydraulics
Landscaping	Water Efficient Landscaping will be incorporated on site	Landscape
Energy		
Hot Water	Within one star or within 85% of the COP of the best in equivalent capacity	Services
Facade	Wall and glazing demonstrate meeting the required NCC facade calculator.	Architect
Floor/Ceiling	Envelope floors and ceilings demonstrate meeting NCC part J levels	Architect
HVAC	HVAC system within one star or 85% of the COP of the best in equivalent capacity	Services
Lighting	Maximum illumination power density (W/m2) to meet IPD levels outlines in the NCC	Services
Energy	The development will be all electric and provides electricity infrastructure for future provision of 3kW solar PV array on the roof of each of the proposed two buildings	Services/Architect
Stormwater Management		
Stormwater	STORM score of 100% is maintained or exceeded	Contractor
Indoor Environment Quality		
Outdoor Air	85% of the regularly occupied rooms designed to achieve effective natural ventilation	Architect
Glazing	Glazing VLT>=50% used to achieve compliant levels of daylight (appendix. C)	Architect
Pollutants	Indoor paints, sealants, adhesives, carpets, and engineered wood with compliant indoor pollutants levels	Architect
Waste		
Waste	Food and garden waste bins (green waste bin) are available at the school	Waste Consultant
Urban Ecology		
Vegetation	>30% of the site is covered with vegetation (approx. 40sqm provided in this scheme).	Landscape
Transport		
Bicycle spaces	The minimum of 3 bike spaces is exceeded for this development	

1- Introduction

This Sustainability Management Plan sets the requirements for the Environmentally Sustainable Design (ESD) elements to be incorporated into the proposed school buildings development located at Cnr Sentinel Parade and Clara Avenue, Truganina. It captures initiatives necessary to ensure that the development meets the sustainability requirements of Melton City Council.

The analysis is based on drawings prepared by LAW Architects, Ref 2024-20, dated to June 2024. This report provides the references, benchmarks and council's planning scheme requirements. Commitments to demonstrate compliance are then outlined.

2- Site Description

This site is located at Cnr Sentinel Parade and Clara Avenue, Truganina (Figure 1) and has an approximate site surface area of 15,152 sqm.

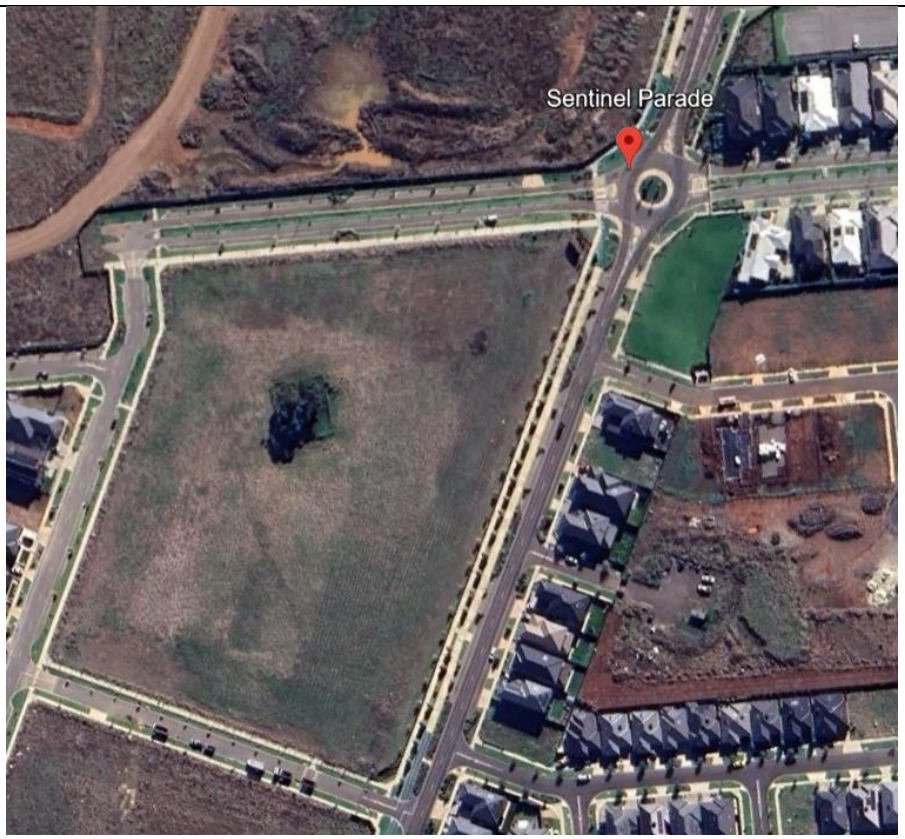


Figure 1: Existing Site

3- References, Benchmarks, and Planning scheme requirements

This section provides the benchmarks and the sections demonstrating compliance with the benchmarks.

3.1- Planning scheme

This assessment is based on drawings based on drawings prepared by LAW Architects, Ref 2024-20, dated to June 2024. It provides guidelines for the project to meet the following Planning Scheme requirements related to non-residential spaces in the city of Banyule:

Planning scheme requirements		
Clause	Objective (reduced)	Project Commitment
15.01-2S	**Building Design** Improve the energy performance of buildings through siting and design measures that encourage: • Passive design responses that minimize the need for heating cooling and lighting. • On-site renewable energy generation and storage technology. • Use of low embodied energy materials. Restrict the provision of reticulated natural gas in new dwelling development. Ensure the layout and design of development supports resource recovery, including separation, storage and collection of waste, mixed recycling, glass, organics and e-waste. Encourage use of recycled and reusable materials in building construction and undertake adaptive reuse of buildings, where practical. Encourage water efficiency and the use of rainwater, stormwater and recycled water. Minimise stormwater discharge through site layout and landscaping measures that support on-site infiltration and stormwater reuse. Ensure the form, scale, and appearance of development enhances the function and amenity of the public realm. Ensure buildings and their interface with the public realm support personal safety, perceptions of safety and property security. Ensure development is designed to protect and enhance valued landmarks, views and vistas. Ensure development considers and responds to transport movement networks and provides safe access and egress for pedestrians, cyclists and vehicles. Encourage development to retain existing vegetation. Ensure development provides landscaping that responds to its site context, enhances the built form, creates safe and attractive spaces and supports cooling and greening of urban areas.	**Energy:** • Space and infrastructure provision for future Renewable Energy **Water:** • Rainwater collection and re-use for irrigation • High WELS rated taps • Draught tolerant landscaping **IEQ:** • High levels of Cross ventilation • Use of materials with low toxicity. **Transport:** • Promotes school bus use, cycling and walking. **Waste Management:** • Provision of recycling and composting bins. • Bins are managed by the school. **Urban Ecology:** • Native landscaping • WSUD assessment achieves 100% STORM score • BESS urban ecology score of 71%. • >30% site area covered with vegetation.

4- Project ESD assessment

This project is committing to demonstrating:

- Built Environment Sustainability Scorecard (BESS) assessment exceeding the best practice benchmark
- STORM rating of 100%
- Consideration of the council's planning scheme

Figure 2 illustrates the BESS score of this development. It shows the credit criteria that were prioritized in this project, it shows the achieved points vs the maximum available in each credit.

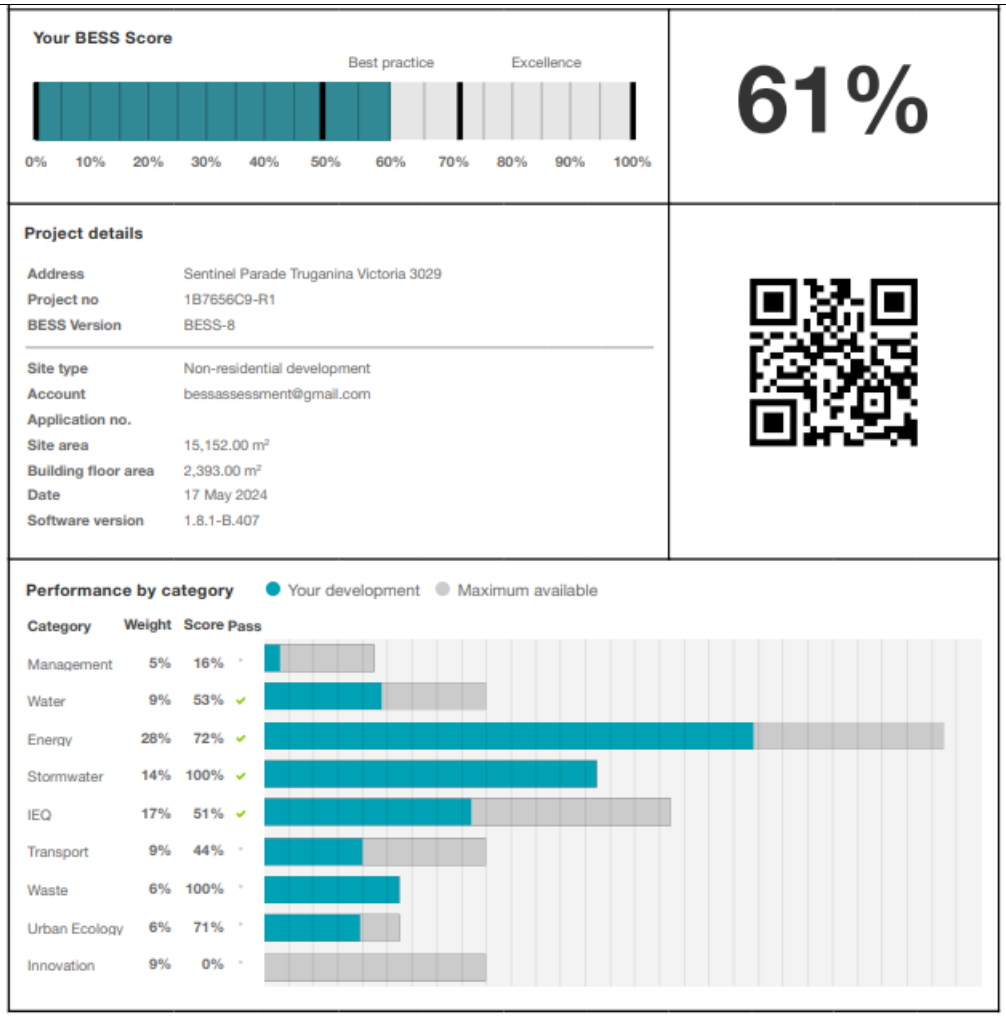


Figure 2: Claimed points % achieved vs total available for every credit

4.1- Management

The building and construction management approach followed in this project covers the planning, design and construction phases. Its commitments are summarised below:

Measure	Responsible Party
A preliminary facade assessment has been undertaken in accordance with NCC part J for the development. Refer to appendix D for the preliminary calculator results. The following building fabric criteria has been used in the preliminary facade assessment: **Admin and ELC Building:** • Insulation: R2 wall insulation as a minimum • No floor insulation for CSOG. • Glazing: (Single glazed grey high performance/ Evantage grey 6 mm) Casement: U<4.82 and SHGC=0.31 +/-10% Fixed: U<4.43 and SHGC=0.39+/-10% Sliding: U<4.62 and SHGC=0.33+/-10% • Roof: R3.4 insulation as a minimum. **Learning Community Building:** • Insulation: R2 wall insulation as a minimum • No floor insulation for CSOG. • Glazing: (Double glazed grey low performance/ V-float grey 4-12-4 (Air)) Casement: U<4.22 and SHGC=0.4 +/-10% Fixed: U<3.64 and SHGC=0.51+/-10% • Roof: R3.4 insulation as a minimum.	ESD consultant

Note that this is a preliminary stage of the project and building fabric and glazing commitments might change throughout the design stages. Ultimately it is a requirement of this report that the building is expected to pass the NCC benchmarks.

4.2- Water

The average Victorian household uses approximately 500 litres of water per day (ABS, 2017) for both drinking and non-drinking purposes. This development acknowledges the importance of Victoria's precious water resources and aims at reducing the use of drinking water. This will be done through the substitution of drinking water for non-drinking purposes with reused and recycled water. He building specific commitments are summarised below:

Measure	Responsible Party
Installation of 10,000 L rainwater tank for each building, proposed to cater for the irrigation system's water consumption. Tank to be installed in accordance with HB230 codes and standard requirements.	Architect and Hydraulics consultant
Use of the following WELS rating for fixtures:	Architect

• 5 star kitchen taps • 6 star bathroom taps • 4 star toilets • 4 star (>=4.5 &<=6) showers • 5 star urinals • 4 star washing machine	
Water Efficient Landscaping will be incorporated on site	Landscape architect

4.3- Energy

Increased energy consumption is not always needed for more comfortable indoors. Sustainable practices in building design can decrease power consumption, reduce the impact of climate change while providing a comfortable indoor environment. This development supports council's aim of encouraging:

- Land use and development that is energy and resource efficient, supports a cooler environment and minimises greenhouse gas emissions.
- The provision of renewable energy in a manner that ensures appropriate siting and design considerations are met.

This is achieved via:

Measure	Responsible Party
Installation of electric and structural provision for future 3kW solar Photovoltaic array on the roof of each of the two proposed buildings	Architect and electrical
HVAC systems within one Star of the most efficient equivalent capacity unit available, or COP>85% of the most efficient equivalent capacity unit available	Mechanical engineer
Hot water system. Within one star or 85% of the best efficiency in equivalent capacity	Hydraulics engineer
Building fabric thermal performance to meet the levels outlined in part J of NCC 2022.	Architect
All electric development	Electrical engineer
Provision of LED internal lighting, IPD to meet the requirements in Table J7D3a of the NCC 2022 Vol 1	Electrical engineer

Building fabric assumptions might change throughout the design development, The design team and head contractor will ultimately be responsible for ensuring that the NCC requirements are achieved.

4.4- Stormwater

Hard and impervious surfaces, such as buildings, roads and car parks lead to excess stormwater runoff that would otherwise have been retained on site in natural forests. This development is committed to reduce stormwater runoff and improve the quality of our waterways.

This is demonstrated by achieving best practice reduction in total suspended solids (TSS), total phosphorus (TP) and total nitrogen (TN) loads.

These reductions are achieved here through a 100% STORM score using Melbourne Water STORM tool. Below is a mark-up showing assumptions taken to this end:

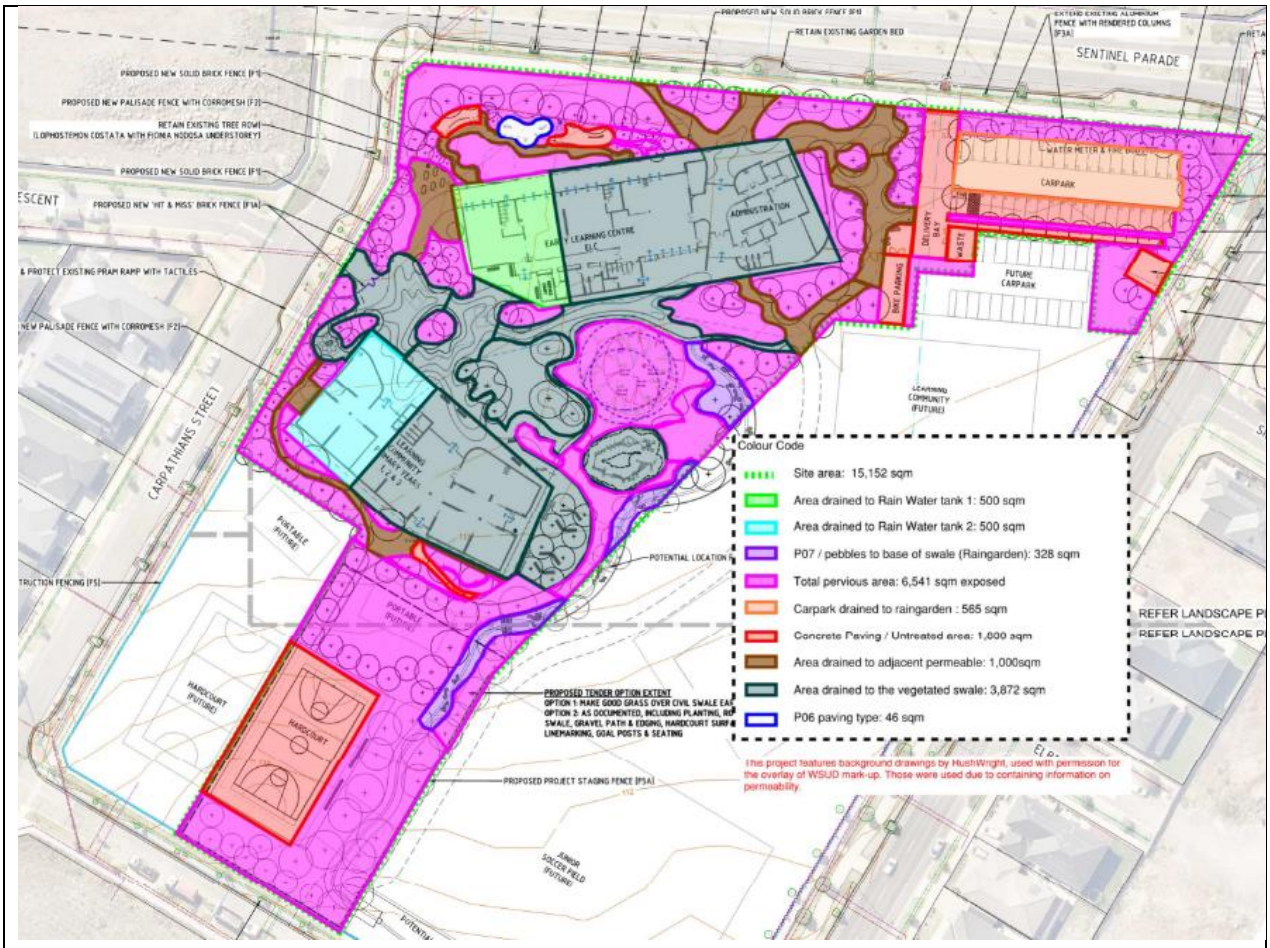


Figure 3: 100% storm score

4.5- IEQ

People spend most of their time indoors, especially in Melbourne's weather. Therefore, the quality of the indoor environment is vital to our health and wellbeing. A building's architecture can lead to passive cooling and heating strategies that lead to more comfortable indoors. Also good distribution of operable windows can lead to cross ventilation, which lets outdoor air in moving with it indoor air pollutants to the outside.

This project commits to high levels of indoor environment quality through the following practices:

Measure	Responsible Party
36% of the regular use area has more than 2% daylight factor (Refer to appendix C for daylight contours mark-up)	Architect
85% of regular use floor area is effectively naturally ventilated (Refer to appendix B for cross-ventilation mark-up)	Architect

All paints, sealants, adhesives, carpet, and engineering wood meet the maximum total indoor pollutant emission limits	Architect

Below are extracts from the Green Star Design and As Built Guidelines for indoor pollutant levels compliance:

Table 13.1.1B: Maximum TVOC Limits for Paints, Adhesives and Sealants

Product Category	**Max TVOC content in grams per litre (g/L) of ready to use product.**
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75

Product Category	**Max TVOC content in grams per litre (g/L) of ready to use product.**
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

Table 13.1.2B Carpet Test Standards and TVOC Emissions Limits

Compliance option	Test protocol	Limit
ASTM D5116	ASTM D5116 - Total VOC limit*	0.5mg/m^2 per hour
	ASTM D5116 - 4-PC (4-Phenylcyclohexene)*	0.05mg/m^2 per hour
ISO 16000 / EN 13419	ISO 16000 / EN 13419 - TVOC at three days	0.5 mg/m^2 per hour
ISO 10580 / ISO/TC 219 (Document N238)	ISO 10580 / ISO/TC 219 (Document N238) - TVOC at 24 hours	0.5mg/m^2 per hour

*Both limits should be met when testing against ASTM D5116

4.6- Waste

Buildings construction and demolition waste contributes to up to 40 per cent of the waste going to Australia's landfills. Also, our buildings generate an enormous amount of waste during their occupancy. One of Melton city council strategies is to encourage the design of buildings that reduce waste and protect the biodiversity.

This development achieves the above targets trough:

Measure	Responsible Party
General and recycling waste storage bins are available at the school and managed by the school	School
Green waste bins are available at the school and managed by the school	School

4.8- Urban Ecology

This development commits to maintaining and enhancing the health of our urban system. This is achieved through:

Measure	Responsible Party
Vegetation cover exceeds >30% of site area (current scheme achieves 40%).	Architect and/or landscape architect
Provision of food production area through the allocation of space for and provision of veggie patches	Architect and/or landscape architect

5- Stormwater Managements and System Maintenance

Below are additional commitments addressing stormwater management beyond harvesting of rainwater:

5.1- Stormwater management report:

A STORM score of over 100% has been achieved as detailed in Appendix A to demonstrate achieving best practice stormwater pollution reduction targets. It is required that the total storm score claimed in this report be achieved using Appendix A or an equivalent storm score.

5.2- Stormwater management layout:

Refer to Appendix A for treatment areas and architectural drawings for location of rainwater tanks.

5.3- Site management plan:

Refer to Construction Management Plan to be prepared by the builder for stormwater control measures during construction.

Plan to contain and be not limited to initiatives similar to the following or to commit to initiatives with similar outcome:

- Silt fences or the like to prevent sediment infiltration into the stormwater system.
- Buffer strips or the like for the prevention of stormwater runoff.
- Gravel filters or similar at stormwater inlets to prevent site contaminant infiltration into the stormwater system.
- Site is to be kept clean.

5.4- Maintenance program:

A maintenance program which sets out future operation and maintenance arrangements.

The WSUD objectives are achieved through a rainwater capture and reuse system. The maintenance requirements for this system are:

- Rainwater tank:
  - Maintenance in accordance with Handbook HB-230:2008 produced by Standards Australia
  - Access will be via the watertight maintenance panel, noting that it is a confined space and appropriate precautions must be taken.
  - Pumps and filtration systems maintenance to be in accordance with manufacturer requirements

As the majority of rainwater will be collected, the stormwater quality leaving the site will be improved and quantity reduced compared to a conventional building.

6- Maintenance schedule

The below minimum maintenance intervals are proposed for the building's systems, these intervals are to be confirmed upon building users guide submission maintenance otherwise can be in accordance with the relevant standard, and supplier's recommendations. This information is preliminary only, for detailed maintenance information and more updated schedule refer to building users guide.

For Rainwater tanks, refer to the below guidelines:

Item	Procedure	Proposed maintenance interval
Gutters and downpipes	Inspection & cleaning	In accordance with the relevant standard, and supplier's recommendations (otherwise semi-annually).
Leaf diverters	Inspection & cleaning	In accordance with the relevant standard, and supplier's recommendations (otherwise semi-annually).
First flush system	Inspection & cleaning	In accordance with the relevant standard, and supplier's recommendations (otherwise semi-annually).
Rainwater tank	Inspection & reparation	In accordance with the relevant standard, and supplier's recommendations (otherwise every semi-annually).
Rainwater tank	Sediment build-up cleaning	In accordance with the relevant standard, and supplier's recommendations (otherwise annually).

7- Conclusion

The project achieves all the minimum BESS requirements for Water, Energy, Stormwater and IEQ and exceeds BESS best practice levels to achieves an overall BESS rating of 61%. BESS represents industry ESD best practice benchmarks. The BESS assessment completed in this report demonstrates compliance of this building with the ESD requirements in the Melton City Council Planning Scheme.

8- Appendix A – Stormwater assessment

The builder is required to adhere to Melbourne Water's stormwater management guidelines during the construction stage. RWT tank and stormwater system design and installation (by others) to comply with the Building Code of Australia, Australian standards (including: AS/NZS 2179.1; AS/NZS 3500.3.2; AS/NZS 3500.3 etc…) and rainwater tank design and installation handbook.

This report does not constitute a civil engineering design and nor does it replace any civil engineering designs or requirements.

This report does not constitute a flood management design and nor does it replace any flood management designs or requirements.

This report assumes all materials, designs, sizing and construction processes are expected to be compliant with the building code, relevant codes and Australian standards.

The drawings and values provided indicate the performance required and design intent but not material specifications or detailed site implementation. The builder is required to implement the design intent indicated in this report in accordance with the BCA and relevant Australian codes and standards.

Any products indicated in this report are suggestions only and have been suggested in relation to their WSUD performance. The results of any computer simulations within this report do not guarantee future performance.

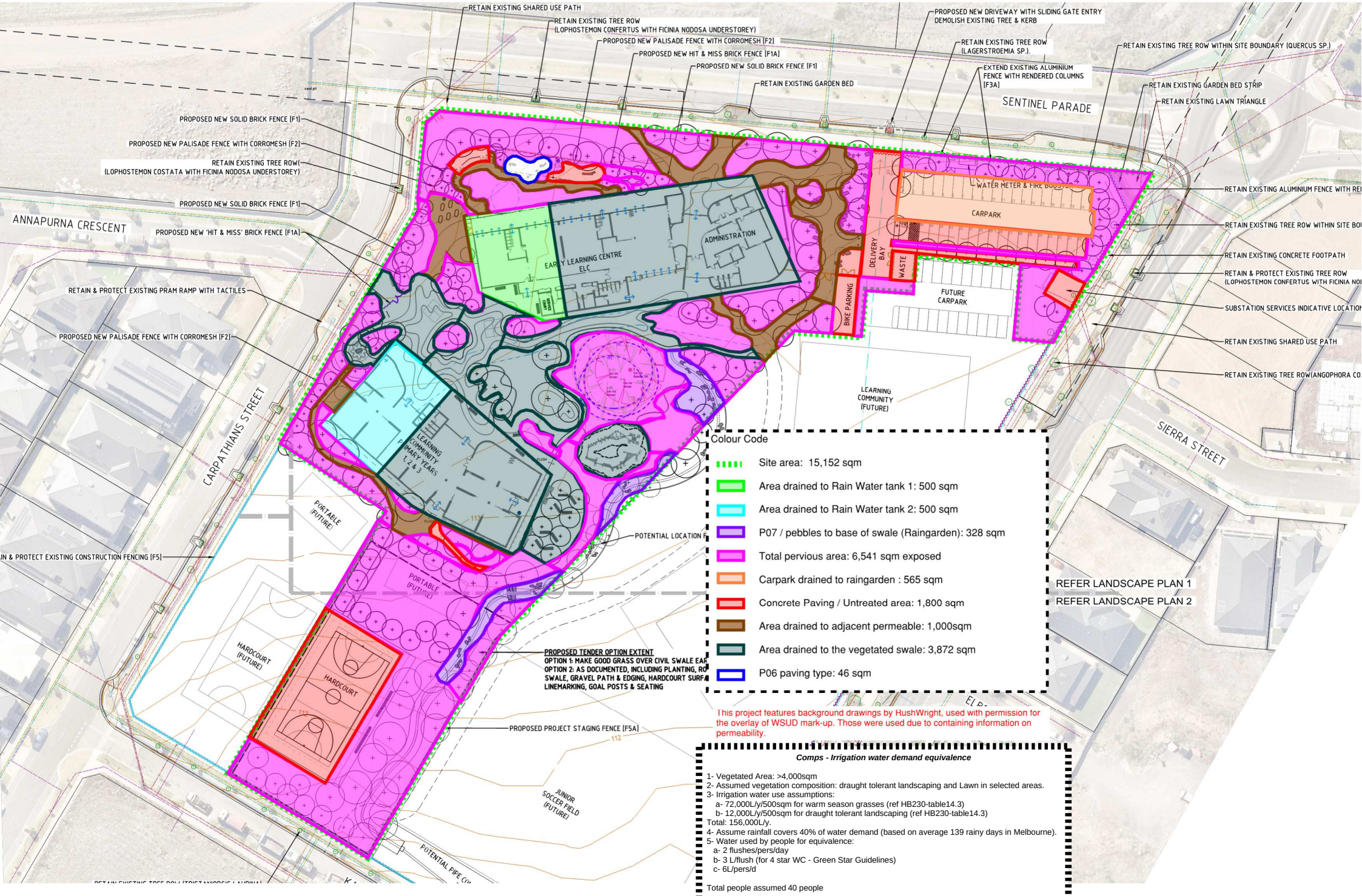
STORM Rating Report

TransactionID: 0
Municipality: MELTON
Rainfall Station: MELTON
Address: Sentinel Road

Truganina, VIC
VIC
Assessor: Jessica Daaboul
Development Type: Commercial/Retail
Allotment Site (m2): 15,152.00
STORM Rating %: 101

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof 1 to rainwater tank	500.00	Rainwater Tank	10,000.00	20	148.00	81.50
Roof 2 to rainwater tank	500.00	Rainwater Tank	10,000.00	20	148.00	81.50
Area to swale	4,200.00	Raingarden 100mm	328.00	0	133.50	0.00
Carpark and trafficable to raingarden	565.00	Raingarden 100mm	4.00	0	100.00	0.00
Untreated	1,800.00	None	0.00	0	0.00	0.00

Date Generated: 04-Jun-2024 Program Version: 1.0.0



Colour Code

- Site area: 15,152 sqm
- Area drained to Rain Water tank 1: 500 sqm
- Area drained to Rain Water tank 2: 500 sqm
- P07 / pebbles to base of swale (Raingarden): 328 sqm
- Total pervious area: 6,541 sqm exposed
- Carpark drained to raingarden : 565 sqm
- Concrete Paving / Untreated area: 1,800 sqm
- Area drained to adjacent permeable: 1,000sqm
- Area drained to the vegetated swale: 3,872 sqm
- P06 paving type: 46 sqm

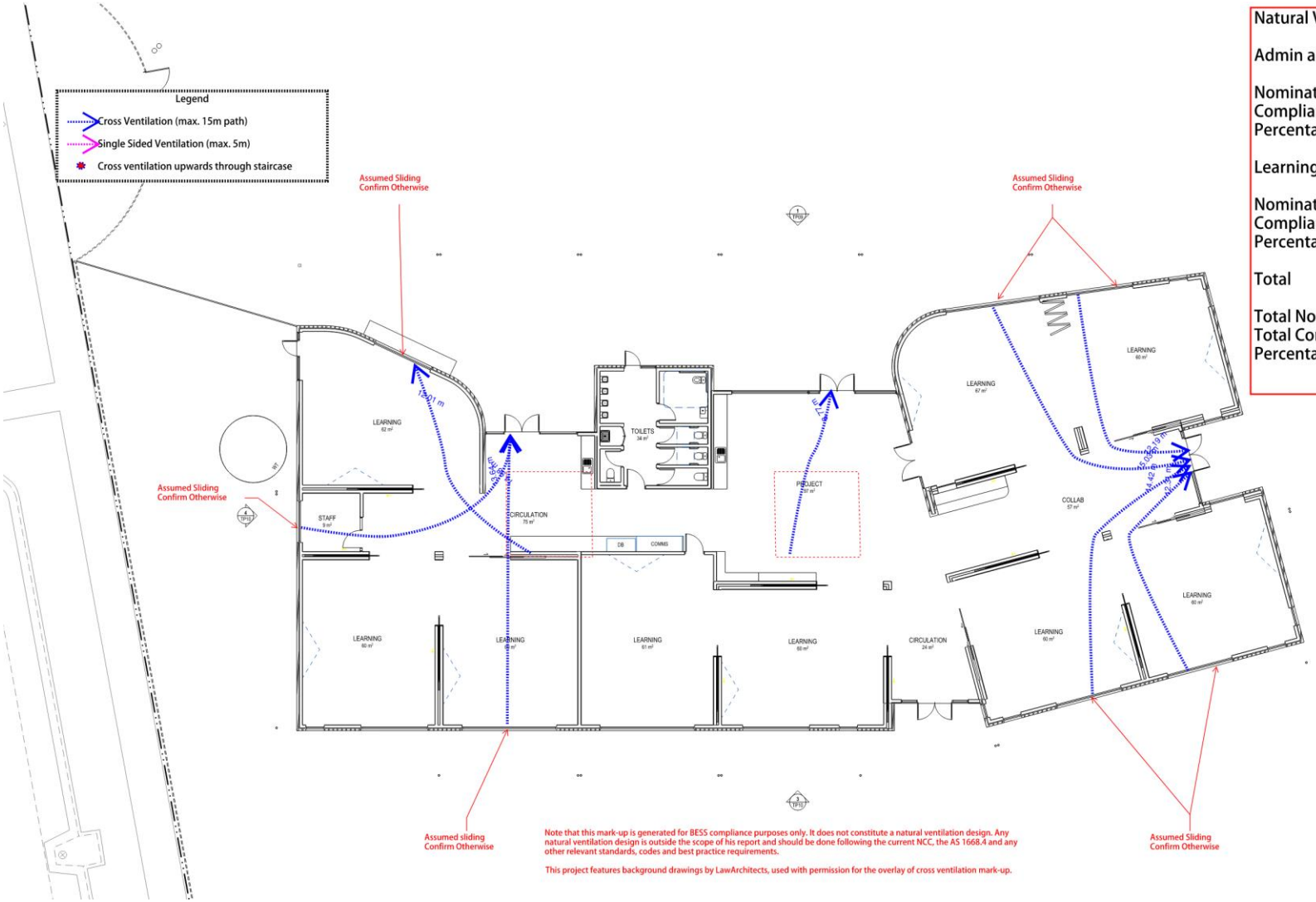
This project features background drawings by RushWright, used with permission for the overlay of WSUD mark-up. Those were used due to containing information on permeability.

Comps - Irrigation water demand equivalence

1- Vegetated Area: >4,000sqm
2- Assumed vegetation composition: draught tolerant landscaping and Lawn in selected areas.
3- Irrigation water use assumptions:
   a- 72,000L/y/500sqm for warm season grasses (ref HB230-table14.3)
   b- 12,000L/y/500sqm for draught tolerant landscaping (ref HB230-table14.3)
Total: 156,000L/y.
4- Assume rainfall covers 40% of water demand (based on average 139 rainy days in Melbourne).
5- Water used by people for equivalence:
   a- 2 flushes/pers/day
   b- 3 L/flush (for 4 star WC - Green Star Guidelines)
   c- 6L/pers/d

Total people assumed 40 people

9- Appendix B – Cross ventilation assessment



Natural Ventilation Results

Admin and ELC Bldg.

Nominated Area: 833 sqm
Compliant Area: 798 sqm
Percentage Compliance: 96%

Learning Bldg.

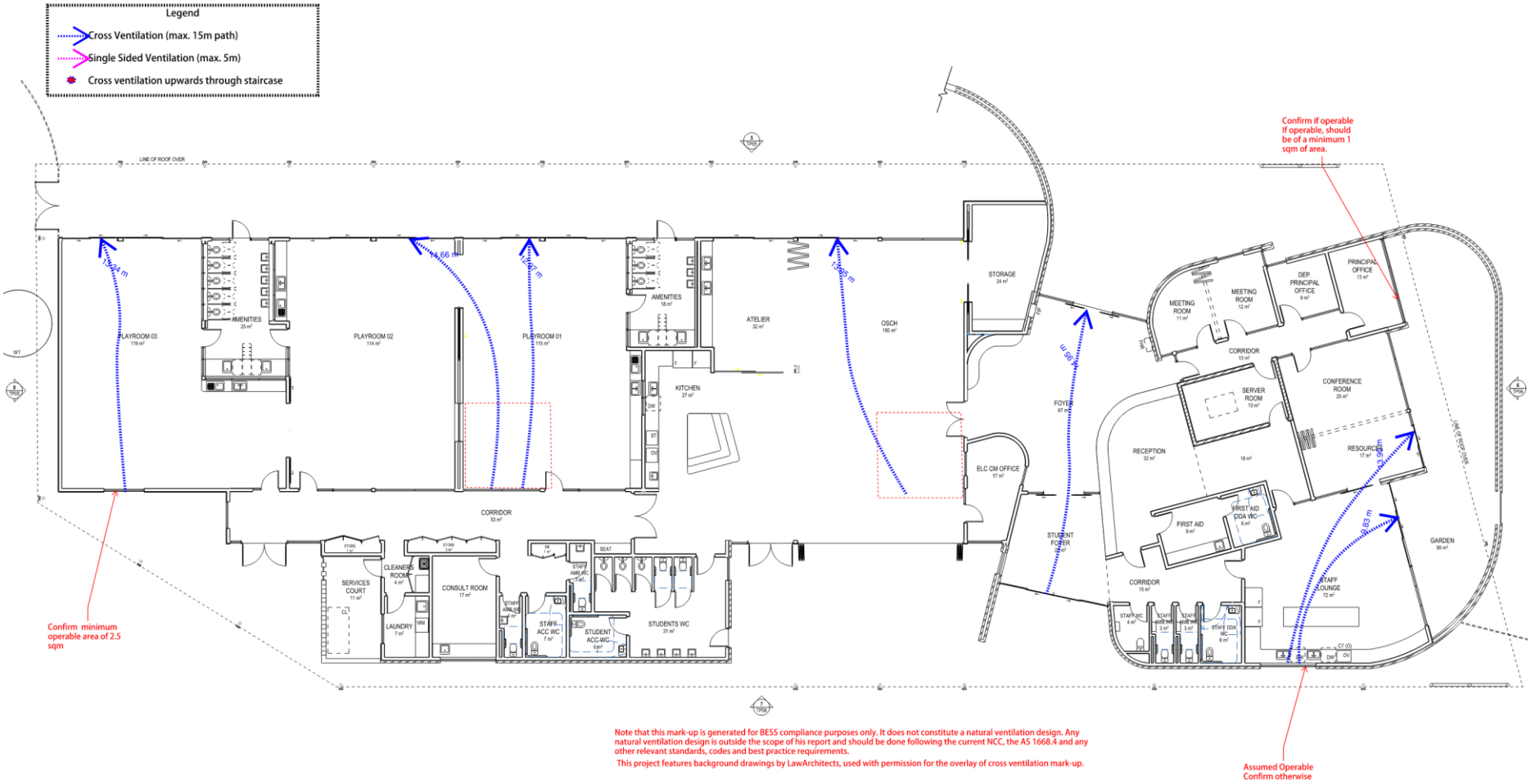
Nominated Area: 656 sqm
Compliant Area: 475 sqm
Percentage Compliance: 72%

Total

Total Nominated Area: 1,489 sqm
Total Compliant Area: 1,273 sqm
Percentage Compliance: 85%

Note that this mark-up is generated for BESS compliance purposes only. It does not constitute a natural ventilation design. Any natural ventilation design is outside the scope of his report and should be done following the current NCC, the AS 1668.4 and any other relevant standards, codes and best practice requirements.

This project features background drawings by LawArchitects, used with permission for the overlay of cross ventilation mark-up.



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This project features background drawings by LawArchitects, used with permission for the overlay of cross ventilation mark-up.

10- Appendix C – Preliminary daylight modelling assessment (and daylight mark-up)

Blue Bee Sustainable Services performed a daylight analysis on the planned development located at Sentinel Road, Truganina, Victoria 3029.

To assess the development against BESS requirements we summarise the daylight requirements below:

> *To claim this credit, you must use daylight modelling software or daylight calculations to show the % of floor area achieving the target daylight factor of 2%, assuming a uniform design sky of 10,000 lux.*
>
> *Points are awarded where it is demonstrated that a minimum of 33% of regular use areas (by floor area) achieves the target daylight factor.*

This daylight modelling was performed using the Integrated Environmental Solutions, Virtual Environment. A three-dimensional model of the project was created to this end.

The results of the assessment indicate that:

- Admin / ELC Building: 36% of the nominated area would achieve>2% DF.
- Learning Building: 35% of the nominated area would achieve>2% DF.

That is when the selected glazing was used.

Admin and ELC Building			
VLT 55%			
Space Type	Total Nominated Area	Compliant Nominated Area	% Compliant
Consultant Room	12.1090	10.1716	84.0000
Student Foyer	12.6943	5.3051	41.7910
Principal Office	10.1926	10.1926	100.0000
Dep Principal Office	5.9044	0.0000	0.0000
Meeting Room 2	18.1060	0.0000	0.0000
Conference Room +Resources	34.7788	34.7788	100.0000
Foyer	101.7954	0.0000	0.0000
Staff Lounge	56.6577	47.6869	84.1667
Atelier	24.4817	10.4229	42.5743
Playroom 3	109.1132	26.3376	24.1379
Playroom 2	102.5714	16.4114	16.0000
OSH	166.3992	92.9506	55.8600
Playroom 1	103.5270	19.6570	18.9873
Total	758	274	36

Learning Building			
VLT 55%			
Space Type	Total Nominated Area	Compliant Nominated Area	% Compliant
Learning 1	54.9761	6.8425	12.4464
Learning 2	51.8001	5.3959	10.4167
Learning 3	52.1404	5.1597	9.8958
Learning 4	48.9386	5.0978	10.4167

Learning 5	53.0873	2.7649	5.2083
Staff	5.4134	5.4134	100.0000
Learning 6	52.9185	15.4035	29.1080
Learning 7	53.4173	20.5261	38.4259
Learning 8	51.4814	17.9066	34.7826
Learning 9	60.1513	3.2313	5.3719
Project	83.7678	2.0431	2.4390
Total	259	90	35

Based on the results above, the benchmark set is achieved with the selected glazing. Below are the contours:

Figure 1: Admin and ELC Building Daylight Modelling Contours

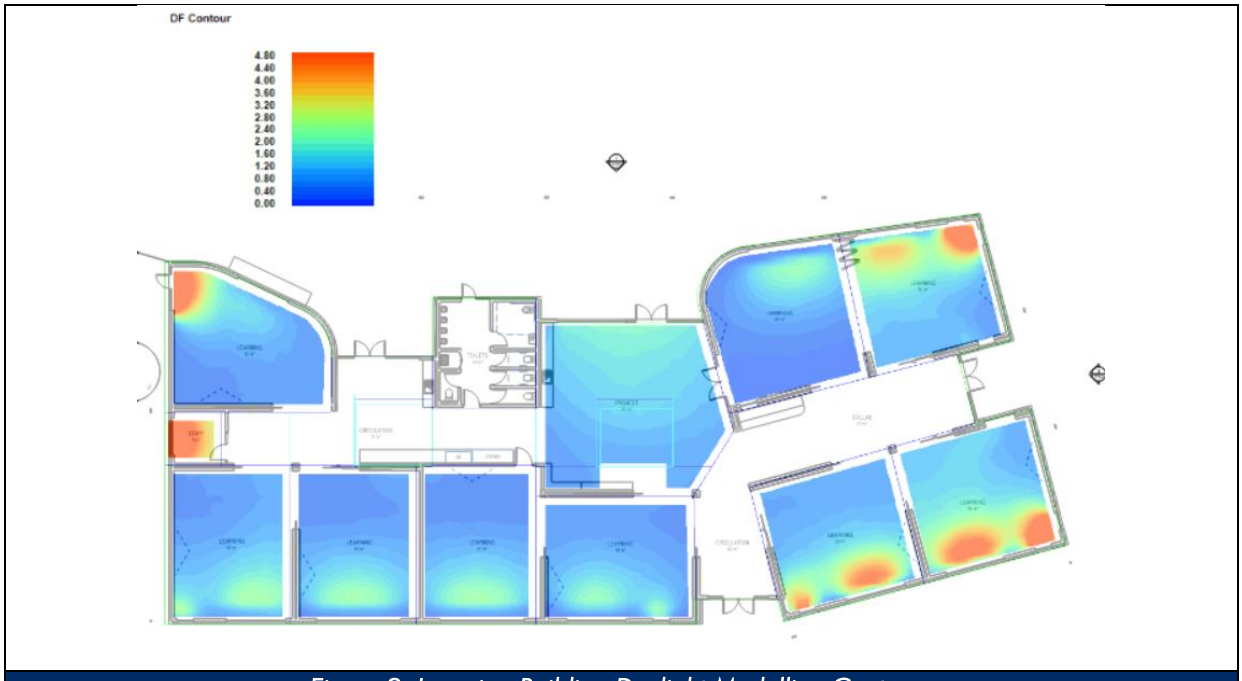


Figure 2: Learning Building Daylight Modelling Contours

General Modelling Parameters and Assumptions

The software used for the analysis is Integrated Environmental Solutions (IES) Virtual Environment version 2021. Daylight access is determined through modelling the Daylight Factor across the Nominated Area.

The main modelling parameters and assumptions are provided below:

Daylight Factor:

- When calculating Daylight Factor, a CIE uniform sky was used.
- The daylight Factor is determined either at the finished floor level
- The equivalent sky conditions used for base daylight is 10,000Lux CIE overcast sky

Calculation method:

- Point-by-point method

Modelling resolution:

- 0.5m by 0.5m, giving a maximum grid area of 0.25sqm

Reflectance:

- Reflectance from all external surfaces and all room internal surfaces

Project specific assumptions:

Shading:

- A site assessment was conducted based on the current condition of the site.
- Project modelling includes shading from external shadings, or overhangs.
- Project modelling includes shading from significant nearby buildings and feature (ex: neighbouring building height is at least a third of the height of the proposed building design).

Assessment area:

- Circulation areas are excluded from the area calculation as they are not nominated areas.

Project materials:

The characteristics shown in table 2 were used for the building elements. The values used for the building materials were chosen based on AS/NZS1680.1 Table E1 referenced in Green Star and are as follows.

Table 02: Visible light transmittance and reflectance values assumed

Surface	Light Transmittance (%)	Light Reflectance (internal)	Light Reflectance (external)
Floor	0	30	30
Internal Partitions	0	80	80
External Wall	0	80	50
Ceiling/Roof	0	80	25
Windows	55	15	18

11- Appendix D – Preliminary façade calculator results

Façade

Report

Calculator

Project Summary

Date
17/05/2024

Name
Safaa Khalil

Company
Blue Bee

Position
ESD Consultant

Building Name / Address
MT Atkinson PS And ELC
Sentinel Rd, Truganina, Vic 3029

Building State

VIC

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Class 9b - early childhood centres

Storeys Above Ground
1

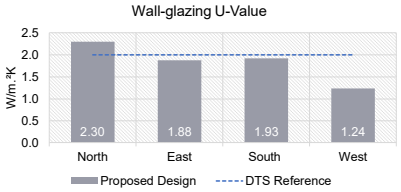
Tool Version
1.2 (June 2020)

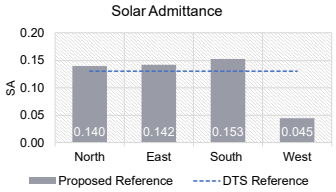
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

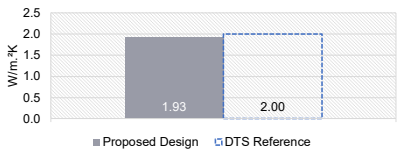
	Method 1 North	Method 1 East	Method 1 South	Method 1 West	Method 2 All
Wall-glazing U-Value (W/m².K)	2.30	1.88	1.93	1.24	1.93
Solar Admittance	0.14	0.14	0.15	0.04	
AC Energy Value					149

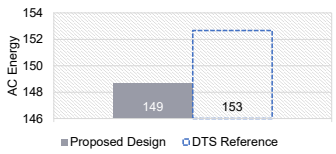
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	160.98	71.49	136.38	37.16
Glazing to Façade Ratio	67%	55%	53%	31%
Glazing References	Fixed 1 Fixed 2 Hinged 1 Sliding 1 Fixed 3 Fixed 4	Fixed 1 Fixed 2 Sliding 1 Fixed 3 Fixed 4	Fixed 1 Fixed 2 Hinged 1 Sliding 1 Fixed 3 Fixed 4 Fixed 5 Fixed-6	Fixed 1 Fixed 2 Fixed 3
Glazing System Types	Fixed Casement Sliding Door	Fixed Sliding Door	Fixed Casement Sliding Door	Fixed
Glass Types	0	0	0	0
Frame Types	0	0	0	0
Average Glazing U-Value (W/m².K)	3.17	3.00	3.18	2.90
Average Glazing SHGC	0.38	0.40	0.38	0.41
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	77.92	58.1	119.7	83.73
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Wall R2 PB wall	Wall R2 PB wall	Wall R2 PB wall	Wall R2 PB wall
Wall Thickness	200 180	200 180	200 180	200
Average Wall R-value (m².K/W)	2.00	2.00	2.00	2.00
Solar Absorptance				

Façade

Report

Calculator

Project Summary

Date
17/05/2024

Name
Safaa Khalil

Company
Blue Bee

Position
ESD Assessor

Building Name / Address
MACS Learning Center
0

Building State
VIC

Climate Zone
Climate Zone 6 - Mild temperate

Building Classification
Class 9b - schools

Storeys Above Ground
1

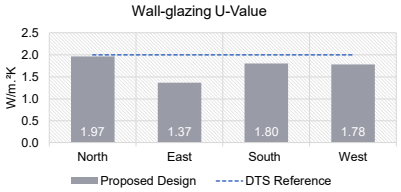
Tool Version
1.2 (June 2020)

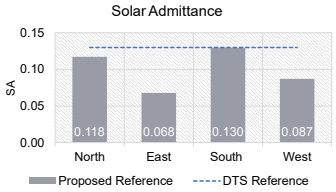
The summary below provides an overview of where compliance has been achieved for Specification J1.5a - Calculation of U-Value and solar admittance - Method 1 (Single Aspect) and Method 2 (Multiple Apects).

Compliant Solution =
Non-Compliant Solution =

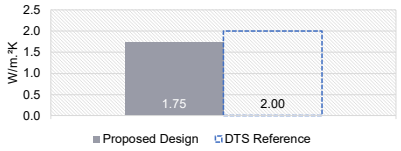
	Method 1				Method 2
	North	East	South	West	All
Wall-glazing U-Value (W/m².K)	1.97	1.37	1.80	1.78	1.75
Solar Admittance	0.12	0.07	0.13	0.09	
AC Energy Value					96

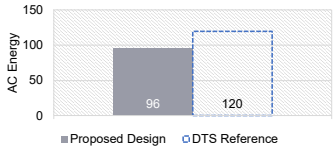
Method 1





Method 2





Project Details

	North	East	South	West
Glazing Area (m²)	87.57	44.85	114.88	57.04
Glazing to Façade Ratio	55%	36%	55%	53%
Glazing References	Fixed-1 Fixed-2 Fixed-3 Fixed-4 Fixed-5 Casement-1 Fixed-6 Casement-2	Fixed-1 Fixed-2 Fixed-3 Casement-1 Fixed-4 Fixed-5	Fixed-1 Fixed-2 Casement-1 Fixed-3 Fixed-4 Fixed-5 Fixed-6 Fixed-7	Fixed-1 Casement-1 Fixed-2 Fixed-3 Fixed-4
Glazing System Types	Fixed Casement	Fixed Casement	Fixed Casement	Fixed Casement
Glass Types	0	0	0	0
Frame Types	0	0	0	0
Average Glazing U-Value (W/m².K)	3.23	3.06	2.96	2.98
Average Glazing SHGC	0.38	0.39	0.34	0.40
Shading Systems	Horizontal	Horizontal	Horizontal	Horizontal
Wall Area (m²)	70.23	78.15	94.62	49.66
Wall Types	Wall	Wall	Wall	Wall
Methodology	Wall			
Wall Construction	Wall R2 PB Wall R2	Wall R2 PB Wall R2	Wall R2 PB Wall R2	Wall R2 PB Wall R2
Wall Thickness	200 185	200 185	200 185	200
Average Wall R-value (m².K/W)	2.50	2.50	2.50	2.50
Solar Absorptance				

12- Appendix E – BESS assessment

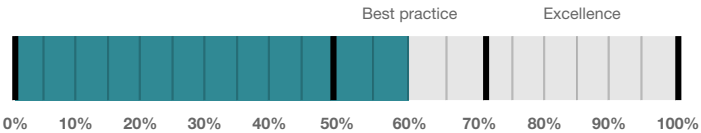
BESS Report

Built Environment Sustainability Scorecard

This BESS report outlines the sustainable design commitments of the proposed development at Sentinel Parade Truganina Victoria 3029. 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 Melton 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

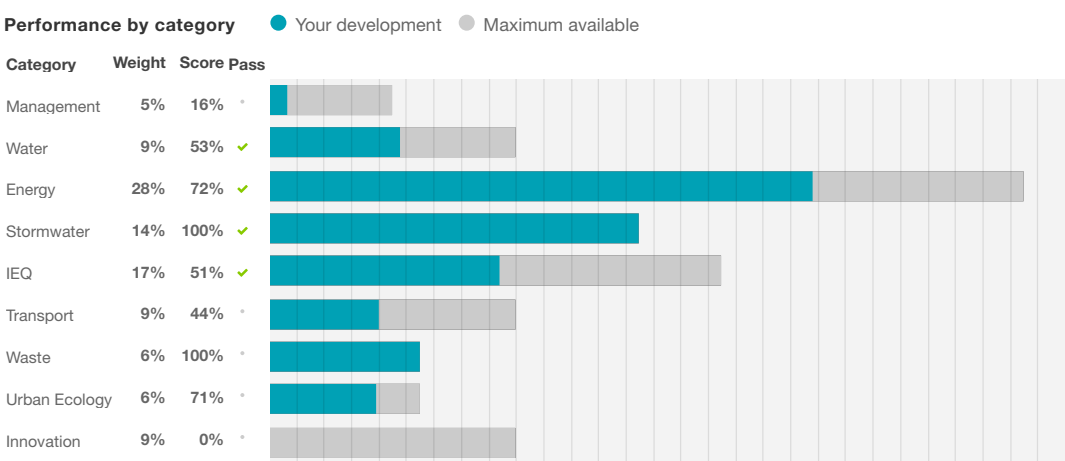


61%

Project details

Address	Sentinel Parade Truganina Victoria 3029
Project no	1B7656C9-R1
BESS Version	BESS-8
Site type	Non-residential development
Account	bessassessment@gmail.com
Application no.	
Site area	15,152.00 m²
Building floor area	2,393.00 m²
Date	17 May 2024
Software version	1.8.1-B.407

Performance by category



Buildings

Name	Height	Footprint	% of total footprint
Admin and ELC Bldg	1	1,296 m^2	58%
Learning Bldg	1	937 m^2	41%

Dwellings & Non Res Spaces

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Public building				
Adminstration & ELC	1	1,453 m^2	Admin and ELC Bldg	60%
Learning Community	1	940 m^2	Learning Bldg	39%
Total	**2**	**2,393 m^2**	**100%**	

Supporting information

Floorplans & elevation notes

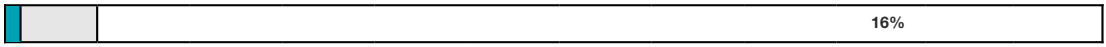
Credit	Requirement	Response	Status
Water 3.1	Annotation: Water efficient garden details		-
Stormwater 1.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)		-
Transport 1.4	Location of non-residential bicycle parking spaces		-
Transport 1.5	Location of non-residential visitor bicycle parking spaces		-
Transport 2.2	Location of car share parking space(s)		-
Waste 2.1	Location of food and garden waste facilities		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 2.1	Location and size of vegetated areas		-
Urban Ecology 3.2	Location of food production areas		-

Supporting evidence

Credit	Requirement	Response	Status
Management 2.3a	Section J glazing assessment		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.7	Average lighting power density and lighting type(s) to be used		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 1.4	A short report detailing assumptions used and results achieved.		-

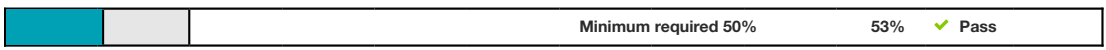
Credit summary

Management Overall contribution 4.5%



1.1 Pre-Application Meeting	0%	
2.3 Thermal Performance Modelling - Non-Residential	50%	
3.2 Metering - Non-Residential	N/A	Scoped Out
	This is a single tenant development with one utility meter.	
3.3 Metering - Common Areas	N/A	Scoped Out
	This is a single tenant development with no common area.	
4.1 Building Users Guide	0%	

Water Overall contribution 9.0%



1.1 Potable Water Use Reduction	44%	
3.1 Water Efficient Landscaping	100%	
4.1 Building Systems Water Use Reduction	N/A	Scoped Out
	The development does not include sprinkler system.	

Energy Overall contribution 27.5%

1.1 Thermal Performance Rating - Non-Residential	37%	
2.1 Greenhouse Gas Emissions	100%	
2.2 Peak Demand	100%	
2.6 Electrification	100%	
2.7 Energy consumption	100%	
3.1 Carpark Ventilation	N/A	Scoped Out
	The development does not include an enclosed carpark	
3.2 Hot Water	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	0%	Disabled
	No solar PV renewable energy is in use.	
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%	51% ✔ Pass
1.4 Daylight Access - Non-Residential		36% ✔ Achieved
2.3 Ventilation - Non-Residential		43% ✔ 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%

	44%
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	0%
2.2 Car Share Scheme	100%
2.3 Motorbikes / Mopeds	0%

Waste Overall contribution 5.5%

	100%
1.1 - Construction Waste - Building Re-Use	N/A ✣ Scoped Out
No previous development is present on site.	
2.1 - Operational Waste - Food & Garden Waste	100%
2.2 - Operational Waste - Convenience of Recycling	100%

Urban Ecology Overall contribution 5.5%

	71%
1.1 Communal Spaces	N/A ✣ Scoped Out
This is a school development. All external areas are commonly accessed by all residents.	
2.1 Vegetation	100%
2.2 Green Roofs	0%
2.3 Green Walls and Facades	0%
3.2 Food Production - Non-Residential	100%

Innovation **Overall contribution 9.0%**

		0%
	1.1 Innovation	0%

Credit breakdown

Management Overall contribution 1%

1.1 Pre-Application Meeting		0%
Score Contribution	This credit contributes 50.0% 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?	
Question	Criteria Achieved ?	
Project	No	
2.3 Thermal Performance Modelling - Non-Residential		50%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2022 Section J4D6?	
Question	Criteria Achieved ?	
Public building	Yes	
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2022 Section J (Energy Efficiency), NABERS or Green Star?	
Question	Criteria Achieved ?	
Public building	No	
3.2 Metering - Non-Residential		N/A Scoped Out
This credit was scoped out	This is a single tenant development with one utility meter.	
3.3 Metering - Common Areas		N/A Scoped Out
This credit was scoped out	This is a single tenant development with no common area.	
4.1 Building Users Guide		0%
Score Contribution	This credit contributes 16.7% towards the category score.	
Criteria	Will a building users guide be produced and issued to occupants?	
Question	Criteria Achieved ?	
Project	No	

Water Overall contribution 5% Minimum required 50%

Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Project Water Profile Question	
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
Water fixtures, fittings and connections	
Showerhead:	
Learning Community	4 Star WELS (>= 4.5 but <= 6.0)
Adminstration & ELC	4 Star WELS (>= 6.0 but <= 7.5)
Bath: All	Scope out
Kitchen Taps: All	>= 5 Star WELS rating
Bathroom Taps: All	>= 6 Star WELS rating
Dishwashers: All	Scope out
WC: All	>= 4 Star WELS rating
Urinals: All	>= 5 Star WELS rating
Washing Machine Water Efficiency: All	>= 4 Star WELS rating
Which non-potable water source is the dwelling/space connected to?:	
Learning Community	RWT 2
Adminstration & ELC	RWT 1
Non-potable water source connected to Toilets: All	No
Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All	No
Rainwater Tanks	
What is the total roof area connected to the rainwater tank?:	
RWT 1	500 m²
RWT 2	500 m²
Tank Size:	
RWT 1	10,000 Litres
RWT 2	10,000 Litres
Irrigation area connected to tank:	
RWT 1	2,000 m²
RWT 2	2,000 m²
Is connected irrigation area a water efficient garden?:	
RWT 1	Yes
RWT 2	Yes
Other external water demand connected to tank?:	
RWT 1	-
RWT 2	-

1.1 Potable Water Use Reduction		44%	
Score Contribution	This credit contributes 83.3% 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	11907 kL		
Output	Proposed (excluding rainwater and recycled water use)		
Project	8851 kL		
Output	Proposed (including rainwater and recycled water use)		
Project	8555 kL		
Output	% Reduction in Potable Water Consumption		
Project	28 %		
Output	% of connected demand met by rainwater		
Project	16 %		
Output	How often does the tank overflow?		
Project	Sometimes		
Output	Opportunity for additional rainwater connection		
Project	4655 kL		

3.1 Water Efficient Landscaping		100%	
Score Contribution	This credit contributes 16.7% towards the category score.		
Criteria	Will water efficient landscaping be installed?		
Question	Criteria Achieved ?		
Project	Yes		

4.1 Building Systems Water Use Reduction		N/A	Scoped Out
This credit was scoped out	The development does not include sprinkler system.		

Energy Overall contribution 20% Minimum required 50%

Use the BESS Deem to Satisfy (DtS) method for Energy?:	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

Non-Residential Building Energy Profiles

1.1 Thermal Performance Rating - Non-Residential	37%
Score Contribution	This credit contributes 36.4% towards the category score.
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC2022 Section J)?

2.1 Greenhouse Gas Emissions	100%
Score Contribution	This credit contributes 9.1% towards the category score.
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?

2.2 Peak Demand	100%
Score Contribution	This credit contributes 4.5% 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 13.6% 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 18.2% towards the category score.
Criteria	What is the % reduction in annual energy consumption against the benchmark?

3.1 Carpark Ventilation	N/A ◈ Scoped Out
This credit was scoped out	The development does not include an enclosed carpark

3.2 Hot Water		100%	
Score Contribution	This credit contributes 4.5% towards the category score.		
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?		
3.7 Internal Lighting - Non-Residential		100%	
Score Contribution	This credit contributes 9.1% 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 ?		
Public building	Yes		
4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A	Scoped Out
This credit was scoped out	No cogeneration or trigeneration system in use.		
4.2 Renewable Energy Systems - Solar		0%	Disabled
This credit is disabled	No solar PV renewable energy is in use.		
4.4 Renewable Energy Systems - Other		N/A	Scoped Out
This credit was scoped out	No other (non-solar PV) renewable energy is in use.		

Stormwater

Overall contribution 14% Minimum required 100%

Which stormwater modelling are you using?:	Melbourne Water STORM tool	
1.1 Stormwater Treatment		100%
Score Contribution	This credit contributes 100.0% towards the category score.	
Criteria	Has best practice stormwater management been demonstrated?	
Question	STORM score achieved	
Project	100	
Output	Min STORM Score	
Project	100	

IEQ

Overall contribution 9% Minimum required 50%

1.4 Daylight Access - Non-Residential	36%	✔ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.	
Criteria	What % of the nominated floor area has at least 2% daylight factor?	
Question	Percentage Achieved?	
Public building	36 %	
2.3 Ventilation - Non-Residential	43%	✔ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.	
Criteria	What % of the regular use areas are effectively naturally ventilated?	
Question	Percentage Achieved?	
Public building	85 %	
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?	
Question	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668:2012?	
Public building	-	
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?	
Question	Value	
Public building	-	
3.4 Thermal comfort - Shading - Non-Residential	100%	
Score Contribution	This credit contributes 17.6% towards the category score.	
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?	
Question	Percentage Achieved?	
Public building	100 %	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential	0%	
Score Contribution	This credit contributes 5.9% towards the category score.	
Criteria	What percentage of regular use areas in tenancies have ceiling fans?	
Question	Percentage Achieved?	
Public building	0 %	
4.1 Air Quality - Non-Residential	100%	
Score Contribution	This credit contributes 5.9% towards the category score.	
Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?	
Question	Criteria Achieved ?	
Public building	Yes	

Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Public building	Yes

Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Public building	Yes

Transport Overall contribution 4%

1.4 Bicycle Parking - Non-Residential	100%
Score Contribution	This credit contributes 22.2% 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 ?
Public building	Yes
Question	Bicycle Spaces Provided ?
Public building	2

1.5 Bicycle Parking - Non-Residential Visitor	100%
Score Contribution	This credit contributes 11.1% 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 ?
Public building	Yes
Question	Bicycle Spaces Provided ?
Public building	1

1.6 End of Trip Facilities - Non-Residential	0%
Score Contribution	This credit contributes 11.1% 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 ?
Public building	-
Question	Number of lockers provided ?
Public building	-
Output	Min Showers Required
Public building	1
Output	Min Lockers Required
Public building	2

2.1 Electric Vehicle Infrastructure	0%
Score Contribution	This credit contributes 22.2% towards the category score.
Criteria	Are facilities provided for the charging of electric vehicles?
Question	Criteria Achieved ?
Project	No

2.2 Car Share Scheme		100%
Score Contribution	This credit contributes 11.1% towards the category score.	
Criteria	Has a formal car sharing scheme been integrated into the development?	
Annotation	This is a school development, school buses are a form of a formalised carshare.	
Question	Criteria Achieved ?	
Project	Yes	

2.3 Motorbikes / Mopeds		0%
Score Contribution	This credit contributes 22.2% 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 6%

1.1 - Construction Waste - Building Re-Use		N/A	Scoped Out
This credit was scoped out	No previous development is present on site.		

2.1 - Operational Waste - Food & Garden Waste		100%
Score Contribution	This credit contributes 50.0% 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 50.0% 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 4%

1.1 Communal Spaces	N/A	Scoped Out
This credit was scoped out	This is a school development. All external areas are commonly accessed by all residents.	

2.1 Vegetation	100%
Score Contribution	This credit contributes 57.1% 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	40 %

2.2 Green Roofs	0%
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Does the development incorporate a green roof?
Question	Criteria Achieved ?
Project	No

2.3 Green Walls and Facades	0%
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Does the development incorporate a green wall or green façade?
Question	Criteria Achieved ?
Project	No

3.2 Food Production - Non-Residential	100%
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	What area of space per occupant is dedicated to food production?
Question	Food Production Area
Public building	332 m^2
Output	Min Food Production Area
Public building	60 m^2

Innovation Overall contribution 0%

1.1 Innovation	0%
Score Contribution	This credit contributes 100.0% towards the category score.
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?