

St Columba College - STEAM Building

Sustainability Management Plan

20 September 2022

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Revision

Revision	Date	Comment	Prepared By	Approved By
01	28/04/22	For Review	KKHY	KKHY
01A	09/05/22	Town Planning Submission	KKHY	KKHY
02	18/08/22	Town Planning Submission	KKHY	KKHY
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Disclaimer

Energy modelling provides an estimate of a building's energy performance. This estimate is based on a necessarily simplified and idealised version of the building that does not and cannot fully represent all of the intricacies of the building and its operation. As a result, energy modelling results only represent an interpretation of the potential performance of a building. No guarantee or warrantee of building performance in practice can be based on energy modelling results alone.

The results generated from any modelling analysis within this report are based on specific criteria outlined in the National Construction Code (NCC) and Built Environment Sustainability Scorecard (BESS), along with best practice guidelines and are not considered to be a true representation of the actual operation of the building. The intent of these criteria is to permit the project team to estimate the expected annual energy consumption of the proposed building and therefore determine if the building has the ability to be energy efficient.



1. Executive Summary

This report has been prepared at the request of Fontic c/o St Columba College and is intended to provide an overview of the Environmentally Sustainable Design (ESD) initiatives in support of the Planning Permit application for the proposed development at 2 Leslie Road Essendon.

This Sustainable Management Plan (SMP) has been prepared to inform Moonee Valley City Council of the proposed development's commitment to sustainability, measured against the documented performance guidelines in accordance with Moonee Valley City Council's Planning Scheme. The Built Environment Sustainability Scorecard (BESS) has been utilised as the sustainability tool to demonstrate compliance with ESD requirements.

The vision of this project is to create a building which is an example of sustainable design for the students and meet the school's intent to contribute to tackling the challenges of climate change through the conservation of energy and materials and innovative design initiatives. The project will achieve the following key sustainability targets:

- As a minimum demonstrate compliance with local council policy for a **BESS "Best Practice (50%)"** score across the development
- Minimum of **10% improvement** on NCC 2019 energy efficiency standards
- Use of **recycled materials** where possible and practicable

The following key focuses were adopted by the project team and underpin the design approach:

- **Fossil fuel free** building, utilising no on-site combustion of fossil fuels and sourcing 100% of off-site energy from certified renewable sources.
- **Onsite PV generation** – 30 kWp to be installed
- Maintain **comfortable internal temperatures** passively, providing comfortable spaces year round and protecting inhabitants from extreme weather events. Building fabric construction methods to have an improved standard of air tightness.
- Create **healthy interiors**, including reduction in the use of harmful VOCs in glues, sealants and paints, and protection from dust and other external airborne pollutants.
- Create **improved indoor environment** through higher outside air rates and good daylight amenity
- **Minimise consumption** conservation of natural resources, including **water and raw materials**.
- Minimise environmental impacts through **construction**, including **embodied energy** and the **ecological cost of materials**.
- Minimise environmental impacts through **operation**, including **energy consumption, waste creation** and discharge of **pollutants**.

This SMP has been amended to address further information requests from DELWP dated 08/09/2022



2. Project Information

2.1 Project Overview

the project is a new building to be developed over an existing car park that will serve as a new science technology, arts and food technology teaching space. The building will be constructed within the bounds of the existing campus and add to the schools teaching capabilities and serve as a building to demonstrate sustainability in the built environment.

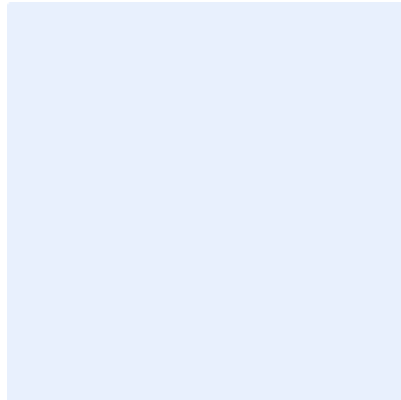
2.2 Development Summary

The proposed built form can be summarised as follows:

Floor Level	Description
Basement 1	Car park
Ground	Arts and food technology teaching spaces
Levels 1	Science and teaching laboratories



2.3 Project Image



2.4 Project Site

The proposed development has a total site area of **2250 m²**. The project site (yellow hatch) is shown in the image below.



2.5 Design Documentation

For further development summary information, please refer to the relevant design drawings documented by CHT as nominated below:

- Town Planning Submission Revision – CHT – August 2022

2.6 Applicable Policy Requirements

The Project and ESD requirements for the development have been based on the following documents:

- Moonee Valley Planning Scheme
- ABCB National Construction Code (NCC) 2019



2.6.1 Planning Scheme Requirements – City of Moonee Valley

Clause 15.02-1L the Moonee Valley Planning Scheme requires proposed development of a non-residential building with a gross floor area of more than 1000m² to propose a Sustainability Management Plan (SMP) as part of the application requirement. The overarching objective is that development should achieve best practice in ESD from the design stage through to construction and operation in the following categories:

- Energy Performance
- Water Resources
- Indoor Environment Quality
- Stormwater Management
- Transport
- Waste Management
- Urban Ecology

This Sustainability Management Plan has been drafted to provide a detailed assessment of the development and identify achievable environmental performance outcomes in regards to the overarching objectives. Sustainability assessment tools such as BESS/Green Star and STORM/MUSIC are encouraged to be utilised as a guide to demonstrate that the building has the design potential to achieve the relevant environmental performance outcomes given the site's opportunities and constraints.

Storm water management Clause 53.18-5 and 53.18-6 are addressed in combination via a STORM assessment for the site and a post development flow assessment by the civil engineers.

2.6.2 ABCB National Construction Code – NCC 2019

The National Construction Code (NCC) via Section J – energy efficiency sets the minimum mandatory building design performance required for Australian buildings. Performance requirement JP1 Energy Use states, a building including its services, must have the features that facilitate the efficient use of energy appropriate to-

- the function and use of the building; and
- the level of human comfort required for the building use; and
- solar radiation being
 - utilised for heating; and
 - controlled to minimise energy for cooling; and
- the energy source of the services; and
- the sealing of the building envelope against air leakage; and
- for a conditioned space, achieve an hourly regulated energy consumption in line with stated figures.

Additional commentary is provided within Section 3.2.2 in response to the above



3. Summary of Sustainability Commitments

3.1 Sustainability Vision

The development at 2 Leslie Road Essendon aims to effectively implement sustainable practises in order to reduce the project’s overall environmental footprint through a combination of best practise ESD design and campus specific ESD innovations which exemplify the schools commitment to tackling climate change. The building is a STEAM and Arts building hence there is opportunity to design the building to address the subject matter and explore sustainable design through the educational lens.

3.2 Sustainability Commitments & Targets

Sustainability is a fundamental guiding principle embedded in the proposed development. The project will achieve the following key targets:

- **BESS “Best Practice (50%)”** score across the development
- **Minimum of 10% improvement** on NCC 2019 energy efficiency standards

3.2.1 Built Environment Sustainability Scorecard (BESS)

In addition to the sustainable design elements nominated above, the development has completed a Built Environment Sustainability Scorecard (BESS) assessment.

BESS assesses energy and water efficiency, thermal comfort, and overall environmental sustainability performance of a new building or alteration. It was created to assist builders and developers to demonstrate that a project meets sustainability information requirements as part of a planning permit application and is considered an acceptable tool for ESD benchmarking.

In order to achieve a ‘Best Practise’ score in BESS, the project must achieve a minimum score of 50% in the Water, Energy, Stormwater, and IEQ categories in addition to scoring a minimum of 50% overall. The score that this development has achieved in BESS is summarised in the table below:

BESS Assessment Score		
Category	Required Score	Score
Management	0%	57%
Water	50%	50%
Energy	50%	60%
Stormwater	50%	100%
IEQ	50%	55%
Transport	0%	33%
Waste	0%	33%
Urban Ecology	0%	14%
Innovation	0%	30%
Overall Score	50%	54%



3.2.2 Improvement on NCC Energy Efficiency Standards

The National Construction Code (NCC) requires a building to meet minimum energy efficient requirements and prove compliance via a Deemed-to-Satisfy (DtS) or Performance Solution. A verification method can be used as a means of demonstrating that a Performance Solution complies with the relevant requirements. Verification Method JV3 requires a Class 3, 5, 6,7,8, or 9 building to have calculated annual energy consumption not more than that predicted by computer simulation for a building built using DtS Provisions.

For this project, energy consumption for the building will be reduced by at least 10% compared to a NCC 2019 reference case building, which complies with the DtS Provisions, as calculated using JV3 modelling software.

The building will comply with NCC 2019 Section J Energy Efficiency standards. The improvement on an NCC 2019 reference case has been stated because this is the Benchmark used to calculate the Energy score in BESS.



4. BCA Section J Compliance

The project will be designed in accordance with the Section J Energy Efficiency requirements of the BCA. The energy efficiency requirements apply to the conditioned areas of a building to ensure adequate thermal comfort conditions can be maintained within said space.

Section J compliance assessment will be carried out in the next design stage of the project. In addition, the project must also comply with relevant prescriptive requirements of Section J. The findings of this assessment will be issued in a dedicated report to the Building Surveyor to formally demonstrate compliance.

4.1 Approach

All conditioned (heated or cooled) areas of the project are required to comply with the thermal performance requirements of Section J 2019.

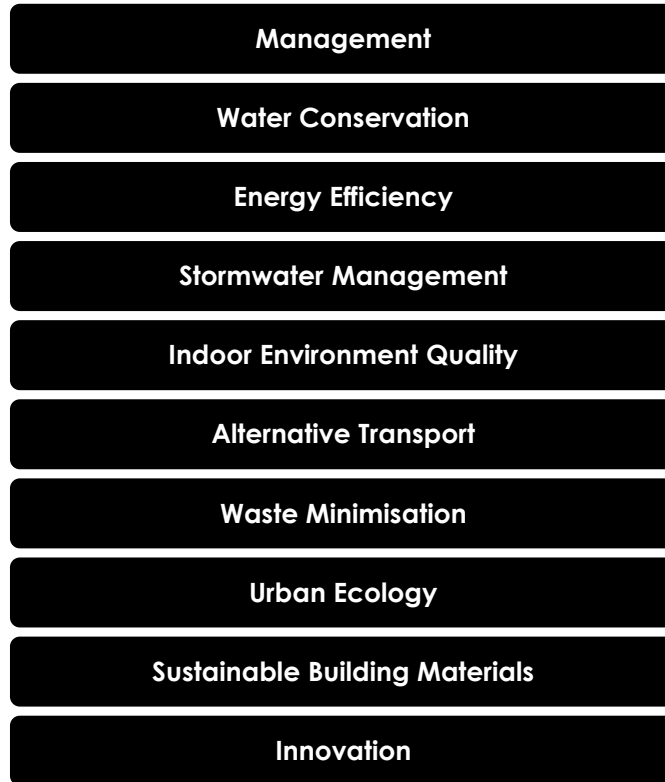
In order to demonstrate section J compliance, the conditioned areas will be assessed in accordance with the energy modelling provisions of an Alternative Solution, known as a JV3 Performance Solution assessment.

A Performance Solution is based on assessing the energy performance of a proposed building against that of a reference building. This involves detailed simulation modelling of the proposed buildings to provide a holistic assessment of the building's energy efficiency in accordance with the requirements of Section J of the BCA. This method of compliance provides much higher levels of flexibility in the design of a building's envelope.



5. Sustainability Strategy

In line with the sustainability commitments and vision for this development, the sustainability management plan has been broken into 10 major categories.



These categories provide the framework to create a development with a holistic and thorough approach to environmental sustainability. The project design details have been carefully reviewed and curated to address each category and provide innovative solutions wherever applicable.



5.1 Management

In order to create an integrated design and construction process which in turn leads to effective operational and on-going building performance, the development seeks to address this category through the following on-site initiatives.

BUILDING INFORMATION

- A simple easy-to-use **Building Users Guide** is to be developed and issued to building occupants.

THERMAL PERFORMANCE MODELLING

- A **preliminary Section J Assessment** has been undertaken to better understand the thermal performance of the building based on the building envelope. Glazing to wall ratio of around 60% is to be applied to allow standard double glazed and wall systems to be applied.

METERING & MONITORING

- Separate utility meters will be provided for each building's major services to give users the ability to monitor water and electricity usage and consumption.

5.2 Water Resources

With people becoming more aware of our water security issues, properties that are designed to use water more efficiently are becoming highly regarded by potential residents. Water saving measures such as water efficient fittings and fixtures (taps, shower heads etc.) and reuse systems are key features for water efficient design.

Overall the development will seek to address water efficiency and reduce the potable water demand for the building through the below initiatives.

WATER CONSERVATION

- Sanitary fixtures across all the development meet the WELS rating below:
 - Taps –5 Star Kitchen Taps;
 - Taps –5 Star Basin taps
 - Toilets – 4 Star
 - Urinals – 4 Star
 - Showers – NA
 - Dishwashers – 4 Star
- A **fire protection system** will be designed to include temporary storage for 80% of the routine fire protection system test water and maintenance drain-downs for reuse on-site. If sprinkler systems are installed, each floor will be fitted with isolation valves or shut-off points for floor-by-floor testing.
- **Drip irrigation** with moisture sensor override will be installed. The landscaping and associated systems will be designed to reduce the consumption of potable water required for irrigation through the installation of subsoil drip irrigation and moisture sensor controls.
- **Rainwater** will be collected and **re-used for landscape irrigation & toilet flushing** via a 30,000L retention tank. Rainwater will be collected from the clean roof (area approx. 1765m²) and the reuse rate is to be at least 1200L/day. This will be met by the number of students expected to use the building.

5.3 Energy Efficiency

The built environment within Australia contributes over **40%** of our total greenhouse gas emissions annually which is among the highest per capita in the world. **Intelligent design** can drastically improve energy efficiency and decrease greenhouse gas emissions associated with a building's operation.

This development has sought to include several sustainable initiatives designed in order to maximise the energy efficiency of the development. Energy efficiency initiatives proposed for inclusion within the development are outlined below:



BUILDING FABRIC

- The building will achieve **compliance with NCC 2019** requirements for building fabric. The strategy for compliance incorporates external shading on the North façade, the Western and Eastern façade,
- **Double glazing** will be used throughout the project.
- **Glazing placement and sizing** have been carefully managed (particularly to East, West, and South) to reduce unwanted heat gain/loss, while providing access to daylight and natural ventilation. A target glazing ratio of 60% - 65% glazing is to be adopted.
- Considered specification of **construction materials and external cladding** to maximise positive influence of thermal mass and minimise unwanted heat gain/loss. This includes exposed concrete ceilings and a combination of insulated precast concrete external walls and insulated lightweight external and party wall construction.

APPLIANCES & EQUIPMENT

- All **services will be electric** in order to eliminate reliance on fossil fuels. (gas will be supplied to science labs only)
- A high efficiency centralised **heat pump system** will be installed to minimise greenhouse gas emissions from the **domestic hot water** demand from the facility.
- **Commercial grade Centralised VRV/VRF system** are to be installed and sized to provide heating and cooling to the main occupied areas
- **Heat recovery ventilators** will be provided to supply zoned fresh air to each zone independently

SUSTAINABLE ENERGY SUPPLY

- A **30 kWp Rooftop Solar PV** array will be installed on the building to offset grid electricity usage and further reduce GHG emissions associated with the building's operation.
- **100% Certified Greenpower** to be explored further in design development and when building is operational

LIGHTING

- Energy efficient **LED** will be installed throughout.
- The **lighting power density** will be reduced by at least 10% below the maximum lighting power density allowable in Table J6.2a (NCC 2019). Independent light switching will be provided to each functional room. Lighting to be controlled via occupancy sensors.

CAR PARK VENTILATION

- Car park is **mechanically ventilated** and controlled on CO sensors.

5.4 Stormwater Management

The design team recognizes and embraces that by reducing stormwater run-off from the site the project has the potential to improve natural ecosystem health and improve natural ecology beyond the site boundary. Measures taken to reduce stormwater runoff include:

WATER SENSITIVE URBAN DESIGN (WSUD)

The project aims to meet Urban Stormwater - Best Practice Environmental Management Guidelines through the following strategies

- To satisfy clause 53.18-5, a **WSUD** strategy has been developed for the site, where rainwater tank reuse strategy achieving a 100% STORM score is utilised to demonstrate compliance. Run off from the clean roofs will be collected and reused in the toilet flushing system.



- The WSUD strategy involves **30kL retention tank** collecting stormwater from roof area (1487m²) and a **rain garden** (minimum 5m²) to treat ground surface runoff (1,608m²). The combination of rainwater harvesting and landscaped rain garden will achieve a 100% score which meets the storm water objectives of clause 53.18-5. Refer to Appendix B for details of the STORM assessment.
- The project will implement site management practises to mitigate and control storm water runoff during construction phase. Clause 53.18-6 will be addressed by the contractor and implement an **Erosion and Sediment control plan**. Refer to Appendix C for the requirements that the contractor shall undertake.

5.5 Indoor Environmental Quality

Indoor Environment Quality (IEQ) has been defined as a key sustainable building category in order to improve indoor environments for building occupants which in turn aims to improve their overall wellbeing. Australians spend 90% or more of their time indoors. Therefore, consideration to improving indoor environmental quality is a vital step within the design process for any modern building.

The proposed development seeks to improve the overall Indoor Environmental Quality (IEQ) for building occupants by addressing the following elements:

INDOOR AIR QUALITY

- The **ventilation system** will comply with ASHRAE Standard 62.1 in regards to minimum separation distances between pollution sources & outdoor air intakes.
- All **kitchens will be ventilated** in accordance with AS 1668.2-2012. A separate exhaust system will be provided for the kitchen exhaust.
- **Outdoor air supply** rates shall be 50% improvement on AS 1668.2-2.12 and be controlled on CO₂ sensors to ensure a maximum CO₂ concentration of 800ppm.

ACCESS TO DAYLIGHT

- Building orientation, eave and facade design, glazing and material selection have all been designed with the intent to achieve **natural daylight** to occupied areas while maintaining a high thermal performance
- Glazing will be selected to maximise access to daylight while prioritising thermal performance necessary to achieve the targeted energy consumption outcomes. The VLT of the selected glazing will be a **minimum of 55%** given that the thermal performance required is achieved.
- All student activity and learning spaces within the building are afforded **direct access to natural light**.

VISUAL COMFORT

- **External screens** will be provided to the West & North façade to minimise glare
- All occupied spaces will have a **clear line of sight** to high quality internal or external views.

INDOOR POLLUTANTS

- **Low Volatile Organic Compounds (VOC)** internally applied paints, carpets, adhesives and sealants will be selected for the project.
- **Low Formaldehyde** engineered wood products (particleboard, plywood, MDF) will be selected for the project.

5.6 Alternative Transport

The adoption of sustainable transport methods are encouraged by building designs which provide appropriate facilities for occupants and visitors. Site proximity to major transport infrastructure also lends itself to staff and students adopting and utilising sustainable methods of transport.



BICYCLE PARKING

- **14 new secure bicycle spaces** are provided within the development. Staff will have access to end of trip facilities in a separate multipurpose centre building which is part of the main campus.

ELECTRIC VEHICLE INFRASTRUCTURE

- Car park will be provided with trickle charge points only. 2 off car park bays to have access to charge points.

5.7 Waste Minimisation

Construction and demolition activities account for a large percentage of the waste and recycling generated by a site when compared to its general operation. There is now a growing level of interest in 'green' buildings, which through careful design use less resources and energy than conventional buildings and provide healthier environments for staff.

CONSTRUCTION AND DEMOLITION WASTE

- The head contractor will commit to divert at least 80% of the waste generated during construction and demolition from landfill.

OPERATIONAL WASTE

- **Clearly labelled recycling bins** will be provided in refuse room, along with a hard waste collection area for larger items.

5.8 Urban Ecology

In order to protect and enhance the local biodiversity and urban ecology, the development seeks to address this ESD category through the following on-site initiatives.

SITE VEGETATION

- The project will incorporate landscaping over roughly **8% of the site area**.

5.9 Sustainable Building Materials

A significant amount of material is expected to be used within the development. Embodied energy is often a key consideration overlooked in material selection. The proposed development seeks to address and manage the selection and specification of sustainable building materials.

MATERIAL REDUCTION

- The selection of a **limited materials palette**, along with a focus on raw finishes, aims to reduce total material usage in the project.

HEALTHY MATERIALS SPECIFICATION

- During the project's detailed design phase all materials will be evaluated regarding their potential toxicity. This will result in the specification of **low or zero VOC** paints, materials, adhesives and finishes throughout.
- Selections for permanent formwork, pipes, flooring, blinds and cables will be either PVC free products or meet **PVC Best Practice Guidelines**.

RECLAIMED OR RECYCLED MATERIALS

- Opportunities to use **reclaimed or recycled materials**, such as recycled feature brick walls and the reuse of existing brickwork, will be pursued through detailed design.



LOW IMPACT MATERIALS

- Subject to structural engineering requirements, the project will specify recycled content (fly ash or furnace slag) in **structural concrete**. aggregates and sand shall come from reused or sourced from reprocessed materials.
- All new **timber** used in the project will be **FSC or PEFC or AFC certified**.
- Building materials shall give preference to materials that includes recycled materials such as
 - Plaster board with recycled gypsum
 - Insulation material to be recycled glass
 - Floor coverings such as carpets and resilient coatings to have recycled content
 - Cladding materials
 - Materials that feature energy reducing process or are certified carbon neutral

5.10 Innovation

These are strategies which encourage innovative technology, design and processes in all aspects of the development, which positively influence the sustainability of the building

100% RENEWABLE / FOSSIL FUEL FREE

- Site uses all electric appliances and services; all electricity is either from onsite renewable generation or certified offsite renewable sources

PASSIVE HOUSE

- Building design will be for higher level of air tightness allowing the building to save additional of energy when compared to a reference (BCA compliant) building. Airtight construction methods to be implemented and air tightness testing to be carried out as part of commissioning process to confirm air permeability rates The building will target an air tightness standard of $5\text{m}^3/\text{h}/\text{m}^2$ at 50 Pa.

SUSTAINABLE MATERIALS

- Building material selection shall give preference to materials that includes recycled materials such as
 - Plaster board with recycled gypsum
 - Insulation material to be recycled glass
 - Floor coverings such as carpets and resilient coatings to have recycled content
 - Cladding materials
 - Materials that feature energy reducing process or are certified carbon neutral

CARBON NEUTRAL READY

- The building gas free building will reduce direct carbon emissions associated with construction & operation as much as possible and calculate and offset all remaining carbon emissions as per Climate Active guidelines. This will be an initiative the school will consider as part of future sustainability goals.



Appendix A – BESS Assessment



BESS Report

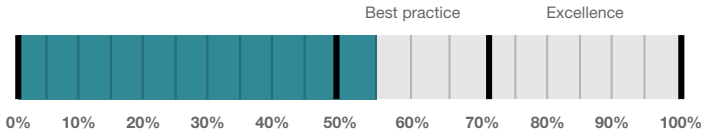
Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 2 Leslie Rd Essendon VIC 3040. 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 Moonee Valley 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



54%

Project details

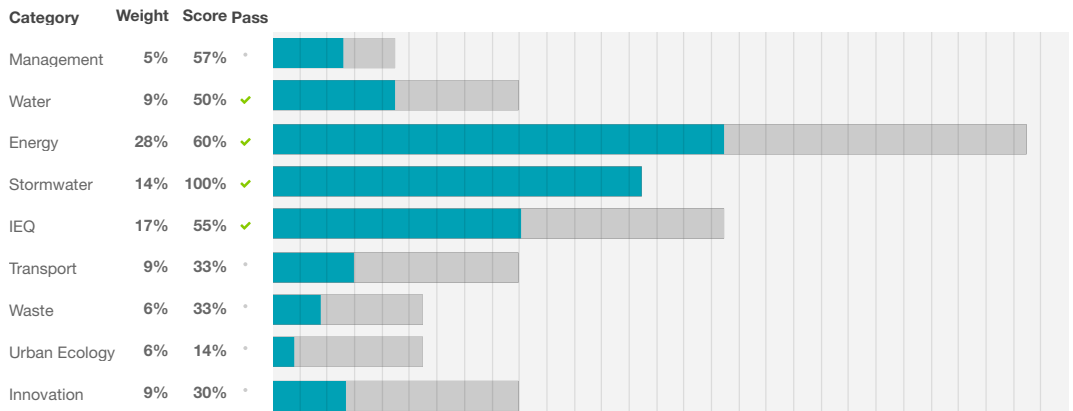
Address 2 Leslie Rd Essendon VIC 3040
Project no 29C7040D-R4
BESS Version BESS-6

Site type Non-residential development
Account kenneth.yuen@wge.com.au
Application no.
Site area 2,250.00 m²
Building floor area 3,530.00 m²
Date 09 May 2022
Software version 1.7.0-B.385



Performance by category

● Your development ● Maximum available



Buildings

Name	Height	Footprint	% of total footprint
STEAM building	2	1,420 m ²	100%

Dwellings & Non Res Spaces

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Other building				
STEAM building	1	3,530 m ²	STEAM building	100%
Total	1	3,530 m²	100%	

Supporting information

Floorplans & elevation notes



Credit	Requirement	Response	Status
Management 3.3	Common area submeters annotated		-
Water 3.1	Water efficient garden annotated		-
Energy 3.1	Carpark with natural ventilation or CO monitoring system		-
Energy 4.2	Floor plans showing location of photovoltaic panels as described.		-
Stormwater 1.1	Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)		-
Transport 2.1	Location of electric vehicle charging infrastructure		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 2.1	Vegetated areas		-

Supporting evidence




Credit	Requirement	Response	Status
Management 2.3a	Section J glazing assessment		-
Management 2.3b	Preliminary modelling report		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.1	Provide a written explanation of either the fully natural carpark ventilation or carbon monoxide monitoring, describing how these systems will work, what systems are required for them to be fully integrated and who will be responsible for their implementation throughout the design, procurement and operational phases of the building life.		-
Energy 3.7	Provide a written description of the average lighting power density to be installed in the development and specify the 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 1.4	A short report detailing assumptions used and results achieved.		-

Credit summary






Management Overall contribution 4.5%

	57%
1.1 Pre-Application Meeting	0%
2.3 Thermal Performance Modelling - Non-Residential	100%
3.2 Metering - Non-Residential	N/A  Scoped Out
No Commercial Tenant	
3.3 Metering - Common Areas	100%
4.1 Building Users Guide	100%

Water Overall contribution 9.0%

	Minimum required 50%	50%  Pass
1.1 Potable water use reduction	40%	
3.1 Water Efficient Landscaping	100%	
4.1 Building Systems Water Use Reduction	N/A  Scoped Out	
Building will connect to existing (campus wide) fire system which doesnt allow for storage of fire test water.		

Energy Overall contribution 27.5%

	Minimum required 50%	60%  Pass
1.1 Thermal Performance Rating - Non-Residential	12%	
2.1 Greenhouse Gas Emissions	100%	
2.2 Peak Demand	100%	
2.3 Electricity Consumption	100%	
2.4 Gas Consumption	N/A  Scoped Out	
No gas connection in use		
3.1 Carpark Ventilation	100%	
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	100%	
4.4 Renewable Energy Systems - Other	N/A  Disabled	
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%	55%	✔ Pass
1.4 Daylight Access - Non-Residential			40%	✔ Achieved
2.3 Ventilation - Non-Residential			66%	✔ Achieved
3.4 Thermal comfort - Shading - Non-residential			66%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential			0%	
4.1 Air Quality - Non-Residential			100%	

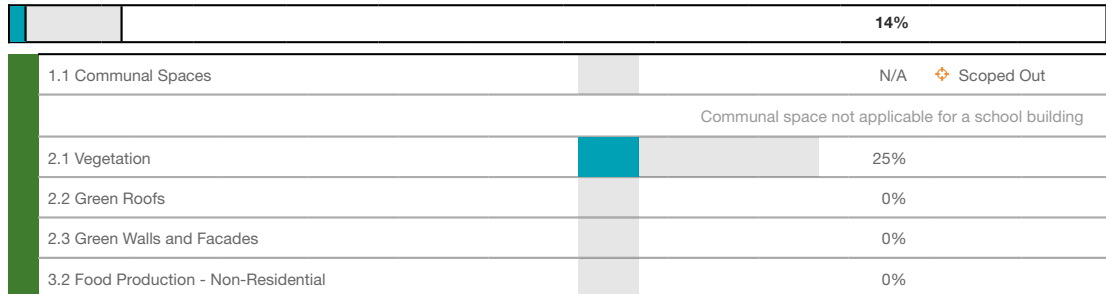
Transport Overall contribution 9.0%

			33%	
1.4 Bicycle Parking - Non-Residential			0%	
1.5 Bicycle Parking - Non-Residential Visitor			0%	
1.6 End of Trip Facilities - Non-Residential			N/A	⊘ Disabled
Credit 1.4 must be complete first.				
2.1 Electric Vehicle Infrastructure			100%	
2.2 Car Share Scheme			N/A	⚡ Scoped Out
Car share not applicable to a school building				
2.3 Motorbikes / Mopeds			N/A	⚡ Scoped Out
Motorbikes not applicable to a school building				

Waste Overall contribution 5.5%

			33%	
1.1 - Construction Waste - Building Re-Use			0%	
2.1 - Operational Waste - Food & Garden Waste			0%	
2.2 - Operational Waste - Convenience of Recycling			100%	

Urban Ecology Overall contribution 5.5%



Innovation Overall contribution 9.0%




Credit breakdown

Management Overall contribution 3%

1.1 Pre-Application Meeting		0%
Score Contribution	This credit contributes 42.9% 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		100%
Score Contribution	This credit contributes 28.6% towards the category score.	
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2019 Section J1.5?	
Question	Criteria Achieved ?	
Other building	Yes	
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?	
Question	Criteria Achieved ?	
Other building	Yes	
3.2 Metering - Non-Residential		N/A  Scoped Out
This credit was scoped out	No Commercial Tenant	
3.3 Metering - Common Areas		100%
Score Contribution	This credit contributes 14.3% towards the category score.	
Criteria	Have all major common area services been separately submetered?	
Question	Criteria Achieved ?	
Other building	Yes	
4.1 Building Users Guide		100%
Score Contribution	This credit contributes 14.3% towards the category score.	
Criteria	Will a building users guide be produced and issued to occupants?	
Question	Criteria Achieved ?	
Project	Yes	


Water Overall contribution 4% 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	
Building:	STEAM building
Showerhead:	Scope out
Bath:	Scope out
Kitchen Taps:	>= 5 Star WELS rating
Bathroom Taps:	>= 5 Star WELS rating
Dishwashers:	>= 4 Star WELS rating
WC:	>= 4 Star WELS rating
Urinals:	>= 4 Star WELS rating
Washing Machine Water Efficiency:	Scope out
Which non-potable water source is the dwelling/space connected to?:	-1
Non-potable water source connected to Toilets:	Yes
Non-potable water source connected to Laundry (washing machine):	No
Non-potable water source connected to Hot Water System:	No
Rainwater Tank	
What is the total roof area connected to the rainwater tank?: Tank 1	1,600 m ²
Tank Size: Tank 1	30,000 Litres
Irrigation area connected to tank: Tank 1	-
Is connected irrigation area a water efficient garden?: Tank 1	Yes
Other external water demand connected to tank?: Tank 1	-

1.1 Potable water use reduction		40%
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	2992 kL	
Output	Proposed (excluding rainwater and recycled water use)	
Project	2154 kL	
Output	Proposed (including rainwater and recycled water use)	
Project	2154 kL	
Output	% Reduction in Potable Water Consumption	
Project	28 %	
Output	% of connected demand met by rainwater	
Project	0 %	
Output	How often does the tank overflow?	
Project	Very Often	
Output	Opportunity for additional rainwater connection	
Project	1185 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	Building will connect to existing (campus wide) fire system which doesnt allow for storage of fire test water.	

Energy Overall contribution 16% Minimum required 50%

Use the BESS Deem to Satisfy (DtS) method for Energy?:	No
Non-Residential Building Energy Profile	
Heating, Cooling & Comfort Ventilation - Electricity - reference fabric and reference services:	100 kWh
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and reference services:	100 kWh
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and proposed services:	90.0 kWh
Heating - Wood - reference fabric and reference services:	0.0 MJ
Heating - Wood - proposed fabric and reference services:	0.0 MJ
Heating - Wood - proposed fabric and proposed services:	0.0 MJ
Hot Water - Electricity - Baseline:	100 kWh
Hot Water - Electricity - Proposed:	85.0 kWh
Lighting - Baseline:	100 kWh
Lighting - Proposed:	85.0 kWh
Peak Thermal Cooling Load - Baseline:	100 kW
Peak Thermal Cooling Load - Proposed:	95.0 kW
Solar Photovoltaic system	
System Size (lesser of inverter and panel capacity): PV	30.0 kW peak
Orientation (which way is the system facing)?: PV	North
Inclination (angle from horizontal): PV	20.0 Angle (degrees)
1.1 Thermal Performance Rating - Non-Residential	12%
Score Contribution	This credit contributes 40.0% towards the category score.
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC 2019 Section J)?
2.1 Greenhouse Gas Emissions	100%
Score Contribution	This credit contributes 10.0% 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)
Other building	204 kg CO2
Output	Proposed Building with Proposed Services (Actual Building)
Other building	178 kg CO2
Output	% Reduction in GHG Emissions
Other building	12 %

2.2 Peak Demand		100%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?	
Output	Peak Thermal Cooling Load - Baseline	
Other building	100 kW	
Output	Peak Thermal Cooling Load - Proposed	
Other building	95.0 kW	
Output	Peak Thermal Cooling Load - % Reduction	
Other building	5 %	
2.3 Electricity Consumption		100%
Score Contribution	This credit contributes 10.0% towards the category score.	
Criteria	What is the % reduction in annual electricity consumption against the benchmark?	
Output	Reference	
Other building	200 kWh	
Output	Proposed	
Other building	175 kWh	
Output	Improvement	
Other building	12 %	
2.4 Gas Consumption		N/A  Scoped Out
This credit was scoped out	No gas connection in use	
3.1 Carpark Ventilation		100%
Score Contribution	This credit contributes 10.0% 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	Yes	
3.2 Hot Water		100%
Score Contribution	This credit contributes 5.0% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?	
Output	Reference	
Other building	100 kWh	
Output	Proposed	
Other building	85.0 kWh	
Output	Improvement	
Other building	15 %	

3.7 Internal Lighting - Non-Residential		100%
Score Contribution	This credit contributes 10.0% 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 J6.2a of the NCC 2019 Vol 1?	
Question	Criteria Achieved ?	
Other 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		100%
Score Contribution	This credit contributes 5.0% 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	
Other building	38,310 kWh	
Output	% of Building's Energy	
Other building	14734 %	
4.4 Renewable Energy Systems - Other		N/A  Disabled
This credit is disabled	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		40%	✓ 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?		
Other building	40 %		
2.3 Ventilation - Non-Residential		66%	✓ 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?		
Other building	0 %		
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?		
Other building	50 %		
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?		
Question	Value		
Other building	800 ppm		
3.4 Thermal comfort - Shading - Non-residential		66%	
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?		
Other building	50 %		
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?		
Other 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 ?		
Project	Yes		

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

Transport Overall contribution 3%

1.4 Bicycle Parking - Non-Residential		0%
Score Contribution	This credit contributes 33.3% 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 ?	
Other building	No	
Question	Bicycle Spaces Provided ?	
Other building	14	
1.5 Bicycle Parking - Non-Residential Visitor		0%
Score Contribution	This credit contributes 16.7% 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 ?	
Other building	No	
Question	Bicycle Spaces Provided ?	
Other building	0	
1.6 End of Trip Facilities - Non-Residential	N/A	⊘ Disabled
This credit is disabled	Credit 1.4 must be complete first.	
2.1 Electric Vehicle Infrastructure		100%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Question	Criteria Achieved ?	
Project	Yes	
2.2 Car Share Scheme	N/A	⊕ Scoped Out
This credit was scoped out	Car share not applicable to a school building	
2.3 Motorbikes / Mopeds	N/A	⊕ Scoped Out
This credit was scoped out	Motorbikes not applicable to a school building	

Waste Overall contribution 2%

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		0%
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	No	
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 1%

1.1 Communal Spaces		N/A	✦ Scoped Out
This credit was scoped out	Communal space not applicable for a school building		
2.1 Vegetation		25%	
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	8 %		
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		0%	
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		
Other building	0.0 m ²		
Output	Min Food Production Area		
Other building	45 m ²		

Innovation Overall contribution 3%

Innovations	
Description:	
Air tight Building	Building will target a higher air tight construction of 5 m3/hr/m2@50Pa
Circular Economy Materials	Building will seek to nominate materials which have a higher % of recycled or reused materials
Fossil fuel free services	The building will be designed so that building services are electric systems.
Points Targeted:	
Air tight Building	1
Circular Economy Materials	1
Fossil fuel free services	1
1.1 Innovation	30%
Score Contribution	This credit contributes 100.0% towards the category score.
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?

Disclaimer

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Appendix B – STORM Assessment





STORM Rating Report

TransactionID: 1370512
Municipality: MOONEE VALLEY
Rainfall Station: MOONEE VALLEY
Address: 2 Leslie Road

Essendon
VIC 3040

Assessor: Stantec
Development Type: Other
Allotment Site (m2): 3,395.00
STORM Rating %: 108

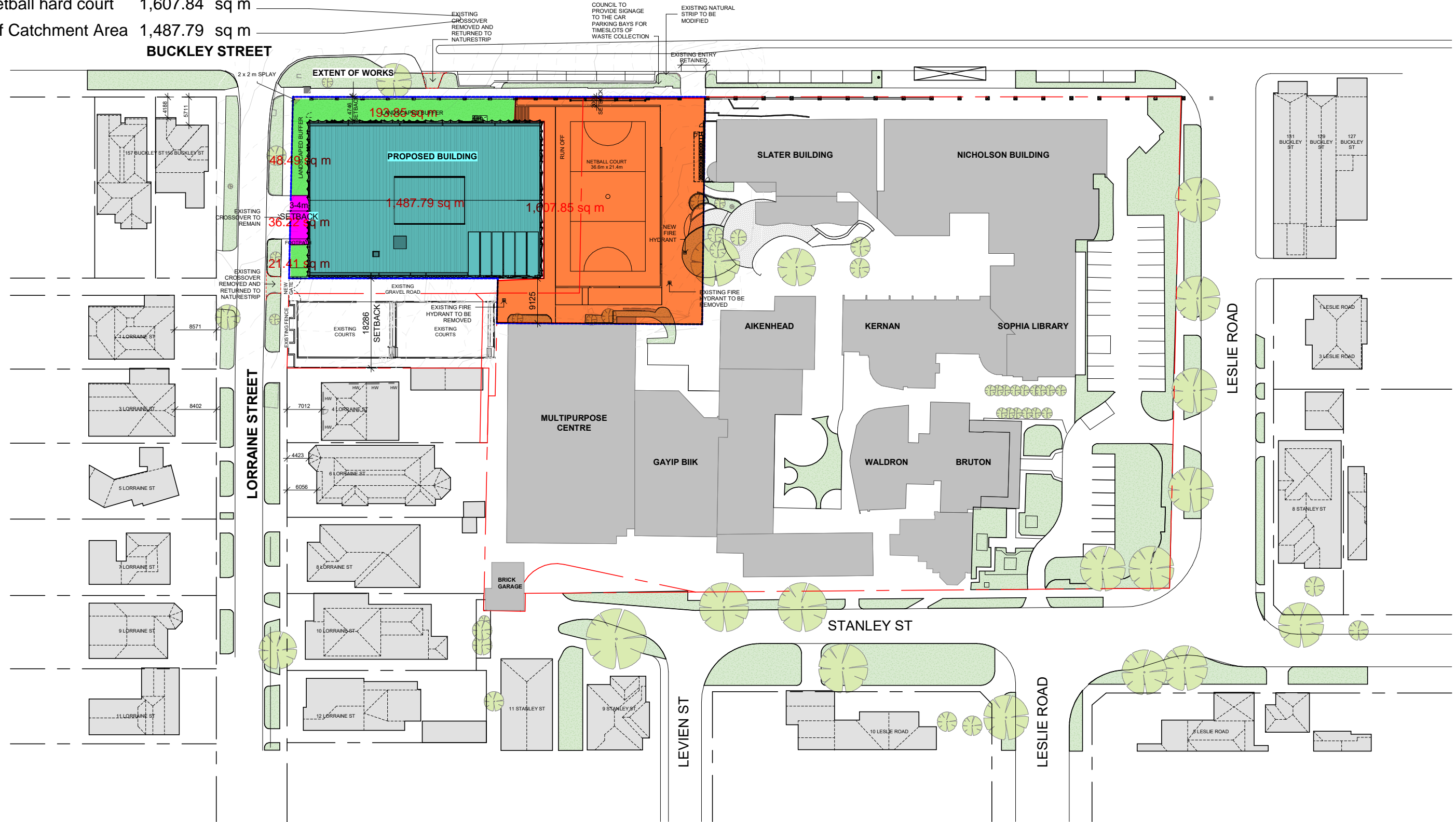
Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof area	1,487.00	Rainwater Tank	30,000.00	60	157.40	78.10
Netball Hard Court	1,608.00	Raingarden 100mm	5.00	0	64.80	0.00
Driveway	36.00	None	0.00	0	0.00	0.00

Date Generated: 06-May-2022

Program Version: 1.0.0

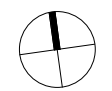
Legend

Description	Quantity	Unit
Driveway	36.22	sq m
Landscape Area	263.74	sq m
Netball hard court	1,607.84	sq m
Roof Catchment Area	1,487.79	sq m



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1 TP - PROPOSED SITE PLAN
SCALE 1:400



Appendix C – Storm Water Site Management

It is expected that the construction phase works will comprise of:

- Clearing
- Bulk Earthworks
- Trimming and Profiling
- Road boxing and construction
- Site Drainage & Services construction
- Landscaping and associated drainage

During the construction phase, the management of stormwater runoff from the exposed earthworks surfaces will be based on containment, diversion and retention. Throughout the stages of construction these include:

- Erosion controls such as sediment fences surrounding stripped earth
- Sediment fences surrounding stockpiles of soil and debris
- Construction of perimeter bunding at toe and/or top of earthworks batters
- Catch drains, including check dams, though the site to catch direct runoff.
- The containment of runoff from the site into a temporary sediment basin during the construction works.
- Diversion drains to re-direct clean water around the site.

An Erosion and Sediment Control plan will be included with the Contractor's building permit application and will be implemented during the construction phase. This will be prepared in accordance with the latest International Erosion Control Association (IECA) standards and applicable Council standards. A suitably qualified person will inspect construction works to ensure compliance.

During the construction phase the maintenance and monitoring of erosion and sediment control measures remains the responsibility of the Contractor. Details of the inspection frequency expected will be noted within the Contractor's Erosion and Sediment Control Drawings. If during the construction phase it is deemed required, monitoring will also be undertaken by qualified consultants to determine the impact of activities on the subject site. MVC Construction Management Plan to pick this up.



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