








Sustainability Management Plan

Kardinia International College – Junior School Redevelopment

-  Structural
-  Geotechnical
-  Civil
-  Residential
-  Forensic
-  Building Services
-  Surveying

Presented to

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Document Revision History

Date	Rev	Author	Comments
4/11/2020	A	Jenny Liu	Draft
11/02/2021	B	Jenny Liu	First Edition

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1. Executive Summary

The purpose of this Sustainability Management Plan (SMP) submission is to show the compliance of the junior school redevelopment at 205 Ballarat Rd, Bell Post Hill VIC 3215 against the Built Environment Sustainability Scorecard (BESS), demonstrating best practice energy performance, water efficiency, indoor environment quality, stormwater management, sustainable transport, waste management and urban ecology. This report also demonstrates how this project contributes towards achieving the ESD targets of the City of Greater Geelong which are contained in the planning scheme 15.02 and 22.71.

The key recommendations for elements to be incorporated include:

Categories	Response Strategies	
Management	<ul style="list-style-type: none"> ESD Professional engaged All major common area services to be separately sub-metered 	<ul style="list-style-type: none"> Building User Guide
Water	<ul style="list-style-type: none"> Water efficient fittings, fixtures and appliances: <ul style="list-style-type: none"> Showers: 3 Stars (>=6 but<=7.5) Toilets: 4 Stars Taps: 5 Stars Urinals: 5 Stars 	<ul style="list-style-type: none"> Rainwater used to flush toilets and irrigation.
Energy	<ul style="list-style-type: none"> High Performance Fabric and Glazing 10kWp x2 PV system >10% reduction in heating and cooling energy to non-residential areas >10% reduction in electricity consumption to non-residential areas 	<ul style="list-style-type: none"> >10% reduction in energy consumption to non-residential areas for the hot water system
Stormwater	<ul style="list-style-type: none"> 105% STORM score. 60,000L rainwater tank 15 sqm raingarden 	
IEQ	<ul style="list-style-type: none"> Adequate daylight to non-residential areas. Adequate winter sunlight 	<ul style="list-style-type: none"> High performance double glazing
Transport	<ul style="list-style-type: none"> 6 Bicycle parking provided for employees and pupils. 	
Waste	<ul style="list-style-type: none"> Recycling facilities as accessible as general waste facilities 	<ul style="list-style-type: none"> Operational waste-food & garden waste
Materials	<ul style="list-style-type: none"> Low VOC 	<ul style="list-style-type: none"> Low Formaldehyde
Urban Ecology	<ul style="list-style-type: none"> Communal spaces provided for occupants 	<ul style="list-style-type: none"> 13% of the site is covered with vegetation.

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2. Introduction

This report provides an overview of the ecologically sustainable design (ESD) strategy for the proposed junior school redevelopment at 205 Ballarat Road, Bell Post Hill VIC 3215, consisting of stage 1 building and stage 2 building.

The objective of this report is to describe how best practice ESD will be incorporated in the development, including targets and proposed design approaches, and to demonstrate that the development meets or exceeds the standards required by the City of Greater Geelong's Planning Scheme 15.02-1S and 22.71, specifically the requirement to achieve the design potential to a minimum +50% BESS.

The analysis is based on drawings prepared by Croxon Ramsay reference project no. 2018 dated 03.02.2021.

The proposed Junior school redevelopment comprising the following 2 stages:

Stage 1:

- 9 classroom spaces
- Meeting rooms
- Office
- Breakout space
- Toilets
- Covered outdoor areas

Stage 2

- 10 classroom spaces
- One conference/breakout space
- Office
- Meeting rooms
- Administrative building
- Outdoor basketball court

2.1 Statutory Context

The site is situated within the municipal boundaries of the City of Greater Geelong. The City of Greater Geelong has objectives and strategies relating to ESD which are contained in the planning scheme 15.02-1S and 22.71. These policies and objectives have been taken into consideration throughout this assessment and in our advice given to the applicant.

Overall, the proposed ESD initiatives of this development will meet Council's overarching goal of promoting sustainable design and buildings.

The Built Environment Sustainability Scorecard (BESS) has been utilised to benchmark the environmental performance of the project. The proposal has the preliminary design potential to achieve the following BESS Score:

- 52% - Best practice

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3. ESD Initiatives

3.1 Management



The SDAPP ‘Management’ category encourages and rewards the adoption of practices and processes that enable and support best practice sustainability outcomes throughout the different phases of a project’s design, construction and its ongoing operation.

Throughout the ‘Management’ category, SDAPP intends to improve the sustainability performance of a project by influencing areas where decision-making is critical. This category rewards the implementation of processes and strategies that support positive sustainability outcomes during construction. The category also promotes practices that ensure a project will be used to its optimum operational potential. The ‘Management’ category rewards projects that achieve the following outcomes:

- Coordinated approaches
- Commitment to implementation
- Sustainable cultures and behaviours

Table 1: Building Management Actions

No.	Action	Response-Strategies	Responsible Entity	Project Phase
M-1	Engage ESD Professional	<ul style="list-style-type: none"> • Intrax Consulting will be appointed as the ESD Consultant from schematic design to construction completion. 	Intrax	Design to completion
M-2	Thermal Performance Modelling – Non-Residential	<ul style="list-style-type: none"> • A preliminary Section J facade assessment been undertaken accordance with Section J of the NCC. 	Intrax	Design
M-3	Metering Strategy	<ul style="list-style-type: none"> • All major common area services to be separately sub-metered. 	Intrax	Design Construction
M-4	Building Users Guide	<ul style="list-style-type: none"> • A building user’s guide will be developed for use by the occupants. The building design and ESD commitments will be reviewed to identify the systems and processes that the occupants and owners interact with. The building user’s guide will be a booklet or pamphlet with simple language to encourage the most sustainable use of the development. 	Builder	Completion Handover

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3.2 Water



The SDAPP 'Water' category aims to encourage and reward initiatives that reduce the consumption of potable water through measures such as the incorporation of water efficient fixtures and building systems and water re-use.

Reductions in operational water consumption may be achieved through maximisation of water-efficiency within a project, as well as through the utilisation of reclaimed water sources.

The 'Water' category rewards projects that achieve the following outcomes:

- The selection of equipment that is more water efficient than comparable standard practice equivalents;
- The use of water-efficient supplementary equipment;
- The selection of water-efficient toilets taps and showers.

Table 2 Water Efficiency Actions

No.	Action	Response Strategies	Responsible Entities	Project Phase
W-1	Potable Water Use Reduction	<ul style="list-style-type: none"> • Greater than 35% reduction in potable water consumption. • Water efficient fittings, fixtures and appliances (WELS ratings): <ul style="list-style-type: none"> ○ Showers: 3 Stars (>6.0 but ≤7.5) ○ Toilets: 4 Stars ○ Taps: 5 Stars ○ Urinals: 5 Stars 	Architect Builder	Design Construction
W-2	Rainwater Collection & Reuse	<ul style="list-style-type: none"> • Rainwater tanks connected to toilets flushing and irrigation. 	Architect Intrax Builder	Design Construction
W-3	Water efficient irrigation	<ul style="list-style-type: none"> • Water efficiency principles used for landscaped areas, includes low water use plant selection • No irrigation system for water efficient garden and not require watering after an initial period when plants are getting established. 	Architect	Design Construction
W-4	Building Systems Water Use Reduction	<ul style="list-style-type: none"> • Where applicable measures will be taken to reduce the potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems. 	Intrax Builder	Design Construction

3.3 Energy



The SDAPP 'Energy' category aims to reward projects that are designed and constructed to reduce their overall operational energy consumption below that of a comparable standard practice building. Such reductions are directly related to reduced greenhouse gas emissions, lower overall energy demand as well as reductions in operating costs for building owners and occupants.

Through the 'Energy' category, SDAPP aims to ensure reductions in greenhouse gas emissions by facilitating efficient energy usage and encouraging the utilisation of energy generated by low-emission sources.

The 'Energy' category rewards projects that achieve the following outcomes:

- The implementation of well-designed systems, aimed at lower operating emissions;
- The selection of high efficiency equipment over less energy efficient alternatives;
- The implementation of well-designed and zoned lighting that is energy efficient and appropriate for a space's use;
- The use of efficient supplementary equipment; and
- The procurement of zero carbon and low carbon energy sources.

Table 3 Energy Efficiency Actions

No.	Action	Response-Strategies	Responsible Entities	Project Phase
E-1	Thermal Design – Non-residential	<ul style="list-style-type: none"> • All exposed floors and ceilings (forming part of the envelope) demonstrate a minimum 10% improvement in required NCC2019 insulation levels (total R-value upwards and downwards). 	Intrax Architect	Design
E-2	Thermal Comfort Wall and Glazing	<ul style="list-style-type: none"> • All wall and glazing demonstrate meeting the required NCC2019 facade calculator 	Architect Builder	Design Construction
E-3	Heating and Cooling systems	<ul style="list-style-type: none"> • 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. 	Intrax Builder	Design Construction
E-4	Hot water	<ul style="list-style-type: none"> • Water heating systems within one star of the best available, or 85% or better than the most efficient equivalent capacity unit. 	Intrax Builder	Design Construction
E-5	Internal Lighting	<ul style="list-style-type: none"> • 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. 	Lighting Designer Builder	Design Construction
E-6	Renewable Energy Systems	<ul style="list-style-type: none"> • Installation of 10kWp Solar PV system for each building, 2 x 10kwp in total. 	Architect Intrax Builder	Design Construction

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3.4 Stormwater



The SDAPP 'Stormwater' category aims to ensure projects are responsibly treating stormwater to reduce the amount of polluted stormwater run-off entering local waterways such as; rivers, streams, wetlands and bays. This can be achieved by the following water sensitive urban design strategies (WSUD); rainwater tanks, raingardens, porous paving and landscaping.

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

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

Table 4: Stormwater Management Actions

No.	Action	Response-Strategies	Responsible Entities	Project Phase
S-1	Stormwater Treatment	<ul style="list-style-type: none"> • 105% STORM score. • 60,000L rainwater tank • 15 sqm raingarden • Refer to Appendix A STORM Markup and calculation prepared by civil consultant - Argall for further details. 	Architect Argall Builder	Design Construction

3.5 Indoor Environment Quality



The SDAPP 'Indoor Environment Quality' category aims to encourage and reward initiatives that enhance the comfort and well-being of occupants. The credits within this category address issues such as natural daylight, air quality and thermal comfort.

Through the 'Indoor Environment Quality' category, SDAPP aims to achieve sustainability performance improvements in a manner that also improves occupants' experience of the space. While it is possible to reduce a project's energy intensity by simply providing occupants with poor lighting quality for example, the 'Indoor Environment Quality' category recognises that buildings are designed for people and that reductions in energy use should never be made at the expense of the occupants' health and wellbeing.

By rewarding both energy efficiency and encouraging occupant well-being, the BESS rating system promotes and rewards a holistic approach to sustainability that results in multiple benefits.

The 'Indoor Environment Quality' category rewards projects that achieve the following outcomes:

- Increased comfort and wellbeing
- Reduced exposure to pollutants

Table 5 Indoor Environment Quality Actions

No.	Action	Response Strategies	Responsible Entities	Project Phase
IEQ-1	Daylight Access	<ul style="list-style-type: none"> • >30% of the nominated floor area has at least 2% daylight factor for the primary floor area. 	Architect Intrax	Design
IEQ-2	Natural Ventilation	<ul style="list-style-type: none"> • This development supports the use of natural ventilation by providing openable windows to primary areas. 	Architect Intrax	Design
IEQ-3	Shading	<ul style="list-style-type: none"> • Canopies provide external shading to Ground floor area. 	Architect Builder	Design Construction
IEQ-4	Visual Comfort	<ul style="list-style-type: none"> • Primary areas have a clear line of sight to external views to provide engaging views and increase the visual comfort of building occupants. 	Architect	Design

3.6 Transport



The SDAPP 'Transport' category aims to reward projects that facilitate a reduction of the dependency of occupants on private car use as an important means of reducing overall greenhouse gas emissions. The use of motor vehicles directly contributes to climate change in two ways - through the high amounts of energy required to produce cars and build and maintain supporting road transport infrastructure and services; and the direct emissions that result from car operations.

If reliance on individual motor vehicle transportation is to be reduced, it is necessary to maximise alternative transportation options. Rather than limiting access to private fossil fuel vehicles, the 'Transport' category aims to encourage and reward initiatives that reduce the need for their use. This may include initiatives that encourage the use of public transport options, cycling or walking, and the selection of sites that are close to local amenities.

The 'Transport' category rewards projects that achieve the following outcomes:

- The selection of sites that have readily accessible public transport options;
- The selection of sites within close proximity of a diversity of amenities;
- The facilitation and encouragement of the use of alternative transport options, such as bicycles or electric vehicles.

Table 7 Transport Actions

No.	Action	Response Strategies	Responsible Entities	Project Phase
T-1	Bicycle Parking	<ul style="list-style-type: none"> • Total 6 bicycle parking facilities provided in the proposed development 	Architect	Design
T-3	Public Transport	<ul style="list-style-type: none"> • The site is within walking distance of the following public transport services: <ul style="list-style-type: none"> ○ Bus 25 		



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3.7 Waste management



The SDAPP 'Waste & Materials' category aims to address the consumption of resources within a building construction context, by encouraging the selection of lower-impact materials. The category also encourages absolute reductions in the amount of waste generated or the recycling of as much of the waste generated as possible.

The 'Waste' category rewards projects that achieve the following outcomes:

- Reduction in waste to landfill
- To promote waste avoidance, re-use and recycling during the design, construction and operation stages of development.

Table 8 Waste and Materials Actions

No.	Action	Response Strategies	Responsible Entities	Project Phase
W-1	Operational Waste Convenience	<ul style="list-style-type: none"> • Recycling facilities located next to general waste facilities for convenience. 	Architect	Design
W-2	Construction Waste Building Re-Use	<ul style="list-style-type: none"> • This development is on a site that has been previously developed, at least 30% of the existing building been re-used. 	Architect	Design

3.8 Materials



The SDAPP 'Materials' category aims to address the consumption of resources within a building construction context, by encouraging the selection of lower-impact materials. The category also encourages absolute reductions in the amount of waste generated or the recycling of as much of the waste generated as possible.

The 'Materials' category rewards projects that achieve the following outcomes:

- Use of products and materials with lower impact

Table 9 Waste and Materials Actions

No.	Action	Response Strategies	Responsible Entities	Project Phase
A-1	Low VOC	<ul style="list-style-type: none"> • Low VOC paints, sealants and adhesives • Materials used for the development will comply with the Green Star Interiors requirements for Low Volatile Organic Compounds 	Architect	Design
A-2	Low Formaldehyde	<ul style="list-style-type: none"> • Low formaldehyde engineered wood products • 95% of all engineered wood products used in the fit outs will meet stipulated formaldehyde limits 	Architect	Design

3.9 Urban Ecology



The SDAPP 'Urban Ecology' category aims to reduce the negative impacts on sites' ecological value as a result of urban development and reward projects that minimise harm and enhance the quality of local ecology.

The 'Ecology' category rewards projects that achieve the following outcomes:

- Site sustainability.
- Reducing ecological impacts from occupied sites.

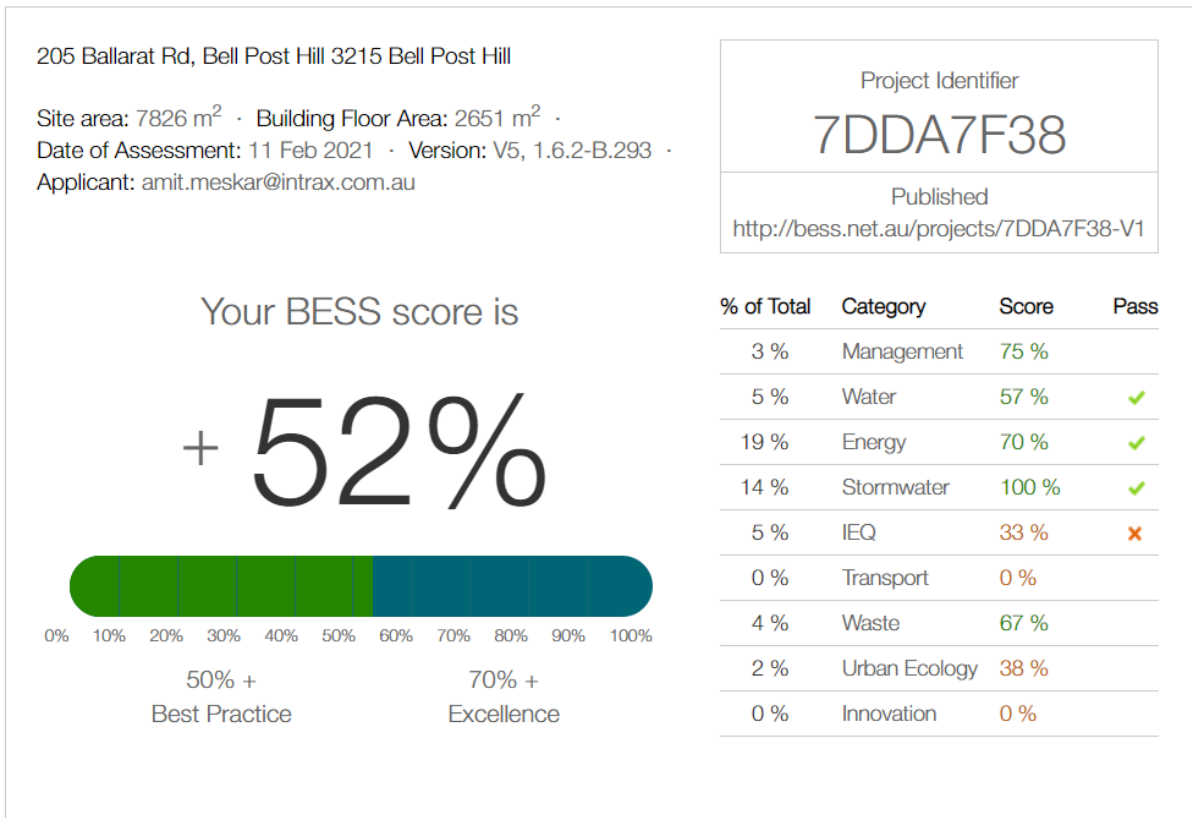
Table 10 Urban Ecology Actions

No.	Action	Response Strategies	Responsible Entities	Project Phase
U-1	Communal Spaces	<ul style="list-style-type: none"> • At least 91m² communal space will be provided on the proposed development. 	Architect Builder	Design Construction
U-2	Vegetated	<ul style="list-style-type: none"> • 13% of the site is covered with vegetation. 	Architect	Design

4. Summary and Discussion

The proposed development exceeds the minimum +50% BESS requirements, demonstrating best practice energy performance, water efficiency, indoor environment quality, stormwater management, sustainable transport, waste management and urban ecology.

Regarding the 33% in IEQ section, as the daylight is the only input in IEQ section, the other IEQ elements could not be engaged in BESS calculation, including ventilation and shading, which affect the final result in the IEQ section. In addition, according to SDAPP, achieve a daylight factor of at least 2.0% for at least 30% of the floor area of regularly occupied primary spaces can be considered as Best Practice.



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Appendix A – BESS

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BESS Report



This BESS report outlines the sustainable design commitments of the proposed development at 205 Ballarat Rd Bell Post Hill VIC 3215. 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 Greater Geelong 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.

205 Ballarat Rd, Bell Post Hill 3215 Bell Post Hill

Site area: 7826 m² · Building Floor Area: 2651 m² ·

Date of Assessment: 11 Feb 2021 ·

Version: V5, 1.6.2-B.293 ·

Applicant: amit.meskar@intrax.com.au

Project Identifier

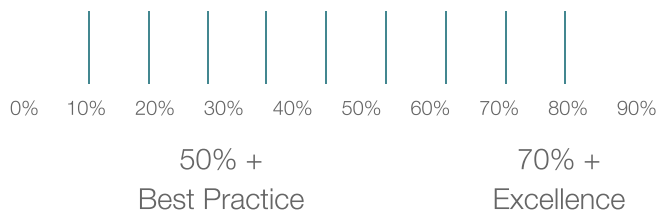
7DDA7F38

Published

<http://bess.net.au/projects/7DDA7F38-V1>

Your BESS score is

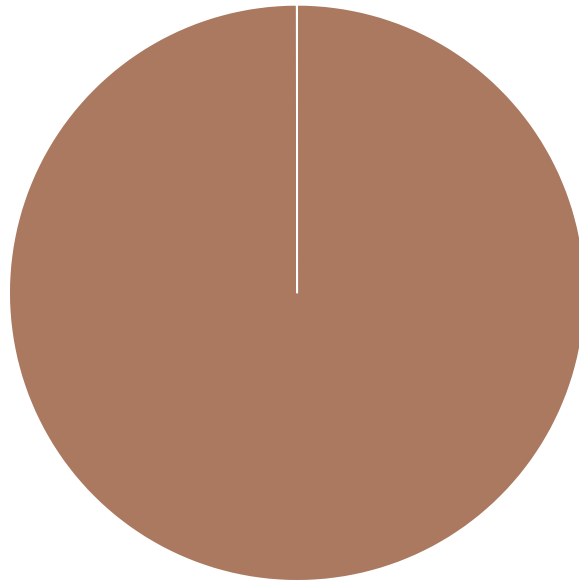
+ 52%



% of Total	Category	Score	Pass
3 %	Management	75 %	
5 %	Water	57 %	✓
19 %	Energy	70 %	✓
14 %	Stormwater	100 %	✓
5 %	IEQ	33 %	✗
0 %	Transport	0 %	
4 %	Waste	67 %	
2 %	Urban Ecology	38 %	
0 %	Innovation	0 %	

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Building Composition



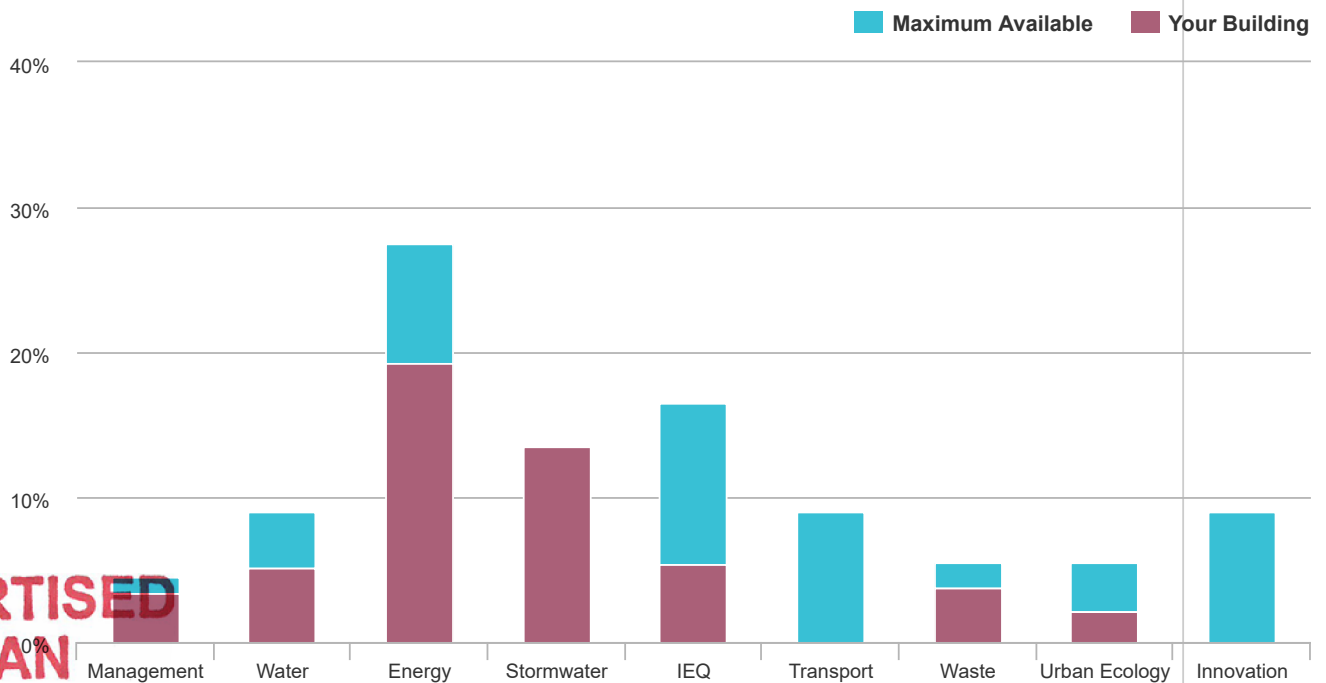
■ Other building

Non-Residential Spaces

Other building	1,148 m ²
Other building	1,502 m ²

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How did this Development Perform in each Environmental Category?



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Sustainable design commitments by category

The sustainable design commitments for this project are listed below. These are to be incorporated into the design documentation and subsequently implemented.

Management

75% - contributing 3% to overall score

Credit	Disabled	Scoped out	Score
Management 1.1 Pre-Application Meeting			100 %
Management 2.4 Thermal Performance Modelling - Non-Residential			100 %
Management 3.2 Metering			N/A
Management 3.3 Metering			100 %
Management 4.1 Building Users Guide			100 %

Management 1.1 Pre-Application Meeting 100%

Score Contribution This credit contributes 37.5% towards this section's score.

Aim To encourage the involvement of suitably qualified ESD professionals in the project team from the early design stage.

Questions

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? *

Yes

Management 2.4 Thermal Performance Modelling - Non-Residential 100%

Score Contribution This credit contributes 12.5% towards this section's score.

Aim To encourage and recognise developments that have used modelling to inform passive design at the early design stage

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Questions

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Has a preliminary Section J facade assessment been undertaken? *

Yes

Management 3.2 Metering

N/A

This credit was scoped out: No commercial areas in this project.

Aim

To provide building users with information that allows monitoring of energy and water consumption

Management 3.3 Metering

100%

Score Contribution

This credit contributes 12.5% towards this section's score.

Aim

To provide building users with information that allows monitoring of energy and water consumption

Questions

Have all major common area services been separately submetered? *

Yes

Management 4.1 Building Users Guide

100%

Score Contribution

This credit contributes 12.5% towards this section's score.

Aim

To encourage and recognise initiatives that will help building users to use the building efficiently

Questions

Will a building users guide be produced and issued to occupants? *

Yes

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Water

57% - contributing 5% to overall score

Credit	Disabled	Scoped out	Score
Water 1.1 Potable water use reduction			40 %
Water 3.1 Water Efficient Landscaping			100 %
Water 4.1 Building Systems Water Use Reduction			100 %

Water Approachs

What approach do you want to use Water?	Use the built in calculation tools
Do you have a reticulated third pipe or an on-site water recycling system?	No
Are you installing a swimming pool?	No
Are you installing a rainwater tank?	Yes

Water fixtures, fittings and connections

	Stage 1-Building	Stage 2-Building
Showerhead	3 Star WELS (>= 6.0 but <= 7.5)	3 Star WELS (>= 6.0 but <= 7.5)
Bath	Scope out	Scope out
Kitchen Taps	>= 5 Star WELS rating	>= 5 Star WELS rating
Bathroom Taps	>= 5 Star WELS rating	>= 5 Star WELS rating
Dishwashers	Scope out	Scope out
WC	>= 4 Star WELS rating	>= 4 Star WELS rating
Urinals	>= 5 Star WELS rating	>= 5 Star WELS rating
Washing Machine Water Efficiency	Scope out	Scope out
Which non-potable water source is the dwelling/space connected to?	RWT	RWT
Non-potable water source connected to Toilets	Yes	Yes
Non-potable water source connected to Laundry (washing machine)	No	No
Non-potable water source connected to Hot Water System	No	No
Rainwater Tanks		RWT
Name		RWT
What is the total roof area connected to the rainwater tank?	Square Metres	2752.0
Tank Size	Litres	60000.0

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Water 1.1 Potable water use reduction 40%

Score Contribution This credit contributes 71.4% towards this section's score.

Aim Water 1.1 Potable water use reduction (interior uses) What is the reduction in total water use due to efficient fixtures, appliances, and rainwater use? To achieve points in this credit there must be >25% potable water reduction. You are using the built in calculation tools. This credit is calculated from information you have entered above.

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.

Calculations

Reference (kL) *

4717

Proposed (excluding rainwater and recycled water use) (kL) *

3629

Rainwater or recycled water supplied (Internal + External) (kL) *

580

Proposed (including rainwater and recycled water use) (kL) *

3048

% Reduction in Potable Water Consumption * Percentage %

35 %

Water 3.1 Water Efficient Landscaping 100%

Score Contribution This credit contributes 14.3% towards this section's score.

Aim Are water efficiency principles used for landscaped areas? This includes low water use plant selection (e.g. xeriscaping). Note: food producing landscape areas and irrigation areas connected to rainwater or an alternative water source are excluded from this section.

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Will water efficient landscaping be installed? *

Yes

Water 4.1 Building Systems Water Use Reduction

100%

Score Contribution This credit contributes 14.3% towards this section's score.

Aim Will the project minimise water use for building systems such as evaporative cooling and fire testing systems?

Questions

Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems? *

Yes

Energy

70% - contributing 19% to overall score

Credit	Disabled	Scoped out	Score
Energy 1.1 Thermal Performance Rating - Non-Residential			38 %
Energy 2.1 Greenhouse Gas Emissions			100 %
Energy 2.2 Peak Demand			100 %
Energy 2.3 Electricity Consumption			100 %
Energy 2.4 Gas Consumption			100 %
Energy 3.1 Carpark Ventilation			N/A
Energy 3.2 Hot Water			100 %
Energy 3.7 Internal Lighting - Non-Residential			100 %
Energy 4.1 Combined Heat and Power (cogeneration / trigeneration)			N/A
Energy 4.2 Renewable Energy Systems - Solar			100 %
Use the BESS Deem to Satisfy (DtS) method for Energy?			Yes
Do all exposed floors and ceilings (forming part of the envelope) demonstrate a minimum 10% improvement in required NCC2019 insulation levels (total R-value upwards and downwards)?			Yes

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Does all wall and glazing demonstrate meeting the required NCC2019 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

Are you installing a cogeneration or trigeneration system? No

Solar Photovoltaic systems

	Solar System1	Solar system2
Name	Solar System1	Solar system2
System Size (lesser of inverter and panel capacity) ^{kW peak}	10.0	10.0
Orientation (which way is the system facing)?	North	North
Inclination (angle from horizontal) ^{Angle (degrees)}	30.0	30.0

Energy 1.1 Thermal Performance Rating - Non-Residential 38%

Score Contribution	This credit contributes 40.0% towards this section's score.
Aim	Reduce reliance on mechanical systems to achieve thermal comfort in summer and winter - improving comfort, reducing greenhouse gas emissions, energy consumption, and maintenance costs.
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC 2019 Section J)?

Energy 2.1 Greenhouse Gas Emissions 100%

Score Contribution	This credit contributes 10.0% towards this section's score.
Aim	Reduce the building's greenhouse gas emissions
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?

Energy 2.2 Peak Demand

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100%

Score Contribution	This credit contributes 5.0% towards this section's score.
Aim	Reduce demand on electrical infrastructure during peak cooling periods
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?

Energy 2.3 Electricity Consumption 100%

Score Contribution	This credit contributes 10.0% towards this section's score.
Aim	Reduce consumption of electricity
Criteria	What is the % reduction in annual electricity consumption against the benchmark?

Energy 2.4 Gas Consumption 100%

Score Contribution	This credit contributes 10.0% towards this section's score.
Aim	Reduce consumption of gas
Criteria	What is the % reduction in annual gas consumption against the benchmark?

Energy 3.1 Carpark Ventilation N/A

This credit was scoped out: N/A

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Energy 3.2 Hot Water 100%

Score Contribution	This credit contributes 5.0% towards this section's score.
Criteria	What is the % reduction in annual hot water system energy use (gas and electricity) against the benchmark?

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Energy 3.7 Internal Lighting - Non-Residential 100%

Score Contribution	This credit contributes 10.0% towards this section's score.
---------------------------	---

Aim	Reduce energy consumption associated with internal lighting
------------	---

Questions

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? *

Yes

Energy 4.1 Combined Heat and Power (cogeneration / trigeneration)	N/A
---	-----

This credit was scoped out: No cogeneration or trigeneration system in use.

This credit was disabled: No cogeneration or trigeneration system in use.

Aim	Reduce energy consumption
------------	---------------------------

Criteria	Does the CHP system reduce the class of buildings GHG emissions by more than 25%?
-----------------	---

Energy 4.2 Renewable Energy Systems - Solar	100%
---	------

Score Contribution	This credit contributes 5.0% towards this section's score.
---------------------------	--

Aim	To encourage the installation of on-site renewable energy generation
------------	--

Criteria	Does the solar power system provide 5% of the estimated energy consumption of the building class it supplies?
-----------------	---

Calculations

Solar Power - Energy Generation per year * kWh
--

26061.0

% of Building's Energy * Percentage %

35 %

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Stormwater

100% - contributing 14% to overall score

Credit

Disabled Scoped out Score

Stormwater 1.1 Stormwater Treatment	100 %
-------------------------------------	-------

Which stormwater modelling are you using?	Melbourne Water STORM tool
---	----------------------------

Stormwater 1.1 Stormwater Treatment	100%
-------------------------------------	------

Score Contribution	This credit contributes 100.0% towards this section's score.
---------------------------	--

Aim	To achieve best practice stormwater quality objectives through reduction of pollutant load (suspended solids, nitrogen and phosphorus)
------------	--

Criteria	Has best practice stormwater management been demonstrated?
-----------------	--

Questions

STORM score achieved *

105

Calculations

Min STORM Score *

100

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IEQ

33% - contributing 5% to overall score

Credit	Disabled	Scoped out	Score
--------	----------	------------	-------

IEQ 1.4 Daylight Access - Non-Residential			33 %
---	--	--	------

IEQ 1.4 Daylight Access - Non-Residential			33%
---	--	--	-----

Score Contribution	This credit contributes 100.0% towards this section's score.
---------------------------	--

Aim	To provide a high level of amenity and energy efficiency through design for natural light.
------------	--

Criteria	What % of the nominated floor area has at least 2% daylight factor?
-----------------	---

Questions

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% Achieved ? *

30 %

Transport

0% - contributing 0% to overall score

Waste

67% - contributing 4% to overall score

Credit	Disabled	Scoped out	Score
Waste 1.1 - Construction Waste - Building Re-Use			100 %
Waste 2.2 - Operational Waste - Convenience of Recycling			100 %

Waste 1.1 - Construction Waste - Building Re-Use 100%

Score Contribution This credit contributes 33.3% towards this section's score.

Aim To recognise developments that re-use materials on-site

Questions

If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used? *

Yes

Waste 2.2 - Operational Waste - Convenience of Recycling 100%

Score Contribution This credit contributes 33.3% towards this section's score.

Aim To minimise recyclable material going to landfill

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Questions

Are the recycling facilities at least as convenient for occupants as facilities for general waste? *

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Yes

Urban Ecology

38% - contributing 2% to overall score

Credit	Disabled	Scoped out	Score
Urban Ecology 1.1 Communal Spaces			100 %
Urban Ecology 2.1 Vegetation			50 %

Urban Ecology 1.1 Communal Spaces 100%

Score Contribution This credit contributes 12.5% towards this section's score.

Aim To encourage and recognise initiatives that facilitate interaction between building occupants

Criteria Is there at least the following amount of common space measured in square meters : * 1m² for each of the first 50 occupants * Additional 0.5m² for each occupant between 51 and 250 * Additional 0.25m² for each occupant above 251?

Questions

Common space provided * Square Metres

91.0

Calculations

Minimum Common Space Required * Square Metres

91

Urban Ecology 2.1 Vegetation 50%

Score Contribution This credit contributes 50.0% towards this section's score.

Aim To encourage and recognise the use of vegetation and landscaping within and around developments

Criteria How much of the site is covered with vegetation, expressed as a percentage of the total site area?

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Questions

Percentage Achieved ? * Percentage %

13 %

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Innovation

0% - contributing 0% to overall score

Items to be marked on floorplans

0 / 7 floorplans & elevation notes complete.

Management 3.3: Common area submeters annotated	Incomplete
Water 3.1: Water efficient garden annotated	Incomplete
Energy 4.2: Floor plans showing location of photovoltaic panels as described.	Incomplete
Stormwater 1.1: Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)	Incomplete
Waste 2.2: Location of recycling facilities	Incomplete
Urban Ecology 1.1: Size and location of communal spaces	Incomplete
Urban Ecology 2.1: Vegetated areas	Incomplete

Documents and evidence

0 / 7 supporting evidence documentation complete.

Management 2.4: Section J glazing assessment	Incomplete
Energy 1.1: Energy Report showing calculations of reference case and proposed buildings	Incomplete
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.	Incomplete
Energy 4.2: Specifications of the solar photovoltaic system(s).	Incomplete
Stormwater 1.1: STORM report or MUSIC model	Incomplete

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Appendix B – Stormwater Assessment

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STORM Rating Report

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TransactionID: 1100877
Municipality: GREATER GEELONG
Rainfall Station: GREATER GEELONG
Address: 29-31 Kardinia Drive
Bell Post Hill
VIC
VIC 3215

Assessor:
Development Type: Commercial/Retail
Allotment Site (m2): 12,500.00
STORM Rating %: 105

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof to Tank	2,752.00	Rainwater Tank	60,000.00	100	134.40	75.60
Sports Pitch & Externals to Rain Garden	2,238.00	Raingarden 300mm	15.00	0	113.00	0.00
Externals to Buffer	356.00	Buffer Strip	25.00	0	66.00	0.00
Externals & Future Sports to Pond	2,010.00	Pond	25.00	0	63.80	0.00

Date Generated: 09-Feb-2021

Program Version: 1.0.0

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LOWER PRIMARY WORKS 6,900m²
 BASED ON EXISTING DRAINAGE NETWORK DESIGN CAPACITY INDUSTRIAL, FRACTION IMPERVIOUS 0.8.

PROPOSED DEVELOPMENT
 ROOF AREA: 1207m²
 PAVED AREA: 961m²
 SPORTS PITCH: 1633m²
 PERMEABLE AREA: 3099m²

LOWER PRIMARY PERMISSIBLE SITE DISCHARGE (PSD) 66.5l/s
 ATTENUATION BASED ON ABOVE PSD: 29.13m³

ATTENUATION TO BE CONTAINED WITHIN RAINWATER TANKS, RAINGARDENS, PIPES AND TANKS AS REQUIRED.

COMBINED STORM RATING FOR PHASE 1 WORKS + FUTURE SPORTS COURT
 BASED ON PHASE 1 WORKS BEING ASSESSED UNDER SINGULAR STORM RATING

PROPOSED DEVELOPMENT
 ROOF AREA TO RAINWATER TANK 2752m² 60,000L TANK
 PAVED AREA TO RAINGARDEN 2238m² 15m² RAINGARDEN
 EXTERNALS TO BUFFER STRIP* 356m² 25m² BUFFER STRIP
 EXTERNALS & FUTURE SPORTS COURT TO POND 806m² 25m² POND*

STORM RATING: 105%
 *POND WITHIN CAR PARK WORKS UTILISED FOR UPPER PRIMARY PAVED AREA TREATMENT

UPPER PRIMARY WORKS 4,790m²
 BASED ON EXISTING DRAINAGE NETWORK DESIGN CAPACITY INDUSTRIAL, FRACTION IMPERVIOUS 0.8.

PROPOSED DEVELOPMENT
 ROOF AREA: 1545m²
 PAVED AREA: 1203m²
 PERMEABLE AREA: 2042m²

FUTURE SPORT COURT TO BE INCLUDED 810m²

UPPER PRIMARY WORKS TO DISCHARGE VIA CAR PARK WORKS ATTENUATION, FLOWS NOT TO BE RESTRICTED WITHIN WORKS CONFIRMED BY WGA.

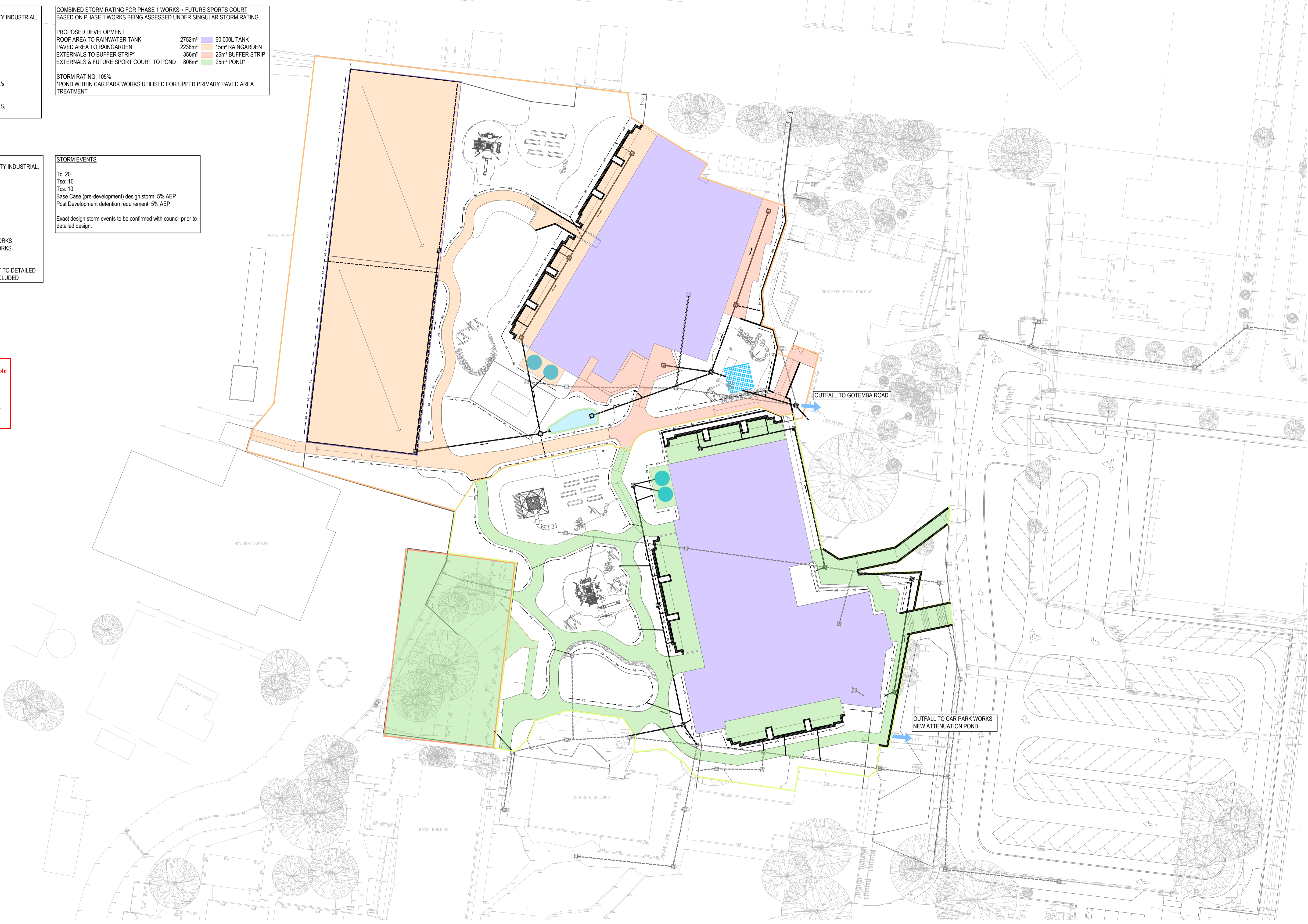
UPPER PRIMARY WORKS SITE DISCHARGE 205 l/s, SUBJECT TO DETAILED DESIGN, 10% ALLOWANCE FOR FUTURE PHASE WORKS INCLUDED

STORM EVENTS

Tc: 20
 Tso: 10
 Tcs: 10
 Base Case (pre-development) design storm: 5% AEP
 Post Development detention requirement: 5% AEP

Exact design storm events to be confirmed with council prior to detailed design.

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REVISION	ISSUE	DATE
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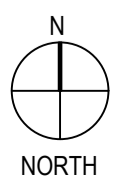
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APPROVED:	SHEET SIZE: A1



PROJECT: KARDINIA INTERNATIONAL COLLEGE

DRAWING TITLE: STORM ANALYSIS PLAN

PROJECT NUMBER: 20ARG047	DRAWING: SK007	REVISION: 1
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