Sustainable Management Plan

Date: 19 December 2025

Assessment of: Proposed College Building | Trinity College Colac, 119 Hart Street, Colac VIC 3250

Commissioned by: Morton Co

Hexicon

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(03) 9754 0914
esd@hexicon.com.au
www.hexicon.com.au
27/148 Chesterville Road, Cheltenham VIC 3192

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		FC	KK	DS

(03) 9754 0914
esd@hexicon.com.au
www.hexicon.com.au
27/148 Chesterville Road, Cheltenham VIC 3192

ESD Initiatives

ESD Initiatives	
Proposed College Building	Trinity College Colac, 119 Hart Street, Colac VIC 3250
Category	**ESD Implementations**
Stormwater Treatment	- A total of 26.0 m² of Raingardens Planter Boxes with 300mm extended detention depth will be treating 1,334 m² from roof runoff. - The development will be implementing at least 1,589 m² of permeable area (landscape, garden bed) which will enhance the permeability of the site.
Potable Water Use	To ensure the efficient use of water and thereby reduce total operating potable water use, fixtures & fittings will have the following WELS ratings: - 5 Star WELS kitchen & bathroom taps - 4 Star WELS rated toilets
Operational Energy	The development will operate primarily as an all-electric facility, with all HVAC systems and general appliances powered by electricity. Natural gas will be used only where required for educational purposes within the science laboratories, due to the specific functional requirements of laboratory classes.
NCC Section J Compliance	The development commits to achieving NCC 2022 Volume 1 Section J compliance.
HVAC System	Heating and cooling systems will be chosen 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.
Hot Water System	Efficient electric hot water heating systems will be chosen within one star from the best available, or 85% or better than the most efficient equivalent capacity unit.
Lighting	- Maximum illumination power density (W/m²) in at least 90% of the area of the relevant building class meet the requirements in Table J7D3a of the NCC 2022 Vol 1. - Energy efficient LED lights are to be installed throughout the building.
IEQ	For IEQ analysis the following spaces are considered habitable areas for compliance: Science Rooms, Science Prep Room, GPC Rooms, Offices, Careers Hub, Open Offices. Compliance is achieved by: - Daylight: 47% of the floor area of the habitable spaces have at least 2% daylight factor. - Natural Ventilation: 74% of the floor area of habitable spaces will have access to natural ventilation by cross flow or single side ventilation through openable windows and/or highlights.

(03) 9754 0914
esd@hexicon.com.au
www.hexicon.com.au
27/148 Chesterville Road, Cheltenham VIC 3192

ESD Initiatives	
Proposed College Building	Trinity College Colac, 119 Hart Street, Colac VIC 3250
Category	**ESD Implementations**
	- Shading: 73% of east, north and west of the habitable spaces glazed windows areas are effectively shaded. All north-facing windows are shaded by horizontal overhangs with a minimum depth equivalent to 25% of the vertical distance between the window sill and the underside of the eaves. East and west facing windows are considered shaded or partially shaded through a combination of wing walls that block northern sun and horizontal overhangs measuring between 1.0 m and 1.5 m to selected windows.
Transport	Both the occupants and visitors to the proposed building will have access to secure bike parking in the site. The existing site bike parking (show location on markup) has 50 bike parks available and was designed to take into account the future occupancy of the proposed building. In addition, based on feedback from client, only 10 out of the 50 bike are currently in use and as such 40 bike parks are available for use for the occupants and visitors of the proposed building.
Waste	The building will be provided with a food/garden waste bin in addition to general waste and recycling bins.
	The recycling and general waste will be provided in the same storage area in the refuse area on the ground floor to provide opportunities for users to separate their waste from the point of disposal and maximize recycling rates.
	The development is committed to recycling 80% of the construction and demolition waste.
Urban Ecology	509 m^2 of is provided for students and staffs for social gathering in the college building. 417 m^2 of corridors and 92 m^2 of open office space.
	48% of the site area is covered with vegetation.
Building Materials	- Low VOC paints and sealants - Aluminium framing for the windows. - All the carpets, engineered timber and adhesives/sealants meet the Green-star Benchmark for VOC's and emissions. - Use of engineered wood products of E1 or E0 grade (MDF, plywood, engineered-wood flooring) - Light or medium coloured roofs and concrete driveways are considered in the development to help mitigate the Urban heat island effect. - Incorporation of recycled aggregate and water for concrete. - All fabricated structural steelwork incorporated for the project will be sourced from an Environmental Sustainability Charter of the Australian Steel Institute accredited steel contractor.

Table 1: ESD Initiatives

(03) 9754 0914
esd@hexicon.com.au
www.hexicon.com.au
27/148 Chesterville Road, Cheltenham VIC 3192

1. Executive Summary

Hexicon has been engaged by Morton Co to provide a Sustainable Management Plan (SMP) for the proposed College Building Development at Trinity College Colac, 119 Hart Street, Colac VIC 3250.

The development is within the jurisdiction of the Colac Otway Shire and for a development of this size, the council requires an SMP to be produced as part of its planning approval process. The requirements for an SMP are detailed on the Council website and planning scheme.

Please note that as Colac Otway Shire is not available in BESS system, we relied on Geelong City Council for BESS assessment and compliance.

We have used BESS to support the proposed development planning application for ESD. The BESS (Built Environment Sustainability Scorecard) has been used to quantify all sustainable design criteria, except for building materials. BESS is an online sustainability assessment tool purpose built for Sustainable Management Plan in the planning process. The report summarises the sustainable design initiatives being incorporated in the proposed development and benchmarks them against industry best practice. The following table provides a summary of the BESS assessment targets and results for this project.

Categories	Minimum score required	Project's category score	Overall Contribution	Compliance
Management	-	0%	4.5%	-
Integrated Water Management	50%	69%	22.5%	**PASS**
Operational Energy	50%	56%	27.5%	**PASS**
Indoor Environment Quality	50%	52%	16.5%	**PASS**
Transport	-	42%	9.0%	-
Waste & Resource Recovery	-	100%	5.5%	-
Urban Ecology	-	57%	5.5%	-
Innovation	-	0%	9.0%	-
Overall BESS Score	**50%**	**52%**	**(PASS - Best practice Standards)**	

Table 2: BESS Score

Based on the above results, the project achieves the overall minimum passing score under the BESS assessment. This report describes an overall sustainable assessment and the ESD achievements of the proposed development.

The Sustainable Management Plan (SMP) is prepared to support the town planning application in accordance with the Clause 15.01-2S for Environmentally Sustainable Development and Clause 53.18 for Stormwater Management as mentioned in the Colac Otway Shire Planning Scheme.

2. Project Overview

The proposed College Building Development at Trinity College Colac, 119 Hart Street, Colac VIC 3250 that has been covered in this SMP report comprises a single-storey facility including four Science Rooms, one Science Preparation Room, nine GPC classrooms, six office spaces, a Career Hub, and three open-plan office areas. The site plan below illustrates the location of the development. The following site plan indicates the location of the site.

Figure 1. Locality view of the subject site

3. Assessment and Documentation

This report is based on the following:

- Project discussions and email correspondences with Morton Co.
- The architectural drawing by Morton Co dated 16/12/2025.
- Colac Otway Shire Planning Scheme.

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4. Development Summary

Project Details	
Total Building Site Area (m²)	3,639
Building Footprint (m²)	1,983

Table 3: Project Details

To quantify the project's sustainability performance against an industry benchmark, this report uses the Built Environment Sustainability Scorecard (BESS), released by CASBE to support the Sustainable Management Plan in the Planning Process (SMPPP) program.

BESS assesses overall environmental sustainability performance of building projects. It was created to assist builders and developers to demonstrate that they meet sustainability best practice standards as part of planning permit applications.

As part of the BESS assessment, we have used Melbourne Water's Blue Factor Calculator to assess the stormwater score of the site. Results from Blue Factor Report were entered into BESS to support the assessment.

5. Sustainability Categories

This SMP addresses the 8 sustainability categories in line with the BESS-10 tool and one best practice ESD assessment guidelines, noted in the table below:

No.	SMPPP ESD CATEGORIES	BENCHMARK
1	Management	BESS
2	Integrated Water Management (IWM)	BESS (Potable Water Use mandatory 50%) (Stormwater mandatory 100%)
3	Operational Energy	BESS (mandatory 50%)
4	Indoor Environment Quality (IEQ)	BESS (mandatory 50%)
5	Transport	BESS
6	Waste & Resource Recovery	BESS
7	Urban Ecology	BESS
8	Innovation	BESS
9	Building Materials	Industry Best Practice

Table 4: Sustainability Categories

For this assessment, categories 1 to 8 have been assessed using BESS tool while the 9th category, Building Materials, has been assessed against industry best practice standards in the industry. As noted above, the BESS tool sets out minimum standards to achieve compliance for the four major categories:

- Integrated Water Management (IWM):
  - Potable Water Use: 50%
  - Stormwater: 100%
- Operational Energy: 50%
- Indoor Environment Quality (IEQ): 50%

To comply, the development must achieve the minimum score in the categories mentioned above.

6. ESD Assessment

The following is a summary of the ESD initiatives included in each of the BESS benchmark categories, as well as the scores obtained in the rating.

6.1 Management

We have not aimed to target any points in the management category.

6.2 Integrated Water Management (IWM)

BESS Credit	Water Efficiency Features	Responsibility
1.1	**Potable Water Use** To ensure the efficient use of water and thereby reduce total operating potable water use, fixtures & fittings will have the following WELS ratings: - 5 Star WELS kitchen & bathroom taps - 4 Star WELS rated toilets	**Architect/Builder**
	Potable Water Use Score	**42%**
2.1	**Stormwater Treatment** - A total of 26.0 m² of Raingardens Planter Boxes with 300mm extended detention depth will be treating 1,334 m² from roof runoff. - The development will be implementing at least 1,589 m² of permeable area (landscape, garden bed) which will enhance the permeability of the site.	**Builder**
	Stormwater Treatment Score	**100%**
	Final Integrated Water Management (IWM) Score	**69%**

Table 5: Integrated Water Management Category Compliance

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6.2.1 Stormwater Treatment

Blue Factor calculator has been developed to assess how much stormwater runoff and pollutants are created from the development and what treatment measures are needed to comply with these objectives. For the proposed development, impervious and pervious area breakdown has been shown in Table 6 below, results of the Blue Factor calculator output have been detailed in Table 7 below, a screenshot of the results have been included in Figure 2, and the Blue Factor Report has been attached in Appendix D.

The development is committed to achieving best practice outcome for stormwater management on site and as such includes WSUD assets such as raingardens to treat part of the impervious roof runoff, as well as pervious elements such as landscaped and garden bed areas to achieve the minimum 100% Blue Factor score.

The table below shows the previous and impervious area breakdown and the proposed treatment:

BESS Credit	Stormwater Management Features			Responsibility
1.1	**Blue Factor Stormwater Calculator Analysis**			Builder
	Surface	**Area (m²)**	**Stormwater Treatment**	
	Total Site Area	3,863	-	
	Roof Catchment Area to Raingardens	1,334	26.0 m² of Raingardens Planter Boxes with 300mm extended detention depth	
	Roof Catchment Area Untreated	914	Untreated	
	Permeable Area (Landscape, Garden Beds)	1,589	All Permeable areas are excluded from the Stormwater assessment as they do not require treatment.	
	Permeable Area (Raingardens)	26		
	Final Blue Factor Storm rating		**106%**	
			Final Stormwater Score	**100%**

Table 6: Stormwater assessment area breakdown

The result of the stormwater assessment using Blue Factor tool conducted is as per below. Refer to Appendix D for the inputs to the Blue Factor Calculator.

BESS Credit	BPMEG stormwater quality management standards Flow and pollutant load reductions			Responsibility
2.1	**Item**	**Result**	**Target**	**Builder**
	Mean annual runoff volume harvested or evapotranspired (%)	1%	>28%	
	Mean annual runoff volume infiltrated or filtered (%)	9%	>9%	
	Total suspended solids (%)	57%	>80%	
	Total phosphorus (%)	36%	>45%	
	Total nitrogen (%)	48%	>45%	
	Total gross pollutants (%)	58%	>70%	
	Final Blue Factor Rating		**106%**	
			Final Stormwater Score	**100%**

Table 7: Details Flow and pollutant load reductions

Project # 3F222AE9 - Trinity College Colac, 119 Hart Street, Colac VIC 3250
119 Hart St, Colac VIC 3250, Australia
15 December 2025 2:50 p.m.

BLUE FACTOR.

Trinity College Colac, 119 Hart Street, Colac VIC 3250

The proposed stormwater treatments provide 'deemed to comply' compliance with the minimum planning requirement for total nitrogen but does not comply with all the relevant objectives for management of stormwater flows on-site.

106% SCORE

Project details

Name	Trinity College Colac, 119 Hart Street, Colac VIC 3250
Street address	119 Hart St, Colac VIC 3250, Australia
Municipality	Colac Otway
Site area	3863 m^2
Planning Number	

Flow and pollutant load reductions

Item	Result	Target
Mean annual runoff volume harvested or evapotranspired (%)	1%	>28%
Mean annual runoff volume infiltrated or filtered (%)	9%	>9%
Total suspended solids (%)	57%	>80%
Total phosphorus (%)	36%	>45%
Total nitrogen (%)	48%	>45%
Total gross pollutants (%)	58%	>70%

Figure 2. Blue Factor Report

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www.hexicon.com.au
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Legend			
	Description	**Quantity**	**Unit**
	Permeable Area - Landscape	1,589	sq m
	Raingardens 300mm	26	sq m
	Roof Catchment Area to Raingardens	1,334	sq m
	Roof Catchment Area Untreated	914	sq m
	Site Area	3,863	sq m

Figure 3. Area delineation for STORM assessment

Please note that the above is subject to final drainage/civil/hydraulic design and location of the legal point of stormwater discharge. The full civil, hydraulic design and drainage plan will be carried out by the engineering consultants at the design development phase.

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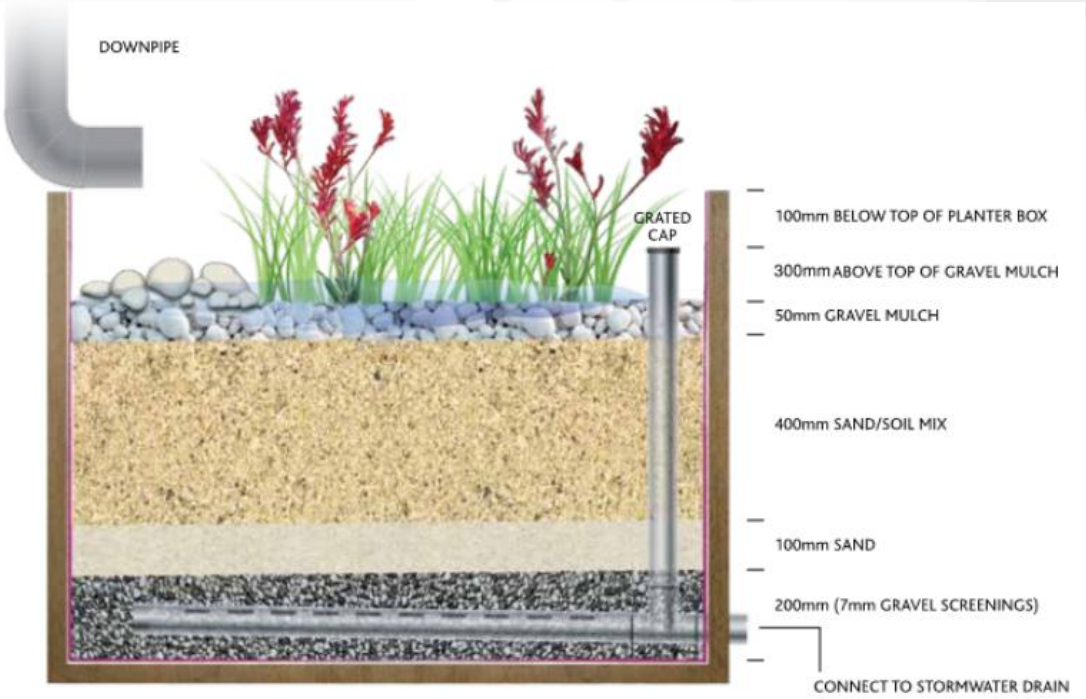

Figure 4: Typical Planter Box Raingarden Detail – Just representative, not for construction (https://www.melbournewater.com.au/)

Please note: *the raingarden proposed for this development should have a 300 mm extended detention depth from the ground floor (overflow pipe). The extended detention depth is defined as the vertical distance from the surface level of the system to the top of the overflow weir. A greater extended detention depth allows for more water to be retained in the raingarden before it overflows into the stormwater connection drain, thus increasing the volume of water that can be treated.*

6.3 Operational Energy

Below is a summary of the energy efficiency features & specifications for the College Building. Generally, the strategy includes efficient building services and design features that contribute to low energy consumption and decrease greenhouse gas emissions.

BESS Credit	Energy Efficiency Features	Responsibility
1.1	The development commits to achieving NCC 2022 Volume 1 Section J compliance.	**ESD Consultant / Services Engineer / Builder**
2.1, 2.7, 3.2	Heating and cooling systems will be chosen 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.	
	Efficient electric hot water heating systems will be chosen within one star from the best available, or 85% or better than the most efficient equivalent capacity unit.	
2.6	The development will operate primarily as an all-electric facility, with all HVAC systems and general appliances powered by electricity. Natural gas will be used only where required for educational purposes within the science laboratories, due to the specific functional requirements of laboratory classes.	**Builder**
3.7	- Maximum illumination power density (W/m²) in at least 90% of the area of the relevant building class meet the requirements in Table J7D3a of the NCC 2022 Vol 1. Refer to Figure 6. - Energy efficient LED lights are to be installed throughout the buildings.	
	Final Operational Energy Score	**56%**

Table 8: Operational Energy Category Compliance

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esd@hexicon.com.au
www.hexicon.com.au
27/148 Chesterville Road, Cheltenham VIC 3192

Table J7D3a: Maximum illumination power density

Space	Maximum *illumination power density* (W/m^2)
Auditorium, church and public hall	8
Board room and conference room	5
Carpark - general	2
Carpark - entry zone (first 15 m of travel) during the daytime	11.5
Carpark - entry zone (next 4 m of travel) during the day	2.5
Carpark - entry zone (first 20 m of travel) during night time	2.5
Common rooms, spaces and corridors in a Class 2 building	4.5
Control room, switch room and the like - intermittent monitoring	3
Control room, switch room and the like - constant monitoring	4.5
Corridors	5
Courtroom	4.5
Dormitory of a Class 3 building used for sleeping only	3
Dormitory of a Class 3 building used for sleeping and study	4
Entry lobby from outside the building	9
Health-care - infants' and children's wards and emergency department	4
Health-care - examination room	4.5
Health-care - examination room in intensive care and high dependency ward	6
Health-care - all other *patient care areas* including wards and corridors	2.5
Kitchen and food preparation area	4
Laboratory - artificially lit to an ambient level of 400 lx or more	6
Library - stack and shelving area	2.5
Library - reading room and general areas	4.5
Lounge area for communal use in a Class 3 or 9c building	4.5
Museum and gallery - circulation, cleaning and service lighting	2.5
Office - artificially lit to an ambient level of 200 lx or more	4.5
Office - artificially lit to an ambient level of less than 200 lx	2.5

Space	Maximum *illumination power density* (W/m^2)
Plant room where an average of 160 lx vertical illuminance is required on a vertical panel such as in switch rooms	4
Plant rooms with a horizontal illuminance target of 80 lx	2
Restaurant, café, bar, hotel lounge and a space for the serving and consumption of food or drinks	14
Retail space including a museum and gallery whose purpose is the sale of objects	14
School - general purpose learning areas and tutorial rooms	4.5
Sole-occupancy unit of a Class 3 or 9c building	5
Storage	1.5
Service area, cleaner's room and the like	1.5
Toilet, locker room, staff room, rest room and the like	3
Wholesale storage area with a vertical illuminance target of 160 lx	4
Stairways, including *fire-isolated stairways*	2
Lift cars	3

Figure 5: Table J7D3a of the NCC 2022 Volume 1

6.4 Indoor Environment Quality

Below is a summary of the College Building's performance against Indoor Environmental Quality benchmarks.

For the College Building, the following spaces were considered habitable spaces for IEQ calculations: Science Rooms, Science Prep Room, GPC Rooms, Offices, Careers Hub, Open Offices

BESS Credit	Indoor Environment Quality Performance & Features	Responsibility
1.4	Daylight: 47% of the floor area of the habitable spaces have at least 2% daylight factor. Refer to Section 6.4.1 for details.	**ESD Consultant / Architect / Builder**
2.3	Natural Ventilation: 74% of the floor area of habitable spaces will have access to natural ventilation by cross flow or single side ventilation through openable windows and/or highlights. Refer to Section 6.4.2 for details.	
3.4	Shading: 73% of east, north and west of the habitable spaces glazed windows areas are effectively shaded. All north-facing windows are shaded by horizontal overhangs with a minimum depth equivalent to 25% of the vertical distance between the window sill and the underside of the eaves. East and west facing windows are considered shaded or partially shaded through a combination of wing walls that block northern sun and horizontal overhangs measuring between 1.0 m and 1.5 m to selected windows. Refer to Section 6.4.3 for details.	
4.1	Air Quality - Indoor Materials: - All paints, sealants and adhesives will meet the maximum total indoor pollutant emission limits. - All carpet will meet the maximum total indoor pollutant emission limits. - All engineered wood will meet the maximum total indoor pollutant emission limits. - Accepted standards include meeting current GECA, Global GreenTag, GreenRate, Carpet Institute Australia Environmental Classification Scheme Level 2, Green Star or WELL standards for TVOC in paints, adhesives and sealants (by volume) and carpets (by area) as well as for Formaldehyde in engineered wood (by area). Refer to Appendix C for VOC and Formaldehyde emission limits.	**Builder**
	Final IEQ Score	**52%**

Table 9: Indoor Environment Quality Category Compliance

(03) 9754 0914
esd@hexicon.com.au
www.hexicon.com.au
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6.4.1 Daylight Green Star Hand Calculation

For the regular occupied space, Green Star hand calculation has been undertaken. As a result, 47% of the floor area achieves more than 2% daylight factor. Green Star hand calculation results for all habitable space are as shown below:

'h' height of the window above 700 mm table/desk top height for all habitable spaces
Depth of the Zone of Compliance = h x 2
'w' width of the Zone of Compliance = Width of Glazing
Zone of Compliance = h x 2 x w

Compliance % = (Area with Daylight factor >2 / Area Modelled) x 100

Daylight calculation has been undertaken results are summarized as follows:

Level	Nominated Room	Area Modelled [m^2]	Area with DF >2 [m^2]	Compliance [%]
College Building Habitable Areas				
Ground	Science 01	77.9	23.3	30%
	Science 02	77.9	23.1	30%
	Science Prep	36.5	24.8	68%
	Science 03	88.5	45.7	52%
	Science 04	77.2	22.5	29%
	GPC 01	39.3	16.8	43%
	GPC 02	39.8	18.4	46%
	GPC 03	43.3	30.2	70%
	GPC 04	43.9	26.6	61%
	GPC 05	44.0	25.6	58%
	GPC 06	44.0	10.7	24%
	GPC 07	44.6	25.5	57%
	GPC 08	44.3	24.7	56%
	GPC 09	42.2	24.6	58%
	Office 1	8.4	0.0	0%
	Office 2	8.4	3.8	45%
	Office 3	8.3	0.0	0%
	Office 4	8.3	4.1	49%
	Office 5	16.1	4.5	28%
	Office 6	9.1	0.0	0%
	Careers Hub	25.9	10.2	39%
	Open Office 01	19.7	15.8	80%

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	Open Office 02	27.9	24.3	87%
	Open Office 03	14.9	13.0	87%
Total		**890.4**	**418.2**	**47%**

Table 10: Daylight Calculations

Habitable spaces are marked in blue, and daylight compliant area marked in orange in the markup below:

Figure 6. Daylight Compliant Areas (Part 1)

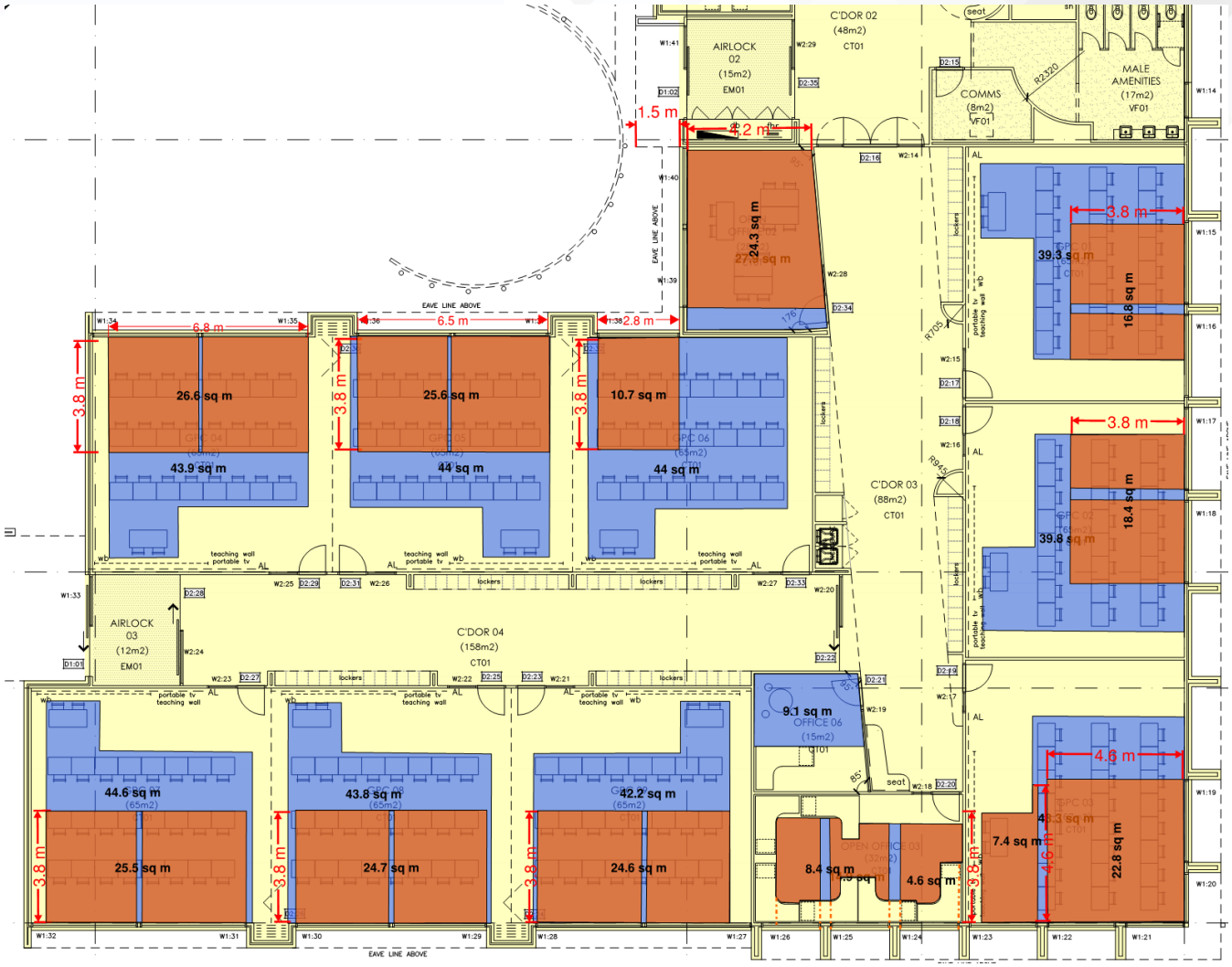

Figure 7. Daylight Compliant Areas (Part 2)

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esd@hexicon.com.au
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6.4.2 Natural Ventilation

Openable windows and highlights will provide fresh air and passive cooling opportunities to some habitable areas of the College Building. Areas comply with either cross flow or single side ventilation. 74% of the habitable areas will achieve crossflow ventilation. Results are summarized as follows:

Level	Nominated Room	Nominated Area (m^2)	Effective Ventilation Achieved	Area Achieves Crossflow Ventilation (m^2)
Ground Floor	Science 01	77.9	Yes	77.9
	Science 02	77.9	Yes	77.9
	Science Prep	36.5	No	0.0
	Science 03	88.5	Yes	88.5
	Science 04	77.2	No	0.0
	GPC 01	39.3	No	0.0
	GPC 02	39.8	No	0.0
	GPC 03	43.3	Yes	43.3
	GPC 04	43.9	Yes	43.9
	GPC 05	44.0	Yes	44.0
	GPC 06	44.0	Yes	44.0
	GPC 07	44.6	Yes	44.6
	GPC 08	44.3	Yes	44.3
	GPC 09	42.2	Yes	42.2
	Office 1	8.4	No	0.0
	Office 2	8.4	Yes	8.4
	Office 3	8.3	No	0.0
	Office 4	8.3	Yes	8.3
	Office 5	16.1	No	0.0
	Office 6	9.1	No	0.0
	Careers Hub	25.9	Yes	25.9
	Open Office 01	19.7	Yes	19.7
	Open Office 02	27.9	Yes	27.9
	Open Office 03	14.9	Yes	14.9
Total		**890.4**	**-**	**655.7**
Total Percentage of Area				**74%**

Table 11: Cross Ventilations Score

Please note that all windows and highlights considered in the compliance will be openable and all doors included in the Crossflow ventilation markups below will be provided with door catchers.

For the rooms complying with openable highlights, please refer to Figures 10-12 below.

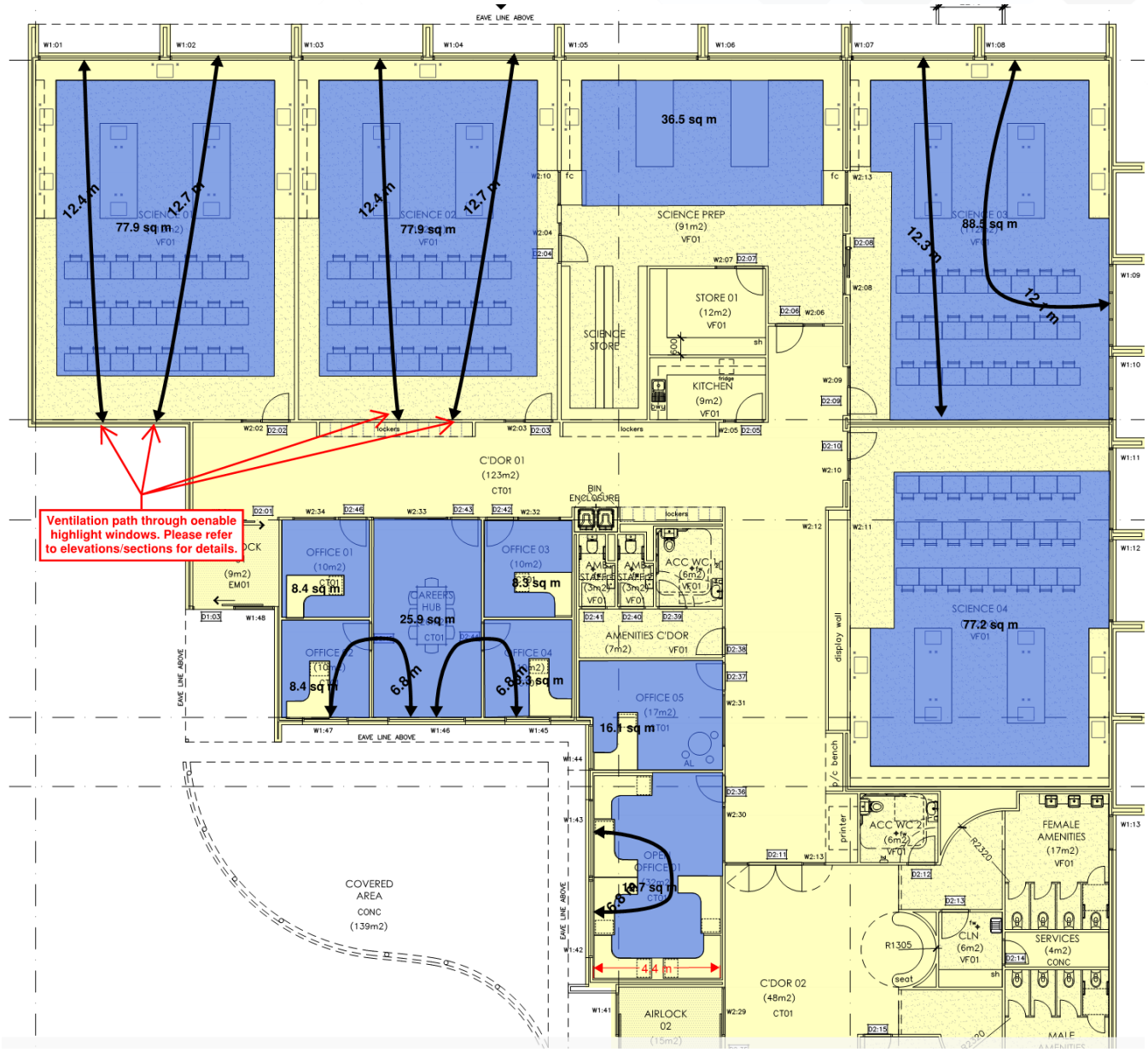

Figure 8. Cross Ventilation Compliance Flow (Part A)

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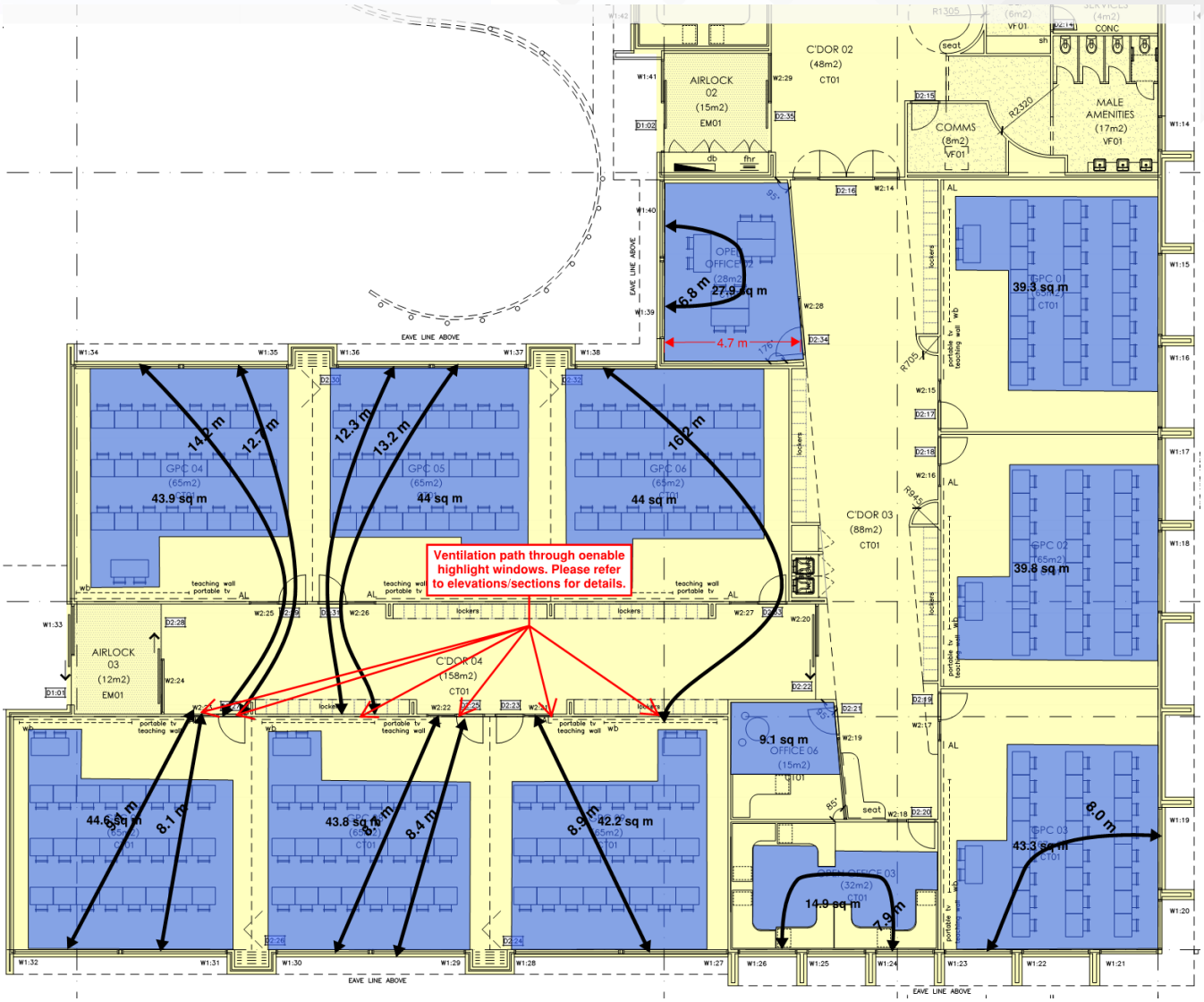

Figure 9. Cross Ventilation Compliance Flow (Part B)

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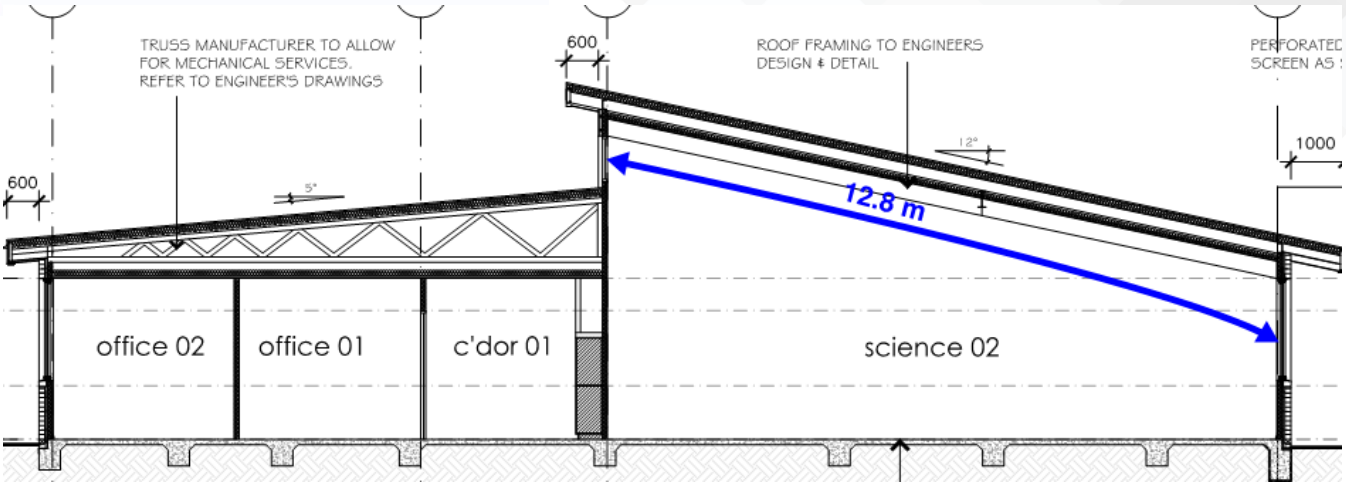

Figure 10: Ventilation Compliance through openable highlight (1)

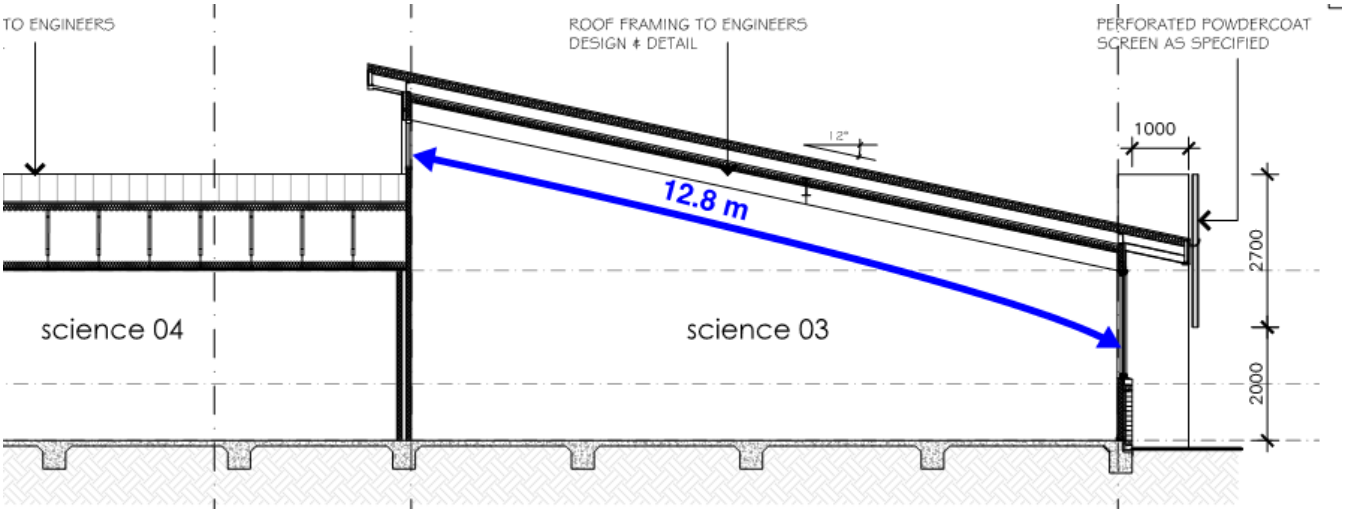

Figure 11: Ventilation Compliance through openable highlight (2)

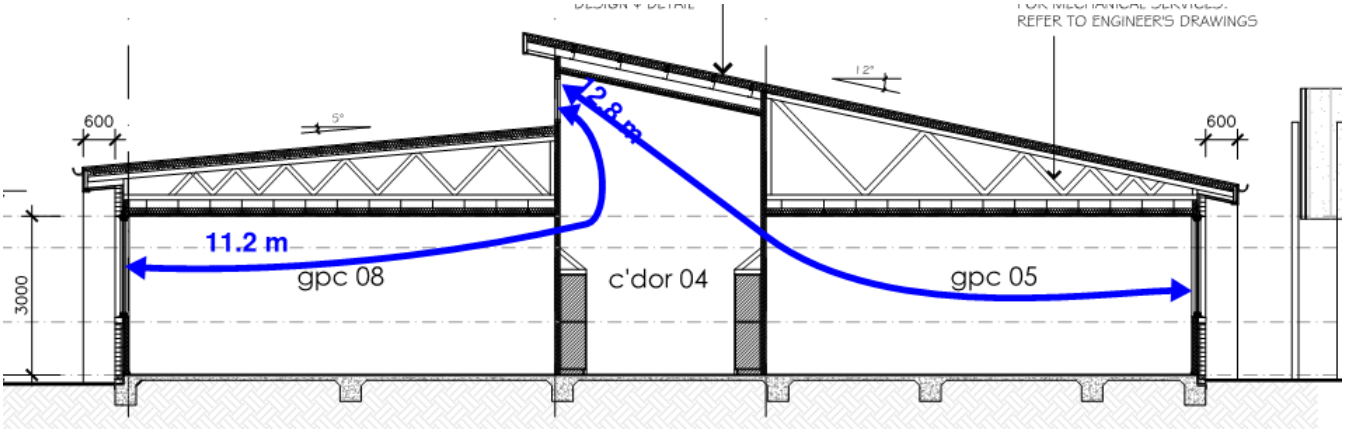

Figure 12: Ventilation Compliance through openable highlight (3)

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6.4.3 External Shading

As per the Energy Smart Housing Manual[1], the following shading strategies are considered as effective

- for all north facing glazing: horizontal shading with depth of at least 25% of the height of the glazing.
- for east and west facing window:
    - adjustable vertical shading; or
    - horizontal shading with depth of the around twice of the window height.

For the development, the following has been considered for shading strategy:

- **North**: All north windows will be shaded by horizontal overhang with a depth measuring at least 25% of the height from the window sill and the bottom of the eaves.
- **East and West**: facing windows are considered shaded or partially shaded through a combination of wing walls that block northern sun and horizontal overhangs measuring between 1.0 m and 1.5 m to selected windows.

The table below summarises the glazing area in North, East, and West. 73% of the glazing in habitable areas is sufficiently shaded.

Facade	Ground Floor	Effectively Shaded
North Facing Glazing (m²)	95.2	95.2
East Facing Glazing (m²)	66.3	27.1
West Facing Glazing (m²)	29.2	17.5
Total Area	**190.7**	**139.8**
Percentage of Effectively Shaded		**73%**

Table 12: Shading calculations

Below is the markup of the external shading implementation. Glazing of habitable areas that are sufficiently shaded is marked in green and non-effectively shaded in yellow, the windows without markup are referent of non-habitable areas. South façade is not included in shading calculations. Below is the markup of the shading calculations:

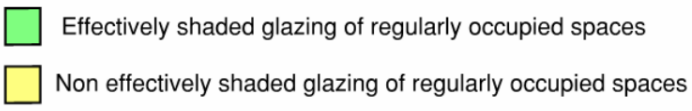

Figure 13: Shading markup legend

[1] https://assets.sustainability.vic.gov.au/susvic/Guide-Energy-Smart-Housing-Manual.pdf

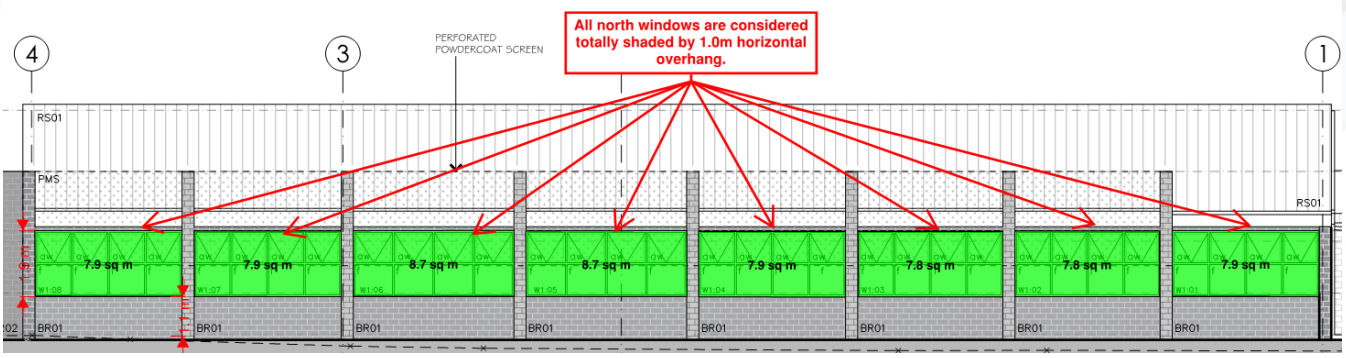

Figure 14: External Shading Markup on North Façade

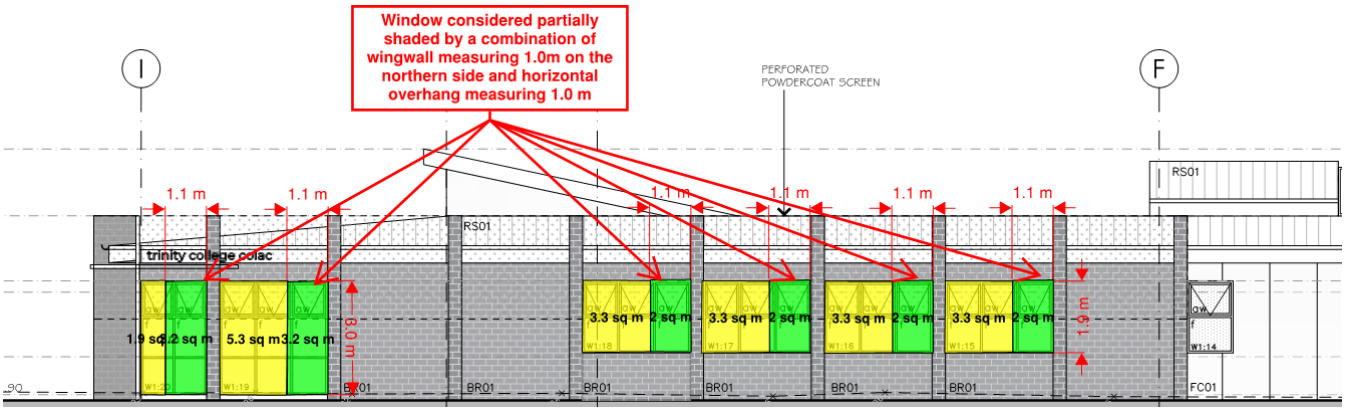

Figure 15: External Shading Markup on East Façade (Part A)

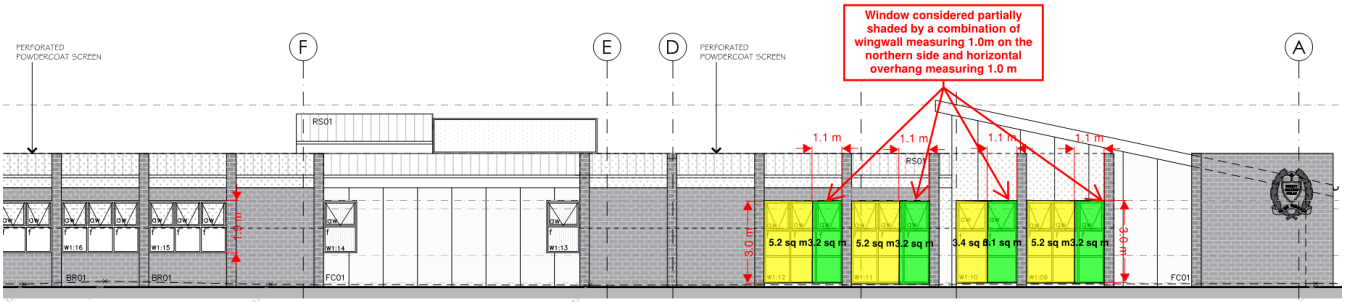

Figure 16: External Shading Markup on East Façade (Part B)

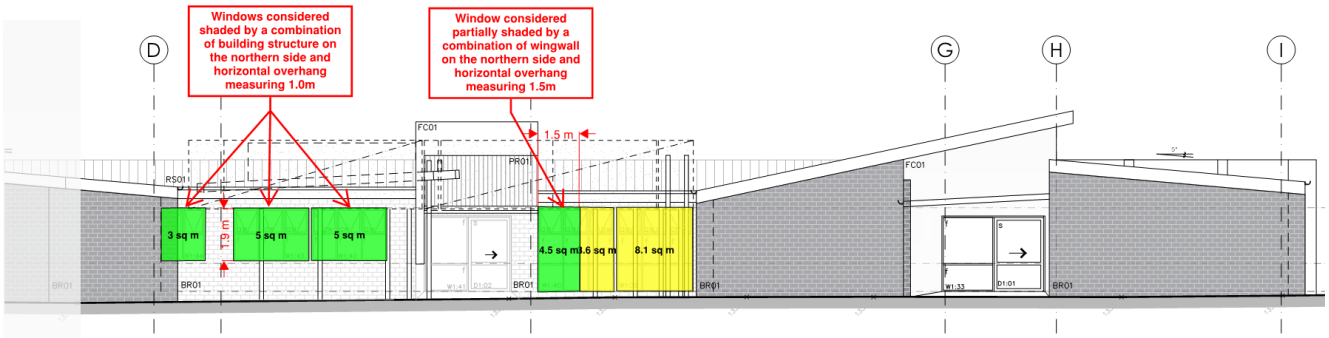

Figure 17: External Shading Markup on West Façade

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6.5 Transport

Below is a summary of the developments' performance against transport benchmarks.

BESS Credit	Waste Features	Responsibility
1.4, 1.5	Both the occupants and visitors to the proposed building will have access to secure bike parking in the site. The existing site bike parking (show location on markup) has 50 bike parks available and was designed to take into account the future occupancy of the proposed building. In addition, based on feedback from client, only 10 out of the 50 bike are currently in use and as such 40 bike parks are available for use for the occupants and visitors of the proposed building.	**Architect & Builder**
	Final Transport Score	**42%**

Table 13: Transport Category Compliance

6.6 Waste & Resource Recovery

Below is a summary of the developments' performance against waste benchmarks.

BESS Credit	Waste Features	Responsibility
2.1	The College Building will be provided with a food/garden waste bin in addition to general waste and recycling bins.	**Architect & Builder**
2.2	The recycling and general waste will be provided in the same storage area in the refuse area on the ground floor to provide opportunities for users to separate their waste from the point of disposal and maximize recycling rates.	
Best Practice	The development is committed to recycling 80% of the construction and demolition waste.	**Builder**
	Final Waste Score	**100%**

Table 14: Waste & Category Compliance

6.7 Urban Ecology

Below is a summary of the developments' performance against urban ecology benchmarks.

BESS Credit	Urban Ecology Features	Responsibility
1.1	509 m² of is provided for students and staffs for social gathering in the college building. 417 m² of corridors and 92 m² of open office space.	**Architect**
2.1	48% of the site area is covered with vegetation.	**Landscape Architect**
	Final Urban Ecology Score	**57%**

Table 15: Urban Ecology Category Compliance

6.8 Innovation

We have not aimed to target any points in the innovation category.

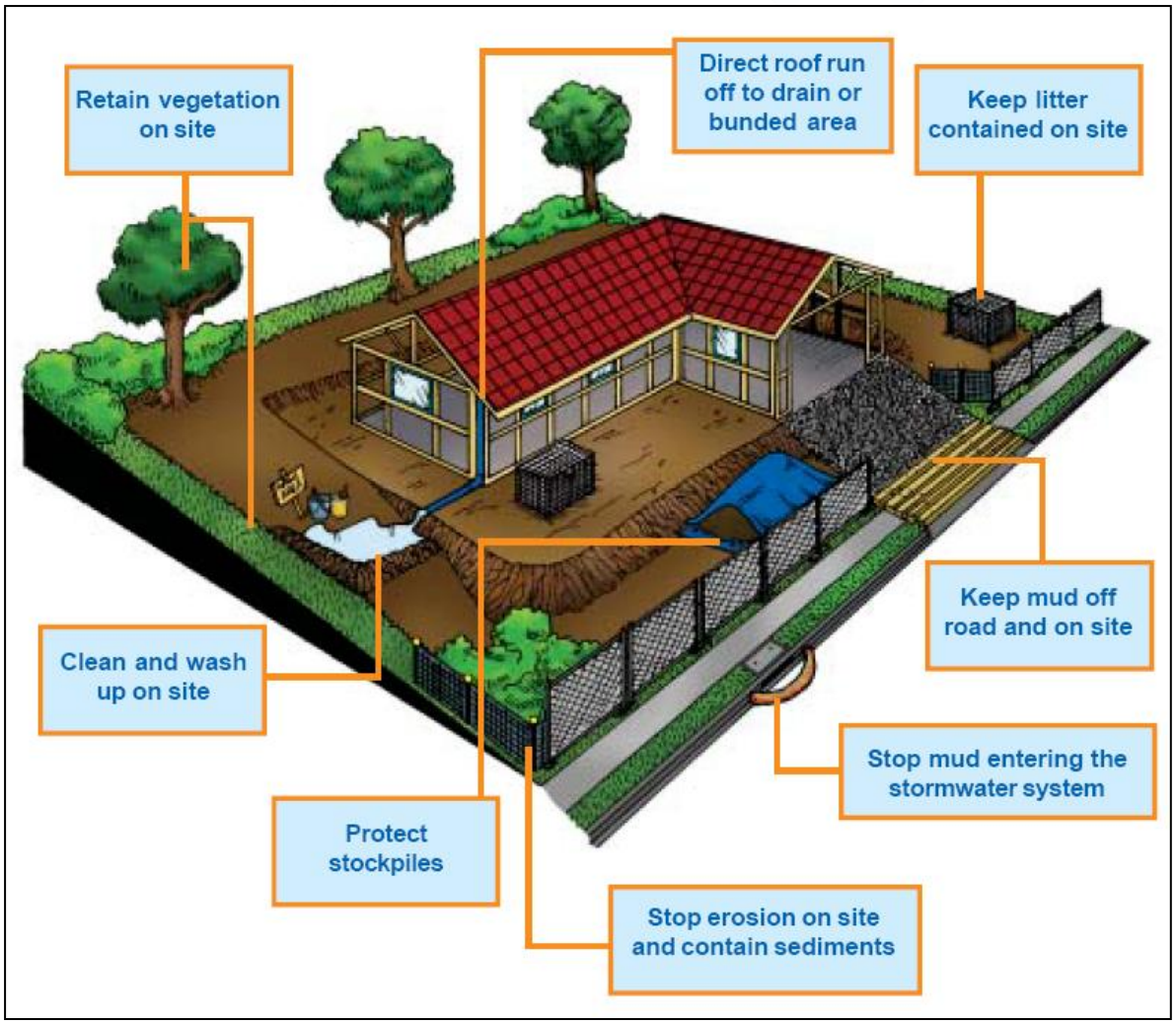
6.9 Building Materials

BESS does not include a category dealing with sustainable building materials. As such, the project has reverted to the previous benchmark which was the STEPS tool. The following material specification achieves the minimum score under STEPS.

- Low VOC paints and sealants
- Aluminium framing for the windows.
- All the carpets, engineered timber and adhesives/sealants meet the Green-star Benchmark for VOC's and emissions.
- Use of engineered wood products of E1 or E0 grade (MDF, plywood, engineered-wood flooring)
- Light or medium coloured roofs and concrete driveways are considered in the development to help mitigate the Urban heat island effect.
- Incorporation of recycled aggregate and water for concrete.
- All fabricated structural steelwork incorporated for the project will be sourced from an Environmental Sustainability Charter of the Australian Steel Institute accredited steel contractor.

7. Stormwater Management at Construction Site

To manage stormwater management in the construction stage, measures will be put in place to minimise the likelihood of contaminating stormwater. This will mean ensuring buffer strips are in place, sediment traps are installed, and the site will be kept clean from any loose rubbish. The builder will follow the process outlined in "Keeping Our Stormwater Clean – A Builder's Guide".



Copies of "Keeping Our Stormwater Clean – A Builder's Guide" booklet can be obtained from Melbourne Water by ringing on 131 722 or can be downloaded from the following website:

https://www.clearwatervic.com.au/resource-library/guidelines-and-strategy/keeping-our-stormwater-clean-a-builders-guide.php

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8. Conclusion

The project achieves all the minimum requirements under BESS, the new industry ESD best practice benchmark, achieving a rating of 52%. For items not covered by the BESS, performance was shown to be in line with industry's best practice.

The proposed mixed-use development located at Trinity College Colac, 119 Hart Street, Colac VIC 3250 has a minimum scoring under the BESS assessment. The assessment results demonstrate that design achieves the best practice standard established by the BESS.

The Sustainable Management Plan (SMP) is prepared to support the town planning application in accordance with the Clause 15.01-2S for Environmentally Sustainable Development and Clause 53.18 for Stormwater Management as mentioned in the Colac Otway Shire Planning Scheme.

(03) 9754 0914
esd@hexicon.com.au
www.hexicon.com.au
27/148 Chesterville Road, Cheltenham VIC 3192

Appendix A – BESS Output Report

(03) 9754 0914
esd@hexicon.com.au
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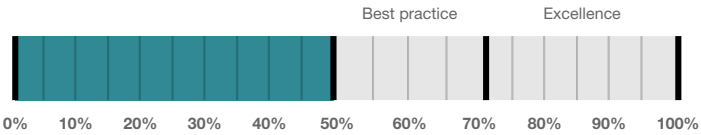
BESS Report

Built Environment Sustainability Scorecard

This BESS report outlines the sustainable design commitments of the proposed development at 119 Hart St Colac Victoria 3250. 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.

Your BESS Score

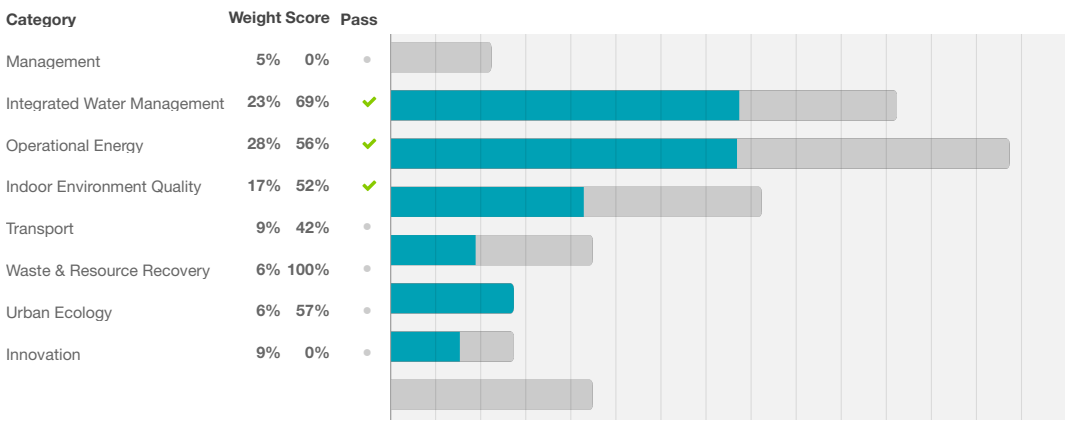


52%

Project details

Name	Trinity College Colac, 119 Hart Street, Colac VIC 3250
Address	119 Hart St Colac Victoria 3250
Project ID	4436BC3F-R2
BESS Version	BESS-10
Site type	Non-residential development
Account	esd@hexicon.com.au
Application no.	
Site area	3,863 m²
Building floor area	1,964 m²
Date	19 December 2025
Software version	2.3.0-B.638

Performance by category



Buildings

Name	Height	Footprint	% of total footprint
Learning + Science Centre	1	1,964 m^2	100%

Dwellings & Non Res Spaces

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Public building				
Learning + Science Centre	1	1,964 m^2	Learning + Science Centre	100%
Total	**1**	**1,964 m^2**	**100%**	

Supporting Evidence

Shown on Floor Plans

Credit	Requirement	Response	Status
Integrated Water Management 2.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)		-
Transport 1.4	Location of non-residential bicycle parking spaces		-
Transport 1.5	Location of non-residential visitor bicycle parking spaces		-
Waste & Resource Recovery 2.1	Location of food and garden waste facilities		-
Waste & Resource Recovery 2.2	Location of recycling facilities		-
Urban Ecology 2.1	Location and size of vegetated areas		-

Supporting Documentation

Credit	Requirement	Response	Status
Integrated Water Management 2.1	STORM report or MUSIC model		-
Operational Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Operational Energy 3.7	Average lighting power density and lighting type(s) to be used		-
Indoor Environment Quality 1.4	A short report detailing assumptions used and results achieved.		-

Credit summary

Management Overall contribution 4.5%

	0%	
1.1 Pre-Application Meeting	0%	
2.3 Thermal Performance Modelling - Non-Residential	0%	
3.2 Metering - Non-Residential	N/A	Scoped Out
	Only one commercial tenant.	
3.3 Metering - Common Areas	N/A	Scoped Out
	No major common areas that require sub-metering as it is only one building.	
4.1 Building Users Guide	0%	

IWM Overall contribution 22.5%

	69%	✔ Pass
1.1 Potable Water Use	42%	✔ Achieved
2.1 Stormwater Treatment	100%	✔ Achieved
3.1 Water Efficient Landscaping	0%	
4.1 Building Systems Water Use	0%	

Operational Energy Overall contribution 27.5%

	Minimum required 50% 56%	✔ Pass
1.1 Thermal Performance Rating - Non-Residential	12%	
2.1 Greenhouse Gas Emissions	100%	
2.2 Peak Demand	0%	
2.6 Electrification	100%	
2.7 Energy consumption	100%	
3.1 Carpark Ventilation	N/A	Scoped Out
	No carparking on site	
3.2 Hot Water - Non-Residential	100%	
3.7 Internal Lighting - Non-Residential	100%	
4.1 Combined Heat and Power (cogeneration / trigeneration)	0%	
4.2 Renewable Energy Systems - Solar	0%	Disabled
	No solar PV renewable energy is in use.	
4.4 Renewable Energy Systems - Other	N/A	Scoped Out
	No other (non-solar PV) renewable energy is in use.	

IEQ Overall contribution 16.5%

Minimum required 50%	52%	✔ Pass
1.4 Daylight Access - Non-Residential	47%	✔ Achieved
2.3 Ventilation - Non-Residential	39%	✔ Achieved
3.4 Thermal comfort - Shading - Non-Residential	91%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential	0%	
4.1 Air Quality - Non-Residential	100%	

Transport Overall contribution 9.0%

	42%	
1.4 Bicycle Parking - Non-Residential	100%	
1.5 Bicycle Parking - Non-Residential Visitor	100%	
1.6 End of Trip Facilities - Non-Residential	0%	
2.1 Electric Vehicle Infrastructure	N/A	◈ Scoped Out
		No carparking on site.
2.2 Car Share Scheme	0%	
2.3 Motorbikes / Mopeds	0%	

Waste & Resource Recovery Overall contribution 5.5%

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

Urban Ecology Overall contribution 5.5%

	57%	
1.1 Communal Spaces	N/A	◈ Scoped Out
509 m² of is provided for students and staffs for social gathering in the college building. 417 m² of corridors and 92 m² of open office space.		
2.1 Vegetation	100%	
2.2 Green Roofs	0%	
2.3 Green Walls and Facades	0%	
3.2 Food Production - Non-Residential	0%	

Innovation Overall contribution 9.0%

	0%	
1.1 Innovation	0%	

Credit breakdown

Management Overall contribution 4.5%

	0%

1.1 Pre-Application Meeting		0%
Score Contribution	This credit contributes 50% 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		0%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2022 Section J4D6?	
Question	Criteria Achieved ?	
Public building	No	
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2022 Section J (Energy Efficiency), NABERS or Green Star?	
Question	Criteria Achieved ?	
Public building	No	
3.2 Metering - Non-Residential		N/A Scoped Out
		Only one commercial tenant.
This credit was scoped out	Only one commercial tenant.	
3.3 Metering - Common Areas		N/A Scoped Out
		No major common areas that require sub-metering as it is only one building.
This credit was scoped out	No major common areas that require sub-metering as it is only one building.	
4.1 Building Users Guide		0%
Score Contribution	This credit contributes 16.7% towards the category score.	
Criteria	Will a building users guide be produced and issued to occupants?	
Question	Criteria Achieved ?	
Project	No	

IWM Overall contribution 22.5%

		69%	✔ Pass

Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No

Stormwater profile

Which stormwater modelling software are you using?:	Blue Factor
Blue Factor score achieved?:	100
Flow:	-
Total Suspended Solids:	-
Total Phosphorus:	-
Total Nitrogen:	-

Fixtures, fittings & connections profile

Building:	Learning + Science Centre
Showerhead:	Scope out
Bath:	Scope out
Kitchen Taps:	>= 5 Star WELS rating
Bathroom Taps:	>= 5 Star WELS rating
Dishwashers:	Scope out
WC:	>= 4 Star WELS rating
Urinals:	Scope out
Washing Machine Water Efficiency:	Scope out
Non-potable water source connected to Toilets:	No
Non-potable water source connected to Laundry (washing machine):	No
Non-potable water source connected to Hot Water System:	No

1.1 Potable Water Use		42%	✔ Achieved

Score Contribution	This credit contributes 31.2% 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	3369 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	2473 kL
Output	Proposed (including rainwater and recycled water use)
Project	2473 kL
Output	% Reduction in Potable Water Consumption
Project	26 %

2.1 Stormwater Treatment		100%	✔ Achieved

Score Contribution	This credit contributes 56.2% towards the category score.
Criteria	Has best practice stormwater management been demonstrated?
Output	Min Blue Factor Score
Project	100
Output	Blue Factor Score
Project	100

3.1 Water Efficient Landscaping	0%

Score Contribution	This credit contributes 6.2% towards the category score.
Criteria	Will water efficient landscaping be installed?
Question	Criteria Achieved ?
Project	No

4.1 Building Systems Water Use	0%

Score Contribution	This credit contributes 6.2% towards the category score.
Criteria	Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems?
Question	Criteria Achieved ?
Project	No

Operational Energy Overall contribution 27.5%

		Minimum required 50%	56%	✔ Pass

Project profile	
Use the BESS Deem to Satisfy (DtS) method for Non-residential spaces?:	No
Are you installing any renewable energy system(s) (other than solar photovoltaic)?:	No
Energy Supply:	All-electric
Non-residential buildings profile	
Heating, Cooling & Comfort Ventilation Electricity Reference fabric and Reference services:	10,000 kWh
Heating, Cooling & Comfort Ventilation Electricity Proposed fabric and Reference services:	10,000 kWh
Heating, Cooling & Comfort Ventilation Electricity Proposed fabric and Proposed services:	10,000 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 - Reference:	5,000 kWh
Hot Water Electricity - Proposed:	5,000 kWh
Lighting Electricity - Reference:	2,000 kWh
Lighting Electricity - Proposed:	2,000 kWh
Peak Thermal Cooling Load Reference:	0.0 kW
Peak Thermal Cooling Load Proposed:	0.0 kW

1.1 Thermal Performance Rating - Non-Residential		12%

Score Contribution	This credit contributes 34.8% towards the category score.
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC2022 Section J)?
Output	Total Improvement
Public building	0 %

2.1 Greenhouse Gas Emissions	100%
Score Contribution	This credit contributes 8.7% 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)
Public building	11,700 kg CO2
Output	Proposed Building with Proposed Services (Actual Building)
Public building	11,700 kg CO2
Output	% Reduction in GHG Emissions
Public building	0 %

2.2 Peak Demand	0%
Score Contribution	This credit contributes 4.3% towards the category score.
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?

2.6 Electrification	100%
Score Contribution	This credit contributes 13% towards the category score.
Criteria	Is the development all-electric?
Question	Criteria Achieved?
Project	Yes

2.7 Energy consumption	100%
Score Contribution	This credit contributes 17.4% towards the category score.
Criteria	What is the % reduction in annual energy consumption against the benchmark?
Output	Reference Building with Reference Services (BCA only)
Public building	54,000 MJ
Output	Proposed Building with Proposed Services (Actual Building)
Public building	54,000 MJ
Output	% Reduction in total energy
Public building	0 %

3.1 Carpark Ventilation	N/A Scoped Out
	No carparking on site
This credit was scoped out	No carparking on site

3.2 Hot Water - Non-Residential	100%
Score Contribution	This credit contributes 4.3% towards the category score.
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?
Output	Reference
Public building	18,000 MJ
Output	Proposed
Public building	18,000 MJ
Output	Improvement
Public building	0 %

3.7 Internal Lighting - Non-Residential		100%
Score Contribution	This credit contributes 8.7% towards the category score.	
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J7D3a of the NCC 2022 Vol 1?	
Question	Criteria Achieved ?	
Public building	Yes	
4.1 Combined Heat and Power (cogeneration / trigeneration)		0%
Score Contribution	This credit contributes 4.3% towards the category score.	
Criteria	What is the reduction in annual greenhouse gas emissions of the CHP system for the class of building?	
Question	Net Electricity Generation	
Public building	-	
Question	Gas Consumption	
Public building	-	
4.2 Renewable Energy Systems - Solar		0% ⊘ Disabled
		No solar PV renewable energy is in use.
This credit is disabled	No solar PV renewable energy is in use.	
4.4 Renewable Energy Systems - Other		N/A ⌖ Scoped Out
		No other (non-solar PV) renewable energy is in use.
This credit was scoped out	No other (non-solar PV) renewable energy is in use.	

IEQ Overall contribution 16.5%

	Minimum required 50%	52%	✔ Pass

1.4 Daylight Access - Non-Residential	47%	✔ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.	
Criteria	What % of the nominated floor area has at least 2% daylight factor?	
Question	Percentage Achieved?	
Public building	47 %	
2.3 Ventilation - Non-Residential	39%	✔ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.	
Criteria	What % of the regular use areas are effectively naturally ventilated?	
Question	Percentage Achieved?	
Public building	74 %	
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?	
Question	Percentage Achieved?	
Public building	0 %	
Criteria	What CO_2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?	
Question	Value	
Public building	-	
3.4 Thermal comfort - Shading - Non-Residential	91%	
Score Contribution	This credit contributes 17.6% towards the category score.	
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?	
Question	Percentage Achieved?	
Public building	87 %	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential	0%	
Score Contribution	This credit contributes 5.9% towards the category score.	
Criteria	What percentage of regular use areas in tenancies have ceiling fans?	
Question	Percentage Achieved?	
Public building	0 %	
4.1 Air Quality - Non-Residential	100%	
Score Contribution	This credit contributes 5.9% towards the category score.	

Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Public building	Yes

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

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

Transport Overall contribution 9.0%

		42%

1.4 Bicycle Parking - Non-Residential		100%
Score Contribution	This credit contributes 28.6% towards the category score.	
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Public building	Yes	
Question	Bicycle Spaces Provided ?	
Public building	5	

1.5 Bicycle Parking - Non-Residential Visitor		100%
Score Contribution	This credit contributes 14.3% towards the category score.	
Criteria	Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50% (or a minimum of 1 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Public building	Yes	
Question	Bicycle Spaces Provided ?	
Public building	5	

1.6 End of Trip Facilities - Non-Residential		0%
Score Contribution	This credit contributes 14.3% towards the category score.	
Criteria	Where adequate bicycle parking has been provided. Is there also: * 1 shower for the first 5 employee bicycle spaces plus 1 to each 10 employee bicycles spaces thereafter, * changing facilities adjacent to showers, and * one secure locker per employee bicycle space in the vicinity of the changing / shower facilities?	
Question	Number of showers provided ?	
Public building	0	
Question	Number of lockers provided ?	
Public building	0	
Output	Min Showers Required	
Public building	1	
Output	Min Lockers Required	
Public building	5	

2.1 Electric Vehicle Infrastructure		N/A Scoped Out
		No carparking on site.
This credit was scoped out	No carparking on site.	

2.2 Car Share Scheme		0%

Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Has a formal car sharing scheme been integrated into the development?
Question	Criteria Achieved ?
Project	No

2.3 Motorbikes / Mopeds	0%

Score Contribution	This credit contributes 28.6% towards the category score.
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?
Question	Criteria Achieved ?
Project	No

Waste & Resource Recovery **Overall contribution 5.5%**

100%

1.1 Construction Waste - Building Re-Use	N/A Scoped Out
	No previous development on site.

This credit was scoped out	No previous development on site.

2.1 Operational Waste - Food & Garden Waste	100%

Score Contribution	This credit contributes 50% towards the category score.
Criteria	Are facilities provided for on-site management of food and garden waste?
Question	Criteria Achieved ?
Project	Yes

2.2 Operational Waste - Convenience of Recycling	100%

Score Contribution	This credit contributes 50% towards the category score.
Criteria	Are the recycling facilities at least as convenient for occupants as facilities for general waste?
Question	Criteria Achieved ?
Project	Yes

Urban Ecology Overall contribution 5.5%

57%

1.1 Communal Spaces		N/A	Scoped Out
509 m² of is provided for students and staffs for social gathering in the college building. 417 m² of corridors and 92 m² of open office space.			
This credit was scoped out	509 m² of is provided for students and staffs for social gathering in the college building. 417 m² of corridors and 92 m² of open office space.		

2.1 Vegetation	100%
Score Contribution	This credit contributes 57.1% towards the category score.
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?
Question	Percentage Achieved ?
Project	48 %

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
Public building	-
Output	Min Food Production Area
Public building	50 m²

Innovation Overall contribution 9.0%

0%

1.1 Innovation	0%
Score Contribution	This credit contributes 100% towards the category score.
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?

Disclaimer

The Built Environment Sustainability Scorecard (BESS) has been provided for the purpose of information and communication. While we make every effort to ensure that material is accurate and up to date (except where denoted as 'archival'), this material does in no way constitute the provision of professional or specific advice. You should seek appropriate, independent, professional advice before acting on any of the areas covered by BESS.

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Appendix B – WSUD Maintenance Plan

This section of the document outlines the key inspection and maintenance activities for each stormwater treatment asset type and is based on Melbourne Water's WSUD Maintenance Guidelines. The implementation of the maintenance program is the responsibility of the owner's corporation. The Gross Pollutant Trap is considered in the development to prevent harmful sediments and pollutants to enter in the water. GPT maintenance is included in the following plan with Owner's responsibility and arranging regular servicing by the GPT company provider.

B.1 Raingardens

Raingardens, also known as bioretention systems, biofilters, bio-infiltration systems and bioremediation systems, are vegetated infiltration systems that improve stormwater quality. Stormwater ponds on the raingarden surface, slowly infiltrates through the filter media to the base of the system and is then conveyed to the downstream drainage system. Pollutants such as nitrogen, phosphorus and suspended solids are removed as stormwater passes through the filter media. The following provides a guide to the timing of inspection and maintenance activities for the typical components of this system.

Component	Key Activities	Typical Frequency
Filter Media	- Remove leaf litter and gross pollutants - Check for biofilms (algal biofilms may develop on the surface of filter media leading to clogging issues) - Monitor ponding of water following rainfall events - Check for permanently boggy/pooled areas	3 months & following storm events
	- Remove sediment (or scarify filter media surface if required)	Annually
Erosion	- Check for erosion/scouring - Check for evidence of preferential flow paths - Replace filter media in eroded areas - Add rock protection around inlets (if required)	3 months
Mulch	- Check depth and even distribution of mulch - Check mulch is not touching plant stems - Check for sediment/silt accumulation in mulch layer - Replace mulch (if required) - Retain mulch using jute mats or nets (if required)	3 months
Vegetation	- Inspect plant health and cover - Replace dead plants (maintain a consistent vegetation density of 6–10 plants per square metre across the raingarden filter media) - Remove weeds (avoid use of herbicides) - Prune plants (where applicable)	3 months

Appendix C – VOC & Formaldehyde Emission Limits

The following table is an extract of the Green Star Design and as built submission guidelines:

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

Product Category	Max TVOC content in grams per litre (g/L) of ready to use product.
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

The product complies with the Total VOC (TVOC) limits specified in the Table below.

Carpet Test Standards and TVOC Emissions Limits

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

Table 13.2: Formaldehyde Emission Limit Values for Engineered Wood Products

Test Protocol	Emission Limit/ Unit of Measurement
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1mg/ L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1mg/ L
AS/NZS 4357.4 - Laminated Veneer Lumber (LVL)	≤1mg/ L
Japanese Agricultural Standard MAFF Notification No.701 Appendix Clause 3 (11) - LVL	≤1mg/ L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1 mg/m²hr*
ASTM D5116 (applicable to high pressure laminates and compact laminates)	≤0.1 mg/m²hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419), applicable to high pressure laminates and compact laminates	≤0.1 mg/m²hr (at 3 days)
ASTM D6007	≤0.12mg/m³**
ASTM E1333	≤0.12mg/m³***
EN 717-1 (also known as DIN EN 717-1)	≤0.12mg/m³
EN 717-2 (also known as DIN EN 717-2)	≤3.5mg/m²hr

*mg/m²hr may also be represented as mg/m²/hr.

Appendix D - Blue Factor Report

(03) 9754 0914
esd@hexicon.com.au
www.hexicon.com.au
27/148 Chesterville Road, Cheltenham VIC 3192

BLUE FACTOR®

Trinity College Colac, 119 Hart Street, Colac VIC 3250

106% SCORE

The proposed stormwater treatments provide 'deemed to comply' compliance with the minimum planning requirement for total nitrogen but does not comply with all the relevant objectives for management of stormwater flows on-site.

Project details

Name	Trinity College Colac, 119 Hart Street, Colac VIC 3250
Street address	119 Hart St, Colac VIC 3250, Australia
Municipality	Colac Otway
Site area	3863 m^2
Planning Number	

Flow and pollutant load reductions

Item	Result	Target
Mean annual runoff volume harvested or evapotranspired (%)	1%	>28%
Mean annual runoff volume infiltrated or filtered (%)	9%	>9%
Total suspended solids (%)	57%	>80%
Total phosphorus (%)	36%	>45%
Total nitrogen (%)	48%	>45%
Total gross pollutants (%)	58%	>70%

Water treatment

Catchments

Roof Catchment Area to Raingardens 1334m2

Roof Catchment Area Untreated 914m2

Permeable Area - Landscape Pervious (garden and lawn), 1589m2

Raingardens Pervious (garden and lawn), 26m2

Treatments

Raingardens Area: 26 m^2, Extended detention depth: 0.3 m, Submerged zone depth: 0.3 m, Site soil type: Sandy clay

Configuration 1

Roof Catchment Area to Raingardens 1334m2

Raingardens Area: 26 m^2,
Extended detention depth: 0.3 m,
Submerged zone depth: 0.3 m, Site soil type: Sandy clay,