

Sustainable Management Plan

41 Monbulk Road, Mt. Evelyn

Reference: SH361483

Date: 22/02/2022

Assessment of:

Service Station (incorporating car wash)

Responsible authority:

Yarra Ranges Shire Council



Reference: SH361483

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Table 1: Document control

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EXECUTIVE SUMMARY

provide a Sustainable Management Plan report (SMP) for a proposed development at 41 Monbulk Road, Mt. Evelyn VIC. The proposed development is within the jurisdiction of the Yarra Ranges Shire Council, and for a development of this size, the council requires an SMP or equivalent to be produced as part of its planning approval process.

BESS (the Built Environment Sustainability Scorecard) has been used to quantitatively assess the proposed development's sustainable design measures. The BESS report summarises the sustainable design initiatives incorporated into the proposed development and benchmarks them against industry best practice. The table below provides a summary of the BESS assessment results for this project.

Categories	Minimum required	Category score	Weighting	Overall Contribution	Compliance Achieved?
Management	%	22%	4.5%	1%	
Water	50%	66%	9%	6%	YES
Energy	50%	64%	27.5%	18%	YES
Stormwater	100%	100%	13.5%	14%	YES
Indoor Environment Quality (IEQ)	50%	51%	16.5%	12%	YES
Transport	%	45%	9%	2%	
Waste Management	%	33%	5.5%	2%	
Urban Ecology	%	47%	5.5%	3%	
Innovation	%	0%	9%	0%	
Overall BESS Score	50%	-		55%	YES

Based on the above results, the project achieves the requirements under the BESS assessment. This report represents a complete Sustainable Management Plan of the proposed development. Key sustainable design strategies considered in the development include:

Key List of ESD strategies

- Major services are separately sub-metered
- Building fabric exceed NCC 2019 insulation levels by at least 10% for floor and ceiling, with all wall and glazing meeting or exceeding the required façade calculator.
- Efficient heating and cooling and hot water systems
- Energy efficient LED lights
- Car wash water recycling system
- Efficient water fixtures and fittings

1. PROJECT OVERVIEW

The proposed service station (incorporating carwash) is located at 41 Monbulk Road, Mt. Evelyn VIC.

This development consists of a service station, a control building and a carwash.

Description	Area
Site Area	4324.5 m ²
Built up area	463 m ²

The development is in NCC Climate Zone 6. The following aerial photo shows the location of the site.

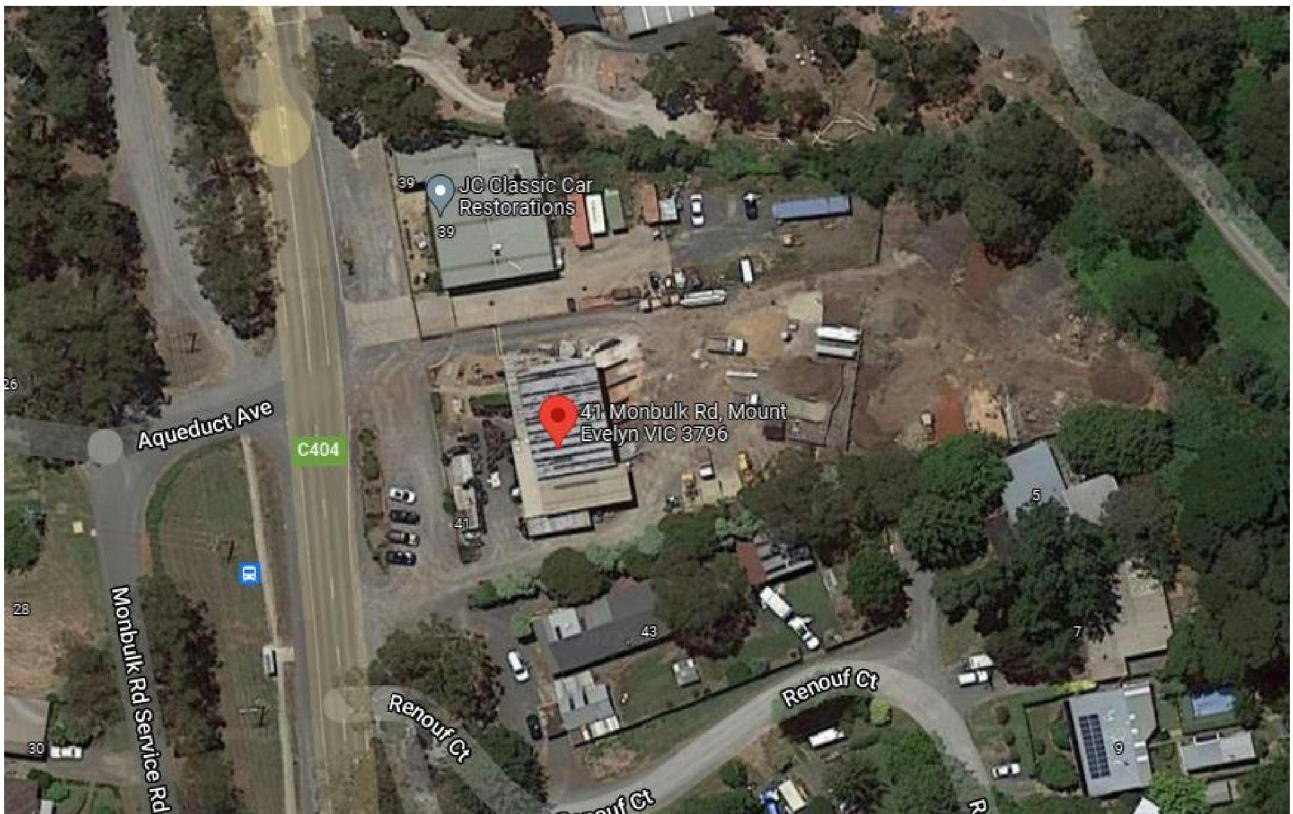


Figure 1: Aerial view of subject site

Documentation and Assessment

This report is based on the following:

- Project discussions and email correspondences with Peregrine Corporation
- The architectural drawings issued by ADS Architects and provided by Peregrine Corporation

Drawing	Description	Date
TP Drawings	Town planning Drawings	08/02/2022

To quantify the project's sustainability performance against an industry benchmark, this report uses the Built Environment Sustainability Scorecard (BESS), an online sustainability assessment tool purpose built for Sustainable Design Assessment in the Planning Process (SDAPP). BESS was created to assist builders and developers to meet sustainability best practice standards as part of planning permit applications.

Sustainability Categories

This report addresses the 10 sustainability categories in line with the requirements of the Sustainable Design Assessment in the Planning Process (SDAPP) scheme, noted in the table below.

	SDAPP ESD Categories	Benchmark
1	Energy Efficiency	BESS (mandatory 50%)
2	Water Efficiency	BESS (mandatory 50%)
3	Stormwater Management	BESS (mandatory 100%)
4	Indoor Environment Quality (IEQ)	BESS (mandatory 50%)
5	Waste Management	BESS
6	Transport	BESS
7	Innovation	BESS
8	Construction & Building Management	BESS
9	Urban Ecology	BESS
10	Building Materials	Industry best practice

Table 2: ESD Benchmarks

For this assessment, nine categories have been assessed using BESS tool while category 10, building materials, has been assessed against industry best practice standards.

As noted above, the BESS tool sets out minimum standards to achieve compliance for the four major categories:

- Energy
- Water
- Stormwater (100%)
- Indoor Environment Quality (IEQ)

To comply, the development must achieve a minimum score of 50% in the categories above unless stated otherwise.

2. ESD MEASURES

The following is a summary of the ESD initiatives included in each of the BESS categories, and the scores obtained in the rating. Calculations for energy (preliminary Section J DtS Check), water and stormwater (the STORM assessment) have been undertaken by SUHO.

Management

The following describes items relating to building management that this project has committed to. These are recognised by the BESS tool as leading to improved environmental sustainability outcomes.

BESS Credit	Management Initiatives	Responsibility
2.2	Preliminary Section J façade assessment and DtS check completed. See Appendix B.	ESD Consultant
3.3	Major Areas have been separately submetered	Building Services Engineers and Architect
Final Management Score		24%

Water Efficiency

The BESS water score (covering potable water use) is over the 50% minimum threshold with a 65% score, which exceeds baseline compliance. To achieve this score, the proposed development commits to the following water efficiency measures:

BESS Credit	Water Efficiency Measures	Responsibility
1.1 Potable Water Use Reduction	Efficient fixtures: the development commits to reducing total operating potable water use, with fixtures and fittings will have high efficiency WELS ratings of at least: <ul style="list-style-type: none"> – 6 Star WELS kitchen and bathroom taps – 5 Star WELS toilets – 5 Star dishwasher – No laundry washing machines in the project 	Architect, Builder
3.1 Water Efficient Landscaping	Water efficiency landscape to be provided. Landscape to include clearly-labelled drought tolerant plantings.	Landscape architect/designer, Builder
Final Water Score		66%

Energy Efficiency

Below is a summary of the energy efficiency measures and specifications for the building. Generally, the strategy includes a high efficiency building fabric and design to support occupant thermal comfort. Energy consumption is further reduced through selection of efficient building services. BESS DTS method is used to determine the energy performance of the building, based on Section J DTS pathway from NCC 2019.

BESS Credit	Energy Efficiency Features	Responsibility
1.1, 2.1, 2.3, 2.4, 3.2	<p>The project aims to achieve the following:</p> <p>All exposed floors and ceilings (forming part of the envelope) demonstrate a minimum 10% improvement in required NCC2019 insulation levels.</p> <p>All wall and glazing demonstrate meeting the required NCC 2019 facade calculator.</p> <p>To provide 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</p> <p>To provide water heating systems within one Star of the most efficient equivalent capacity unit, or 85% or better than the most efficient equivalent capacity unit available</p>	Building services engineer and Builder
3.7	Maximum illumination power density (W/m ²) 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	Electrical engineer, Builder
Owner will review the feasibility of rooftop PV panels and install if and when consistent with operational and financial objectives.		
Final Energy Score		64%

Please note that Summary of Preliminary Section J assessment have been provided in Appendix B

Stormwater Management

The purpose of water sensitive urban design (WSUD) – also known as stormwater management – is to reduce the volume and improve the quality of stormwater runoff from built up areas. This protects the ecological health of waterways while also contributing to urban cooling, local habitat and public safety benefits.

Assessment has been conducted by Civil engineers through MUSIC modeling. Please refer to Appendix C for MUSIC report and Civil Drawings

Pollutant	Reduction Target (%)	Currently proposed MUSIC model
TSS	80	98.38
TP	45	92.11
TN	45	73.08
Gross Pollutants	70	100

Table 3: BESS Credit 1.1 result

Site Management Plan

While a construction management plan will be provided by the builder, below are some key points regarding for managing stormwater in the pre-construction and construction phases to address Clause 53.18-6. 'Keeping Our Stormwater clean: a Builder's Guide' lists six site rules to keep stormwater clean:

- 1. Site Rule 1 – Check Council requirements and plan before you start work on site** – As per this rule it is important to know the lowest point on site because it will affect the location of crossover, stockpile materials and sediment fence.
- 2. Site Rule 2 – Stop Erosion and keep sediment on site** – Sediment escaping from building sites can make roads and footpaths slippery, make stream river cloudy and overload filtration systems. Erosion can be controlled by:
 - o keeping vegetation as a buffer strip at the site boundary because it can slow the flow of water across the ground, hold soil together to minimize erosion and act like a filter to trap soil particles.
 - o early downpipe connection, which can lead to fewer drainage problems and less mud on site.
 - o sediment control fences stop the sediment being washed off site. Fence allows muddy water to pond behind it and for sediment to settle as the water slowly filters through.

3. Site Rule 3 – Contain stockpiles on site – Stockpiles not stored properly can get washed or blown away and pollute the stormwater.
4. Site Rule 4 – Keep mud off road and on site because mud is carried back onto the roads and footpaths, and ashes into the stormwater.
5. Site Rule 5 – Keep Litter contained on site because litter blowing can block stormwater drains.
6. Site Rule 6 – Clean and wash up on site – When cleaning up after painting, plastering or concreting its most important to keep the wash water out of the stormwater system because roads around a building site can become dirty, slippery and dangerous.

See Appendix D for the complete guide, including diagrams.

WSUD Maintenance Program

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
Roof	Remove leaf litter and debris Check general condition of roof for signs of leakage, including broken tiles, and rusting	1 month
Gutters and Downpipes	Remove leaf litter and gross pollutants Check general condition of drainage systems for signs of leakage, including damaged pipes and rusting	1 month
First Flush Device	Inspect inlet screens for blockages or fouling Inspect silt traps and collection pits, clean as required Inspect diversion pit and remove any build-up of sludge blocking the diversion valve Check all float operations and activation switches (if applicable) Check general condition of components for loose connections, wear and tear, and signs of leakage	1 - 3 months
	Arrange licensed EPA contractor to remove built-up sludge accrued in all pits (if applicable)	6 months
Tanks	Ensure inlet and overflow screens are not blocked or fouled Remove excess layers of sludge and biofilms on tank walls if affecting the colour or smell of the tank water Check general condition of tank for signs of damage or leakage	3 – 6 months
Pumps	Pumping systems are to be maintained in accordance with the manufacturers' specifications	Refer manufacturers' details
Vegetation	Prune surrounding vegetation and overhanging trees to reduce leaf litter and debris	6 months
Filtration Pits	Full inspection including cleaning of the grate and sediment trap.	12 months
Filtration Media Inspection	Filter media inspection to look for sediment build up at inflow and outlets points. Holes that appear in the filter media (or other signs of erosion in preferential flow paths) should be filled. In addition to the regular inspection schedule, this inspection should be conducted after major storm events.	3 months
Filtration Media Replacement	Filtration media cartridge replacement	4 years

Table 4: WSUD maintenance program

Indoor Environment Quality

Below is a summary of the building's performance against indoor environment quality benchmarks. The table below outlines the categories against the BESS benchmark.

BESS Credit	Indoor Environment Quality Features	Responsibility
1.4	54.5% of the nominated floor area of the convenience store and 100% of the nominated floor area of the carwash meet the equivalent of a 2% daylight factor, as demonstrated via the Green Star Hand Calculation Method.	ESD Consultant, Architect and Builder
2.3	Over 50% increase in outdoor air available to regular areas compared to AS 1668:2021 Ventilation system shall be designed to monitor and maintain CO2 concentration less than 800 ppm	Service engineer
4.1	All paints, adhesives, carpet, and engineering wood will meet the maximum total indoor pollutant emissions limits	Architect
Final IEQ Score		51%

Please refer to Appendix E for daylight mark-up.

Transport

The table below outlines the items that contribute to the BESS score of 47% for the Transport category.

BESS Credit	Transport Features	Responsibility
1.1, 1.2	At least 2 Bicycle spaces have been provided for the convenience store staff.	Builder and Architect
2.1	One EV charging space will be provided	Builder and Architect
Final IEQ Score		47%

Waste Management

BESS Credit	Waste Management Features	Responsibility
2.2 - Operational Waste - Convenience of Recycling	To maximise recycling, and ensure a reduction in waste to landfill, the project has provided operational recycling facilities that are as convenient as the waste facilities provided. This, along with appropriate signage, will encourage residents and visitors to use the recycling stream when appropriate.	Waste Management Consultant
Final Waste Score		33%

Urban Ecology

BESS Credit	Urban Ecology	Responsibility
2.1	Over 20% of the site is covered with vegetation	Landscape Architect
Final Urban Ecology Score		47%

Building Materials as innovation

As BESS does not include a category for sustainable building materials, the project has referenced Green Star TVOC Content requirements. The following building materials will comply with TVOC Content limit as per the table below:

- Low VOC paints, adhesives and sealants

Product Category	TVOC Limit [g/L]*
General purpose adhesives	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

Table 5: TVOC Content - Paints, Adhesives and Sealants

3. CONCLUSIONS

The project achieves all the minimum requirements under BESS, the new industry ESD best practice benchmark, achieving a rating of 55%.

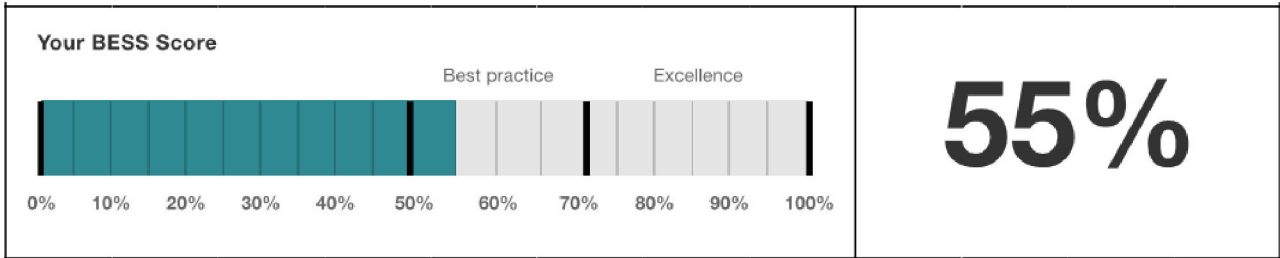


Figure 2: BESS score

For items not covered by BESS, performance was shown to be in line with industry best practice. The proposed development exceeds minimum scoring under the BESS assessment. The assessment results demonstrate that the design achieves the best practice standard established by the BESS.

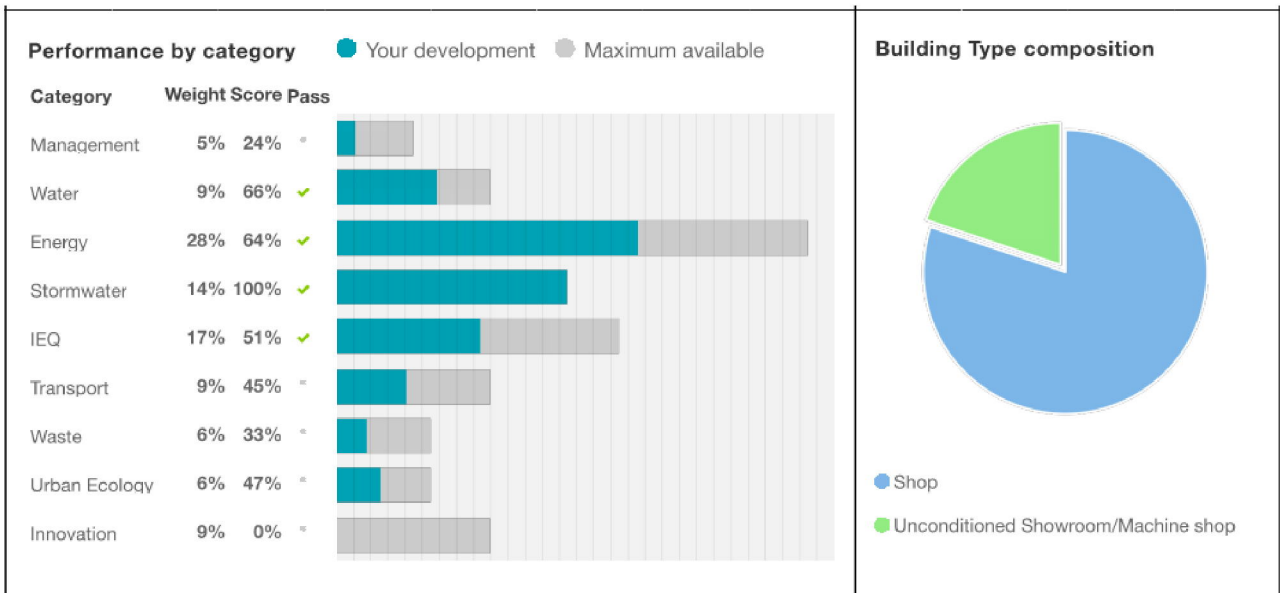


Figure 3: Category scores

APPENDIX A – BESS OUTPUT REPORT

BESS Report

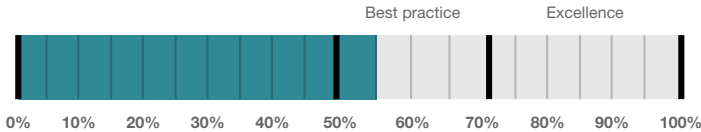
Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 41 Monbulk Road Mt. Evelyn Vic VIC 3796. 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 Yarra Ranges Shire 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



55%

Project details

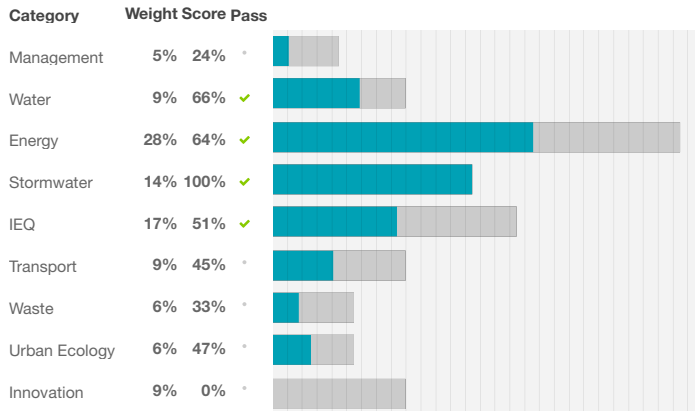
Address 41 Monbulk Road Mt. Evelyn Vic VIC 3796
Project no D5A0A43B-R1
BESS Version BESS-6

Site type Non-residential development
Account esd@sustainabilityhouse.com.au
Application no.
Site area 4,324 m²
Building floor area 312.0 m²
Date 14 February 2022
Software version 1.7.0-B.377

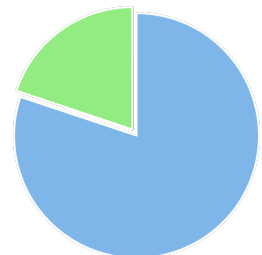


Performance by category

● Your development ● Maximum available



Building Type composition



● Shop
 ● Unconditioned Showroom/Machine shop

Buildings

Name	Height	Footprint	% of total footprint
Building 1	1	463 m ²	100%

Dwellings & Non Res Spaces

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Shop				
Control Building	1	250 m ²	Building 1	80%
Total	1	250 m²	80%	
Unconditioned Showroom/Machine shop				
Auto wash	1	62.0 m ²	Building 1	19%
Total	1	62 m²	19%	

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Management 3.3	Common area submeters annotated	To be printed To be marked on plans	✓
Water 3.1	Water efficient garden annotated	To be printed To be marked on plans	✓
Stormwater 1.1	Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)	To be printed To be marked on plans	✓
Transport 1.4	All nominated non-residential bicycle parking spaces	To be printed To be marked on plans	✓
Transport 2.1	Location of electric vehicle charging infrastructure	To be printed To be marked on plans	✓
Waste 2.2	Location of recycling facilities	To be printed To be marked on plans	✓
Urban Ecology 1.1	Size and location of communal spaces	To be printed To be marked on plans	✓
Urban Ecology 2.1	Vegetated areas	To be printed Refer Architectural Drawings	✓

Supporting evidence

Credit	Requirement	Response	Status
Management 2.3a	Section J glazing assessment	To be printed -- Attached in the Appendix of the SMP	✓
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings	To be printed -- --	✓

Credit	Requirement	Response	Status
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.	To be printed -- --	✓
Stormwater 1.1	STORM report or MUSIC model	To be printed -- -	✓
IEQ 1.4	A short report detailing assumptions used and results achieved.	To be printed -- --	✓

Credit summary

Management Overall contribution 4.5%

		24%
1.1 Pre-Application Meeting		0%
2.3 Thermal Performance Modelling - Non-Residential		50%
3.2 Metering		0%
3.3 Metering		100%
4.1 Building Users Guide		0%

Water Overall contribution 9.0%

		Minimum required 50%	66%	✓ Pass
1.1 Potable water use reduction			60%	
3.1 Water Efficient Landscaping			100%	
4.1 Building Systems Water Use Reduction			N/A	✦ Scoped Out
This building does not include sprinklers or water based heat rejection.				

Energy Overall contribution 27.5%

		Minimum required 50%	64%	✔ Pass
1.1 Thermal Performance Rating - Non-Residential			37%	
2.1 Greenhouse Gas Emissions			100%	
2.2 Peak Demand			124%	
2.3 Electricity Consumption			100%	
2.4 Gas Consumption			100%	
3.1 Carpark Ventilation			N/A	✦ Scoped Out
				no enclosed carpark
3.2 Hot Water			100%	
3.7 Internal Lighting - Non-Residential			80%	
4.1 Combined Heat and Power (cogeneration / trigeneration)			N/A	✦ Scoped Out
				No cogeneration or trigeneration system in use.
4.2 Renewable Energy Systems - Solar			N/A	⊘ Disabled
				No solar PV renewable energy is in use.
4.4 Renewable Energy Systems - Other			N/A	⊘ Disabled
				No other (non-solar PV) renewable energy is in use.

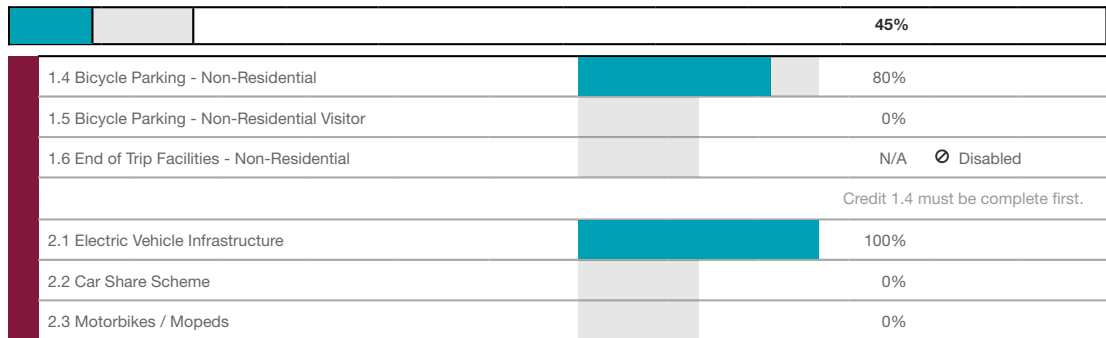
Stormwater Overall contribution 13.5%

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

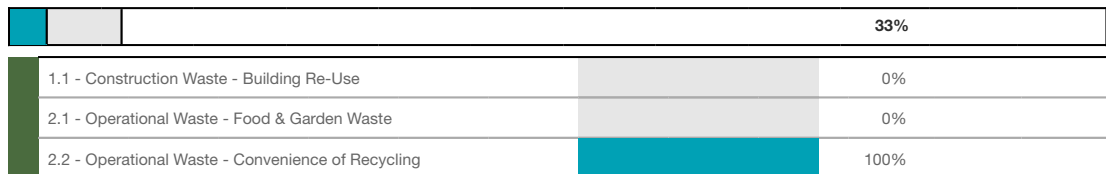
IEQ Overall contribution 16.5%

		Minimum required 50%	51%	✔ Pass
1.4 Daylight Access - Non-Residential			63%	✔ Achieved
2.3 Ventilation - Non-Residential			66%	✔ Achieved
3.4 Thermal comfort - Shading - Non-residential			0%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential			0%	
4.1 Air Quality - Non-Residential			100%	

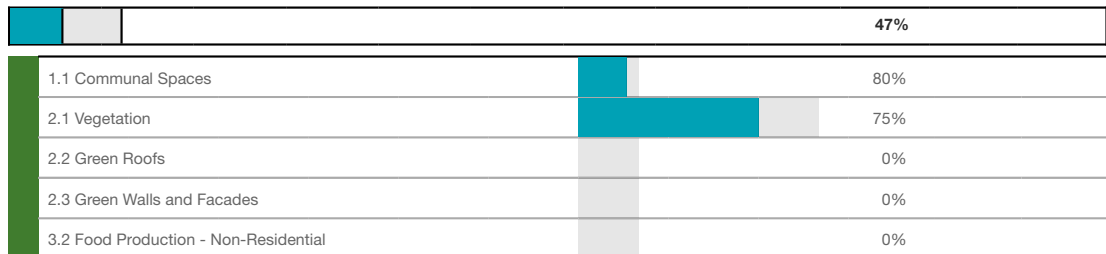
Transport Overall contribution 9.0%



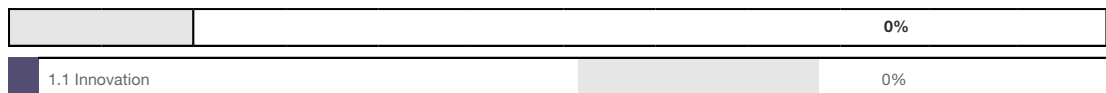
Waste Overall contribution 5.5%



Urban Ecology Overall contribution 5.5%



Innovation Overall contribution 9.0%




Credit breakdown

Management Overall contribution 1%

1.1 Pre-Application Meeting	0%
Score Contribution	This credit contributes 38.2% towards the category score.
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?
Question	Criteria Achieved ?
Project	No
2.3 Thermal Performance Modelling - Non-Residential	50%
Score Contribution	This credit contributes 23.5% towards the category score.
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2019 Section J1.5?
Question	Criteria Achieved ?
Shop	Yes
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?
Question	Criteria Achieved ?
Shop	No
3.2 Metering	0%
Score Contribution	This credit contributes 12.7% towards the category score.
Criteria	Have utility meters been provided for all individual commercial tenants?
Question	Criteria Achieved ?
Shop	No
Unconditioned Showroom/Machine shop	No
3.3 Metering	100%
Score Contribution	This credit contributes 12.7% towards the category score.
Criteria	Have all major common area services been separately submetered?
Question	Criteria Achieved ?
Shop	Yes
Unconditioned Showroom/Machine shop	Yes
4.1 Building Users Guide	0%
Score Contribution	This credit contributes 12.7% towards the category score.
Criteria	Will a building users guide be produced and issued to occupants?
Question	Criteria Achieved ?
Project	No





Water Overall contribution 6% Minimum required 50%

Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Project Water Profile Question	
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
Water fixtures, fittings and connections	
Building: All	Building 1
Showerhead: All	Scope out
Bath: All	Scope out
Kitchen Taps: All	>= 6 Star WELS rating
Bathroom Taps: All	>= 6 Star WELS rating
Dishwashers:	
Control Building	>= 5 Star WELS rating
Auto wash	Scope out
WC: All	>= 5 Star WELS rating
Urinals: All	Scope out
Washing Machine Water Efficiency: All	Scope out
Which non-potable water source is the dwelling/space connected to?: All	-1
Non-potable water source connected to Toilets: All	Yes
Non-potable water source connected to Laundry (washing machine): All	No
Non-potable water source connected to Hot Water System: All	No
1.1 Potable water use reduction	60%
Score Contribution	This credit contributes 83.3% towards the category score.
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.
Annotation	Water balance calculations provided in the SMP appendix.
Output	Reference
Project	417 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	239 kL
Output	Proposed (including rainwater and recycled water use)
Project	239 kL
Output	% Reduction in Potable Water Consumption
Project	42 %

3.1 Water Efficient Landscaping		100%
Score Contribution	This credit contributes 16.7% towards the category score.	
Criteria	Will water efficient landscaping be installed?	
Question	Criteria Achieved ?	
Project	Yes	
4.1 Building Systems Water Use Reduction		N/A  Scoped Out
This credit was scoped out	This building does not include sprinklers or water based heat rejection.	

Energy Overall contribution 18% Minimum required 50%

Use the BESS Deem to Satisfy (DtS) method for Energy?:	Yes
Do all exposed floors and ceilings (forming part of the envelope) demonstrate a minimum 10% improvement in required NCC2019 insulation levels (total R-value upwards and downwards)?:	Yes
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
Use the BESS Deem to Satisfy (DtS) method for Energy Unconditioned Spaces?:	-
Are you installing a cogeneration or trigeneration system?:	No
Non-Residential Building Energy Profile	
Heating, Cooling & Comfort Ventilation - Electricity - reference fabric and reference services:	-
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and reference services:	-
Heating, Cooling & Comfort Ventilation - Electricity - proposed fabric and proposed services:	-
Heating - Gas - reference fabric and reference services:	-
Heating - Gas - proposed fabric and reference services:	-
Heating - Gas - proposed fabric and proposed services:	-
Heating - Wood - reference fabric and reference services:	-
Heating - Wood - proposed fabric and reference services:	-
Heating - Wood - proposed fabric and proposed services:	-
Hot Water - Electricity - Baseline:	-
Hot Water - Electricity - Proposed:	-
Hot Water - Gas - Baseline:	-
Hot Water - Gas - Proposed:	-
Lighting - Baseline:	-
Lighting - Proposed:	-
Peak Thermal Cooling Load - Baseline:	-
Peak Thermal Cooling Load - Proposed:	-
1.1 Thermal Performance Rating - Non-Residential	37%
Score Contribution	This credit contributes 38.3% towards the category score.
Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC 2019 Section J)?

2.1 Greenhouse Gas Emissions	100%
Score Contribution	This credit contributes 10.4% towards the category score.
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?
2.2 Peak Demand	124%
Score Contribution	This credit contributes 4.8% towards the category score.
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?
2.3 Electricity Consumption	100%
Score Contribution	This credit contributes 10.4% towards the category score.
Criteria	What is the % reduction in annual electricity consumption against the benchmark?
2.4 Gas Consumption	100%
Score Contribution	This credit contributes 10.4% towards the category score.
Criteria	What is the % reduction in annual gas consumption against the benchmark?
3.1 Carpark Ventilation	N/A  Scoped Out
This credit was scoped out	no enclosed carpark
3.2 Hot Water	100%
Score Contribution	This credit contributes 5.2% towards the category score.
Criteria	What is the % reduction in annual hot water system energy use (gas and electricity) against the benchmark?
3.7 Internal Lighting - Non-Residential	80%
Score Contribution	This credit contributes 10.4% towards the category score.
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J6.2a of the NCC 2019 Vol 1?
Question	Criteria Achieved ?
Shop	Yes
Unconditioned Showroom/Machine shop	No
4.1 Combined Heat and Power (cogeneration / trigeneration)	N/A  Scoped Out
This credit was scoped out	No cogeneration or trigeneration system in use.
4.2 Renewable Energy Systems - Solar	N/A  Disabled
This credit is disabled	No solar PV renewable energy is in use.
4.4 Renewable Energy Systems - Other	N/A  Disabled
This credit is disabled	No other (non-solar PV) renewable energy is in use.

Stormwater Overall contribution 14% Minimum required 100%

Which stormwater modelling are you using?:		MUSIC or other modelling software
1.1 Stormwater Treatment		100%
Score Contribution	This credit contributes 100.0% towards the category score.	
Criteria	Has best practice stormwater management been demonstrated?	
Question	Flow (ML/year)	
Project	0.2 % Reduction	
Question	Total Suspended Solids (kg/year)	
Project	93.6 % Reduction	
Question	Total Phosphorus (kg/year)	
Project	61.5 % Reduction	
Question	Total Nitrogen (kg/year)	
Project	53.0 % Reduction	

IEQ Overall contribution 9% Minimum required 50%

1.4 Daylight Access - Non-Residential		63%	✓ 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?		
Shop	54 %		
Unconditioned Showroom/Machine shop	100 %		
2.3 Ventilation - Non-Residential		66%	✓ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.		
Criteria	What % of the regular use areas are effectively naturally ventilated?		
Question	Percentage Achieved?		
Shop	0 %		
Unconditioned Showroom/Machine shop	0 %		
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668:2012?		
Question	Percentage Achieved?		
Shop	50 %		
Unconditioned Showroom/Machine shop	50 %		
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?		
Question	Value		
Shop	800 ppm		
Unconditioned Showroom/Machine shop	800 ppm		
3.4 Thermal comfort - Shading - Non-residential		0%	
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?		
Shop	-		
Unconditioned Showroom/Machine shop	-		
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?		
Shop	-		
Unconditioned Showroom/Machine shop	-		
4.1 Air Quality - Non-Residential		100%	
Score Contribution	This credit contributes 5.9% towards the category score.		

Criteria	Do all paints and adhesives meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Project	Yes
Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Project	No carpet
Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?
Question	Criteria Achieved ?
Project	Yes

Transport Overall contribution 4%

1.4 Bicycle Parking - Non-Residential		80%
Score Contribution	This credit contributes 25.0% 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)?	
Annotation	clause 52.34 Shop and Retail both cite 1 per 600 and 300 sqm respectively	
Question	Criteria Achieved ?	
Shop	Yes	
Unconditioned Showroom/Machine shop	No	
Question	Bicycle Spaces Provided ?	
Shop	2	
Unconditioned Showroom/Machine shop	-	
1.5 Bicycle Parking - Non-Residential Visitor		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50% (or a minimum of 1 where there is no planning scheme requirement)?	
Question	Criteria Achieved ?	
Shop	No	
Unconditioned Showroom/Machine shop	No	
Question	Bicycle Spaces Provided ?	
Shop	0	
Unconditioned Showroom/Machine shop	-	
1.6 End of Trip Facilities - Non-Residential	N/A	⊘ Disabled
This credit is disabled	Credit 1.4 must be complete first.	
2.1 Electric Vehicle Infrastructure		100%
Score Contribution	This credit contributes 25.0% towards the category score.	
Criteria	Are facilities provided for the charging of electric vehicles?	
Question	Criteria Achieved ?	
Project	Yes	
2.2 Car Share Scheme		0%
Score Contribution	This credit contributes 12.5% 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 12.5% towards the category score.	
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?	
Question	Criteria Achieved ?	
Project	No	

Waste Overall contribution 2%

1.1 - Construction Waste - Building Re-Use		0%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used?	
Question	Criteria Achieved ?	
Project	No	

2.1 - Operational Waste - Food & Garden Waste		0%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are facilities provided for on-site management of food and garden waste?	
Question	Criteria Achieved ?	
Project	No	

2.2 - Operational Waste - Convenience of Recycling		100%
Score Contribution	This credit contributes 33.3% towards the category score.	
Criteria	Are the recycling facilities at least as convenient for occupants as facilities for general waste?	
Question	Criteria Achieved ?	
Project	Yes	

Urban Ecology Overall contribution 3%

1.1 Communal Spaces		80%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Is there at least the following amount of common space measured in square meters : * 1m ² for each of the first 50 occupants * Additional 0.5m ² for each occupant between 51 and 250 * Additional 0.25m ² for each occupant above 251?	
Question	Common space provided	
Shop	27.5 m ²	
Unconditioned Showroom/Machine shop -		
Output	Minimum Common Space Required	
Shop	25 m ²	
Unconditioned Showroom/Machine shop	3 m ²	
2.1 Vegetation		75%
Score Contribution	This credit contributes 50.0% 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	20 %	
2.2 Green Roofs		0%
Score Contribution	This credit contributes 12.5% 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 12.5% towards the category score.	
Criteria	Does the development incorporate a green wall or facade?	
Question	Criteria Achieved ?	
Project	No	
3.2 Food Production - Non-Residential		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Is there at least 0.25m ² of space per occupant dedicated to food production?	
Question	Food Production Area	
Shop	-	
Unconditioned Showroom/Machine shop -		
Output	Min Food Production Area	
Shop	7 m ²	
Unconditioned Showroom/Machine shop	1 m ²	

Innovation Overall contribution 0%

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

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 – PRELIMINARY DTS CHECK AND FACADE CALCULATOR

NCC 2019 Volume 1 - Preliminary DTS

Check

SUHO developed this NCC 2019 fabrics compliance check to act as a guide for the Deemed-to-Satisfy requirements. This is to be used strictly as a guide only and is not an official compliance report.

Please note: These DTS values are a guide for general compliance.

Project Summary:

Project Name: Control Building - OTR Mt
Eevlyn
361483
Floor Level: Ground
Climate Zone: 7
Building Class: 6

Envelope

Description

Under Section J for NCC 2019, the external walls, roof, floor and glazing of this building has been considered as the conditioned envelope.

Section J1: Building Fabric Requirements

Note: To meet the BESS requirement, roof-ceiling and floor required insulation have been calculated targeting 10% better than the NCC2019 DTS requirement.

Construction Type	NCC 2019 DTS Requirements
J1.3 Roof	R4.07(Bridged) required to the Roof and Ceiling Construction. To achieve this, there must be a minimum 20mm Air gap between the reflective blanket and ceiling frame structure with, 1. Minimum R1.3 roof blanket reflective foil faced down. 2. Minimum R3.0 ceiling insulation. Maximum Roof colour solar absortance of 0.40 (or less).
J1.5 Walls*	Envelope walls required to achieve a minimum of R1.4 (bridged).

J1.5 Glazing*	Glazing Performance values are required to be equal to or less than those specified below.				
	<u>Method 1 - Individual Orientations</u>	N	E	S	W
	Maximum Glazing U-value	3.27		7.40	
	Maximum SHGC	0.31		0.81	
	<u>Method 2 - All Orientations</u>				
	Maximum Glazing U-value	7.40			
	Maximum SHGC	0.31			
J1.6 Floors**	The ground floor required R2.2 (Bridged). Concrete slab on the ground will provide around R1.5 from the soil-resistant for this building. To achieve rest R0.7, a continuous layer of underfloor insulation (non-compressed or unbridged) will require.				

APPENDIX C – MUSIC REPORT, & CIVIL DRAWINGS

**STORMWATER CALCULATIONS
(SWC-A)**

Client:		Job Number:	2202040
Project:	PROPOSED OTR SERVICE STATION	Date:	11/02/2021
Project Location:	41-43 MONBULK ROAD, MT. EVELYN		

ATTACHMENTS:

SW1 – SW3 - Stormwater Detention Calculations, 'Critical Storm' Duration
SW4 -MUSIC report

DESIGN:

The allotment is approximately 4333m² of vacant land with the total pre-development discharge of 31.92L/s.

100% of surface stormwater runoff is to be detained within a 31,2kL bio-retention swale and 5000L underground tank. Stormwater is to be discharge to the existing street water table via twin submersible pumps set to a discharge rate of 7.0L/s. Roof water is to be discharged directly to the street water table.

Total Pre-development discharge: 31.92L/s Total Post-Development Discharge: 16.77L/s

Total Required Detention Volume: 33,776L

Total Proposed Detention Volume: 31200L bio-retention swale + 5000L (Underground tank) Total: 36,600L

In addition, a Spel Puraceptor "P.040" and a bio-retention swale has been proposed for water quality purposes.

Proposed Treatment:

100% Gross Pollutants
98% Total Suspended Solids
92% Total Phosphorus
73% Total Nitrogen

GENERAL NOTES:

1. These calculations are to be read in conjunction with the relevant associated Drawings, Footing Construction Report, Civil Drawings and / or details.
2. All work is to comply with relevant SAA Standards and Guides.

AS 2200: *Design charts for water supply and sewerage*
AS/NZS 3500: *Plumbing and drainage*
AS 3798: *Guidelines on earthworks for commercial and residential developments*
AS 4000:
 and *General conditions of contract*
AS 2124:
ARRB Special Report 35: Subsurface drainage of road structures
Australian Rainfall and Run-off Volumes 1 and 2: A guide to flood estimation
Austroads 2008 – Guide to pavement technology
NAASRA 1987 – Pavement design
Storm drainage design in small urban catchments: A handbook for Australian practice
Water Sensitive Urban Design (WSUD) Engineering Procedure: Stormwater
Water Services Association of Australia Code (WSAA).

STORMWATER CALCULATIONS - DETENTION VOLUMES

PRE-DEVELOPMENT:

1. CATCHMENT DETAILS

	Coefficient	Area (m ²)	Area (%)
Roof:	0.30	425	10
Paving:	0.30	0	0
Landscaping:	0.30	3908	90
Total Pre-Dev	0.30	4333	100

2. PRE-DEVELOPMENT SITE DISCHARGE

Design Storm Event	5 yr ARI		
Time of Concentration	5 min		
Run-off Coefficient (C)	0.30		
Rainfall Intensity	88.40	mm/hr	
Catchment Area	4333	m ²	
Allowable Discharge	31.92	L/sec	

POST-DEVELOPMENT:

Proposed Detained:	Coefficient	Area (m ²)	Area (%)
Roof:	0.90	476	11
Paving:	0.75	2620	60
Landscaping:	0.30	46	1
	0.77	3142	73

Proposed Undetained:	Coefficient	Area (m ²)	Area (%)
Roof:	0.90	0	0
Paving:	0.75	0	0
Landscaping:	0.30	1191	27
	0.30	1191	27
Total Post-Dev	0.64	4333	100

3. REQUIRED DETENTION STORAGE - 5YR ARI (MINOR STORM EVENT)

Design Storm Event		5 yr ARI	
Catchment Area to Detention	3142	m ²	
Run-off Coefficient (Detained Areas)	0.25		
Discharge	7.00	L/sec	

Time of Concentration (mins)	Rainfall Intensity (mm/hr)	Inflow (L/sec)	Outflow (L/sec)	Required Volume (L)
0	0	0	0	0
5	88.40	19.29	7.00	3687
10	67.30	14.68	7.00	4611
15	54.80	11.96	7.00	4461
20	46.50	10.15	7.00	3775
25	40.60	8.86	7.00	2788
30	36.20	7.90	7.00	1618
60	22.90	5.00	7.00	0
120	14.40	3.14	7.00	0
Critical Detention Volume (L)				4611

4. PROPOSED UNDETAINED DISCHARGE RATE - 5YR ARI

Design Storm Event	5 yr ARI	
Run-off Coefficient (C)	0.25	
Time of Concentration	10.00	Min
Rainfall Intensity	67.30	mm/hr
Catchment Area	1191	m ²
Undetained Discharge	5.57	L/sec

5. TOTAL SITE DISCHARGE RATE - 5YR ARI

Detained Discharge	7.00	L/sec
Undetained Discharge	5.57	L/sec
Total Development discharge	12.57	L/sec
Pre Development Flow	31.92	L/sec
Flow rate satisfies		

6. STORAGE SIZE AND PUMP DISCHARGE RATE - 5YR ARI

Proposed Number of Detention Storage	1	
Detention Storage Required (Total)	4611	L
Detention Storage Required (Per Tank)	4611	L
Pump discharge rate	7.00	L/sec

7. REQUIRED DETENTION STORAGE - 100YR ARI (MAJOR STORM EVENT)

Design Storm Event	100 yr ARI	
Catchment Area to Detention	3142	m ²
Run-off Coefficient (Detained Areas)	0.45	
Discharge	7.00	L/sec

Time of Concentration (mins)	Rainfall Intensity (mm/hr)	Inflow (L/sec)	Outflow (L/sec)	Required Volume (L)
0	0	0	0	0
5	156	61.27	7.00	16281
10	125	49.09	7.00	25256
15	102	40.06	7.00	29754
20	86	33.82	7.00	32179
25	74	29.22	7.00	33331
30	66	25.76	7.00	33776
60	40	15.51	7.00	30649
120	24	9.50	7.00	18033
Critical Detention Volume (L)				33776

8. PROPOSED UNDETAINED DISCHARGE RATE - 100YR ARI

Design Storm Event	100 yr ARI	
Run-off Coefficient (C)	0.45	
Time of Concentration	30.00	
Rainfall Intensity	65.60	mm/hr
Catchment Area	1191	m ²
Undetained Discharge	9.77	L/sec

9. TOTAL SITE DISCHARGE RATE - 100YR ARI

Detained Discharge	7.00	L/sec
Undetained Discharge	9.77	L/sec
Total Development discharge	16.77	L/sec
Pre Development Flow	31.92	L/sec
Flow rate satisfies		

10. STORAGE SIZE AND PUMP DISCHARGE RATE - 100YR ARI

Proposed Number of Detention Storage	1	
Detention Storage Required (Total)	33776	L
Detention Storage Required (Per Tank)	33776	L
Pump Discharge Rate	7.00	L/sec

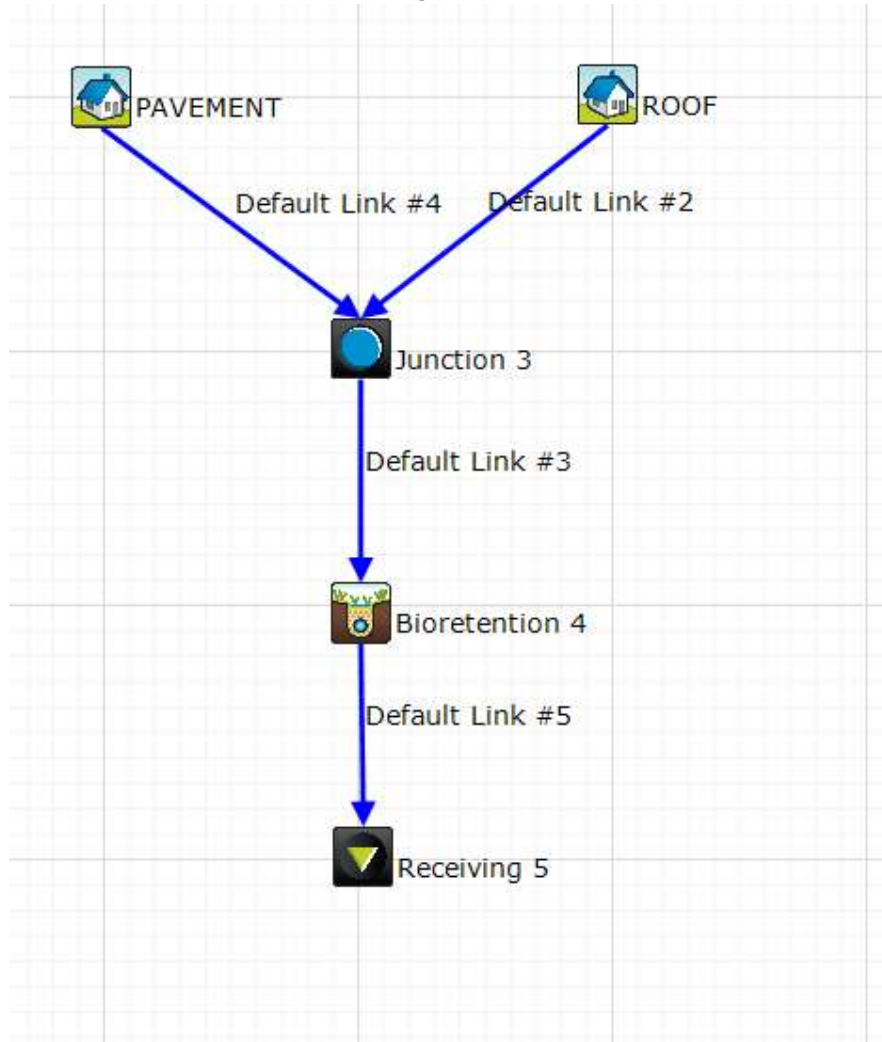
11. UNDERGROUND DETENTION TANK AND SWALE VOLUME

Total Swale volume	31200	L
Total underground tank	5000	L
Total Storage	36200	L
Total Storage Required	33776	L

(only tank volume not including oversized pipes ie. RI industries etc)

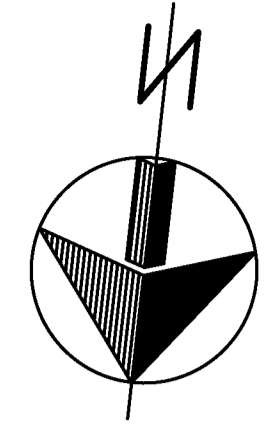
Therefore,
Total storage volume required has been achieved.

SWC-4



(4) Scenario 1 : Treatment Train Effectiveness : Receiving 5

	Sources	Residual Load	% Reduction
Flow (ML/yr)	1.32	1.295	1.886
Total Suspended Solids (kg/yr)	191.6	3.111	98.38
Total Phosphorus (kg/yr)	0.3284	0.02591	92.11
Total Nitrogen (kg/yr)	2.888	0.7772	73.08
Gross Pollutants (kg/yr)	52.07	0	100



LEGEND

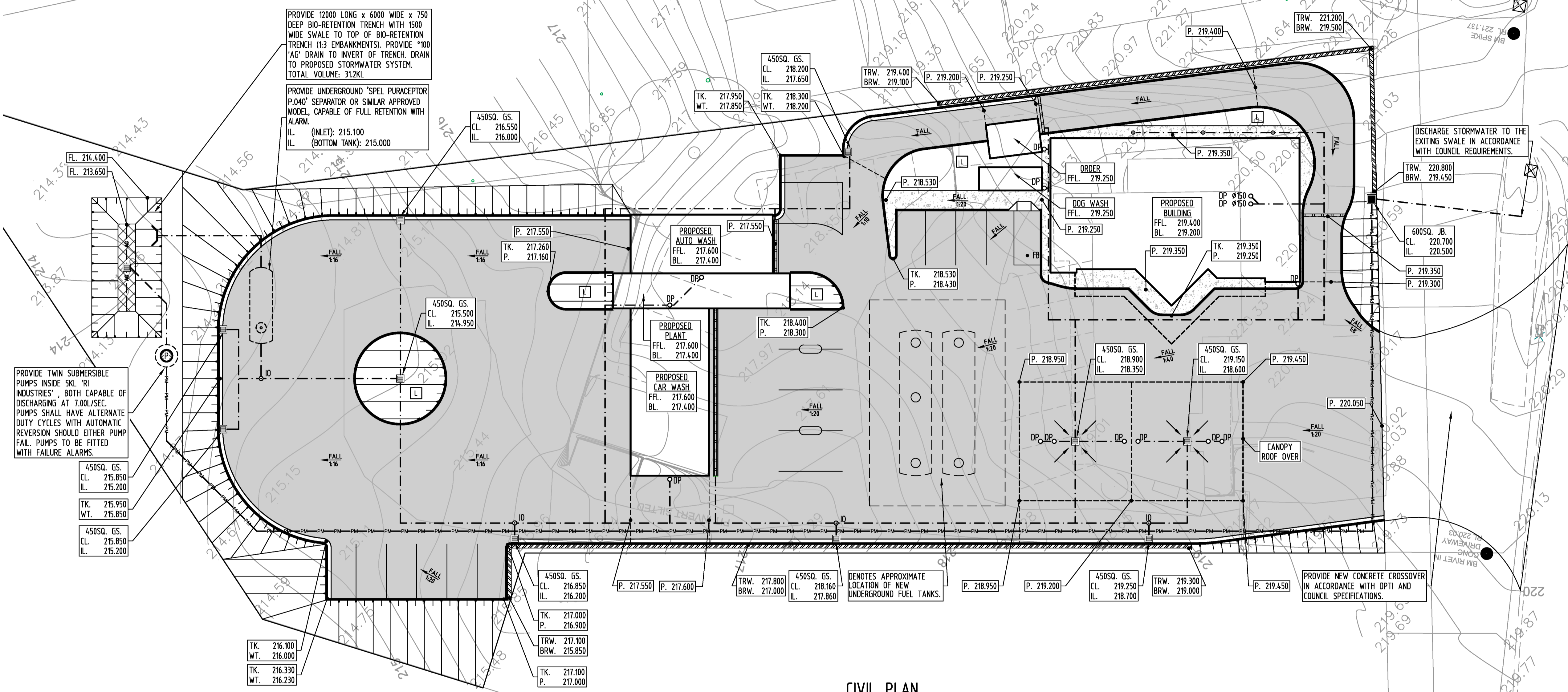
	CONCRETE PAVEMENT
	SELECTED PAVEMENT
	LANDSCAPING / GRASSED AREA
	EXISTING SPOT LEVEL
	EXISTING CONTOUR
	EMBANKMENT/BATTER (GRADE BANKS 1:2 MAX. U.N.O.)
	100 HIGH CONCRETE KERB & GUTTER
	100 HIGH CONCRETE KERB
	100 AG DRAIN WITH 16mm SCREENINGS
	PUMPING MAIN, AS PER SUMP PUMP SPEC.
	STORMWATER PIPE @ 0.5% MIN U.N.O.
	STORMWATER PIPE (SEALED) U.N.O.
	• FB FIXED BOLLARD
	○ DP SELECTED DOWNPIPE
	⊙ IO SURFACE INSPECTION OPENING
	⊙ (GIP) #90 GRATED INLET PIT
	• (GS) 450SQ. GRATED SUMP (UND)
	• (JB) 600SQ. JUNCTION BOX (UND)
	▽ KERB RAMP
	▨ SELECTED RETAINING WALL
	▨ 100 WIDE GRATED TRENCH DRAIN
	▨ 300 WIDE GRATED TRENCH DRAIN
	99.89 DESIGN LEVEL
	T.K. TOP OF KERB
	W.T. WATER TABLE
	P. PAVEMENT
	T.R.W. TOP OF RETAINING WALL
	B.R.W. BOTTOM OF RETAINING WALL
	C.L. COVER LEVEL
	I.L. INVERT LEVEL
	F.F.L. FINISHED FLOOR LEVEL
	B.L. BENCH LEVEL
	N.S. NATURAL SURFACE LEVEL

NOTE:

THIS IS A PLANNING DRAWING ONLY. FURTHER ENGINEERING DESIGN INCLUDING SPECIFICATIONS, SIZING AND STORMWATER INVERTS TO BE PROVIDED PRIOR TO BUILDING RULES ASSESSMENT AND CONSTRUCTION.

THE LOCATION OF EXISTING STRUCTURES ADJACENT TO THE AREA OF CONSTRUCTION ARE TO BE CHECKED ON SITE BY THE BUILDER / CONTRACTOR. SHOULD A RISK OF POTENTIALLY UNDERMINING AN EXISTING STRUCTURE EXIST, THIS OFFICE IS TO BE NOTIFIED IMMEDIATELY.

BEWARE OF UNDERGROUND SERVICES. THE LOCATION OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN. CONTRACTOR TO LOCATE AND CONFIRM DEPTH OF ALL EXISTING SERVICES PRIOR TO CONSTRUCTION.

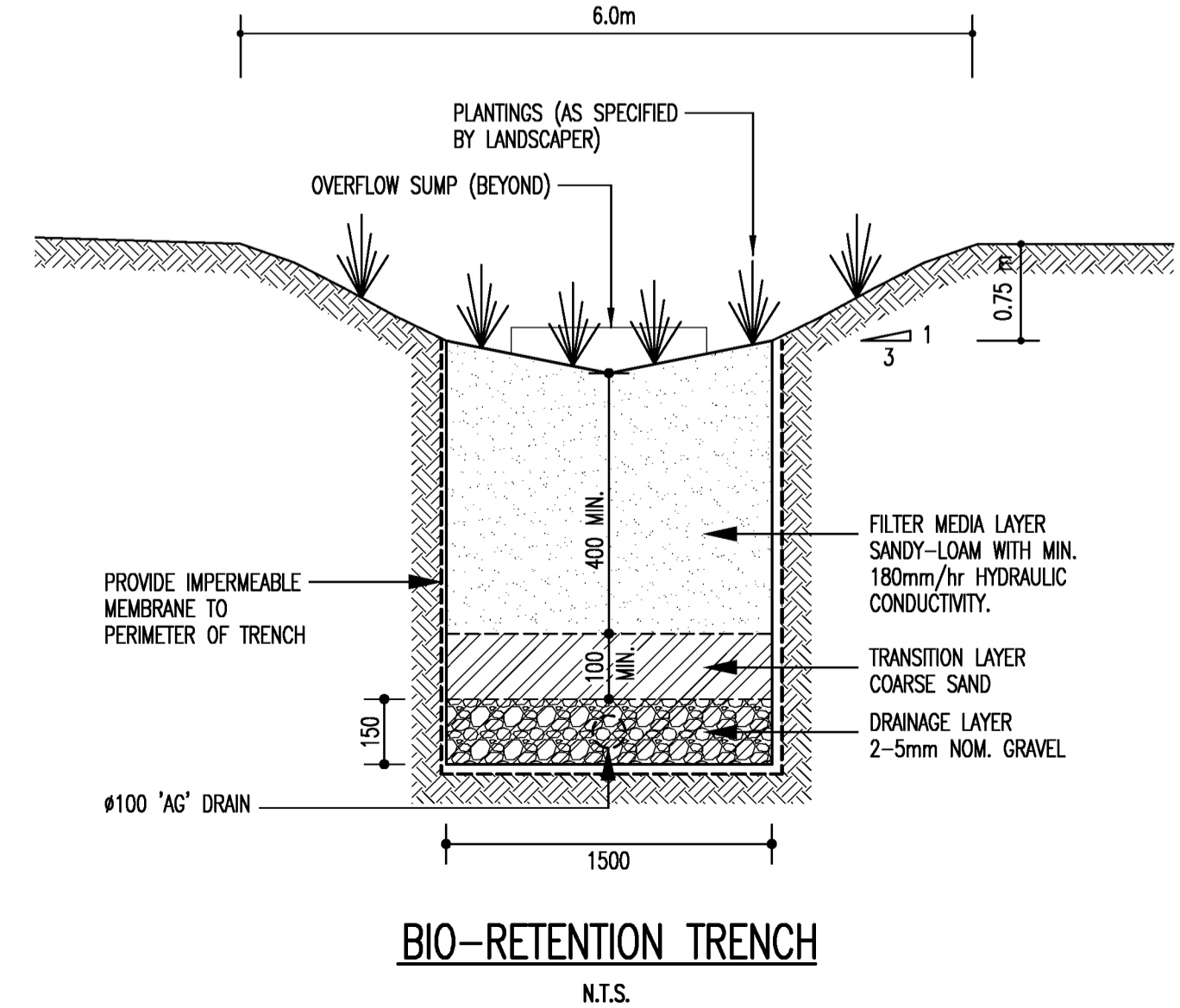


CIVIL PLAN
1:200

PB. FOR PLANNING APPROVAL	ERK	BF	11.02.22
PA. PRELIMINARY ISSUE	ERK	BF	10.02.22
No	REVISION	DRAWN/CHECKD	DATE

PROJECT
PROPOSED OTR SERVICE STATION
AT: 41 - 43 MONBULK ROAD
MT. EVELYN

DRAWN	ERK	DRAWING No.	2202040_C01/PB
DATE	FEB/22		
ENGINEER	ERK		
CHECKED	BF		

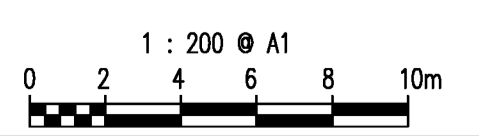


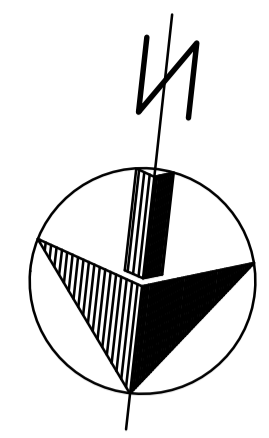
ALLOWABLE PLANTING SCHEDULE
BIO-RETENTION SYSTEMS

BELOW IS A LIST OF ALLOWABLE PLANT SPECIES TO BE PLANTED WITHIN BIO-RETENTION SYSTEMS IN LINE WITH BEST PRACTICE. IT IS RECOMMENDED THAT AT LEAST 5 DIFFERENT VARIETIES ARE PLANTED WITHIN ANY BIO-RETENTION BED TO PROVIDE DIVERSE GROWING CHARACTERISTICS. PLANTING SHOULD BE UNDERTAKEN AT 6 TO 10 PLANTS PER SQUARE METER.

ALLOWABLE SPECIES:

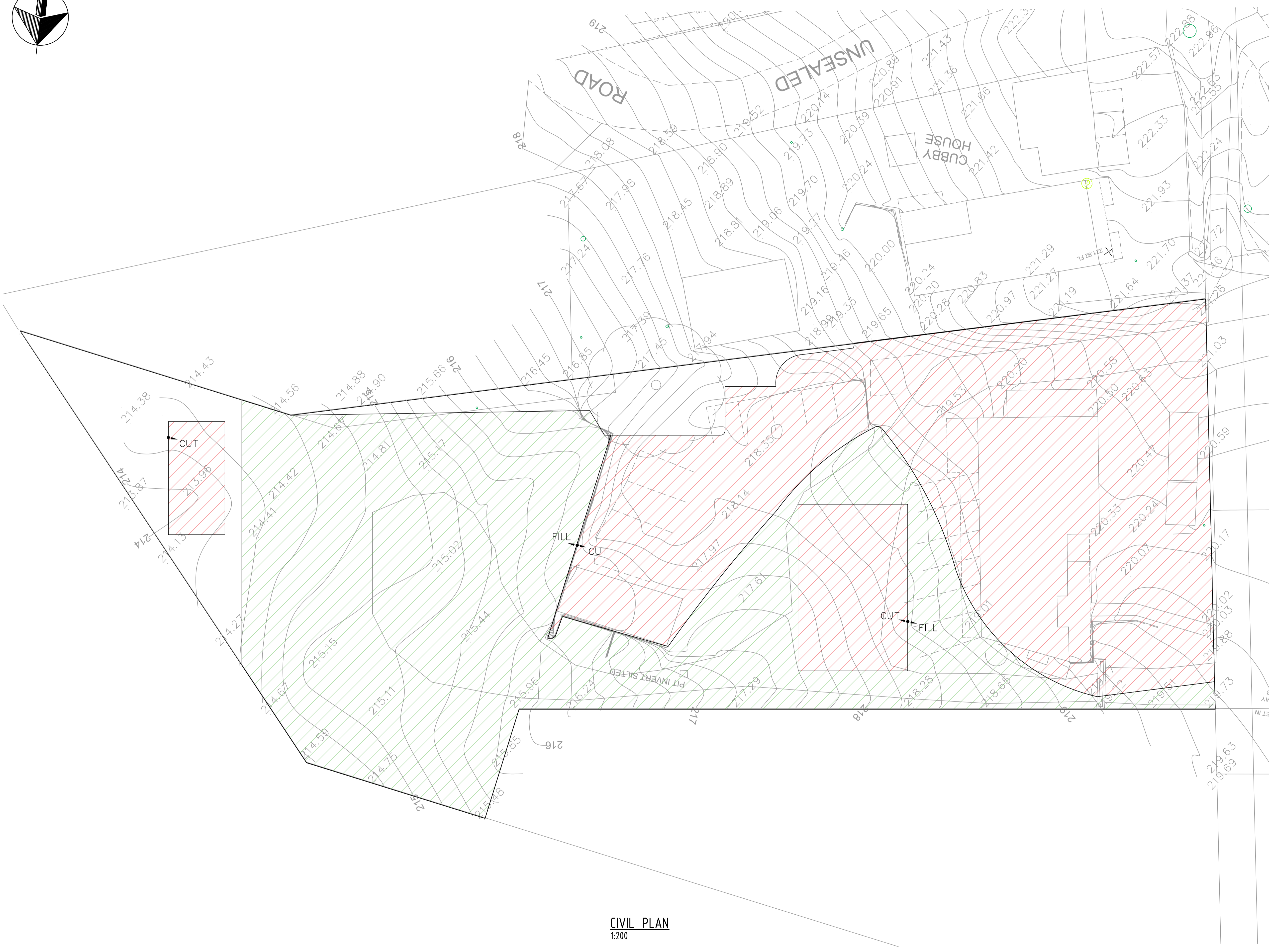
- CAREX APPRESSA
- CYPERUS VAGINATUS
- JUNCUS KRAUSII
- CYPERUS GYMNOCALLOS
- DIANELLA REVOLUTA
- JUNCUS PALLIDUS
- JUNCUS SUBSECUNDUS
- GHANIA FILUM
- BAUMEA JUNCEA





LEGEND

	PROPOSED FILL AREA
	PROPOSED CUT AREA



NOTE:

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PB, FOR PLANNING APPROVAL	ERK	BF	11.02.22	
PA, PRELIMINARY ISSUE	ERK	BF	10.02.22	
No	REVISION	DRAWN	CHEK'D	DATE

PROJECT
PROPOSED OTR SERVICE STATION
AT: 41 - 43 MONBULK ROAD
MT. EVELYN
FOR: PC INFRASTRUCTURE

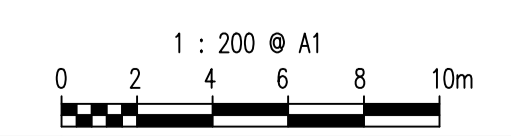
DRAWING TITLE
CUT AND FILL PLAN

- ◆ Civil
 - ◆ Geotechnical
 - ◆ Environmental
 - ◆ Structural
 - ◆ Mechanical
 - ◆ Electrical
 - ◆ Fire
 - ◆ Hydraulics
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ENGINEER	ERK	
CHECKED	BF	

CIVIL PLAN
 1:200



APPENDIX D – BUILDER’S GUIDE FOR STORMWATER MANAGEMENT

KEEPING OUR STORMWATER CLEAN



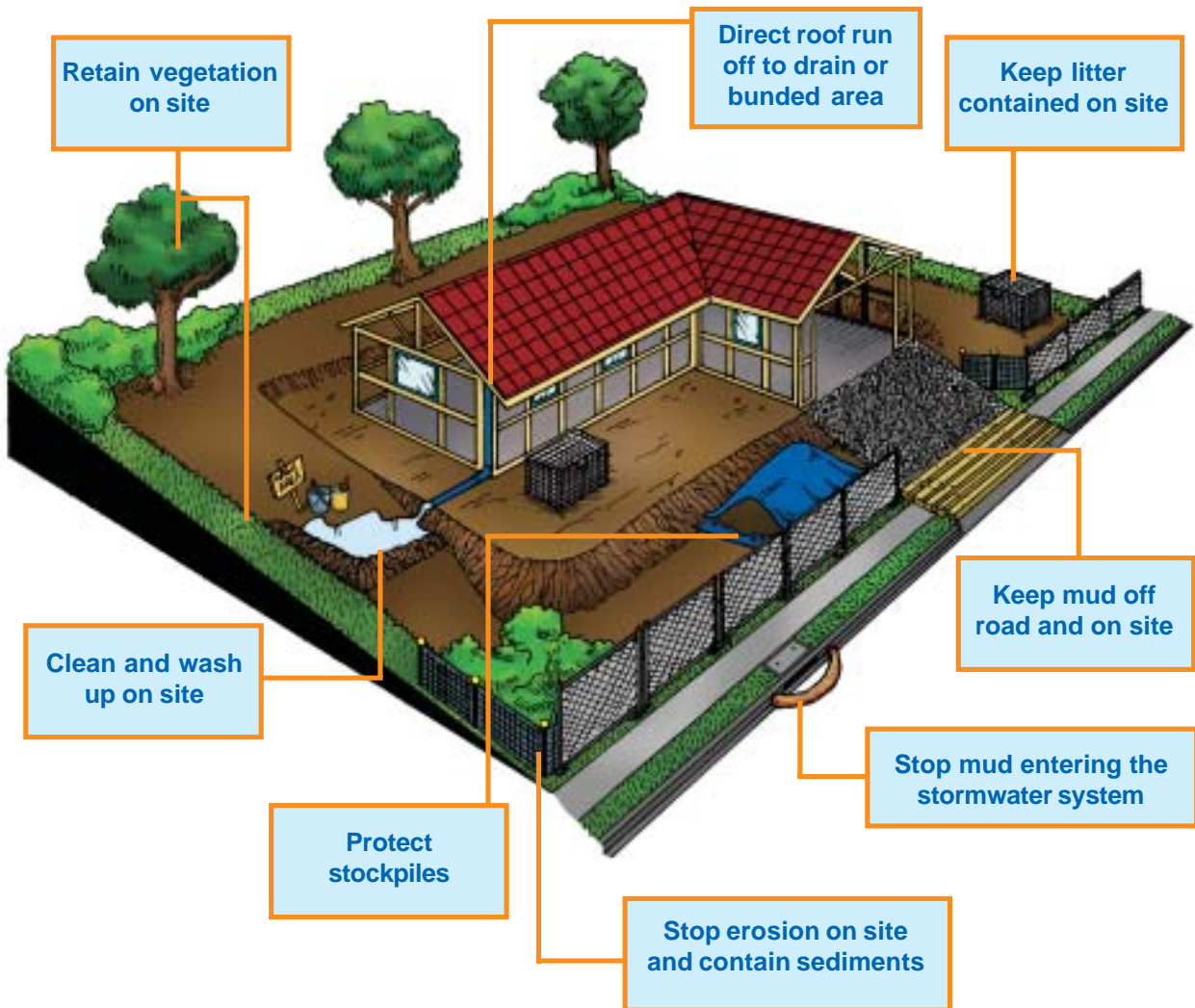
A BUILDER'S GUIDE

Information to help you control sediment and litter from your building site and comply with Council and State regulations

ACKNOWLEDGEMENTS

This revised booklet was originally produced with the support of the Victorian EPA, Melbourne Water, Cities of Kingston, Casey, Hume, Melbourne, Moreland and Moonee Valley.

Check Council requirements and plan before you start work on site



Supplier information for sediment & erosion control on page 3

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Protect stockpiles.

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SITE RULE 4

Keep mud off road and on site.

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SITE RULE 5

Keep litter contained on site.

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SITE RULE 6

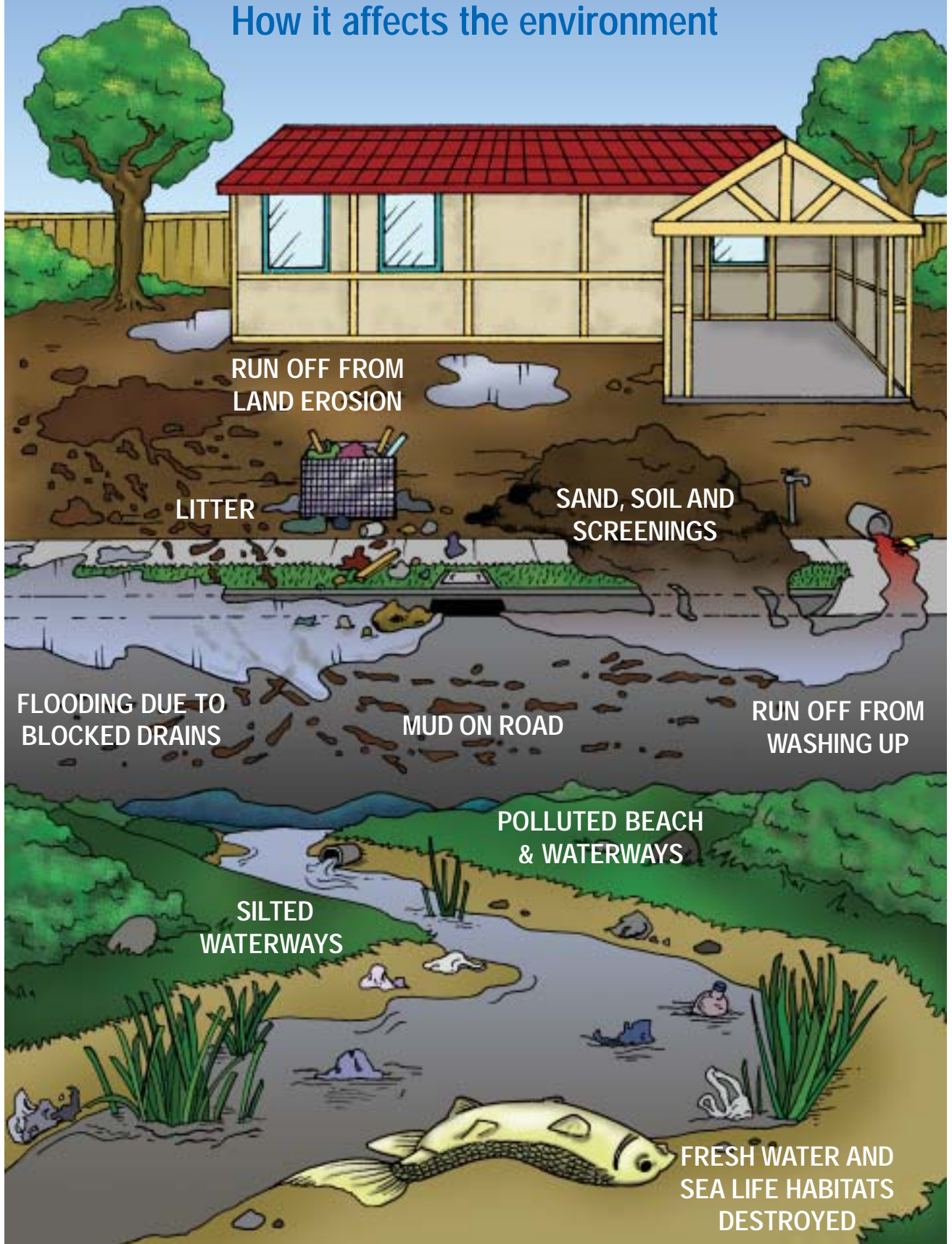
Clean and wash up on site.

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Use the Site Management Plan..... Page 23

PROBLEMS ON OUR BUILDING SITES

How it affects the environment



WHY DO I NEED TO PROTECT OUR ENVIRONMENT?

It's the law!

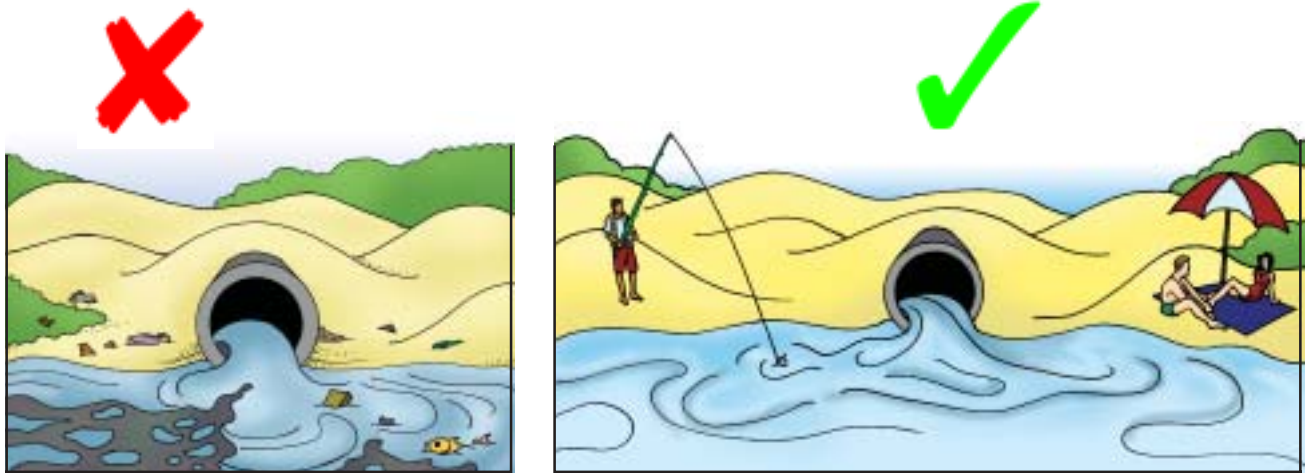
Sediment from building sites can pollute stormwater. There are State and local council laws which make this an offence.

The developer or person managing the building site has the responsibility of making sure that the stormwater is not polluted.

Penalties apply for polluting stormwater.



To enjoy using our environment - now and in the future



Stormwater is not treated and carries pollution to local waterways and bays. Pollution in our stormwater can lead to short and long term damage to our environment.

To benefit builders

The site looks good (which is good for attracting new customers) **and you'll be helping to protect our environment.**

The site has fewer hazards. A well organised site has less loose material lying around causing a hazard. This reduces health and safety issues on a building site.

Downtime is reduced. A well managed and organised site is more efficient. This saves time and money.



USEFUL SUPPLIER INFORMATION



This information is provided for helpful contact details only. The companies are not listed in any particular order and are not necessarily recommended over others that may provide similar services.

SEDIMENT CONTROL

Approximate Price:
Geofabric fencing
100 m roll from \$55 to \$130
stakes \$12 for 10
Filter socks unfilled: 2 m \$4.50 filled \$8 - \$25

Geofabrics Australasia
03 8586 9111 www.geofabrics.com.au
Products: silt fencing

Southern Geosynthetics Supplies
0419 478 238 www.geosynthetics.com.au
Products: Silt fences, Silt Sausages

Statewide River & Stream Management
03 9702 9757 www.stateplanthire.com
Products: silt fence, stakes, silt logs
Installation service and site kits
Approx cost: \$220 for 20 m frontage installed, \$88 self installation

Treemax
03 98787 4111 www.treemax.com.au
Products: filter fence, silt worm, silt sock

Zerosion
0408 351 566 www.zerosion.com.au
Products: silt fence installation
Approx cost: \$215 for up to 20 m frontage

STABILISED DRIVEWAYS

For aggregate look under sand, soil and gravel in the Yellow Pages
Recycled aggregate available from major suppliers.

TEMPORARY DOWNPIPE

Available from major plumbing suppliers
Art Plastic 25 m rolls of temporary plastic downpipe
approx: \$25

Temporary Flexible Downpipe
03 9786 3711 www.tfd.com.au
\$135 per kit - does 2-3 16 sq houses

OTHER EQUIPMENT

Coates Shorco Sykes 131994
Supply : silt fence \$125 100 m
Hire: Rumble Grids \$180 p/week for 2 panels
Hire: Environmental settlement tanks 4 m tank \$542 p/week

PORTABLE TOILETS

See Toilets – Portable in the Yellow Pages

TEMPORARY FENCING

See Fencing Contractors in the Yellow Pages
Australian Temporary Fencing 131716
Victorian Temporary Fencing 03 9484 4000

BRICK AND TILE CUTTING

Slop Mop Recycling Products
www.slopmop.com.au 0418 825 301 **Brikasaurus**:
capture and recycle waste water for brick and tile cutting operations.
Slopmop: water delivery & waste clean up system for use behind concrete saws and grinders.

Useful information is available from:

Master Builders Green Living Builders
www.mbav.com.au
HIA GreenSmart Program
www.greensmart.com.au
Keep Australia Beautiful Victoria – CleanSites Program
<http://www.kabv.org.au/>
Victorian Litter Action Alliance
<http://www.litter.vic.gov.au>
Environment Protection Agency Victoria
www.epa.vic.gov.au
See Publication 981 – Reducing stormwater pollution from construction sites
Melbourne Water
www.melbournewater.com.au



SITE RULE 1

Check Council requirements and plan before you start work on site.



Questions to ask BEFORE you start

Planning, BEFORE you start a job, will make a big difference to how well you manage your site. Check Council requirements for site management. Complete a site management plan (one can be found at the back of this booklet).

Where is the lowest point on the site?

Water always runs to the lowest point. It is important to know where this point is when planning your site. It will affect where you put your crossover, stockpile materials and sediment fence. Leave a buffer of vegetation along the lowest boundary.

Where will I put the crossover?

Try to put the crossover as far away from the lowest point as possible. As water runs to the lowest point it is more likely to be wet and muddy. [See Page 16.]

Where will I keep my stockpile?

Stockpiles are best kept on site, as far away from the lowest point as practical. [See Page 12.]

Where will I build my sediment control fence?

Sediment control fences should be built on the lowest side/s of a site prior to erecting a temporary fence. A flat site may not need sediment control fences. [See Page 9.] These are a primary management measure to keep sediment on site.

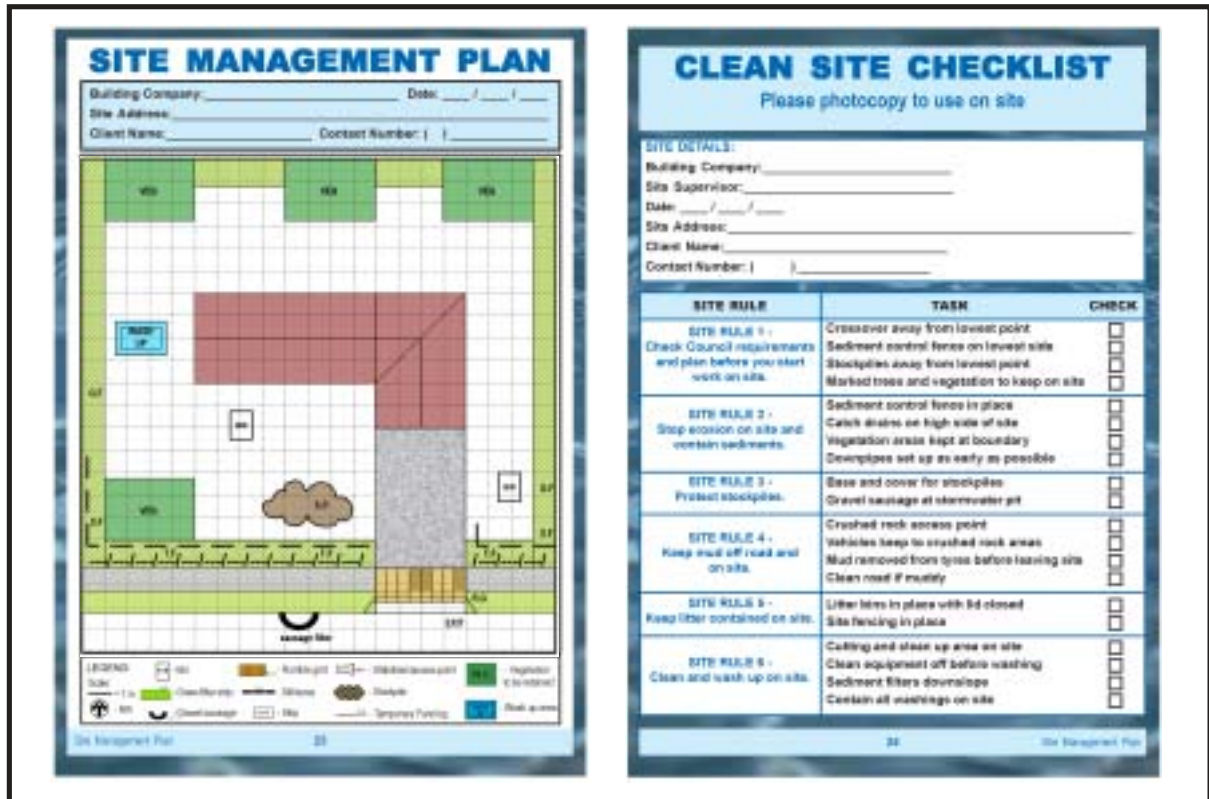
Which trees and vegetation will be kept on site?

Rope or fence off the areas you are going to keep. Keeping vegetation such as grassed areas will help to prevent damage to the surface of the site later on and may trap sediment. [See Page 7.]

Why fence my site?

Many councils require sites to be fenced. Site fencing helps to keep building activities to the site, helps stop movement of litter, and helps to keep a site safe by stopping members of the public wandering on site. [See Page 20.]

SITE READY TO START JOB



For copy of plan & checklist photocopy pages 23 & 24.





SITE RULE 2

Stop erosion and keep sediment on site

Why is erosion a problem?

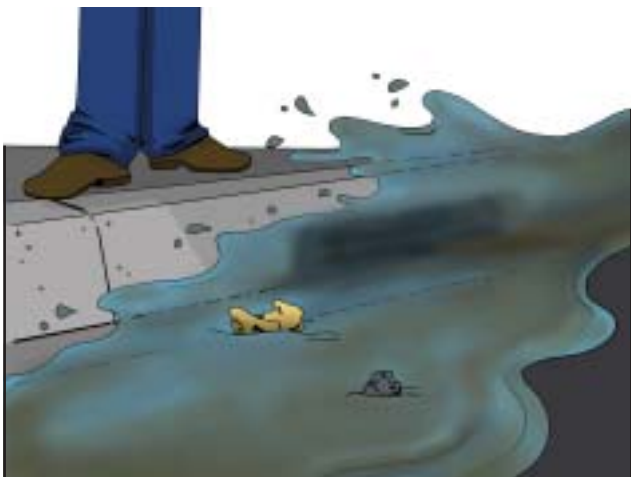
Sediment escaping from building sites can:



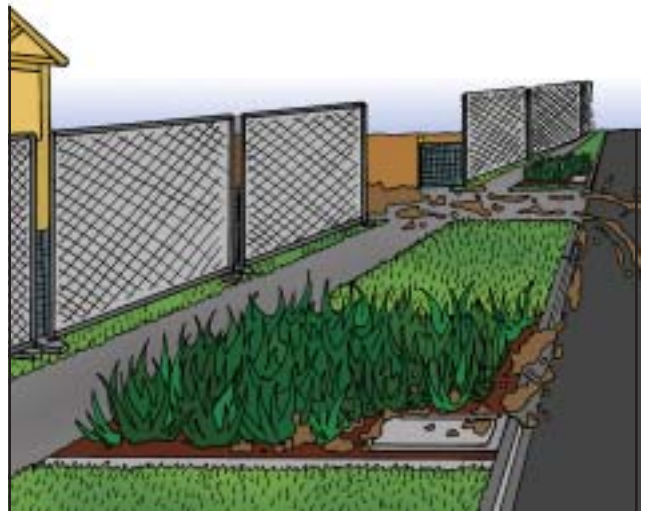
1. Make roads and footpaths slippery for vehicles and pedestrians, increasing public liability risk.



2. Enter the stormwater system and make stream and river water cloudy which can kill plants and animals in creeks and the bay.



3. Cause blockages to the stormwater system including the side entry pit and pipes, increasing the chance of flooding and requiring regular cleaning.

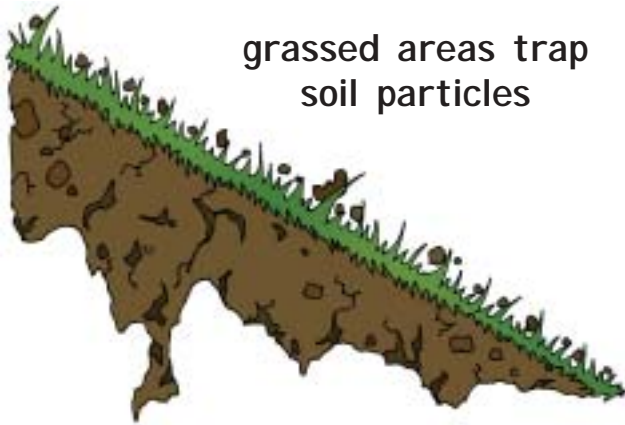


4. Overload and clog local stormwater filtration systems such as rain gardens and swales.

METHODS TO CONTROL EROSION

Control Method 1 - Keep areas of vegetation as a buffer strip at the site boundary.

To prevent sediment leaving site use existing grassed areas and a sediment control fence.

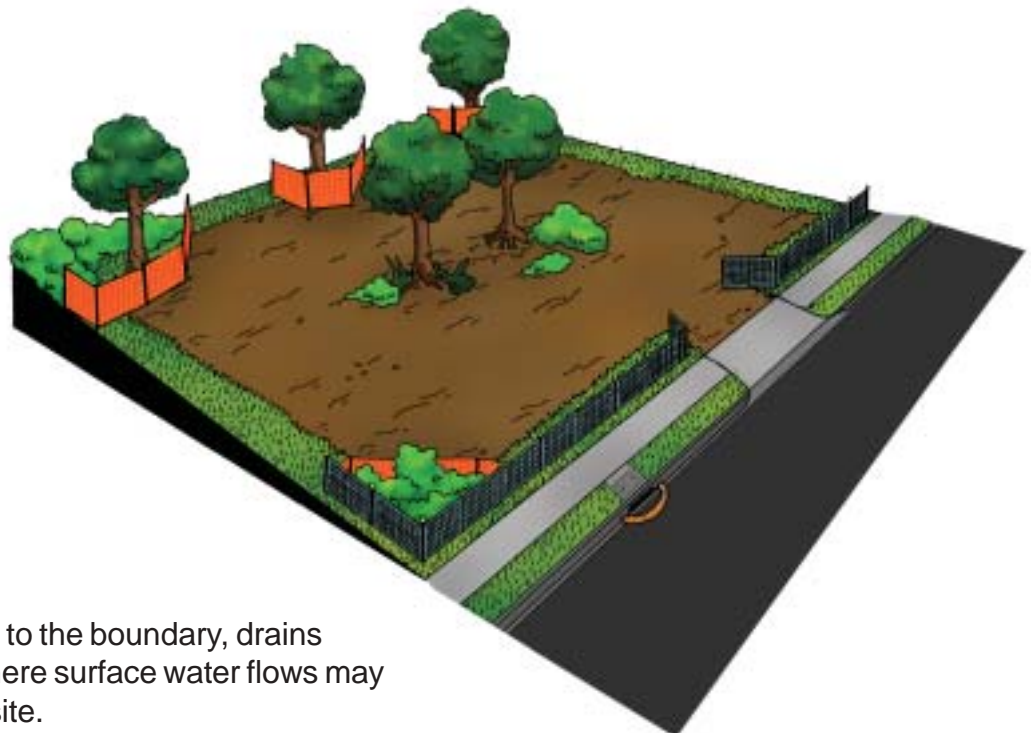


grassed areas trap soil particles

Vegetation helps protect the soil from the effects of rain and surface water by:

- Slowing the flow of water across the ground. Fast water is able to carry more soil particles off site
- Holding the soil together and minimising erosion
- Acting as a filter to trap soil particles.

Decide what areas of vegetation you are going to keep on site. Mark and protect trees, shrubs and grassed areas that you are keeping. Then apply for the relevant permits to remove vegetation.



Protect areas close to the boundary, drains and gutters, and where surface water flows may carry sediment off site.

Control Method 2 - Early downpipe connection



Connecting downpipes to the stormwater or onsite detention system has a number of benefits:

- Less drainage problems on site
- Less mud on site after rain
- A safer site
- Reduce damage to building foundations
- Less downtime after storms
- Projects get finished sooner.

Aim to have the downpipes connected as soon as the roof is installed (temporary or permanent).

Control Method 3 - Pipe roof water onto a grassed or banded area.

If you cannot connect to the stormwater system, pipe the water away from the building onto a vegetated area where there is good ground cover or to a banded area.

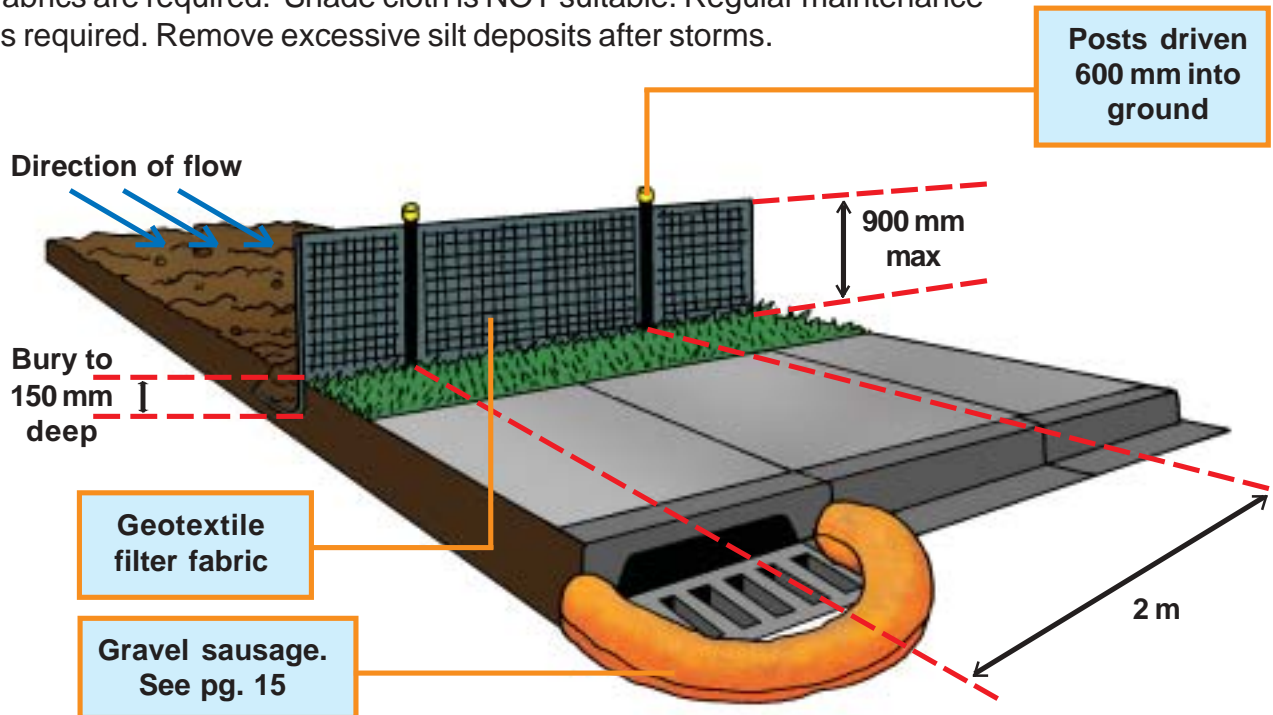


This lets water seep into the ground with less damage to the surface of the soil.

METHODS TO CONTAIN SEDIMENT ON SITE

Method 1 - Sediment Control Fences

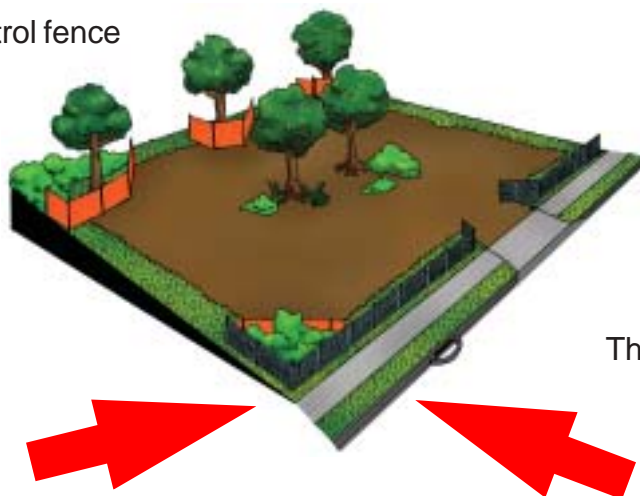
Sediment control fences stop sediment from being washed off site. The fence allows muddy water to pond behind it and for sediment to settle as the water slowly filters through. Geotextile fabrics are required. Shade cloth is NOT suitable. Regular maintenance is required. Remove excessive silt deposits after storms.



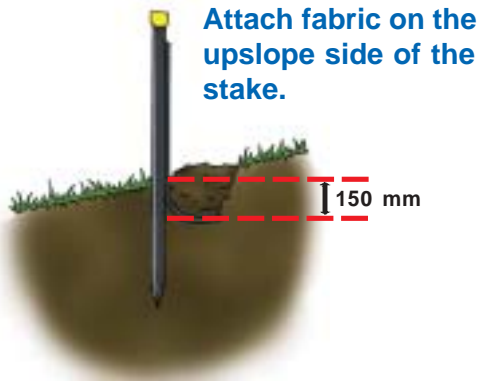
TO BUILD A SEDIMENT CONTROL FENCE:

a) Identify the low point of site.

Place sediment control fence along boundaries where the low point is.



This is the point where the land will allow water to carry sediment off the building site.



b) Dig a trench along the fence line before temporary site fencing is installed.

The trench will be used to bury the base of the sediment control fabric.

The trench should be 150 mm deep.



c) Put in 1500 mm wooden posts (38 mm) or star pickets.

Put 1.5 m star pickets at a maximum of 2 m apart and 600 mm deep.

Put 1.5 m wooden posts (38 mm) at 1.2 m intervals (max 2 m) and 600 mm deep.



d) Fix geotextile to posts

Geotextile material allows water to pass through but traps sediments.

Use cable ties or staples to attach the geotextile to the upslope side of the fence posts.

Only join fabric at the pickets with a 150 mm overlap (wrap around post).



e) Spread volume of water.

Put a star picket 1.5 m upslope of the others every 20 m (if the fence is longer than 20 m). This spreads the volume of water that flows through each section of fence.

Turn ends up slope to allow for ponding.

Method 2 - Control dust and slurry from cutting

A large amount of dust can be made from cutting materials such as concrete, bricks and tiles. When mixed with water this material can be turned into slurry and washed into waterways. Cement changes the acidity of water which may then kill water plants and animals. The following methods will help keep this waste on site and out of the waterways:



a) Cut materials on site

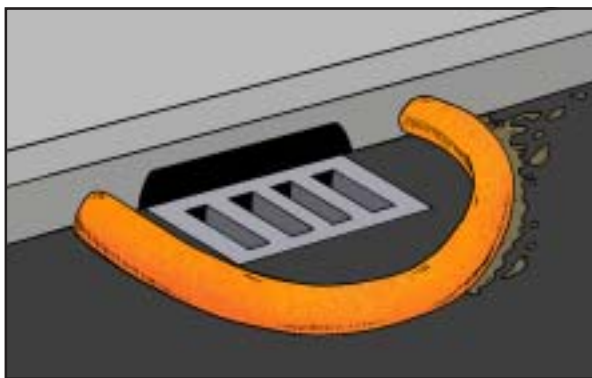
Choose a set area to do all your cutting. This area should be on the building site and away from all stormwater drains.

Equipment is available that captures water used in the cutting process (see page 3).



b) Put sediment control filters downslope

Sediment logs should be placed downslope to catch cutting slurry. A back-up sediment fence may also be used.



c) Use a gravel sausage or sediment log

When cutting must take place near stormwater drains, use gravel sausages or sediment logs.

Alternatively, you can buy sleeves from geotextile companies and fill these with sand.

Always clean up and correctly dispose of captured sediment.



d) Clean up when finished

When you have finished cutting, clean up your equipment in the cutting area.

Use a broom to clean up and get rid of the slurry where it can't get into the stormwater system. Dispose of in waste container

DO NOT HOSE THE SLURRY AWAY



SITE RULE 3

Contain stockpiles on site

Why are sand, soil and screenings a problem?

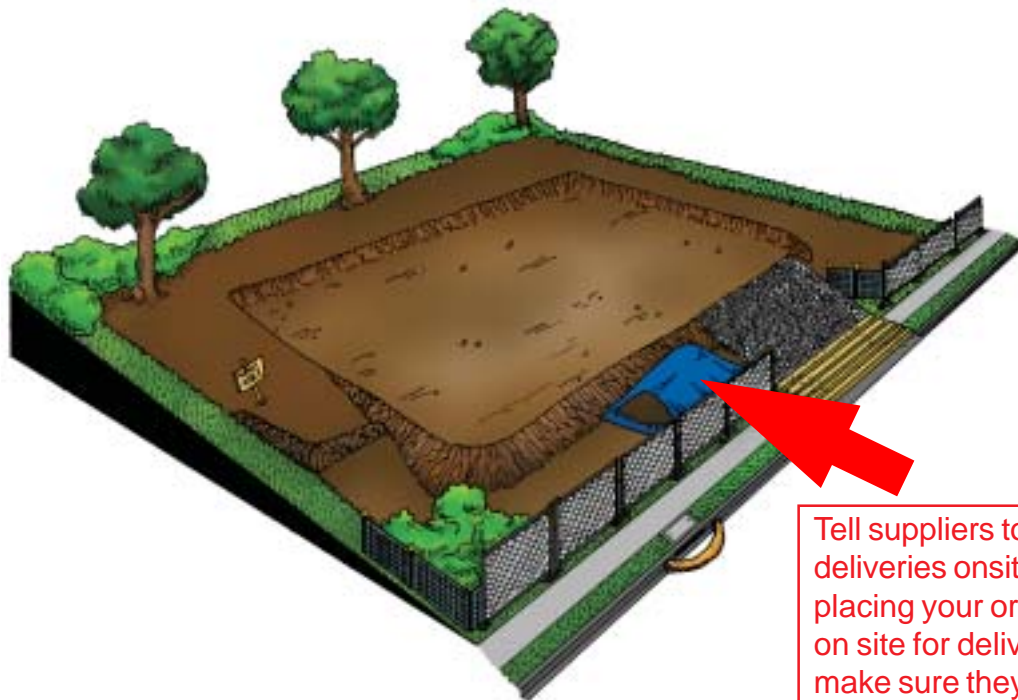


Sand, soil, screenings, dust or sludge from concrete and brick cutting, and other materials escaping from building sites can cause many problems.

Putting stockpiles such as sand, gravel, topsoil and mulch across footpaths and roads will cause a hazard to both vehicles and pedestrians.

Sediment can smother stormwater filtering systems including swales and raingardens.

Stockpiles should be stored on site, not on footpaths or roads.

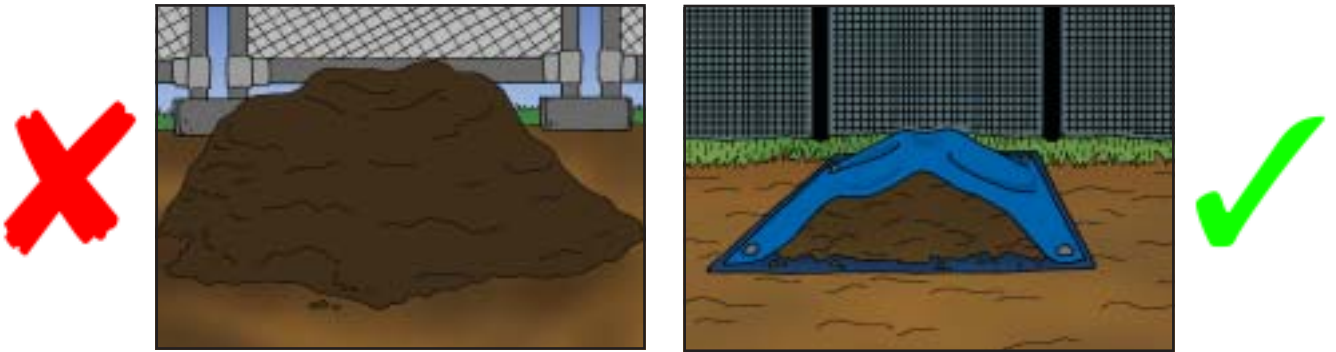


Tell suppliers to place deliveries onsite when placing your order or be on site for deliveries to make sure they are put in the right place.

Stockpiles not stored properly can get washed or blown away and pollute the stormwater.

This is particularly true of stockpiles that:

- Are high
- Have steep sides
- Are put on hard surfaces where they can be blown or washed away.



KEEPING STOCKPILES ON SITE

Place the stockpile in a designated area on site, and upslope of the sediment control fence.

If exposed for some time, stockpiles should be covered with a tarp.



In some cases it may be impossible to store stockpiles on site. In this case, a different set of control methods will be used.

WHEN UNABLE TO STORE STOCKPILES ON SITE

You may have to store a stockpile off site (although never on the footpath, gutter or road). Contact the council to make sure that you have the appropriate council permits.

The council will tell you how stockpiles stored off site are to be managed. Materials may be stored on tarps or on pallets. Containers such as rubbish skips with opening sides that you can get into easily are a good idea.



Material must not get into drains, gutters or the stormwater system

The following control methods can be used when storing materials or working off site.

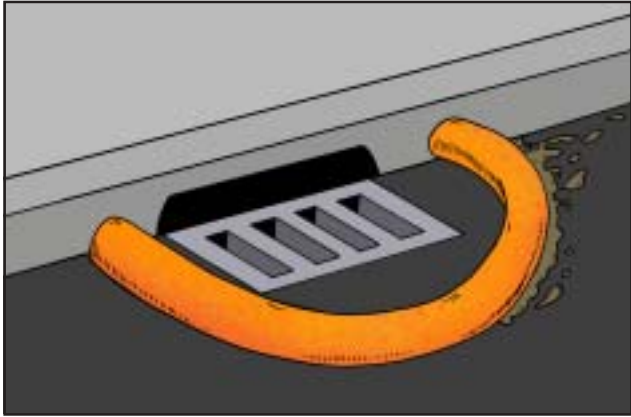
Method 1 - Cover Stockpile

- a) Place a tarp, plastic or banded pallet under the area where the stockpile will be placed.
- b) Place a secured covering over the stockpile.
- c) Then place sediment control logs around the downslope base of the stockpile.



Method 2 - Protect Downstream Stormwater Pit with a Gravel Sausage or Sediment Log

A gravel sausage or sediment log is a temporary collection device that can be used when stockpiles are stored or cutting is done off site. It is also a useful precautionary measure at all sites.

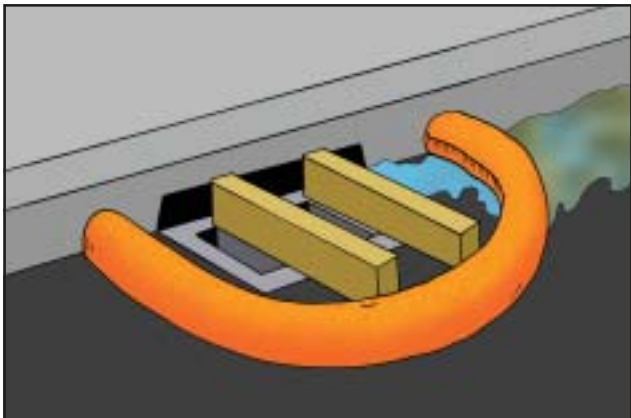


TO BUILD A GRAVEL SAUSAGE:

a) Make the sausage sleeve

A gravel sausage is made from a geotextile sleeve filled with 25 - 50 mm gravel.

The gravel sausage should be 150 mm high.



b) Put the gravel sausage across the opening of the inlet pit

Make sure that the sausage is tight with the kerbing on the upslope side of the inlet pit and extends beyond the grate.

There should be a 100 mm gap between the front of the pit and sausage. Use wooden blocks to keep the 100 mm gap.



c) Clean out gravel sausage regularly

When soil and sand builds up around the gravel sausage, this should be collected and disposed of on site.

Regular maintenance is required.

DO NOT HOSE SEDIMENT DOWN THE GUTTER



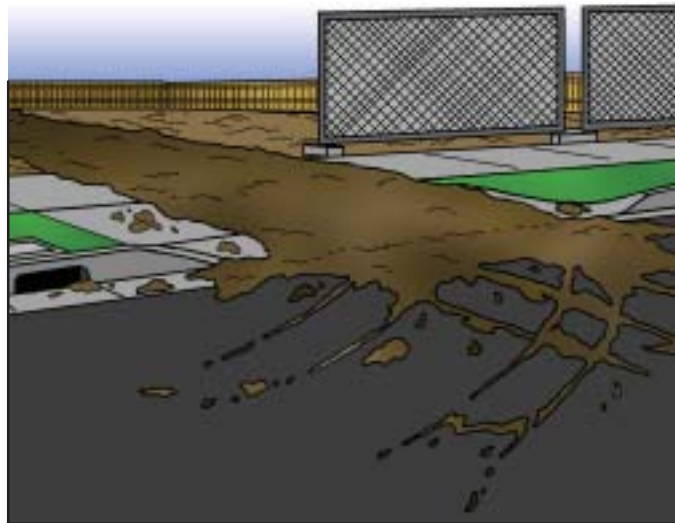
SITE RULE 4

Keep mud off road and on site

Why is mud a problem?

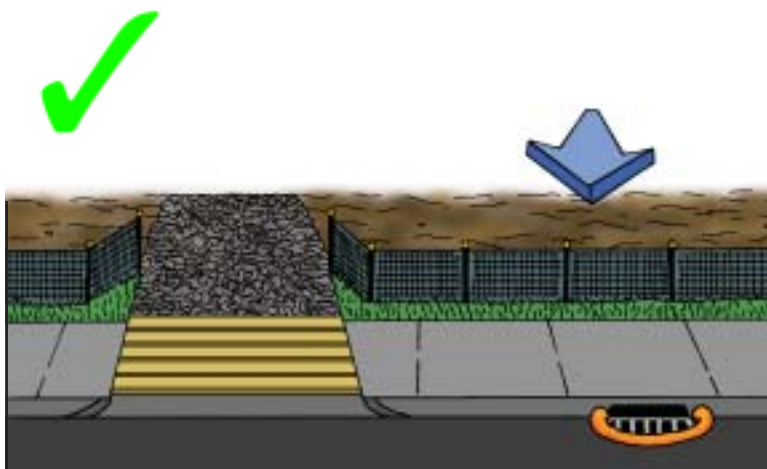
Two things happen when vehicles go on and off the site:

1. The surface area of the site is damaged making it dangerous.
2. Mud is carried back onto the roads and footpaths, and washes into the stormwater system.



METHODS TO CONTROL MUD

The following simple methods will help you to protect the surface of your site and help stop vehicles from dropping mud on the road from their wheels. The best way to do this is to put crushed rock on the crossover or access point of your building site.



Putting crushed rock on the access point of your site is a good way to prevent damage and provide a dry access point for vehicles. Where possible park vehicles off site.

Make sure gravel does not collect in the gutter or on the footpath.

Control Method 1: Build a crushed rock crossover



Remove a 3m or greater strip of soil from road (or where concrete crossover ends) to nearest building point or a minimum of 5 m.

Use road base or 40 mm aggregate or crushed rock to a depth of 200 mm.

Restrict vehicle access to this point.

Control Method 2: Keep to crushed rock path



Only drive where you need to. Keep to a set path (preferably on crushed rock).

Control Method 3: Remove mud from tyres



Use a shovel to remove mud from truck tyres before leaving site.

Control Method 4: Clean road



If mud goes on road, remove as much as possible and put it back on site.

Use a broom or a shovel.
DO NOT USE A HOSE.



SITE RULE 5

Keep litter contained on site

Why is litter a problem?

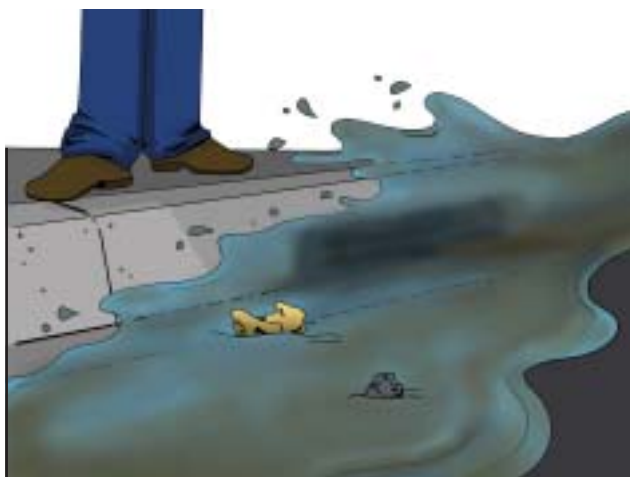


Many building sites have both building rubble and other rubbish spread across them.



This causes many problems:

You may now have an **UNSAFE WORK ENVIRONMENT!**
This could increase the chance of legal and public liability problems



Litter blowing off site can block stormwater drains.



Litter may spoil local creeks and eventually find its way to the coast.

METHODS TO CONTROL LITTER

The following simple methods will help you to stop litter leaving your site or being a hazard on site.

Control Method 1: Litter bins or covered skips

A mesh bin with a closeable lid is suitable for larger items like cardboard boxes, plastic wrapping and polystyrene.

Mesh to be 50 mm or smaller



A smaller bin is okay for smaller rubbish like paper, food wrapping and drink containers that may be blown off site. Council bins may be restricted from building sites.



Empty the litter bin regularly. Don't allow overflow. Where possible, collect the materials from the litter bin for recycling and /or keep different materials in separate bins.

CONSIDER A RECYCLING BIN

Control Method 2: Site fencing

Site fencing will help to keep litter from being carried off site by wind or water and provide security.

A FENCE DOES NOT NEGATE THE NEED FOR A BIN.



Check council requirements for temporary fencing and avoid trip hazards on footpath.



Remember to install a sediment control fence prior to installation of the temporary fence.



SITE RULE 6

Clean and wash up on site

Why is washing up a problem?



When cleaning up after painting, plastering or concreting it's most important to keep the wash water out of the stormwater system.

Problems to the environment include:

1. Oil based paints form a thin film over the surface of the water. This starves water plants and animals of oxygen
2. Paints and petrol chemicals can contain toxic compounds
3. Concrete changes the acidity of waterways which can kill water plants and animals. Concrete washings can harden and block drains
4. Roads around a building site can become dirty, slippery and dangerous.



METHODS TO CONTROL WASHING UP

The following simple methods will help you to stop the contamination of stormwater from paint, plaster or concrete washings.



Control Method 1: Have a set washing up area

Choose a set area to do all your washing up. This area should be on the building site and away from all stormwater drains. It should be bunded and contain wash out barrels.

You could use the same area you have chosen for tile and brick cutting.

Contain chemicals and slurry onsite.

Put sediment control fences downslope.

NOTE: SEDIMENT CONTROL FENCES WILL NOT STOP CHEMICALS

Control Method 2: Get rid of concrete slurry on site

Collect wash water from concrete mixers and pumps in a wheel barrow and get rid of it in your wash area. You can also safely get rid of

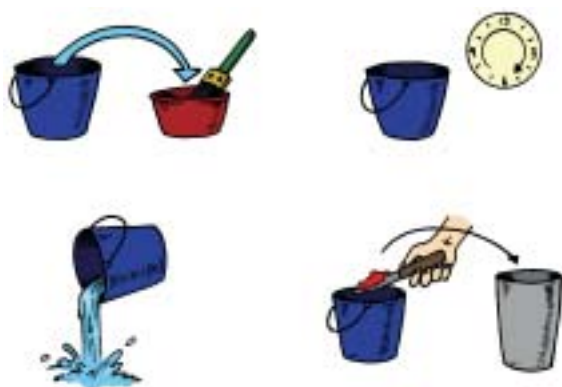
concrete slurry by tipping small amounts in a ditch lined with plastic or geotextile liners. When the water evaporates or soaks into the surface the solids can then be put into a skip bin or recycled in construction or as road base.



Control Method 3: Clean equipment off before washing

Brush dirt and mud off equipment before you wash it. Spin rollers and brushes to remove paint before you wash them in a wash out bin.

You will then need less water to clean this equipment.



Control Method 4: Clean painting tools carefully

Use one container to wash the brush and another to rinse it. Let the first container stand overnight to let solids settle. Then pour out the water on to the ground if it is not too dirty and put settled solids in a bin.

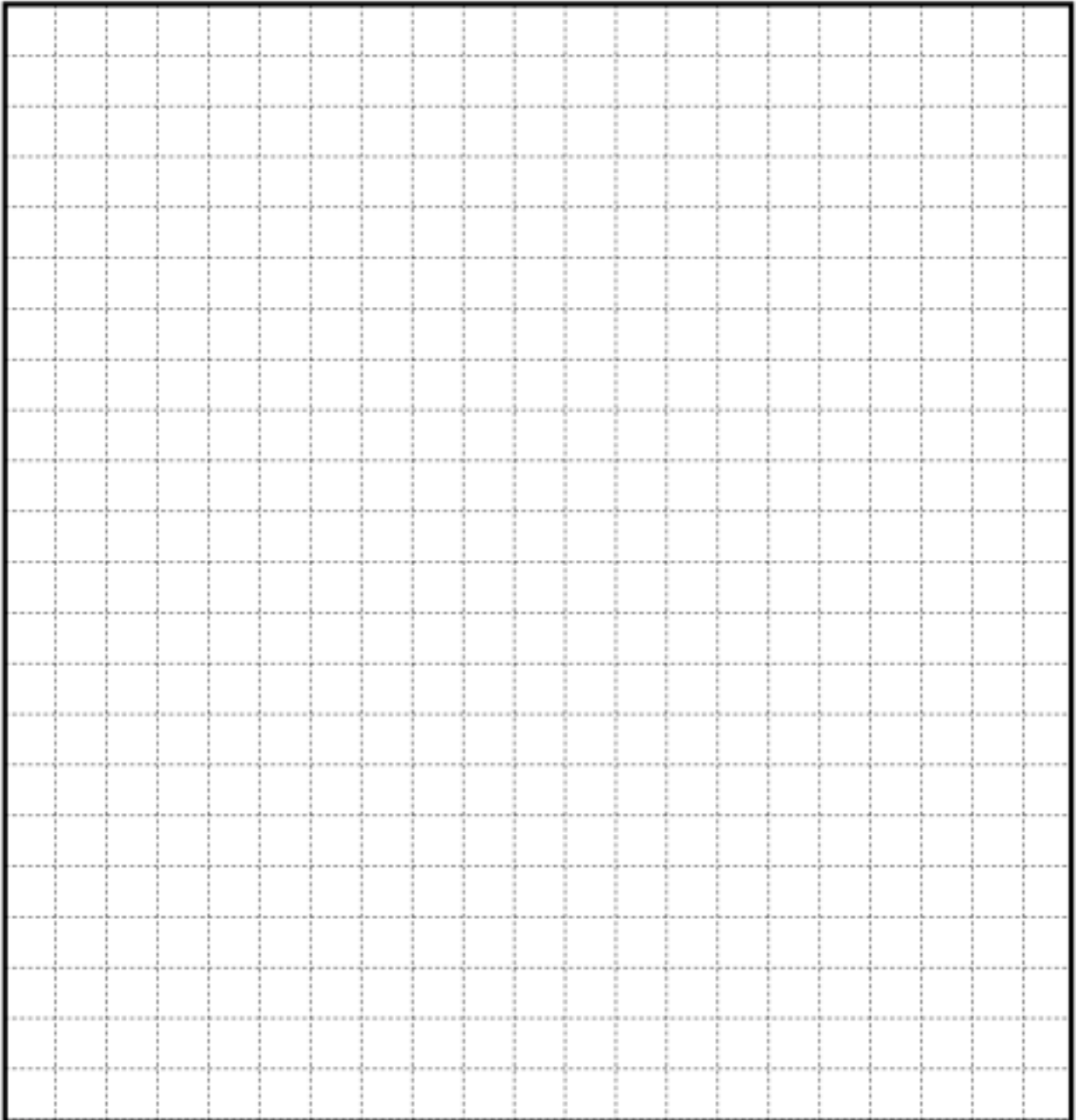
Wash oil based paints in solvent baths until clean. **DO NOT PUT THE SOLVENT ON THE GROUND.** Contact a waste disposal company for removal.

SITE MANAGEMENT PLAN

Building Company: _____ Date: ____ / ____ / ____

Site Address: _____

Client Name: _____ Contact Number: () _____



LEGEND:

Scale:

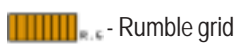
— = 1 m



- Nth



- Bin



- Rumble grid



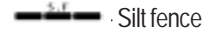
- Stabilised access point



- Vegetation to be retained



- Grass filter strip



- Silt fence



- Stockpile



- Gravel sausage



- Skip



- Temporary Fencing



- Wash up area

CLEAN SITE CHECKLIST

Please photocopy to use on site

SITE DETAILS:

Building Company: _____ Date: ____ / ____ / ____

Site Supervisor: _____

Site Address: _____

Client Name: _____ Contact Number: () _____

SITE RULE	TASK	CHECK
SITE RULE 1 - Check Council requirements and plan before you start work on site.	Crossover away from lowest point	<input type="checkbox"/>
	Sediment control fence on lowest side	<input type="checkbox"/>
	Stockpiles away from lowest point	<input type="checkbox"/>
	Marked trees and vegetation to keep on site	<input type="checkbox"/>
SITE RULE 2 - Stop erosion on site and contain sediments.	Sediment control fence in place	<input type="checkbox"/>
	Catch drains on high side of site	<input type="checkbox"/>
	Vegetation areas kept at boundary	<input type="checkbox"/>
	Gravel sausage at storm water pit	<input type="checkbox"/>
	Downpipes set up as early as possible	<input type="checkbox"/>
SITE RULE 3 - Protect stockpiles.	Base and cover for stockpiles	<input type="checkbox"/>
	Gravel sausage at stormwater pit	<input type="checkbox"/>
SITE RULE 4 - Keep mud off road and on site.	Crushed rock access point	<input type="checkbox"/>
	Vehicles keep to crushed rock areas	<input type="checkbox"/>
	Mud removed from tyres before leaving site	<input type="checkbox"/>
	Clean road if muddy	<input type="checkbox"/>
	Clean stormwater pit and maintain gravel sausage	<input type="checkbox"/>
SITE RULE 5 - Keep litter contained on site.	Litter bins in place with lid closed	<input type="checkbox"/>
	Site fencing in place	<input type="checkbox"/>
SITE RULE 6 - Clean and wash up on site.	Cutting and clean up area on site	<input type="checkbox"/>
	Clean equipment off before washing	<input type="checkbox"/>
	Sediment filters downslope	<input type="checkbox"/>
	Contain all washings on site	<input type="checkbox"/>

6 RULES FOR A CLEAN WORKSITE

SITE RULE 1 -

Check Council requirements and plan before you start work on site.

SITE RULE 2 -

Stop erosion on site and contain sediments.

SITE RULE 3 -

Protect stockpiles.

SITE RULE 4 -

Keep mud off road and on site.

SITE RULE 5 -

Keep litter contained on site.

SITE RULE 6 -

Clean and wash up on site.

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or email enquiry@melbournewater.com

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APPENDIX E – DAYLIGHT MARKUPS

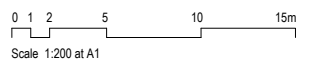
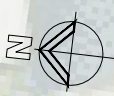


Compliant Areas

Daylight Calculations

Room / Space	Area	Compliant Area	Compliant %
Retail / sales	172.6	94	54.5
Autowash	55.5	55.5	100.0

SITE PLAN
1:200 AT A1



OTR MOUNT EVELYN

41 MONBULK ROAD, MOUNT EVELYN VIC 3796

PRELIMINARY

ADS Architects

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