Sustainable Management Plan

15 November 2022

Ashwood Medical Centre Development

31-33 High Street Rd, Ashwood VIC 3147

Green Rate
Sustainable Building Consultant

Project Details

Report Date	15 November 2022
Project Name	Ashwood Medical Centre Development
Project Address	31-33 High Street Rd, Ashwood VIC 3147
Client Name	ZC Wood Pty Ltd

Consultant Details

Contact Name	Caleb Young
Company Name	Green Rate
Postal Address	PO Box 3080, Eltham VIC 3095
Telephone No.	(03) 9439 1167
Email Address	info@greenrate.com.au
Web Address	www.greenrate.com.au

Table of Contents

Introduction

This ESD Management Plan has been prepared for the proposed Ashwood Medical Centre Development at 31-33 High Street Rd, Ashwood.

Environmentally Sustainable Design (ESD) considerations have become an integral part of the planning permit application process in most municipalities. In order to assist councils achieve these common goals, a framework has been developed named The Sustainable Design Assessment in the Planning Process (SDAPP). An increasing number of councils are adopting this framework, which stands to deliver:

- A practical approach to assessing sustainable development matters during the planning permit application process.
- The consistent inclusion of key environmental performance considerations into the planning approvals process.
- A guide to achieving more sustainable building outcomes for the long-term benefit of the wider community.

As part of the SDAPP program, all 'Large' planning permit applications are required to include a Sustainable Management Plan (SMP). A planning application is generally classified as 'Large' if it meets one of the following categories:

- Residential – ten or more residential dwellings
- Non-residential – 1000m² or more of non-residential Gross Floor Area (GFA).

This report includes a detailed sustainability assessment of the proposed development at the planning stage. A holistic ESD review has been undertaken and the 10 Key Sustainable Building Categories have been addressed. For each category a comprehensive range of beneficial, easy to implement and best practice initiatives have been identified.

The Site

The site is located at 31-33 High Street Rd, Ashwood. The proposed development is three storeys over a basement level with a total floor area of 3,048.1m².

The total site area is 1,491.0m².

BESS

The Built Environment Sustainability Scorecard (BESS) assesses energy and water efficiency, thermal comfort, and overall environmental sustainability performance of new buildings or alterations. It was created to assist builders and developers to demonstrate that they meet sustainability information requirements as part of planning permit applications.

Overarching Principles

- Purpose-built for the planning permit stage
- Assess any size or type of development via a single interface
- Facilitates a consistent framework and assessment of sustainability at the planning stage
- Provides flexibility for the user while delivering sustainability outcomes.
- Multiple options for demonstrating compliance, include in-built calculators, deemed-to-satisfy approaches and option of alternative compliance
- Location-neutral. Does not advantage or disadvantage a development based on location.

The complete BESS report can be found in Appendix A and the Melbourne Water STORM report in Appendix B.

1. Indoor Environment Quality

Indoor environment quality is about creating healthy living spaces for building occupants, including rooms that are designed for optimal daylight access, to promote natural ventilation and are comfortable with minimal need for mechanical heating and cooling. The use of low toxicity materials and finishes also supports a healthy indoor air quality as off-gassing of volatile organic compounds is minimised.

Actions to maximise indoor environment quality

Actions	Potential Impact	Strategies and innovations
Maximise daylight	Access to daylight has physical and mental health benefit for occupants.	• 36% of regular use floor area achieves a Daylight Factor (DF) of 2%.
Thermal comfort	Reduced demand for mechanical heating and cooling.	• All conditioned spaces will exceed NCC 2019 Section J thermal fabric requirements by 10% and meet façade calculator requirements.
Low VOC materials	Reduction in 'off-gassing' and associated health issues from products with high levels of VOCs.	• Low VOC paints • Low VOC flooring • Low VOC adhesives and sealants • Products chosen will meet the maximum VOC levels as defined in the Green Star credit IEQ-8 Volatile Organic Compounds.
Electrical lighting	Reduced energy usage for artificial lighting when natural lighting sources are available.	• Zoned lighting adjacent to external windows.
Improve ventilation / air-quality	Natural ventilation reduces demand for mechanical cooling and prevents build-up of indoor pollutants.	• Ventilation systems will be designed to achieve, monitor and maintain high levels of air quality (CO_2 concentrations of < 500 ppm).

Green Star - Daylight Hand Calculation Method

Purpose: Determine areas which achieve a Daylight Factor of 2% or greater

Elevation	Window Width	Depth of the Zone of Compliance (Window height above 700mm x2)	Zone of Compliance (h x 2 x w)
GF - South	5.4	4.8	25.92
GF - South	9.1	3.9	35.49
1F - South	7	4	28
1F - South	9.1	4	36.4
2F - South	7	4	28
2F - South	9.1	4	36.4
GF - West	3.8	4.8	18.24
GF - West	3.9	4	15.6
1F West	3.9	4	15.6
2F - West	3.9	4	15.6
GF - East	10.4	4	41.6
1F - East	10.4	4	41.6
2F- East	10.4	4	41.6
GF - North	6.5	4	26
1F - North	7.8	4	31.2
2F -North	7.8	4	31.2
Total area of compliance (m2)			**468.5**
Floor area (regular use)			1307.0
Percentage of floor area that complies			35.8

2. Energy

Buildings contribute approximately 20% of global greenhouse gas emissions (Stern Review, 2006), and therefore represent a huge potential for energy and greenhouse gas emission reduction. The highest energy consumption usually comes from heating and cooling, therefore decisions that are made in the early design phase can lock in poor building performance and high energy costs for 50 years or more. Conversely, good design decisions can ensure that a building is future-proofed against rising energy prices.

Actions to maximise energy efficiency

Actions	Potential Impact	Strategies and innovations
Reduce Urban Heat Island Effect	Reduced energy use and increased occupant comfort.	• Light coloured roofing, which reflects excessive heat in the summer months and contributes to reducing the urban heat island effect.
Maximise thermal performance	Reduced energy use, running costs and C02 emissions.	All conditioned spaces will exceed NCC 2019 Section J thermal fabric requirements by 10% and meet façade calculator requirements.
Use energy efficient heating & cooling systems	Heating and cooling systems can account for up to 40% of a household's energy use	• Heating and cooling systems will be specified 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.
Use energy efficient hot water system	Hot water can account for up to 25% of a household's energy use.	• Water heating systems will be specified within one star of the best available, or 85% or better than the most efficient equivalent capacity unit.
Energy efficient lighting	Common area lighting often runs 24/7, 365 days per year. This can add up to significant energy use for the building.	• Motion and daylight sensors to be provided for external lighting. • Motion sensors and timers will be utilised for internal lighting in toilets and non-critical work areas. • All lighting to be LED. The maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class will meet the requirements in Table J6.2a of the NCC 2019.
Electricity meters	Substantial savings in energy use can be achieved through accurate and timely monitoring.	• Separate electricity meters will be provided to each tenement and major common area services.

Provision for solar	Encourages future renewable energy installation	• Roof electrical connection points provided to enable future solar PV installation.

3. Water Resources

In order to conserve our precious water resources, our cities and our buildings need to carefully plan for water efficiency, and for water use that is 'fit-for-purpose'. Potable water is treated to drinking water standard and this water quality level is not needed for every application.

Water Efficiency

Water fittings and appliances are rated under the Water Efficiency Labelling and Standards (WELS) scheme. Choosing high WELS rated fittings and appliances (where specified) are a key way to reduce water consumption within a development. Landscaping with low water use species reduces outdoor water use while maintaining attractive outdoor communal spaces.

Actions to maximise water

Actions	Potential Impact	Strategies and innovations
Water efficient fittings	High efficiency fittings can reduce water use by 50% or more.	• Toilets: 4 star WELS rated (4.5/3L per full/half flush) • Basin taps: 5 star WELS rated • Kitchen taps: 5 star WELS rated
Water efficient landscaping & gardens	Drought tolerant species require little watering.	• Landscaping will incorporate drought tolerant species including drought-tolerant turf/lawn.

Rainwater Harvesting

A 10,000 litre rainwater tank will be installed under the vehicle ramp of this development. This tank will collect rainwater from 100% of the roof area (687m²). See plans for location. All toilets will be connected to the rainwater storage system.

4. Stormwater Treatment

Stormwater quality is a significant issue in urban areas as the high levels of impervious surfaces transport stormwater quickly into the drainage system along with sediment and pollutants from the urban environment. Strategies for improving stormwater include reducing volume entering the stormwater system, either by on-site re-use or by maximising on-site penetration, and also providing treatment measures so that the quality of any stormwater leaving the site is improved.

This development achieves a score of 102% using Melbourne Water's STORM tool. For the full STORM report please see Appendix B.

Actions to increase stormwater quality

Actions	Potential Impact	Strategies and innovations
Rainwater harvesting	Reduction in volume of stormwater to the stormwater system means integrity of stormwater infrastructure is protected. Mains consumption is reduced by onsite reuse.	• 10,000L rainwater tank connected to 100% of the roof area (687m²). All toilets will be connected to the tank.
Water Sensitive Urban Design	Treatment via raingardens means quality of stormwater entering the mains system is improved.	• 8m² raingarden to treat runoff from a minimum of 400m² hard stand, before it enters the stormwater system.

5. Building Materials

A building's life cycle impact is largely influenced by material selection, including embodied energy of the material, longevity/durability, source, ability to be reused/recycled and the toxicity of material components.

Standard and certification schemes for sustainable materials, such as Ecospecifier's Green Tag program and Good Environmental Choice Australia (GECA), provide an independent assessment and are the best starting point for material selection for sustainability. The Moreland Greenlist provides a general list of preferred materials by type.

Actions for sustainable material selection

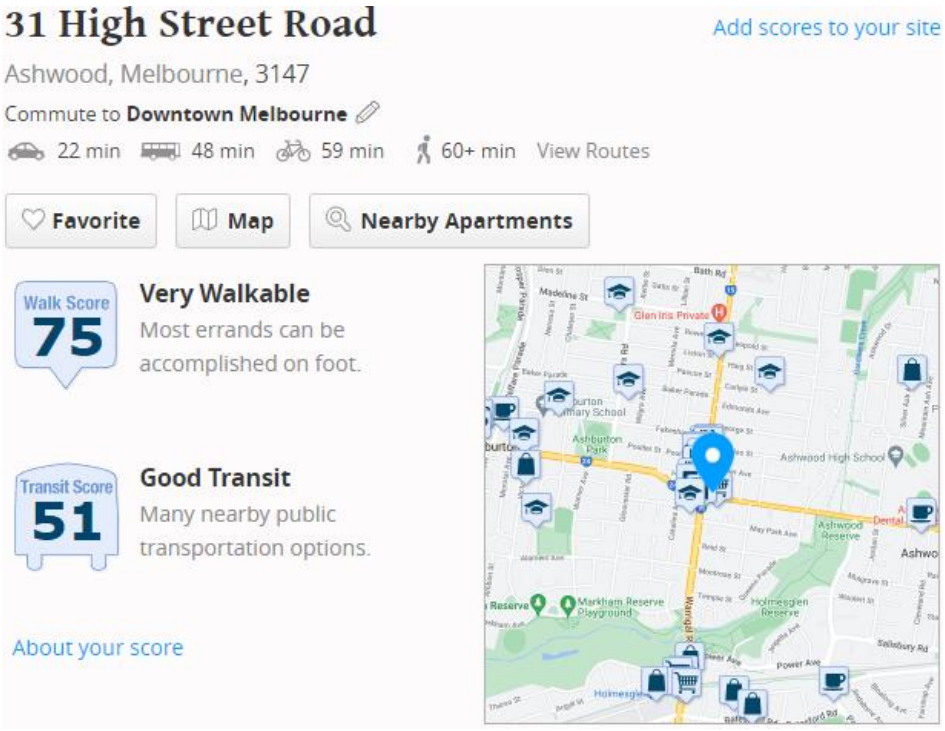
Actions	Potential Impact	Strategies and innovations
Material longevity and durability	Longer lifespan of the building means less repair/replacement materials and waste.	• Durable external finishes including concrete, render, cement cladding, aluminium window frames and rust/corrosion resistant metal roofing.
Sustainable Timber	Avoid timber that may be illegally logged, from old growth forests, or from plantations that are poorly managed	• Min. 95% of timber used in the project will be from a sustainable plantation source or recycled. • Unsustainable timber imports such as Oregon, Western Red Ceder, Meranti, Luan, Teak, Merbau etc. will not be used unless FSC certified (or equivalent).
Dematerialisation	Using less material where possible reduces the overall embodied energy of the building.	• Finishes will be raw and exposed where possible to reduce the embodied energy of the building.
Avoid dangerous materials	Improved health outcomes for construction workers and building occupants	• Building materials containing harmful substances on Red List will be avoided wherever possible. See http://en.wikipedia.org/wiki/Red_List_building_materials for further information. • Use of E1 or E0–grade engineered wood products (e.g. MDF, plywood, engineered-wood flooring).

6. Transport

Many transport impacts are inherent to a building's location, such as the distance from employment, shops, services, schools and recreation. However, sustainable transport options can be facilitated through a building design that promotes convenient use of bicycles and reduced dependence on private vehicle use.

Actions for sustainable transport

Actions	Potential Impact	Strategies and innovations
Bicycle parking onsite	Reduced demand on car transport, reduced demand on public transport. Active & cost effective transport option.	• 1 bicycle space required for each 8 practitioners as per Clause 52.34. Based on 16 practitioners: provide 3x bicycle parking spaces to exceed planning scheme requirement by 50%. 6 bike racks have been proposed.
Pedestrian access	Health and environmental benefits.	• The site has a walk score of 75 out of 100, and is classified as 'Very Walkable'. • The site has a transit score of 51 out of 100, and is classified as 'Good Transit'. • See below for details, and www.walkscore.com for more information.



7. Waste Management

Actions for waste avoidance and recycling

Actions	Potential Impact	Strategies and innovations
Construction Waste Management Plan	Construction and demolition waste makes up approximately one third of waste to landfill in Victoria (Sustainability Victoria). Most of this waste is inert & can be easily recycled for other purposes.	• Before construction commences, a Waste Management Plan will be submitted. This plan will include a target to recycle 50% of waste during both the demolition and construction phases.
Waste Management Infrastructure	Convenient infrastructure can significantly improve recovery rates for recyclable materials	• General waste bins will be just as accessible as recycling bins (located side by side).

8. Urban Ecology

Urban ecology is about promoting and protecting ecosystems and biodiversity. Urban and agricultural development has caused displacement of species and degradation of natural environments – therefore in many established urban areas the aim is to increase biodiversity. Biodiversity provides a number of services that have traditionally been, and continue to be, undervalued, such as:

- Protection of water resources
- Soil formation & protection
- Nutrient storage & recycling
- Pollution breakdown
- Ecosystem maintenance

As well as all the products we harvest and use, such as food, medicine and building products.

This development is a redevelopment of a residential site within an existing urban area. Opportunities for protecting biodiversity are limited; however there are still initiatives that can be incorporated into the development in order to enhance biodiversity and urban ecology.

Actions for urban ecology

Actions	Potential Impact	Strategies and innovations
Re-use of land	Development in existing urban areas helps reduce the need for greenfield development and the associated environmental impacts, such as car dependency, increased need for infrastructure and displacement of agricultural land.	• This development is a redevelopment of an existing residential site, thereby increasing density in already established urban areas and reducing urban sprawl.
Biodiversity	Support the local eco-system and encourage local species.	• Landscaping will incorporate indigenous plants to encourage local insects and birds.

9. Innovation / ESD Excellence

Innovation and ESD Excellence is a category designed to recognise new or outstanding ESD initiatives not recognised elsewhere (such as in the GreenStar tools). This development is not claiming any initiatives under this category.

Actions for ongoing building performance

Actions	Potential Impact	Strategies and innovations
Universal Access	Net gain to the natural environment.	• The site will be fully compliant with AS1428.2 (Universal access). • Accessible parking bays provided. • Compliant pathways and entrances. • Accessible amenities provided at ground level.

10. Ongoing Building & Site Management

Actions for ongoing building performance

Actions	Potential Impact	Strategies and innovations
Building fine-tuning	Ensures the building services operate as designed, throughout various climatic conditions and with realistic occupancy profiles.	• Building services will be fine-tuned quarterly during first 12 months of occupation with the aim of increasing energy/water operational efficiencies.

11. Implementation & Commissioning

Implementation of the ESD initiatives in this report requires the following process:

- Full integration with architectural plans & specifications
- Full integration with building services design drawings & specifications
- Endorsement of the ESD report with town planning drawings
- ESD initiatives to be included in plans and specifications for building approval

The following implementation schedule is provided.

Item	Actions	Person/s Responsible	Date Completed
NCC 2019 Section J	10% improvement on NCC Section J minimum requirements for building fabric insulation.	ESD Consultant, Architect	
Window glazing	To be specified according to Section J & NCC 2019 façade calculator.	Architect, Builder	
Air-conditioning systems	To be 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.	Architect, Builder	
Hot water heating	To be within one star of the best available, or 85% or better than the most efficient equivalent capacity unit.	Services Engineer, Builder	
Lighting	LED. Min. 90% of the area of the relevant building class will meet the requirements in Table J6.2a of the NCC 2019 Vol 1.	Services Engineer, Builder	
Motion / time switch controls	External lighting to be controlled by motion sensors or timers as appropriate.	Services Engineer, Builder	
Metering	Install separate electricity meters for each tenancy & major common area services.	Services Engineer, Builder	
Bike storage	6 bicycle parking spaces.	Architect, Builder	
Water efficient toilets	Specify and install minimum 4 star toilets.	Architect, Builder	
Water efficient taps/showers	Specify and install minimum 5 star basin and kitchen taps.	Architect, Builder	

Low VOC materials	Specify and use low VOC paints, flooring adhesives and sealants.	Architect, Builder
Building tuning	Undertake building services fine-tuning each quarter for the first 12 months of occupation.	Owner's Corporation, ESD Consultant, Building Services

APPENDIX A:

BESS REPORT

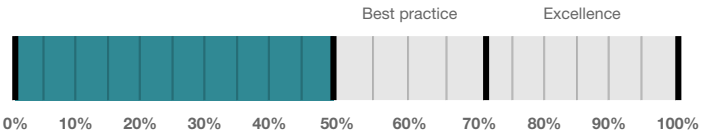
BESS Report

Built Environment Sustainability Scorecard

This BESS report outlines the sustainable design commitments of the proposed development at 31-33 High St Ashwood VIC 3147. 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 Monash 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

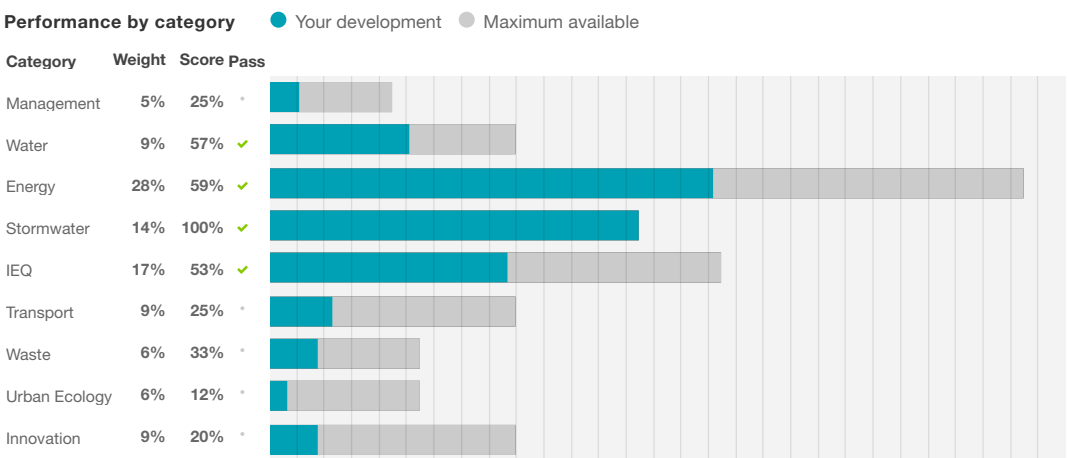


51%

Project details

Address	31-33 High St Ashwood VIC 3147
Project no	020D1818-R2
BESS Version	BESS-6
Site type	Non-residential development
Account	info@greenrate.com.au
Application no.	TBA
Site area	1,491.00 m²
Building floor area	3,048.10 m²
Date	15 November 2022
Software version	1.7.1-B.392

Performance by category



Buildings

Name	Height	Footprint	% of total footprint
Proposed Medical Centre	3	587 m^2	100%

Dwellings & Non Res Spaces

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Other building				
Proposed Medical Centre	1	3,048 m^2	Proposed Medical Centre	100%
Total	**1**	**3,048 m^2**	**100%**	

Supporting information

Floorplans & elevation notes

Credit	Requirement	Response	Status
Management 3.2	Individual utility meters annotated		-
Management 3.3	Common area submeters annotated		-
Water 3.1	Water efficient garden annotated		-
Stormwater 1.1	Location of any stormwater management systems used in STORM or MUSIC modelling (e.g. Rainwater tanks, raingarden, buffer strips)		-
Transport 1.4	All nominated non-residential bicycle parking spaces		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 2.1	Vegetated areas		-

Supporting evidence

Credit	Requirement	Response	Status
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
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.		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 1.4	A short report detailing assumptions used and results achieved.		-

Credit summary

Management Overall contribution 4.5%

	25%
1.1 Pre-Application Meeting	0%
2.3 Thermal Performance Modelling - Non-Residential	0%
3.2 Metering - Non-Residential	100%
3.3 Metering - Common Areas	100%
4.1 Building Users Guide	0%

Water Overall contribution 9.0%

	Minimum required 50%	57%	✔ Pass
1.1 Potable water use reduction		60%	
3.1 Water Efficient Landscaping		100%	
4.1 Building Systems Water Use Reduction		0%	

Energy Overall contribution 27.5%

	Minimum required 50%	59%	✔ Pass
1.1 Thermal Performance Rating - Non-Residential		37%	
2.1 Greenhouse Gas Emissions		100%	
2.2 Peak Demand		100%	
2.3 Electricity Consumption		100%	
2.4 Gas Consumption		100%	
3.1 Carpark Ventilation		0%	
3.2 Hot Water		100%	
3.7 Internal Lighting - Non-Residential		100%	
4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A	Scoped Out
		No cogeneration or trigeneration system in use.	
4.2 Renewable Energy Systems - Solar		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%	53%	✔ Pass
1.4 Daylight Access - Non-Residential		36%	✔ Achieved
2.3 Ventilation - Non-Residential		100%	✔ 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%

		25%
1.4 Bicycle Parking - Non-Residential		100%
1.5 Bicycle Parking - Non-Residential Visitor		0%
1.6 End of Trip Facilities - Non-Residential		0%
2.1 Electric Vehicle Infrastructure		0%
2.2 Car Share Scheme		0%
2.3 Motorbikes / Mopeds		0%

Waste Overall contribution 5.5%

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

Urban Ecology Overall contribution 5.5%

		12%
1.1 Communal Spaces		0%
2.1 Vegetation		25%
2.2 Green Roofs		0%
2.3 Green Walls and Facades		0%
3.2 Food Production - Non-Residential		0%

Innovation Overall contribution 9.0%

		20%
1.1 Innovation		20%

Credit breakdown

Management Overall contribution 1%

1.1 Pre-Application Meeting	0%
Score Contribution	This credit contributes 37.5% 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 25.0% towards the category score.
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2019 Section J1.5?
Question	Criteria Achieved ?
Other building	No
Criteria	Has preliminary modelling been undertaken in accordance with either NCC2019 Section J (Energy Efficiency), NABERS or Green Star?
Question	Criteria Achieved ?
Other building	No
3.2 Metering - Non-Residential	100%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Have utility meters been provided for all individual commercial tenants?
Question	Criteria Achieved ?
Other building	Yes
3.3 Metering - Common Areas	100%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Have all major common area services been separately submetered?
Question	Criteria Achieved ?
Other building	Yes
4.1 Building Users Guide	0%
Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Will a building users guide be produced and issued to occupants?
Question	Criteria Achieved ?
Project	No

Water Overall contribution 5% Minimum required 50%

Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Project Water Profile Question	
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
Water fixtures, fittings and connections	
Building:	Proposed Medical 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
Which non-potable water source is the dwelling/space connected to?:	Tank
Non-potable water source connected to Toilets:	Yes
Non-potable water source connected to Laundry (washing machine):	No
Non-potable water source connected to Hot Water System:	No
Rainwater Tank	
What is the total roof area connected to the rainwater tank?: Tank	687 m^2
Tank Size: Tank	10,000 Litres
Irrigation area connected to tank: Tank	-
Is connected irrigation area a water efficient garden?: Tank	-
Other external water demand connected to tank?: Tank	-

1.1 Potable water use reduction	60%
Score Contribution	This credit contributes 71.4% 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	2614 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	1919 kL
Output	Proposed (including rainwater and recycled water use)
Project	1394 kL
Output	% Reduction in Potable Water Consumption
Project	46 %
Output	% of connected demand met by rainwater
Project	57 %
Output	How often does the tank overflow?
Project	Very Often
Output	Opportunity for additional rainwater connection
Project	300 kL

3.1 Water Efficient Landscaping	100%
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Will water efficient landscaping be installed?
Question	Criteria Achieved ?
Project	Yes

4.1 Building Systems Water Use Reduction	0%
Score Contribution	This credit contributes 14.3% 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

Energy Overall contribution 16% 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
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 36.4% 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 9.1% towards the category score.		
Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?		
2.2 Peak Demand		100%	
Score Contribution	This credit contributes 4.5% towards the category score.		
Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?		
2.3 Electricity Consumption		100%	
Score Contribution	This credit contributes 9.1% 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 9.1% towards the category score.		
Criteria	What is the % reduction in annual gas consumption against the benchmark?		
3.1 Carpark Ventilation		0%	
Score Contribution	This credit contributes 9.1% towards the category score.		
Criteria	If you have an enclosed carpark, is it: (a) fully naturally ventilated (no mechanical ventilation system) or (b) 40 car spaces or less with Carbon Monoxide monitoring to control the operation and speed of the ventilation fans?		
Question	Criteria Achieved ?		
Project	No		
3.2 Hot Water		100%	
Score Contribution	This credit contributes 4.5% towards the category score.		
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?		
3.7 Internal Lighting - Non-Residential		100%	
Score Contribution	This credit contributes 9.1% towards the category score.		
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J6.2a of the NCC 2019 Vol 1?		
Question	Criteria Achieved ?		
Other building	Yes		
4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A	⌖ Scoped Out
This credit was scoped out	No cogeneration or trigeneration system in use.		
4.2 Renewable Energy Systems - Solar		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?:	Melbourne Water STORM tool
1.1 Stormwater Treatment	100%
Score Contribution	This credit contributes 100.0% towards the category score.
Criteria	Has best practice stormwater management been demonstrated?
Question	STORM score achieved
Project	100
Output	Min STORM Score
Project	100

IEQ Overall contribution 9% Minimum required 50%

1.4 Daylight Access - Non-Residential	36%	✔ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.	
Criteria	What % of the nominated floor area has at least 2% daylight factor?	
Question	Percentage Achieved?	
Other building	36 %	
2.3 Ventilation - Non-Residential	100%	✔ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.	
Criteria	What % of the regular use areas are effectively naturally ventilated?	
Question	Percentage Achieved?	
Other building	0 %	
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?	
Question	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668:2012?	
Other building	100 %	
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?	
Question	Value	
Other building	500 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?	
Other building	0 %	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential	0%	
Score Contribution	This credit contributes 5.9% towards the category score.	
Criteria	What percentage of regular use areas in tenancies have ceiling fans?	
Question	Percentage Achieved?	
Other building	0 %	
4.1 Air Quality - Non-Residential	100%	
Score Contribution	This credit contributes 5.9% towards the category score.	
Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?	
Question	Criteria Achieved ?	
Project	Yes	

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

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

Transport Overall contribution 2%

1.4 Bicycle Parking - Non-Residential	100%
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	1 bicycle space required for each 8 practitioners as per Clause 52.34. Based on 16 practitioners: provide 3x bicycle parking spaces to exceed planning scheme requirement by 50%. 6 bike racks are proposed
Question	Criteria Achieved ?
Other building	Yes
Question	Bicycle Spaces Provided ?
Other building	6

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 ?
Other building	No
Question	Bicycle Spaces Provided ?
Other building	-

1.6 End of Trip Facilities - Non-Residential	0%
Score Contribution	This credit contributes 12.5% 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 ?
Other building	0
Question	Number of lockers provided ?
Other building	0
Output	Min Showers Required
Other building	1
Output	Min Lockers Required
Other building	6

2.1 Electric Vehicle Infrastructure	0%
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	No

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 1%

1.1 Communal Spaces		0%
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 : * 1m² for each of the first 50 occupants * Additional 0.5m² for each occupant between 51 and 250 * Additional 0.25m² for each occupant above 251?	
Question	Common space provided	
Other building	27.0 m²	
Output	Minimum Common Space Required	
Other building	101 m²	
2.1 Vegetation		25%
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	5 %	
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 green façade?	
Question	Criteria Achieved ?	
Project	No	
3.2 Food Production - Non-Residential		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	What area of space per occupant is dedicated to food production?	
Question	Food Production Area	
Other building	0.0 m²	
Output	Min Food Production Area	
Other building	39 m²	

Innovation Overall contribution 2%

Innovations	
Description:	
Eco Steel	• All fabricated structural steelwork to be supplied by a steel fabricator/contractor accredited to the Environmental Sustainability Charter of the Australian Steel Institute and minimum of 60% of all reinforcing bar and mesh is produced using energy-reducing processes in its manufacture.
Eco Concrete	• A minimum of 20% of the cement must be replaced with supplementary cementitious material (SCM), 50% recycled aggregate and 50% recycled water.
Points Targeted:	
Eco Steel	1
Eco Concrete	1

1.1 Innovation		20%
Score Contribution	This credit contributes 100.0% towards the category score.	
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?	

APPENDIX B:

WSUD REPORT

STORM Rating Report

TransactionID:	1481375	
Municipality:	MONASH	
Rainfall Station:	MONASH	
Address:	31-33 High Street Rd	
	Ashwood	
	VIC	3147
Assessor:	Green Rate	
Development Type:	Commercial/Retail	
Allotment Site (m2):	1,491.00	
STORM Rating %:	102	

Description	Impervious Area (m2)	Treatment Type	Treatment Area/Volume (m2 or L)	Occupants / Number Of Bedrooms	Treatment %	Tank Water Supply Reliability (%)
Roof - connected to tank	687.00	Rainwater Tank	10,000.00	100	123.50	64.00
Hard stand	246.00	None	0.00	0	0.00	0.00
Hard stand	400.00	Raingarden 100mm	8.00	0	128.10	0.00

Date Generated: 07-Nov-2022 Program Version: 1.0.0

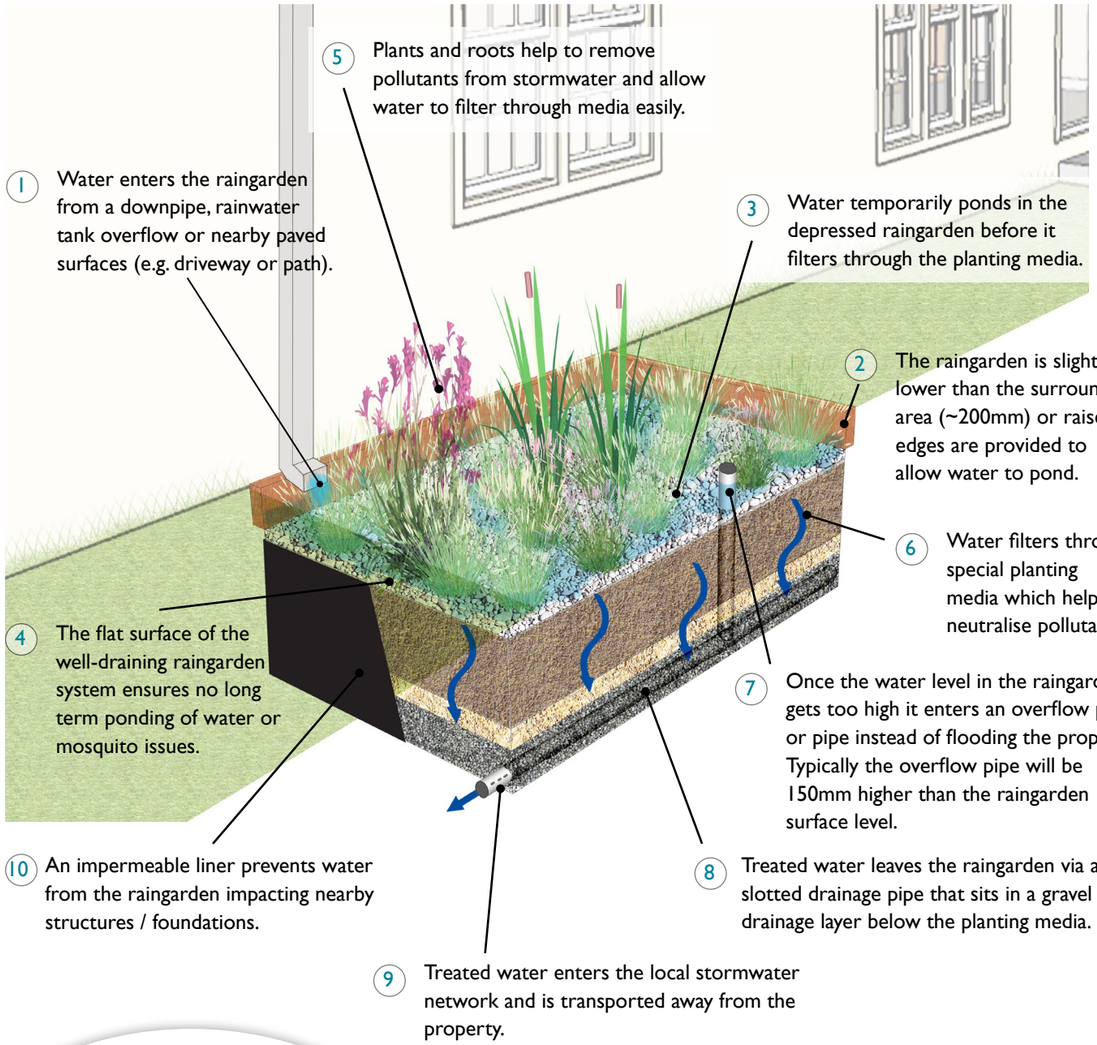
WSUD Plan


39425mm
6m2 Raingarden
400m2 hard stand draining into
8m2 raingarden
RWT
687m2 roof plumbed into
10,000 litre underground
rainwater tank, connected to
all toilets
246m2 hard stand to
stormwater

Maintenance Overview

Raingarden Maintenance

This diagram depicts an in-ground raingarden. Raised bed raingardens are also common (refer to photograph).



Note: It is important not to add fertiliser, compost or floatable mulch to a raingarden as the nutrients will pass through the raingarden and pollute the Bay. The plants best suited to raingardens will grow well in the planting media and take nutrients for their growth from the water entering the raingarden.

Maintenance Checklist

The property owner is responsible for checking the maintenance items in this checklist at the recommended frequency at the bottom of the table. The maintenance log at the bottom of the page should be filled in once each maintenance check is complete. Upkeep of this maintenance log should continue throughout the life of the raingarden.

Item	Raingarden element	Inspection item	Y/N	Likely maintenance task
1	Raingarden inlet	Is there scour or erosion where water enters the raingarden?		Re-profile with hand tools, place gravel or stones at the inlet.
		Is there rubbish, leaf littter or sediment blocking the inlet?		Remove by hand and dispose responsibly.
2	Raingarden surface level	Is the level of the raingarden surface sitting less than 5 cm below the raingarden edges/borders?		Remove sediment from the surface so it is sitting about 10-20 cm below surrounding areas.
3	Raingarden temporary detention	Is there moss or clay on the surface of the raingarden which seem to be slowing the filtration of flows?		Remove the crust from the top of the raingarden and check water will filter through exposed media.
4	Raingarden surface	Are there areas which appear to be higher and are not getting wet during rain events?		Smooth out surface so it is flat with hand tools.
		Are there areas which have been eroded away or scoured?		
5	Plants	Are the plants looking unhealthy or dying?		Prune diseased sections, irrigate and/ or replace dead plants. If plants keep dying, replace with a different type which is doing well. Do not use fertilizer to improve plant health as this will pollute the raingarden.
		Are there bare patches forming between plants?		
		Are there weeds present?		Remove weeds by hand and dispose responsibly.
6	Planting media	Is the raingarden holding water for more than a couple of hours after the rain has stopped?		Remove and replace the top 100 mm of planting material (loamy sand).
7	Overflow pit / pipe	Is there anything blocking the top of the overflow pit / pipe preventing water from entering?		Remove blockages and dispose responsibly.
8	Underdrainage	Is there rain draining to the bottom of the raingarden following heavy rain?		Flush the underdrain or uncover it to check for blockages.
9	Stormwater network connection	Is there water ponding in the overflow pit or pipe and not entering the stormwater network?		Remove blockages and dispose responsibly.

Maintenance frequency

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			x						x		

\+ after heavy rainfall

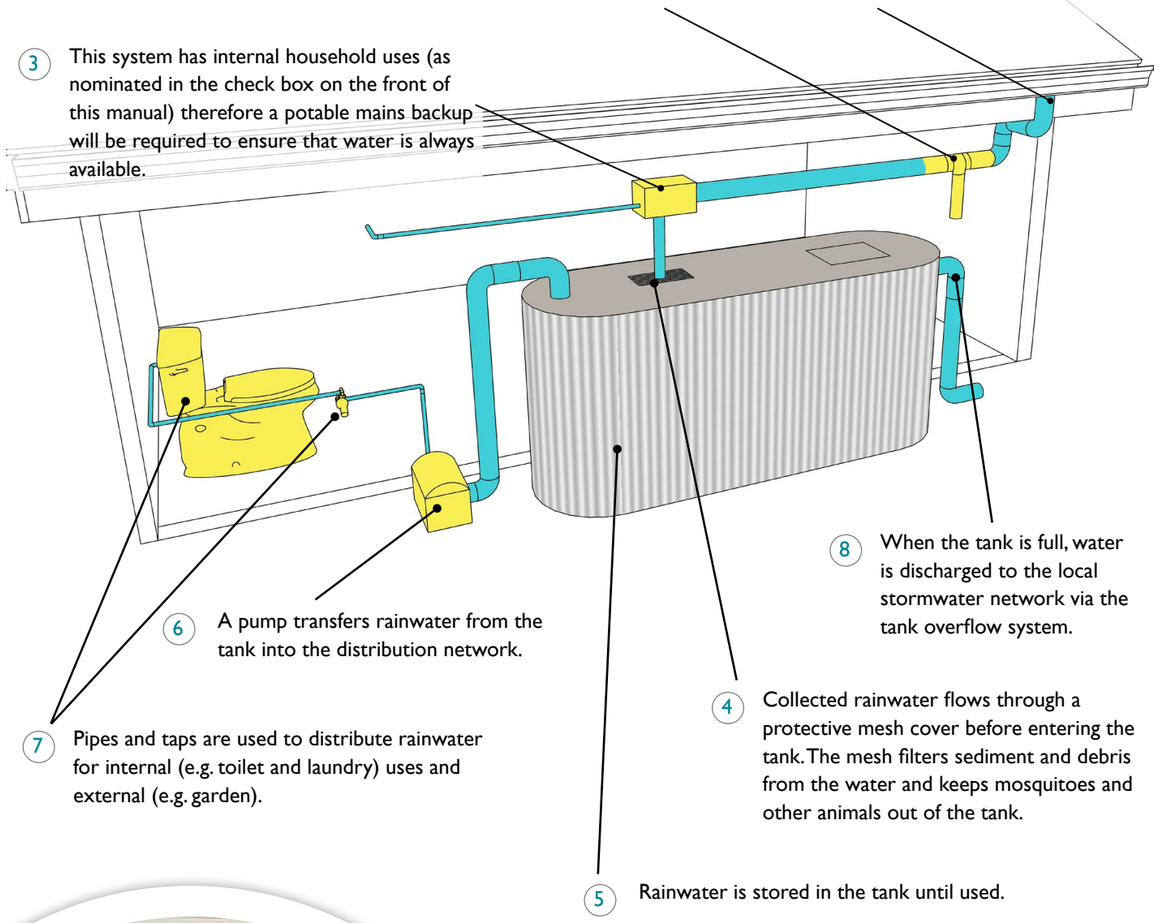
Maintenance Log

Maintenance date	Maintenance undertaken

Maintenance Overview

Rainwater Tank Maintenance

The following diagram identifies the key items which are important for rainwater tanks and their maintenance.



Maintenance Checklist

The property owner is responsible for checking the maintenance items in this checklist at the recommended frequency at the bottom of the table. The maintenance log at the bottom of the page should be filled in once each maintenance check is complete. Upkeep of this maintenance log should continue throughout the life of the rainwater tank.

Item	Rainwater tank element	Inspection item	Y/N	Likely maintenance task
1	Roof gutters and downpipes	Is there leaf litter or debris in the gutters?		Remove by hand and dispose responsibly.
2	First flush diverter	Is there anything blocking the first flush diverter (leaves etc)?		Remove by hand and dispose responsibly.
3	Potable mains back up device	Is the potable mains back up switch operating correctly?		Repair or replace device. Consider a manual switching device.
4	Mesh cover	Has the mesh cover deteroriated or have any holes in it?		Replace mesh cover.
5	Tank volume	Is there large amounts of sediment or debris sitting in the bottom of the tank, reducing the volume available in the tank to store water?		Remove sediment and dispose responsibly.
6	Pump	Is the pump working effectively? Have you heard it on a regular basis?		Check the potable mains back up is not permanently on. Repair or replace pump.
7	Pipes and taps	Are pipes and taps leaking?		Repair as needed.
8	Overflow	Is the overflow clear and connected to the stormwater network?		Remove blockages and/or restore connections to stormwater network.
9	Supporting base	Are there any cracks or movement of pavers?		Empty the tank to reduce weight then repair any damage to the base.

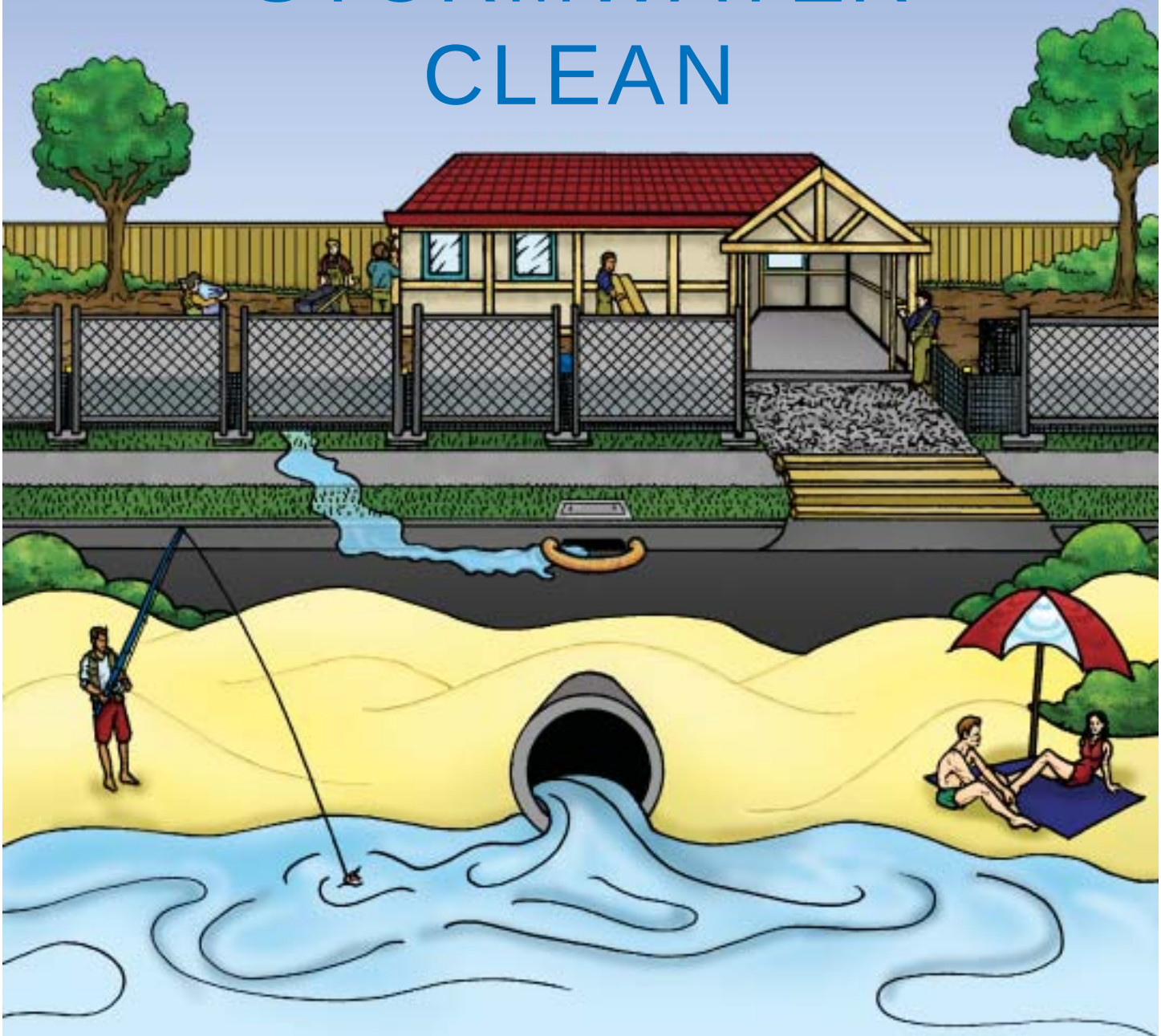
Maintenance frequency												
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
All tasks	x			x			x			x		

Regular maintenance will improve the water quality and extend the life of your system. A well maintained tank isn't likely to need to be cleaned out for up to ten years (when there is more than 20mm of accumulated sediment).

Maintenance Log

Maintenance date	Maintenance undertaken

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

Melbourne Water

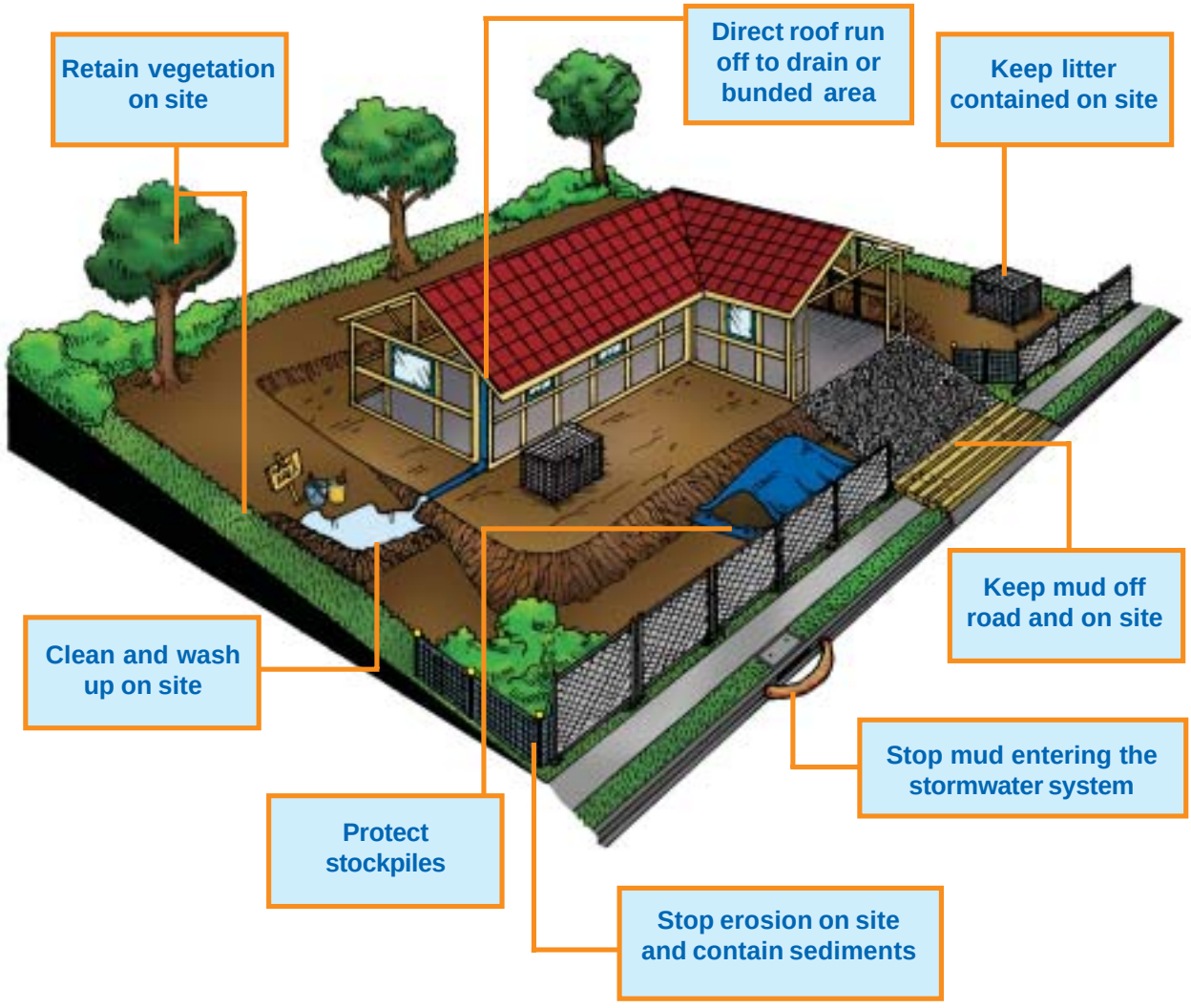
Victoria The Place To Be

EPA VICTORIA

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



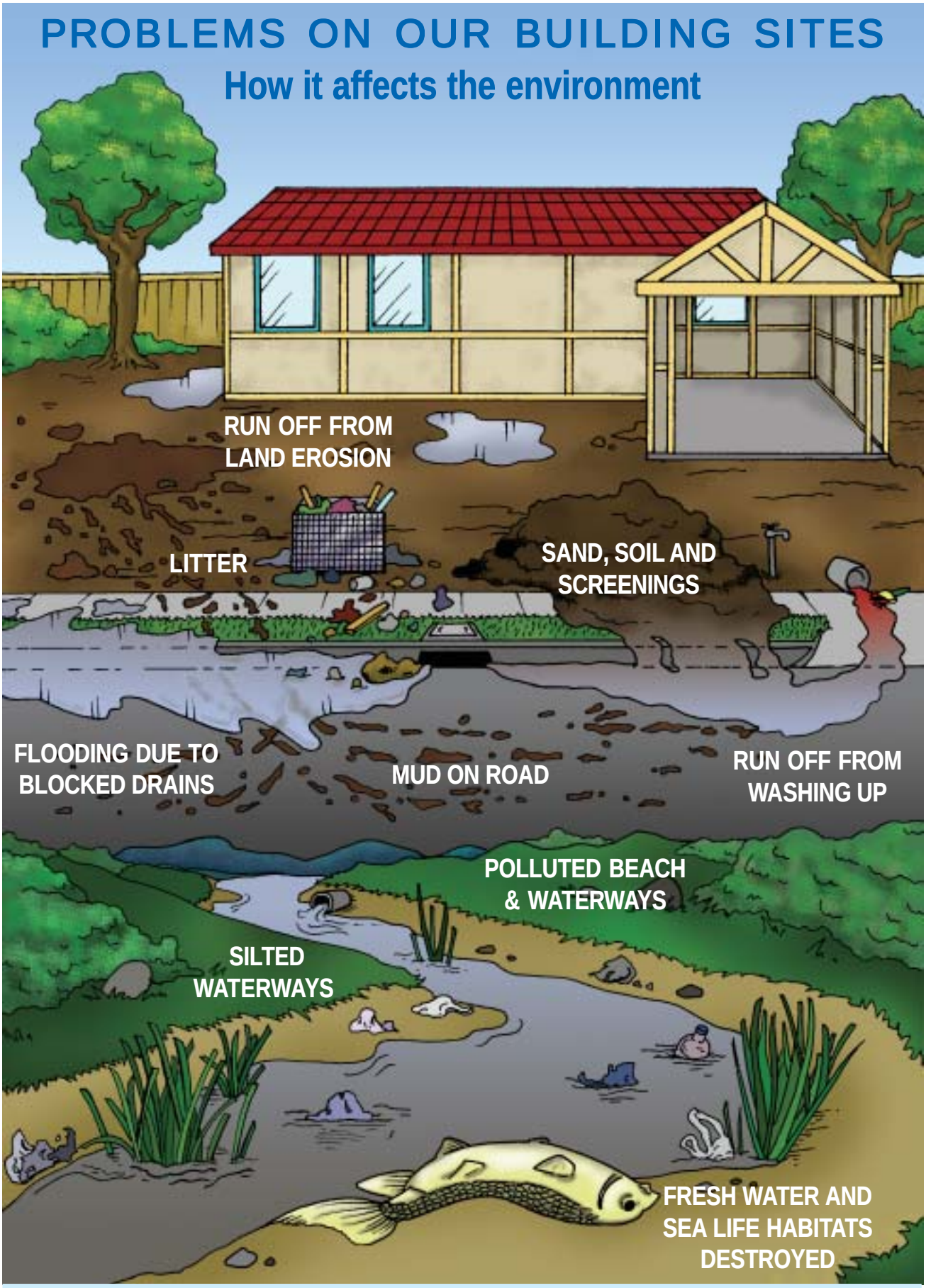
Supplier information for sediment & erosion control on page 3

CONTENTS

6 SITE RULES TO KEEP STORMWATER CLEAN

PROBLEMS ON OUR BUILDING SITES

How it affects the environment



1

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.

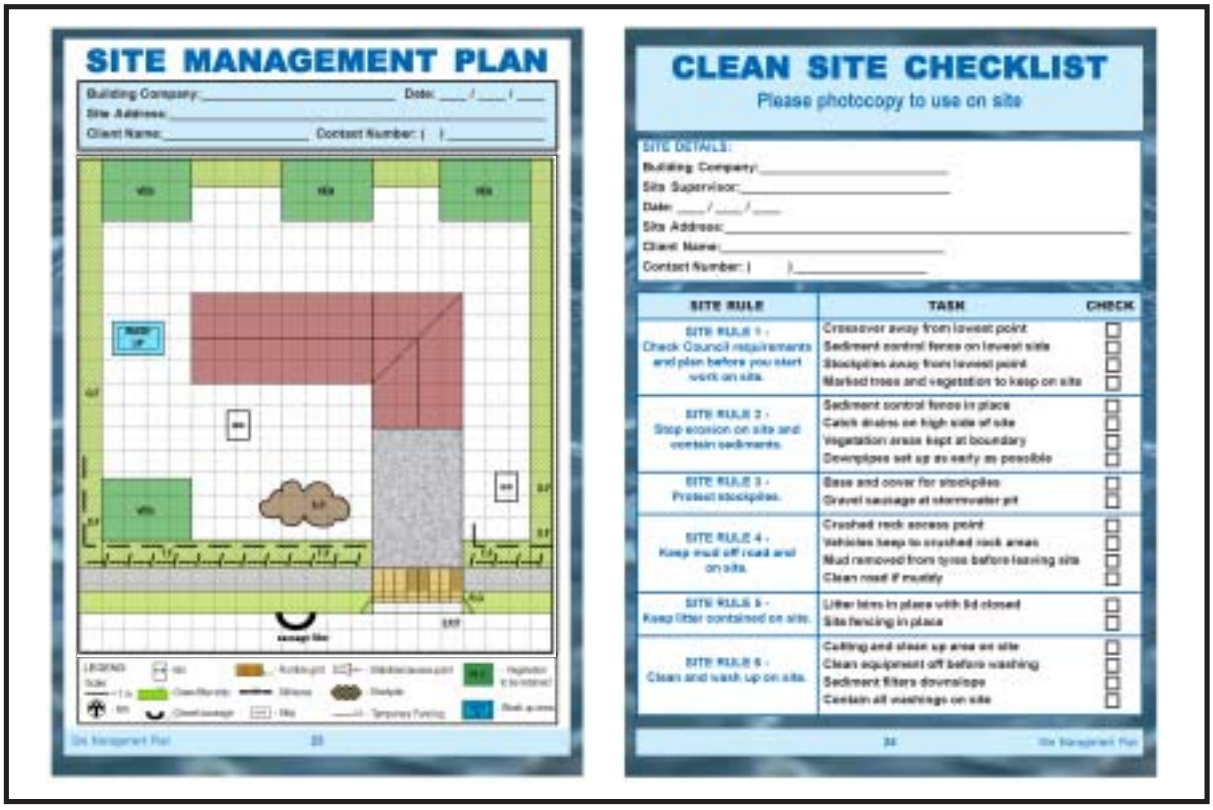
Which trees and vegetation will be kept on site?

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.]

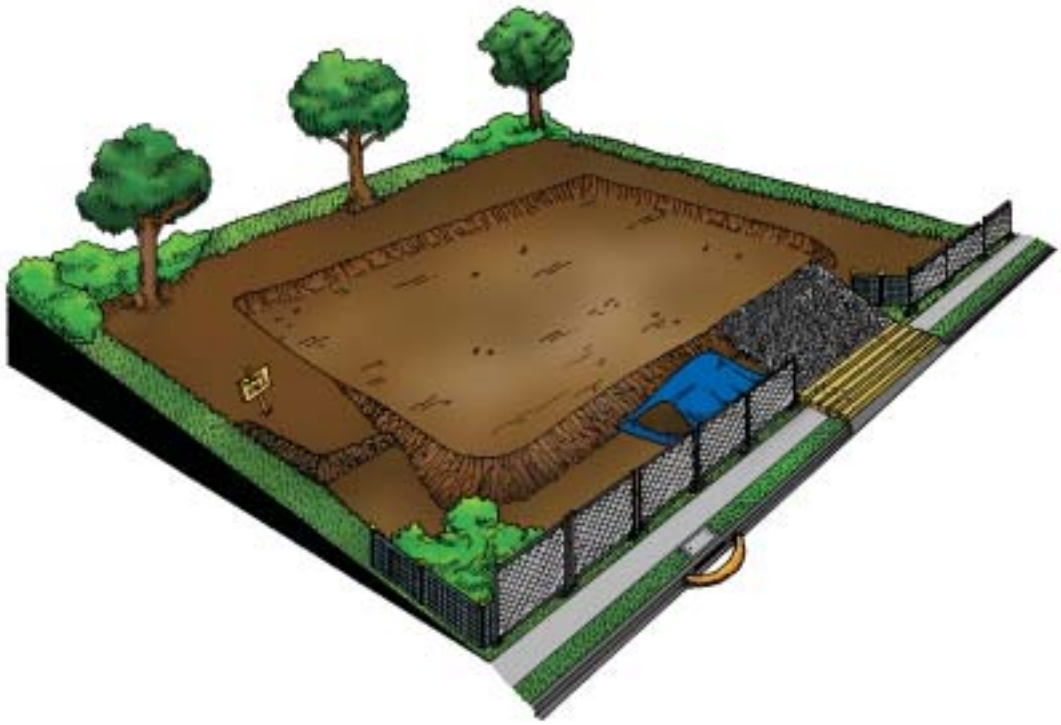
Why fence my site?

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 1 - Plan before you start work on site. **5**

SITE RULE 2

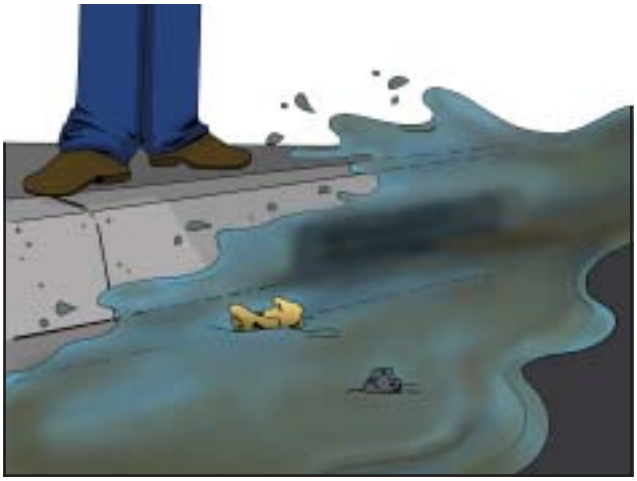
Stop erosion and keep sediment on site

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.



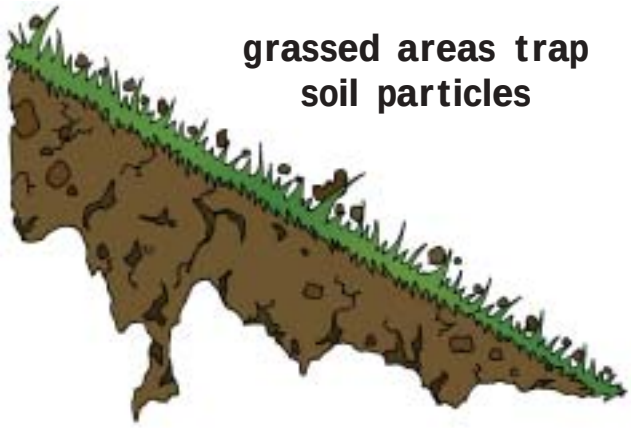
3. Cause blockages to the stormwater system including the side entry pit and pipes, increasing the chance of flooding and requiring regular cleaning.

4. Overload and clog local stormwater filtration systems such as raingardens 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.



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 bunded area.

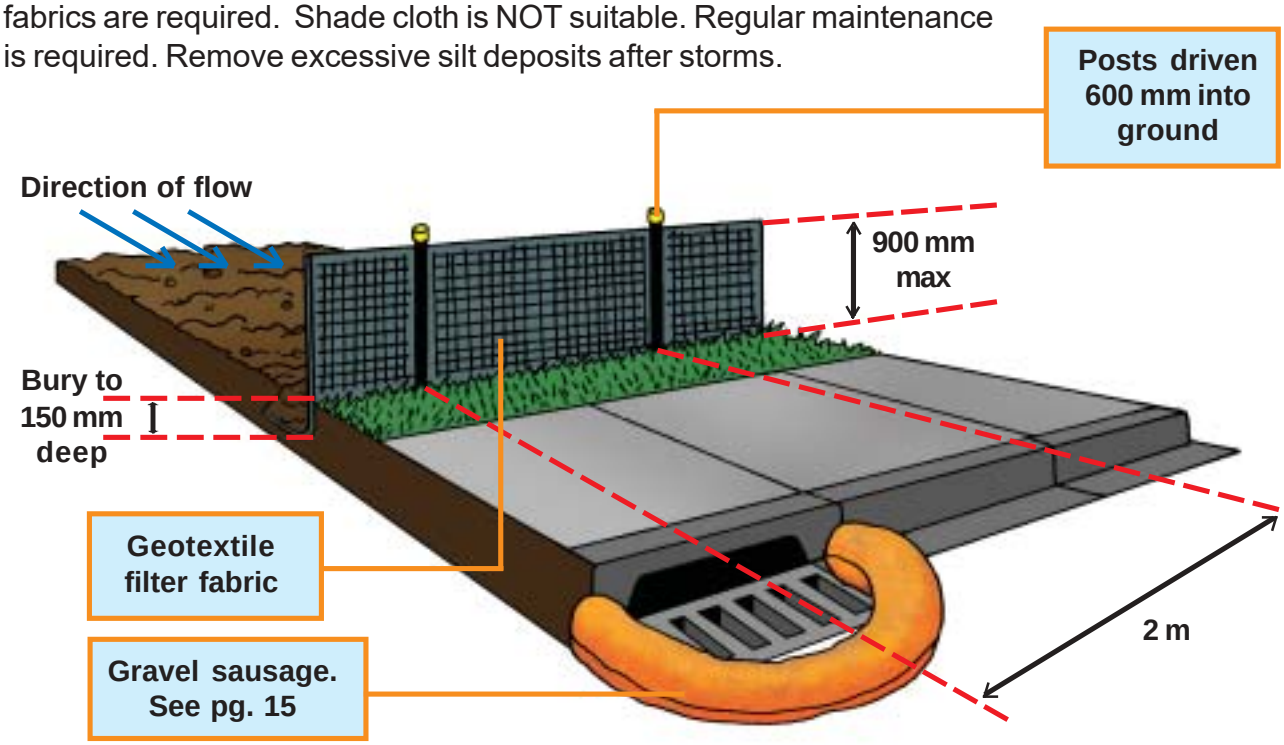
If you cannot connect to the stormwater system, pipe the water away from the building onto a vegetated area where there is good ground cover or to a bunded area.

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

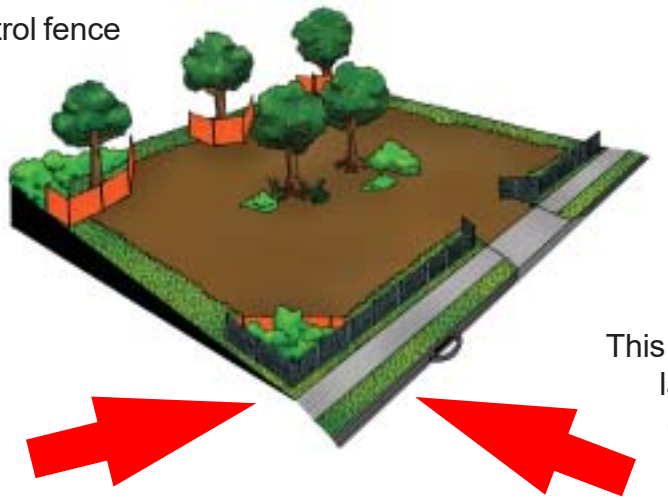
Sediment control fences stop sediment from being washed off site. The fence allows muddy water to pond behind it and for sediment to settle as the water slowly filters through. Geotextile fabrics are required. Shade cloth is NOT suitable. Regular maintenance is required. Remove excessive silt deposits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



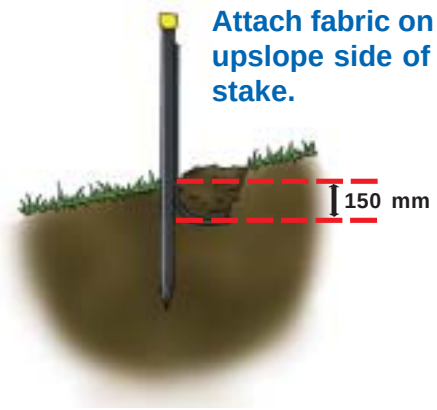
TO BUILD A SEDIMENT CONTROL FENCE:

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.

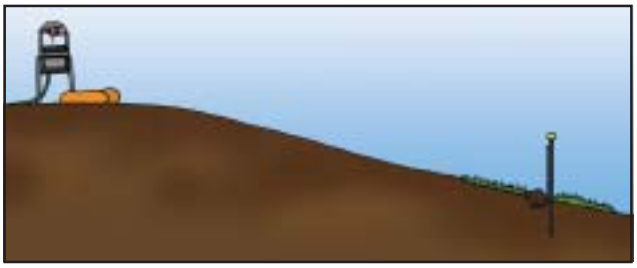
Method 2 - Control dust and slurry from cutting

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

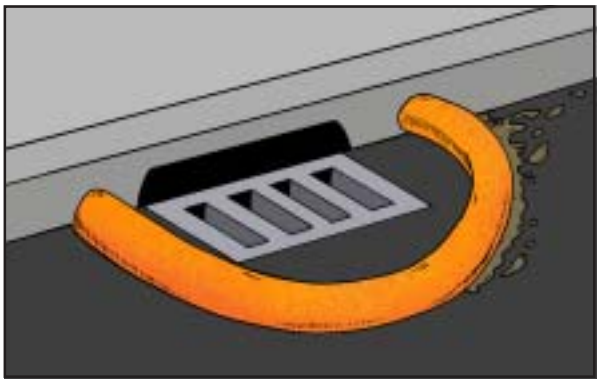
Choose a set area to do all your cutting. This area should be on the building site and away from all stormwater drains.

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

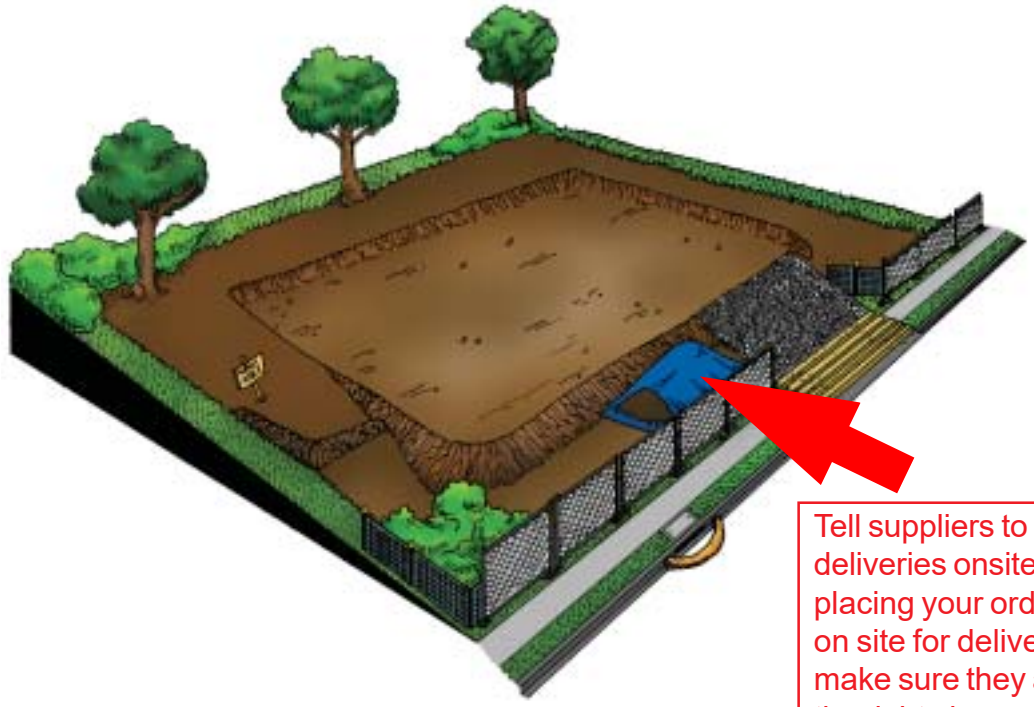
Why are sand, soil and screenings a problem?

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.

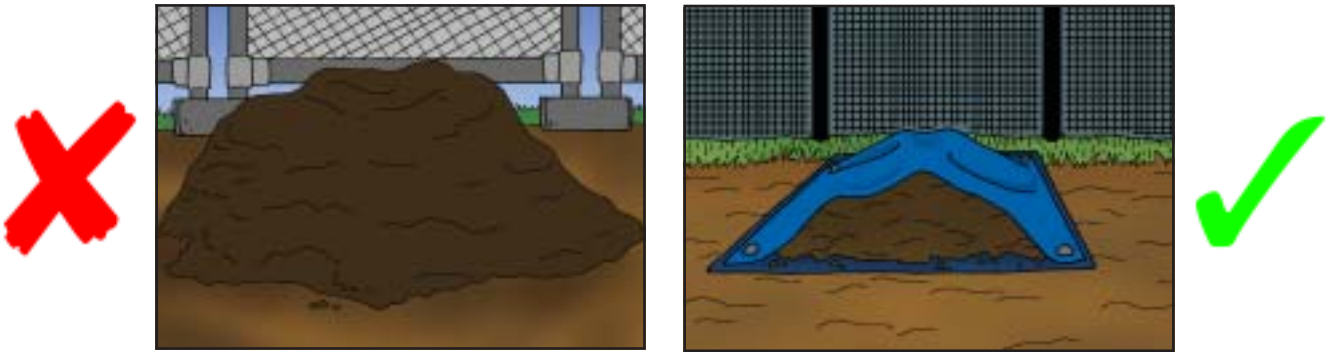


Tell suppliers to place deliveries onsite when placing your order or be on site for deliveries to make sure they are put in the right place.

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.

Site Rule 3 - Contain stockpiles on site. **13**

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

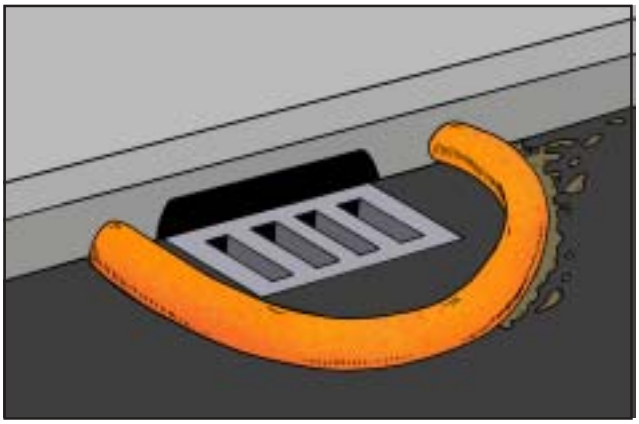
a) Place a tarp, plastic or bunded pallet under the area where the stockpile will be placed.

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.

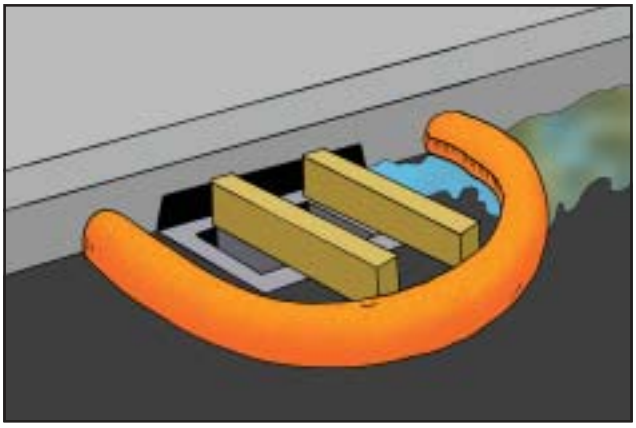


TO BUILD A GRAVEL SAUSAGE:

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?

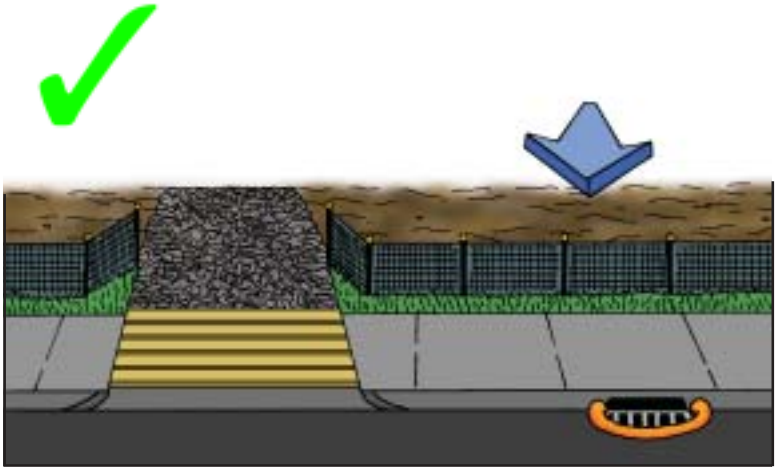
Two things happen when vehicles go on and off the site:

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 4 - Keep mud off road and on site. **17**

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

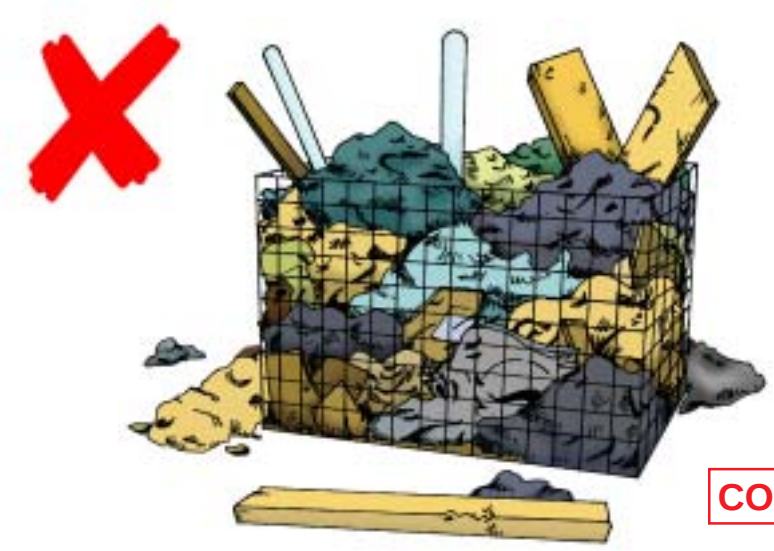
The following simple methods will help you to stop litter leaving your site or being a hazard on site.

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.

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

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.

Melbourne Water

Victoria The Place To Be

EPA VICTORIA

For copies of this guide please contact:
Melbourne Water on 131 722
or email enquiry@melbournewater.com

Desktop publishing and editing was done by:

EASY GUIDES Australia Pty Ltd
www.easyguides.com.au

First published in 2002
Second edition, revised, published 2002
Third edition, revised, published September 2003
Forth edition, revised, published October 2006