

10-11 RAILWAY STREET
WERRINGTON NSW 2747

CONSTRUCTION WASTE MANAGEMENT PLAN
(WASTE MINIMISATION)

- DEMOLITION WASTE
- CONSTRUCTION WASTE
- ENVIRONMENTAL MANAGEMENT
- INCORPORATING STANDARD
WASTE MANAGEMENT FORMS AND
ONGOING WASTE MANAGEMENT.

SEPTEMBER 2021 (Rev B)

PREPARED BY

Caverstock Group

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Caverstock Group

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1.00 INTRODUCTION - WASTE MANAGEMENT PLAN

1.01 This Construction Waste Management Plan for the development at 10-11 Railway Street, Werrington, NSW has been compiled with reference to the following documentation from Penrith Council and NSW Government:

- Penrith Council DCP 2014 – Part C3 - Waste Management.
- Penrith Council DCP 2014 – Part C5.3.3 Design for Waste Minimisation.
- Penrith Council – Multi Unit Waste Guidelines – Boarding House.
- ALSO – Environmental Planning and Assessment Regulation 2000.
- Waste Avoidance and Recovery Act 2001.
- Protection of the Environment Operations Act 1997.
- NSW – EPA Waste Classification Guidelines Part 1 – Classifying Waste Nov 2014.

1.02 The General Objectives of the Construction Waste Management Plan

1. Reduce demand for waste disposal.
2. Maximise re-use and recycling of materials.
3. Assist in achieving Federal, State and Local Government waste minimisation targets.
4. Minimise environmental impact of waste.
5. Source separation and design to complement Council's and private providers waste management.
6. Encourage building design and construction techniques to minimise future waste generation.

1.03 This Construction Waste Management Plan is based on the following Level Architect's drawings:

- Basement One and Two – DA 101 and 102
- Ground Floor – DA 103
- Upper Levels – DA 104, 105 and 106
- Sections – DA 301, 302 and 303
- Coloured Sketch of Building

1.04 This Construction Waste Management Plan covers two phases of new development work. Refer to Appendix A.

- Demolition Phase Waste Management
- Construction Phase Waste Management
- Ongoing Waste Management

The Operational Ongoing Residential Waste Management Plan Is found in APPENDIX A as it is Separate from the Earlier Demolition / Construction Works.

1.05 Special care is to be taken for all existing in-ground and visible cables and services conduits. The builder is to locate all underground services and also to protect all services above and below ground. Any Service to be removed is to be cut off and made safe by the appropriate licenced tradesman.

2.00 DEMOLITION PHASE WASTE MANAGEMENT

2.01 Demolition works consist of the complete and careful demolition of what remains on site following past demolition by Others of existing house structures. It includes demolition of existing concrete driveway, brick footings and ground floors, concrete slabs, pits, brick fence and vegetation. The demolition is required to remove a good bit of rubbish and debris strewn across the yards which comprises metal fencing, metal sheeting, and drywalling this material is covered with vegetation. Workers to wear Personal Protection Equipment as required by Workcover NSW – Hard Hat, adequate clothes, gloves, dust mask and ear plugs.

2.02 Materials in Existing Building and Improvements

The following are generally materials found in this demolition works:

- Some metal roofing scrap.
- Brick foundations.
- PVC and Steel pipes.
- Copper pipes.
- Concrete paths and pads.
- Concrete driveways.
- Concrete pits
- Trees and shrubs.
- Parts of masonry fences.

2.03 The Objective

- Waste minimisation by recycling as much demolished material possible by removing to recycling yards or re-use of materials on site.
- Refer to the required Council's Waste Management Plan Forms - Waste Management Plan - for Demolition & Construction - **Appendix A**.
- Refer to the Facts Sheets – for the Site Control – **Appendix B**.

2.04 Resource Recovery Contacts

Demolisher to contact for material acceptance requirements at each Recovery Centre.

Veola Environmental Services –
CAMELIA - 8844 4200
NORTH ROCKS - 132955
HORSLEY PARK - 9620 2867
CHULLORA - 9707 1709

Bingo Resource Recovery – 165 Woolpack Road, Smithfield

Concrete Recyclers – 14 Thakery Road, Camelia

Kimbriki Resource Recovery Centre Terry Hills – 9486 3512

Suez Recovery Centres – 1300 651 116 – Ryde, Artarmon, Belrose.

Penrith Community Recycling Centre – St Marys – 4732 7777

3.00 CONSTRUCTION PHASE WASTE MANAGEMENT

3.01 With knowledgeable site supervision, waste minimisation can occur during construction of the building. The objective is to remove as little as possible those items that may be classified as Building Waste to land fill as there would be many items in the construction phase that could be used or recycled within the work methodology of the builder. Workers to wear Personal Protection Equipment.

The reuse of broken concrete paving and bricks for working surfaces for safe dry access and truck movement on site, also these items would be used as granular fill around pipes and is a good example. Timber re-used for set-out pegs and formwork bracing is another example. These items can save the builder the cost of purchasing new materials.

3.02 The new construction works will entail the following items of works:

- Excavation into soils.
- Concrete reinforced structure.
- Masonry walls internal and external.
- Drainage works and external Services.
- Internal Services.
- Internal Gyprock stud walls.
- Floor surfaces - Tiles & carpet.
- Miscellaneous metal works.
- Timber and glass screens and windows.
- Painting internal and some external surfaces.
- External Paving.
- General landscaping.

3.03 Controlled Workers Rubbish

Food scraps to be placed into 240 litre General Waste Bins and recyclable materials (bottles and cans, paper and cardboard) to be placed in two 240 litre Recyclable Bins. The Site Forman is to ensure that no rubbish is all placed into the bins provided.

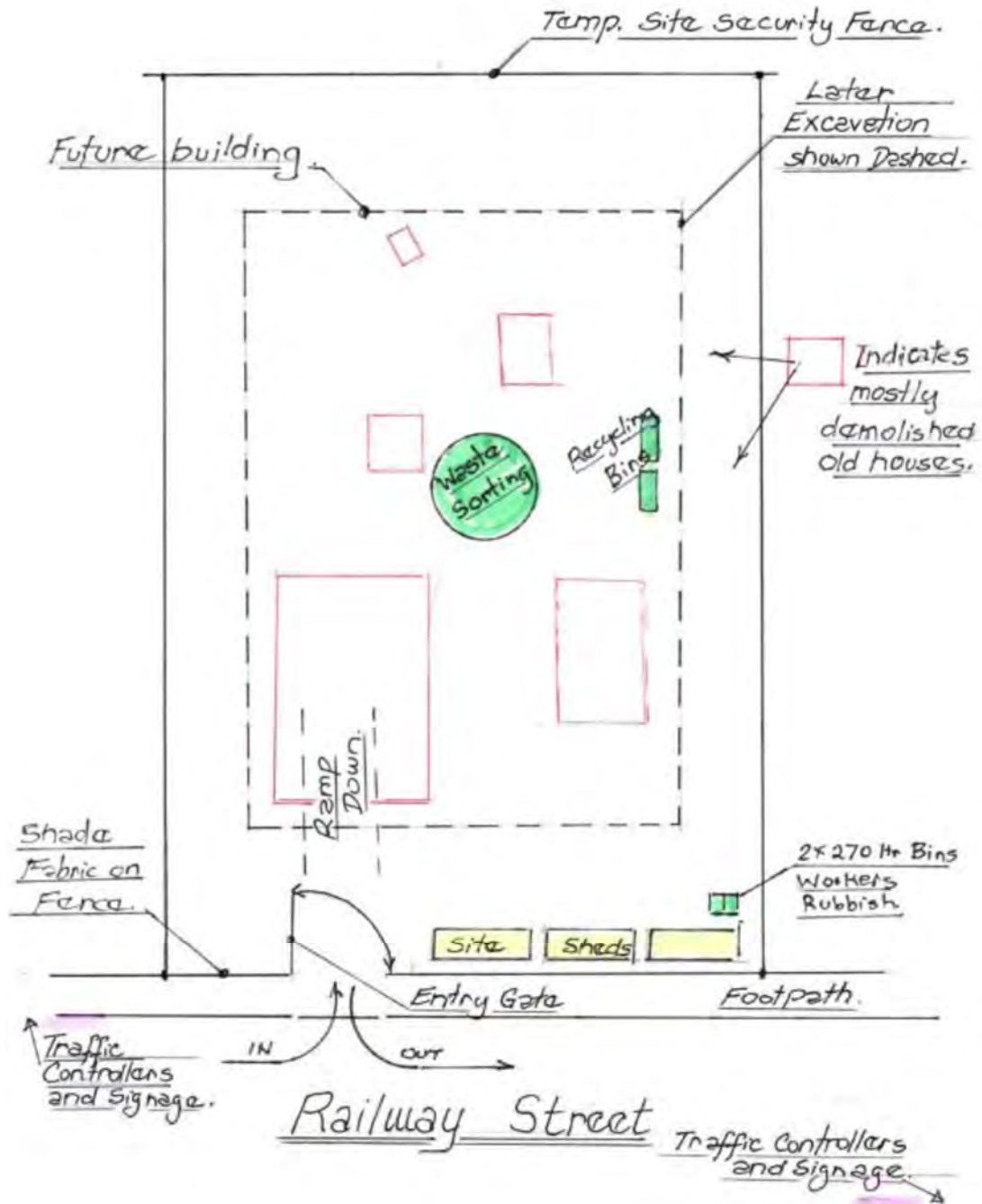
Both types of bins are to be removed every few days (or as needed) and either tipped at approved waste tip or recycled at the tip. These bins are to be managed by the builder who will engage the Waste Removal company.

3.04 The Objective

- Maintain a clean, healthy and safe workplace.
- Waste minimisation by recycling/reusing as much builders' waste material as possible. The builder is to manage Construction Waste to enable as much waste to be recycled On Site or removed to a Resource Recovery Centre.
- Refer to the attached Penrith Council's Required Form - Waste Management Plan - **Appendix A**.

SITE ESTABLISHMENT – ACCESS AND TEMPORARY WASTE STORAGE AREAS

SITE ESTABLISHMENT – ACCESS AND TEMPORARY WASTE STORAGE.



4.00 ENVIRONMENTAL MANAGEMENT

a. Introduction

The aim of this report is to also promote sustainable development principals in both the operations of the building and the construction of the building structure and finishes. General thoughtful product selection by the Architect will enable the promotion of these principals.

Certain Council requirements are available to sensibly locate plant and equipment, screen certain items to lower noise, use specific water saving devices, reduce cars in the area, recycle waste, reduce greenhouse emissions and promote energy efficiency.

Supervision of construction workers by the builder and promoting respect for the neighbours and the environment of the area and sound management of the apartment when completed will assist in resolving future environmental issues of the project.

b. The Local Environment

To design and construct a new building project in Werrington, the Architect must respect the Environment of the area. The local environment which surrounds the site is currently changing. Strict supervision will be undertaken by the builder of all construction activities to reduce and minimize disruption for adjoining properties and the neighbourhood. Traffic Controllers to be used for all Vehicles entering and exiting the Site.

c. Construction Considerations

- Water Conservation - reduce water usage in the building.
- Economical light fixtures to be used.
- Internal landscaping to soften the structure of the building.
- Reduce greenhouse gas emissions by sensible selection of equipment.
- Reduce disruption to neighbourhood community during the construction phase.
- Maintain control of materials delivery.
- reduce noise, dust and vibration emissions from the construction site.
- Promote use of Public Transport for workers.

d. Conclusion

Adequate care through the site Demolition and Construction Works phase and good Asset Management will achieve an Environmentally Friendly building project.

The Demolition and Construction phase is to be strictly supervised and all activities maintained by the Responsible Builder to provide good construction practices that minimize disruption in the neighbourhood.

APPENDIX A - COUNCIL'S REQUIRED FORM (WASTE MANAGEMENT PLAN) -
- **PART ONE - DEMOLITION PHASE (Following Pages)**
- **PART TWO - CONSTRUCTION PHASE (Following pages)**
- **PART THREE - ONGOING WASTE MANAGEMENT OF BOARDING HOUSE**

PART THREE - ONGOING WASTE MANAGEMENT OF BOARDING HOUSE

This project for the construction of a Boarding House which would cater for Students of the University and others as it is close to Werrington Railway Station and the University. The Boarding House consists of 69 Single Rooms and one Managers Room = 70 single rooms. A four storey building - Parking for 35 cars, 17 motorcycles and 15 pushbikes.

All waste is put into kitchen bins which are brought by the residents to the Two Waste Bins in the basement. YELLOW – Recycling, RED – Residual Waste. Signage will be displayed with instructions pertaining to each bin.

For Electronic or E/Waste contact the Penrith Community Recycling Centre 4732 7777. For BULKY Goods allow a 11.0 M2 space in the building – bookings can be made online (The Waste Spot) or by calling 4732 7777 – MINIMUM TWO DAYS PRIOR TO PUTTING THE GOOD OUT ONTO THE KERB SIDE -DISCUSS TIMING WITH COUNCIL.

The Building Manager lives in the building and would supervise and control the requirements of the Three Bins, and make sure that recycling is properly done and that the area is clean and tidy.

The Building Manager has a Set of Rules, some that pertain to Rubbish and the Residents must live by those rules in this Boarding House.

Bins are to be moved up to the kerbside by the Building Manager with the use of an Electric Bin Mover if the bins are to be wheeled up inclines. All bins of the same colour are to be placed together for pick up by the Waste contractors. The Waste removal timetable can be obtained by the Building Manager when the building is completed and placed on the appropriate Notice Boards. Once bins are emptied by the Council contractor all bins are moved back to the bin store area by the Building Manager where they are cleaned if needed in the bin wash area. All Boarders who sign for their rooms are advised that no Illegal Dumping is allowed as they will be fined by Council.

BIN REQUIREMENTS – AS DISCUSSED WITH COUNCIL.

- **YELLOW RECYCLING - 70 SINGLE ROOMS x 0.375** - 27 (240 Lt BINS)
- **RED ORGANICS - 70 SINGLE ROOMS x 0.375** - 27 (240 Lt BINS)

TOTAL NUMBER OF BINS FOR 70 SINGLE ROOM BOARDING HOUSE = 54 (240 Lt BINS)

STANDARD BIN SIZE = 600 mm WIDTH x 740mm DEPTH.

THE BIN ROOM is to have a sealed concrete floor with water supply for bin cleaning, drainage for bin cleaning and exhaust. Access to Bin Room is to be fairly flat with no steps or kerb – An electric bin mover is required if the grade to the kerb side is greater than 1:14 but as bins are sometimes difficult to move an electric bin mover is recommended for use by the Building Manager.

WASTE MANAGEMENT PLAN

DEMOLITION, CONSTRUCTION AND USE OF PREMISES

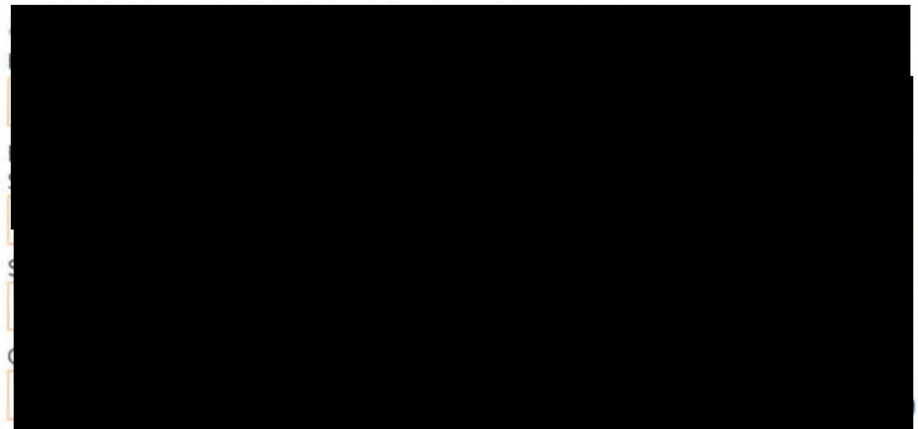
.....
If you need more space to give details, you are welcome to attach extra pages to this form.

PLEASE COMPLETE ALL PARTS OF THIS FORM THAT ARE RELEVANT TO YOUR DEVELOPMENT APPLICATION (DA).

IF YOU NEED MORE SPACE TO GIVE DETAILS, YOU ARE WELCOME TO ATTACH EXTRA PAGES TO THIS FORM.

Council will assess the information you provide on this form along with your attached plans. We will take into account the types and volumes of waste that could be produced as a result of your proposed development, and how you are planning to:

- minimise the amount of waste produced
- maximise re-use and recycling
- store, transport and dispose of waste safely and thoughtfully.



DETAILS OF YOUR PROPOSED DEVELOPMENT

Street No. Street name

Suburb Post code

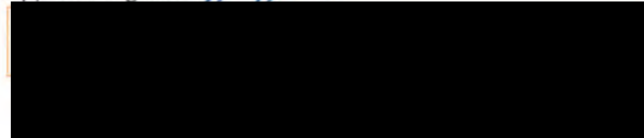
What buildings and other structures are currently on the site?

Buildings Demolished but there is footings, brick fences and demolished items on ground.

Briefly describe your proposed development

4 story 70 room Boarding House with associated 2 level parking.

Applicant Signature 



Date

SECTION 1: DEMOLITION

*Please include details on the plans you submit with this form, for example location of on-site storage areas/containers, vehicle access point/s.

Materials		Destination		
		Re-use and recycling		Disposal
Material	Estimated volume (m ² or m ³)	ON-SITE* Specify proposed re-use or on-site recycling	OFF-SITE Specify contractor and recycling facility	Specify contractor and landfill site
Excavation (eg soil, rock)	—	—	—	—
Green waste	Approx 3m ³ Solid	used as mulch	NIL	NIL
Bricks	Approx 5.2m ³ loose	use as Hand Stand in Wet	NIL	NIL
Concrete	Approx 8.2m ³ loose	Hand Stand at Entry	NIL	NIL
Timber (Please specify type/s)	—	—	—	—
Plasterboard	—	—	—	—
Metals (Please specify type/s) Rea — Other —	Approx. Minimal App 1.2m ³	—	Recycle	Veolia Horsley Park
Other misc Debris to be Sorted	Approx. 15 m ³	NIL	Needs Sorting	Recycle Kimbriki

SECTION 2: CONSTRUCTION

*Please include details on the plans you submit with this form, for example location of on-site storage areas/containers, vehicle access point/s.

Materials		Destination		
		Re-use and recycling		Disposal
Material	Estimated volume (m ² or m ³)	ON-SITE* Specify proposed re-use or on-site recycling	OFF-SITE Specify contractor and recycling facility	Specify contractor and landfill site
Excavation (eg soil, rock)	5,159 m ³ solid All Approx.	Allow 500 m ³ Topsoil	To other building sites	TBA unless needed by Council
Green waste	—	—	—	—
Bricks Masonry off cuts	5.0 m ³ loose	Around Pits & Pipes.	NIL	NIL
Concrete	All measured exact	—	—	—
Timber (Please specify type/s) Formwork	minimal	Reuse	NIL	NIL
Plasterboard	4.8 m ³	As needed	Recycle	Veolia 9620 2867
Metals (Please specify type/s)	minimal	NIL	Recycle	Veolia
Other - Pellets - Packaging	many much	— —	Returned to supplier Recycle	— Kimbriki

SECTION 3: WASTE FROM ON-GOING USE OF PREMISES

If relevant, please list the type/s of waste that may be generated by on-going use of the premises after the development is finished.	Expected volume (average per week)
Normal Red & Yellow	
Bin - for this refer	
to Notes on Appendix A.	
Ongoing Waste.	

SECTION 4: ON-GOING MANAGEMENT OF PREMISES

If relevant, please give details of how you intend to manage waste on-site after the development is finished, for example through lease conditions for tenants or an on-site caretaker/manager. Describe any proposed on-site storage and treatment facilities. Please attach plans showing the location of waste storage and collection areas, and access routes for tenants and collection vehicles.

On site full time Building Manager.
Refer to Notes on Appendix A
Ongoing Waste.

APPENDIX B - FACT SHEETS

- Fact Sheet 2 - Dust Control
- Fact Sheet 4 - Excavation Pump out
- Fact Sheet 6 - Protected Concrete Delivery
- Fact Sheet 7 - Protected Service Trucks
- Fact Sheet 8 - Protected Stockpiles
- Fact Sheet 12 - Protection of Gutters and Street Stormwater Drains
- Fact Sheet 13 - Protection of Site Stormwater Pits
- Fact Sheet 14 - Sediment Controls
- Fact Sheet 15 - Soil and Water Management Plan
- Fact Sheet 16 - Stabilised Site Access

Dust Control



'Do it right on site' is a project to help the construction industry protect the environment and achieve the many benefits that come from doing so.

Dust Control

What is it?

Dust control refers to minimising the amount of dust that enters the air and stormwater system from your site.

Why is it important?

Dust blowing from your site has a four way impact. Firstly, it is a nuisance to neighbours which can result in poor relations or complaints about your company.

Secondly, it can result in adverse health effects like asthma in workers and others. Thirdly, blown away materials are blown away dollars, and finally, it is dangerous to the environment.

The environmental impact of dust and sediment is significant. They smother animals and plants that live on the bottom of creek beds and make the creeks shallower. They carry nutrients which can lead to algal blooms and fish kills, as well as weeds which can take over from native plants.

Even though mud and dirt are natural they are still serious pollutants that must be prevented from entering our waterways.

What do I need to do?

Before building commences:

Assess the dust potential of your site and decide on dust controls. If there is high risk of dust generation then barriers to divert the wind up and over the site can be constructed. These include shade cloth walls of height one-fifth the site length. Document controls on your Soil and Water Management Plan and ensure staff are aware of its importance.

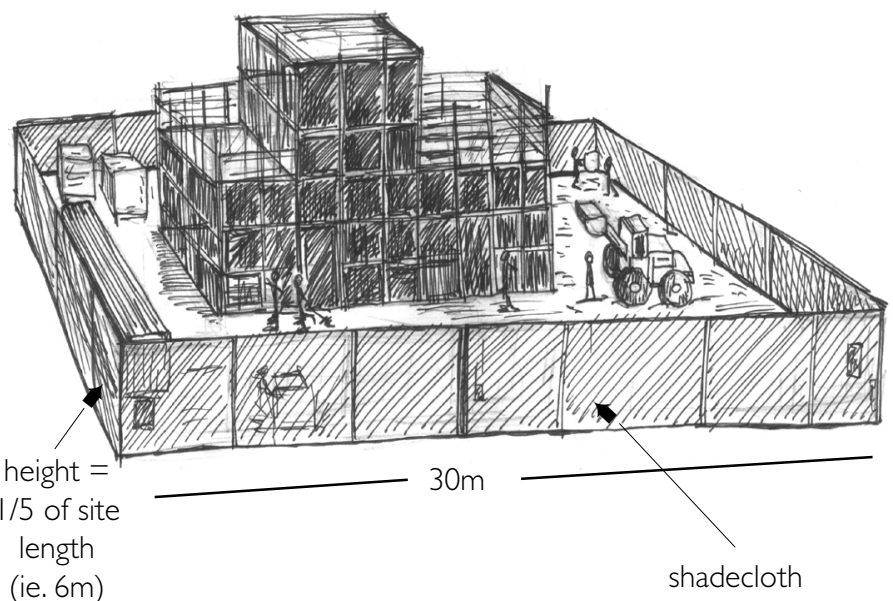
Installing the controls:

Good sediment management can alleviate most of the dust problem. Some of the steps that can be taken to minimise dust include:

- Maintain as much vegetation as possible
- Cover materials and stockpiles
- Ensure that all equipment has dust suppressors fitted
- Dampen the site slightly during excavation or when dust is being raised. Be careful not to wet it to the point of creating polluted runoff.
- Ensure that vehicles only leave via the stabilised site access
- Minimise the amount of the site that is disturbed at any one time

All of these actions will help to minimise the amount of sediment loose on the site and therefore the dust that can be generated.

If dust becomes too serious on windy days the best option is to cease work until wind conditions are suitable.



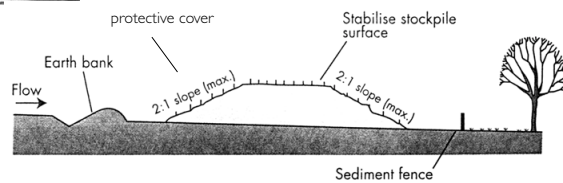
Fact Sheet 2

Maintenance of the sediment controls:

Dust collected around sediment controls will need to be removed regularly to maintain effectiveness. Built up material can be restockpiled, used on site or collected by an Earth Moving Company.

Inspect and sweep roads at the end of each day and when rain is likely.

On larger sites dust monitoring should be undertaken. The National Health and Medical Research Centre (NHMRC) guidelines require an annual mean of $90\mu\text{g}/\text{m}^3$ for total suspended particulate.



List of fact sheets available from Council:

1. Diversion of Upslope Water
- 2. Dust Control**
3. Early installation of Roof Drainage
4. Excavation Pump Out
5. Protected Concrete, Brick and Tile Cutting
6. Protected Concrete Delivery
7. Protected Service Trenches
8. Protected Stockpiles
9. Protected Wash Areas
10. Protected Waste Management and Chemical Storage
11. Protecting Vegetation
12. Protection of Gutter and Street Stormwater Drains
13. Protection of Site Stormwater Pits
14. Sediment Controls
15. Soil and Water Management Plans
16. Stabilised Site Access

For further information on preventing pollution from building and construction sites contact your local council:

Remember:

Everyone has a responsibility to protect the environment. The site supervisor is required to make sure that all workers, including sub-contractors are doing the right thing and all workers are required to notify their supervisors and Council if they see pollution occurring.

It is illegal for any substance other than rainwater to enter the stormwater system. If you do have an accident and pollution occurs you are required by law to notify the Council so that they can work with you to minimise any harm to the environment.

Penalties for polluting the stormwater system range from \$750 on the spot fines to \$1 million and seven years in gaol. Both companies and individuals can be fined.

Council Officers and the EPA enforce the environmental legislation and do routine inspections of building sites. They can issue notices to make companies clean up sites, change the way they are managing the sites and if necessary, cease work. They will attempt to work with you but penalties will be issued if a satisfactory environmental outcome is not achieved.

'Do it right on site' is funded by the Natural Heritage Trust and the Southern Sydney Regional Organisation of Councils – Bankstown, Botany Bay, Canterbury, Hurstville, Kogarah, Marrickville, Randwick, Rockdale, South Sydney, Sutherland Shire, Waverley and Woollahra.

THE DRAIN IS JUST FOR RAIN



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Excavation Pump Out



'Do it right on site' is a project to help the construction industry protect the environment and achieve the many benefits that come from doing so.

Excavation Pumpout

What is it?

Excavation pump out refers to the pumping of water collected in the bottom of excavated sites to the stormwater system. This water may be ground water or collected rain water.

Why is it important?

Rain Water

Rain water pooled on building sites picks up mud, dirt and any other contaminants present.

All of these pollutants can cause serious harm to our waterways. Even if the water is just muddy it can cause significant damage through smothering plants and bottom dwelling animals.

Ground Water

Ground water seeping up from aquifers may contain a range of contaminants such as heavy metals, petrochemicals and toxins depending on prior land uses in the area.

Approval is needed from the Department of Land and Water Conservation and Council to install ground water bores or spear points for pumpout of ground water.

What do I need to do?

Before building commences:

Review the site requirements and consider the best option for dealing with the collected water. Depending on the level of contamination it may be possible to:

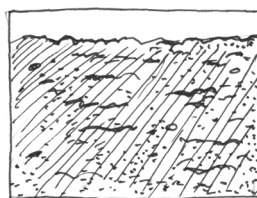
- 1) pump it after treatment to the stormwater system
- 2) pump it to the sewer with approval from Sydney Water or
- 3) have it collected by a liquid waste company for disposal at a licensed treatment facility.

The second and third options are the most preferable as they reduce the risk to the stormwater system and ensure you are not breaking the law. Document the methods to be used on your Soil and Water Management Plan and ensure that staff are aware of its importance. If the groundwater is contaminated EPA advice should be sought and may require waste disposal tracking.

Installing the controls:

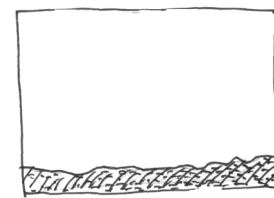
If the water contains only sediment it can be pumped to the stormwater system after filtering. It must have less than 50 mg/L Total Suspended Solids. This is water with no visible cloudiness. If you do not have time or room on-site to let the sediment settle naturally, flocculants such as gypsum can be used. Flocculants speed up the settling process. Unfortunately they raise the pH of the water and pH correction is needed prior to pumping to the stormwater system. Some flocculating agents can be toxic to fish above certain critical concentrations. Council advice should be sought prior to their use. Once settled, pump the clean water from the top to an area of the site where it can soak in or to the stormwater system. The settled sediments, "the sludge", can be reused on site or disposed of in a bin.

Dirty Muddy Water



becomes

Sediment settles out

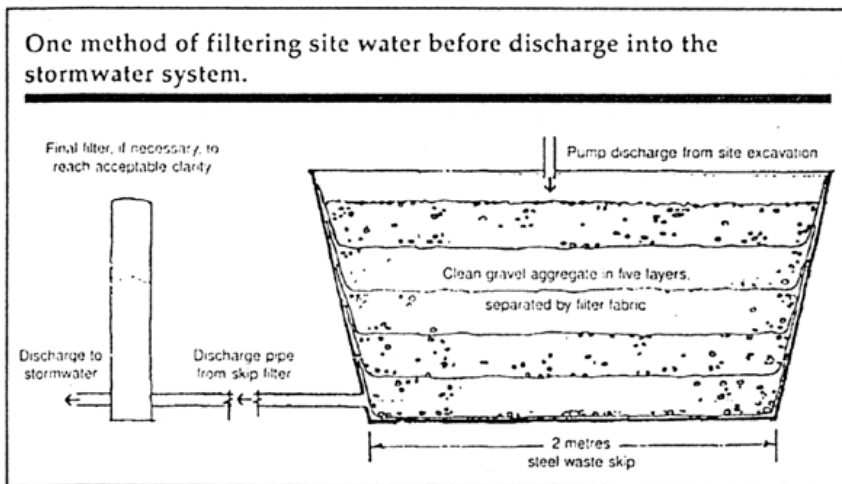


Sediment settles over time but can be sped up with flocculant.

Reuse sediment or place in bin

Pump clear water to "soak in" site or to stormwater system

Fact Sheet 4



Source: Environetwork News, EPA, 5/99

Maintenance of the sediment controls:

If you install a filtering system such as the one pictured it will need to be cleaned regularly to remove the sediment that it filters out.

Remember:

Everyone has a responsibility to protect the environment. The site supervisor is required to make sure that all workers, including sub-contractors are doing the right thing and all workers are required to notify their supervisors and Council if they see pollution occurring.

It is illegal for any substance other than rainwater to enter the stormwater system. If you do have an accident and pollution occurs you are required by law to notify the Council so that they can work with you to minimise any harm to the environment.

Penalties for polluting the stormwater system range from \$750 on the spot fines to \$1 million and seven years in gaol. Both companies and individuals can be fined.

Council Officers and the EPA enforce the environmental legislation and do routine inspections of building sites. They can issue notices to make companies clean up sites, change the way they are managing the sites and if necessary, cease work. They will attempt to work with you but penalties will be issued if a satisfactory environmental outcome is not achieved.

List of fact sheets available from Council:

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2. Dust Control
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13. Protection of Site Stormwater Pits
14. Sediment Controls
15. Soil and Water Management Plans
16. Stabilised Site Access

For further information on preventing pollution from building and construction sites contact your local council:

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**THE DRAIN
IS JUST FOR
RAIN**



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Protected Concrete Delivery



'Do it right on site' is a project to help the construction industry protect the environment and achieve the many benefits that come from doing so.

Protected Concrete Delivery What is it?

This refers to receiving concrete deliveries in a manner that does not pollute the stormwater system.

In the past the usual way of delivering concrete was for the truck to park either in the site access point or next to the site and pump the concrete to the required area. Any spills would land on the road. The chute of the concrete truck would often be washed down, resulting in all of this waste concrete slurry entering the drains and our rivers.

Why is it important?

Concrete that enters the stormwater system causes several problems.

It hardens in the pipes, reducing their diameter. This increases the risk of flooding to the surrounding neighbourhoods.

It also affects the pH of the water, making it toxic to many plants and animals. This kind of pollution results in major fish kills.

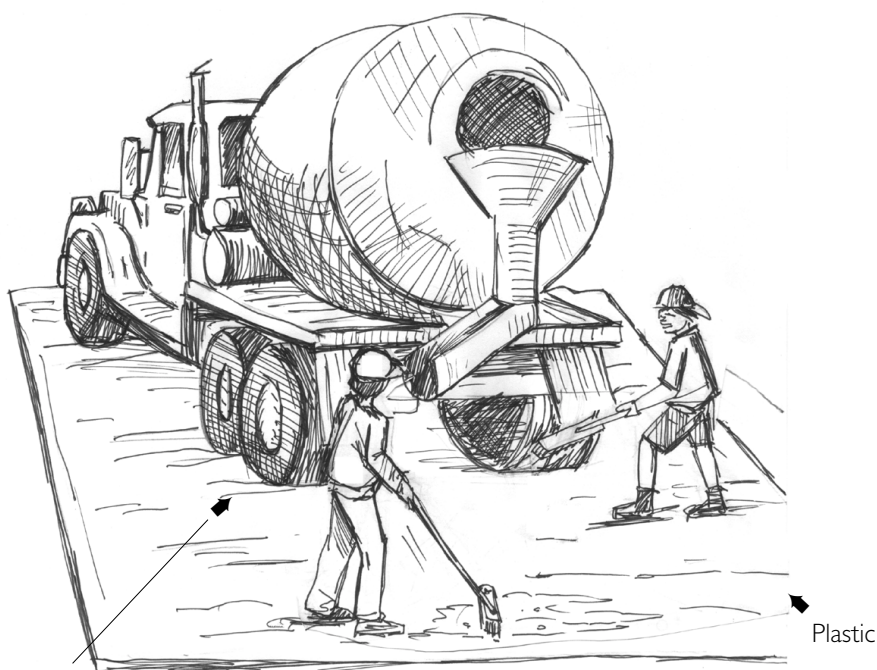
What do I need to do?

Before building commences:

Plan to have concrete deliveries made entirely on the site where spillage can be cleaned up without risk of it entering the stormwater system. If this is not possible you will need to place controls around and under the concrete truck to catch any spills. Document the delivery area on your Soil and Water Management Plan. Purchase these controls and ensure staff are aware of the need to use them. When selecting a concrete supplier ask them if they comply with the Australian Premixed Concrete Association guidelines for safe concrete delivery.

Installing the controls:

1. Before pumping begins, place plastic under the concrete pump and temporary bunds across all downslope gutters to trap any spillage. Sweep up all spillage before removing the bunds. Do not wash it away.
2. Ideally vehicles and equipment should be washed down within a designated bunded area within the site where the washwater can soak in to the ground or at a washdown depot. If more washwater occurs than can soak into the ground, it can be stored, settled and/or filtered by techniques that render waters clear for safe discharge to council drains ie: 50mg/l Total Suspended Solids which means clear water with no visible turbidity (cloudiness). pH correction may be required. Contact suppliers for help with meeting EPA requirements.



Scrape down wheels/tyres

Ensure tyres are clean before leaving construction site

Collect and remove all spillage
Sweep up residues

Fact Sheet 6

Wash down chutes and barrels in proper wash area on site or at a washdown depot. If not applicable, collect wash water in a wheelbarrow and transport on site to wash area



Letting any materials enter the stormwater system may result in fines

Remember:

Everyone has a responsibility to protect the environment. The site supervisor is required to make sure that all workers, including sub-contractors are doing the right thing and all workers are required to notify their supervisors and Council if they see pollution occurring.

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THE DRAIN IS JUST FOR RAIN



Southern Sydney Regional Organisation of Councils

Protected Service Trenches



'Do it right on site' is a project to help the construction industry protect the environment and achieve the many benefits that come from doing so.

Protected Service Trenches

What are they?

This refers to installing phone, power, water and drainage services in a manner that does not pollute the stormwater system.

Why are they important?

Underground service connections can concentrate runoff into rivulets and channels that cause rapid soil erosion and pollution of discharged waters.

This sediment has significant impacts on our waterways. It smothers animals and plants that live on the bottom of creek beds. It settles and makes the creeks shallower. This results in the sun's rays heating the water. Many native plants and animals can not survive in this hotter water and die.

Even though mud and dirt are natural they are still serious pollutants that must be prevented from entering our waterways.

What do I need to do?

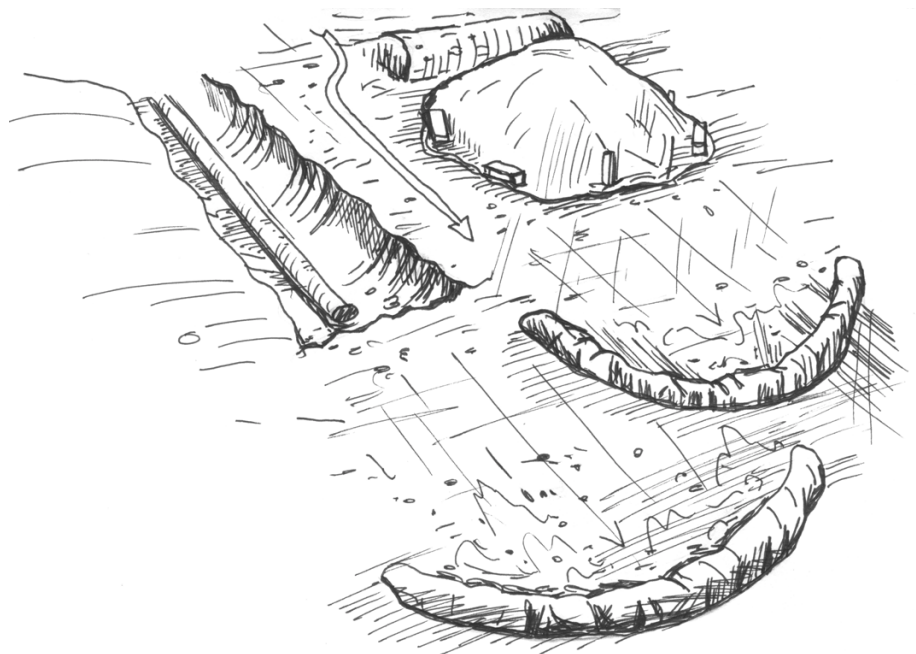
Before building commences:

Decide where the service trenches will need to go. Document them on your Soil and Water Management Plan. Ideally they should be away from areas where water flow is likely to concentrate. Plan to coordinate the various service connections so that a single trench can be used and schedule work to periods when rainfall is low.

Installing the controls:

1. Remove and store vegetated topsoil so that it can be replaced after works to provide immediate erosion protection.
2. Place the soil on the uphill side of trenches to divert water flow away from the trench line. Temporary bunds can also be used.
3. The trench should be open for a maximum of 6 days. Once completed, backfill subsoil and compact.
4. Replace topsoil and any grass / vegetation to match surrounding ground levels. If trench runs are steep place sediment barriers at 5 metre intervals to prevent erosion.

If cutting of pavement is required, ensure that proper measures are taken to prevent 'cuttings' entering the stormwater - see Fact Sheet 5 on 'Protected Concrete, Brick and Tile Cutting' in this series.

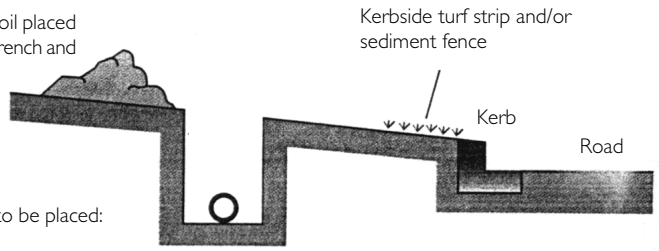


Minimise the width of cut and the time trenches are open - then quickly stabilise the backfill.

Fact Sheet 7

When Excavating Trench...

Excavated soil placed upslope of trench and covered



Excavated soil not to be placed:

- on road
- in areas of concentrated runoff
- within 1 metre of kerb

Maintenance of the controls:

If using temporary bunds, sediment will need to be collected from them to maintain their effectiveness. This material can be re-stockpiled, used on site or collected by an Earth Moving Company. The stockpile of excavated sediment that will be reused to cover the trench should also be checked regularly to ensure it is compacted and not being washed away - see Fact Sheet 8 on 'Protected Stockpiles' in this series for more information.

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Protected Stockpiles



'Do it right on site' is a project to help the construction industry protect the environment and achieve the many benefits that come from doing so.

Protected Stockpiles What are they?

They are materials such as sand, gravel, topsoil, mulch and woodchip stored in a way that will not enter the stormwater system.

Why are they important?

Stockpiles are at risk of being washed or blown away and polluting stormwater. Loose materials in heaps with steep sides and impervious foundations are most at risk. Not only does this affect the environment but it is expensive to the builder, increasing the amount of materials needing to be purchased for the development.

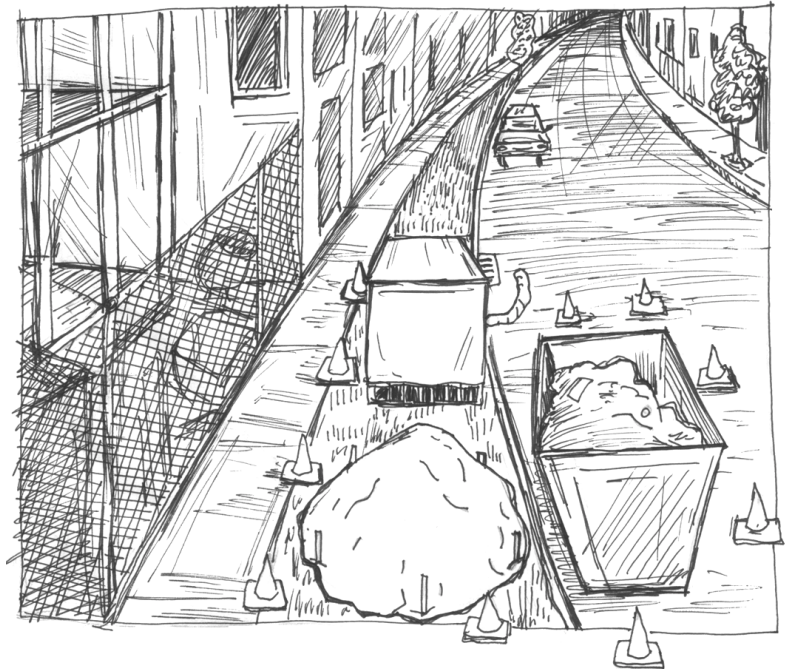
The environmental impact of these materials is significant. Mulch and woodchip decompose absorbing all the oxygen in the water resulting in suffocation of animals. Sediment settles making creeks shallower and smothering animals and plants that live on the creek beds. This shallower water depth also results in the sun's rays heating the water. Many native plants and animals can not survive in this hotter water and die.

Fact Sheet 8

What do I need to do?

Before building commences:

Identify a protected storage area for stockpiles. This should be inside the site under cover, away from stormwater flow paths, with erosion control measures such as sediment fence, gravel sausage or straw bales placed around them. If there is no room on site Council approval will be needed to store materials on the kerb or footpath. Materials should be stored in sand bags or bale/pallet containers with sediment controls around them. Document your storage area on the soil and water management plan and ensure staff are aware of its importance.

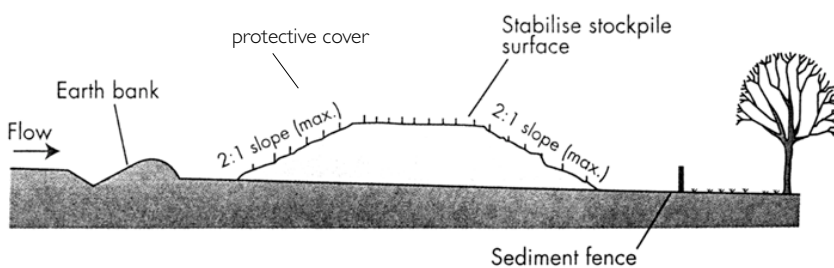


Installing the controls:

1. Locate stockpile away from stormwater flow paths, roads and hazard areas (ideally at least 5m away).
2. Place on a level area as a low, flat, elongated mound.
3. Where there is sufficient area topsoil stockpiles shall be less than 2m in height.
4. Construct an earth bank on the upslope side to divert run off around the stockpile and a sediment fence 1 to 2 m downslope of the stockpile (or sand bag, gravel sausage).
5. Stockpiles should be covered during windy conditions, rain or unattended site periods.
6. Once the roof has been installed on the frame, move stockpiles inside.

Maintenance of the controls:

Stockpiles should be checked and covered at the end of each day. Materials trapped by the down slope controls should be removed regularly to maintain their effectiveness. Built up material can be re-stockpiled, used on site or collected by an Earth Moving Company. Incorrect storage of stockpiles is a major source of stormwater pollution. All site workers, subcontractors, and delivery drivers should be advised of their responsibilities. Delivery drivers should be given a designated location to deliver materials on site.



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Southern Sydney Regional Organisation of Councils

Protection of Gutter and Street Stormwater Drains



'Do it right on site' is a project to help the construction industry protect the environment and achieve the many benefits that come from doing so.

Protection of Gutter and Street Stormwater Drains

What is it?

This refers to placing sediment collection devices around or in the drains down slope of your site to prevent pollutants entering. **This should not be your only measure.**

Street drain protection is a backup measure to support your on-site controls.

Why is it important?

The environmental impact of sediment such as mud and dirt is significant. They smother animals and plants that live on the bottom of creek beds and make the creeks shallower. This results in the sun's rays heating the water. Many native plants and animals can not survive in this hotter water. Even though mud and dirt are natural they are still serious pollutants that must be prevented from entering our waterways.

What do I need to do?

Before building commences:

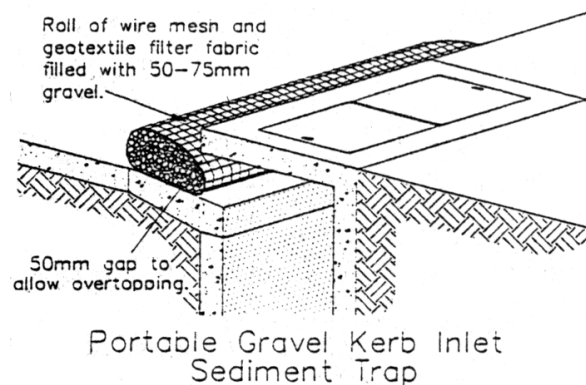
Find the street drains below your work site. Choose the most appropriate method for protection and install prior to commencement of building works. Document these on your Soil and Water Management Plan and ensure staff are aware of its importance.

Installing the controls:

Choose the best down slope control method for your site. Those that collect sediment above the pit are easier to clean but have low storage capacity compared to controls that 'sit' in the pits. Place cones around controls in the gutters or on roads to prevent drivers damaging them.

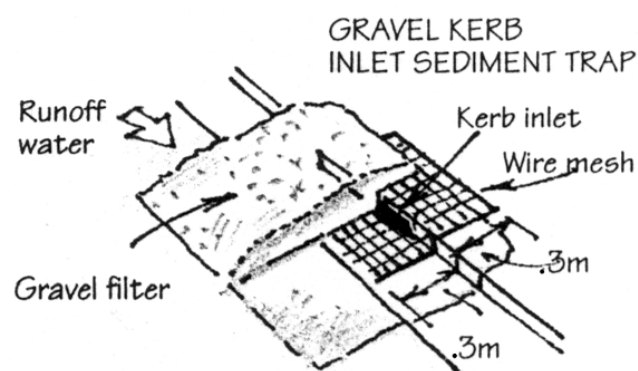
Portable gravel kerb inlet sediment trap:

This trap involves a roll of wire mesh and geotextile filter fabric filled with gravel in front of the kerb inlet. It has the benefit of being portable and easily removed for cleaning. Ensure there is a gap at the top to allow overtopping and prevent flooding.



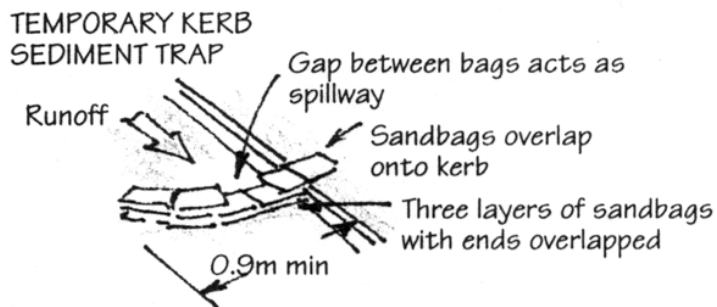
Gravel surface barrier strategy

This method involves placing wire mesh over the drain and placing large gravel upslope of it. The sediment will be filtered out into the gravel with only the clean water entering the stormwater system.



Sandbag kerb sediment trap

Place sandbags in front of flow of water. This will slow down the water enabling sediment to settle out. Two or three of these traps in a row may be required to ensure sediment settles out.



Pit Baskets

There are a range of products that can be placed inside side entry pits that act as baskets or sacks to trap any pollutants that enter. Council permission must be sought before placing any items inside the side entry / gully pit.

Maintenance of the sediment controls:

All sediment collection devices will need to be cleaned regularly to maintain effectiveness. The built up material can be re-stockpiled, used on site or collected by an Earth Moving Company.

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Protection of Site Stormwater Pits



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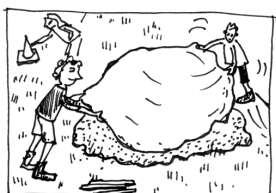
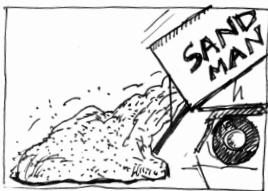
Protection of Site Stormwater Pits

What is it?

This refers to placement of sediment collection devices around any existing stormwater drains on the site.

Why is it important?

Stormwater drains on the construction site are at high risk of having pollutants such as dirt, stockpiled soil, mulch and barkchips washed straight into them. The environmental impact of these materials is significant. Mulch and woodchip decompose absorbing all the oxygen in the water resulting in suffocation of animals. Sediment settles making creeks shallower, smothering animals and plants that live on the creek beds. Many native plants and animals can not survive this and die.



What do I need to do?

Before building commences:

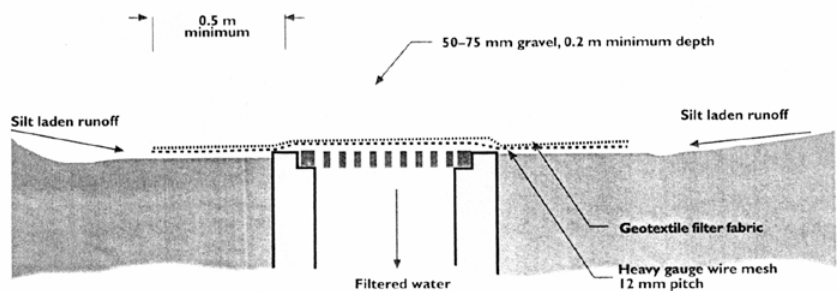
Identify any stormwater drains on the site. Plan the layout of the work site so that any wash down areas, tile or brick cutting areas are not near these drains. Clearly mark the stormwater drains on the site and choose a method of protection for them. Install the protective controls prior to building work commencing. Document all of this on your Soil and Water Management Plan and ensure staff are aware of its importance.

Installing the controls:

There are a range of sediment traps to choose from.

Drop inlet sediment Trap:

Three layers on top of the drain to trap the sediment. 1) heavy gauge wire netting or mesh 2) geotextile filter fabric with 3) a layer of prewashed 50-75mm gravel on top.

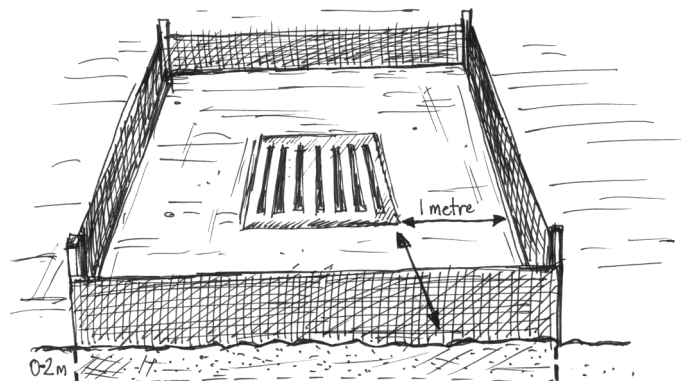


Alternatively, drop inlet may be surrounded by hay bale barriers or a silt fence. Refer to relevant details

Source: EPA (SA) 1999 'Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry.'

Sediment Fence drop inlet sediment trap:

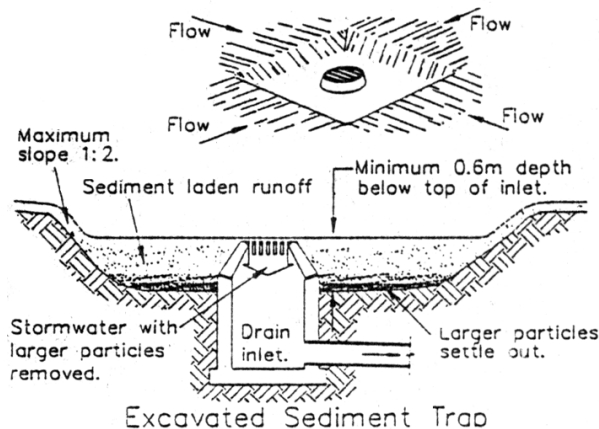
Sediment fence staked around the drain to trap sediment. Note: It is important to partially bury the fabric so that water and sediment can not just flow underneath. The more space between the fence and the drain, the more chance of sediment settling and the greater the capacity of the trap.



Geotextile Filter Fabric Drop Inlet Sediment Trap

Fact Sheet 13

Excavated sediment trap: This is a detention basin technique for on-site drains. The basin depth needs to be at least 0.6m to ensure that water is held in place and sediment can settle out.



Source: Department of Conservation and Land Management (1995) 'Preparing an Erosion and Sediment Control Plan'.

Maintenance of the controls:

All sediment collection devices need regular maintenance to stay effective. Remove the built up sediment and check for holes or other breaks in the controls. Repair and replace them. Built up material can be re-stockpiled, used on site or collected by an Earth Moving Company.

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Southern Sydney Regional Organisation of Councils

Sediment Controls



'Do it right on site' is a project to help the construction industry protect the environment and achieve the many benefits that come from doing so.

Sediment Control What is it?

These are a range of products installed across drainage flows to filter sediment out of water and enable its deposition by slowing down water flow. They include sediment fences, straw bales, grass/vegetation strips and sediment traps/basins. Other controls may be available and advice should be sought from suppliers of Sediment Control Equipment.

Why is it important?

Sediment on building sites causes problems not only for the environment but also for builders. A dirty site causes difficulties in wet weather, increases costs from having to replace stockpiles that are washed away, increases clean up costs, penalties and potential damage to your company's reputation if fined for polluting.

The environmental impact of sediment such as mud and dirt is significant. They smother animals and plants that live on the bottom of creek beds. They settle and make the creeks shallower. Many native plants and animals can not survive this and die. Even though mud and dirt are natural they are still serious pollutants that must be prevented from entering our waterways.

What do I need to do?

Before building commences:

Prepare a soil and water management plan, also known as a sediment control plan. This will be required by Council prior to issuing a construction certificate (either at DA stage or as a condition of consent) and should outline the methods you will use to prevent pollution of the stormwater system throughout the life of the development. There may be different controls needed as the site develops due to changes in drainage patterns and vegetation. This should be thought through and shown on your plans. Council can provide you with sample plans, however it is important that you develop a plan specifically for your site.

Remember the more erosion you can prevent the less sediment will need to be captured! The easiest way to prevent erosion is to leave shrubs and grass in place. This has the dual effect of holding the soil and dirt together as well as filtering and slowing down water flows enabling sediment to settle out.

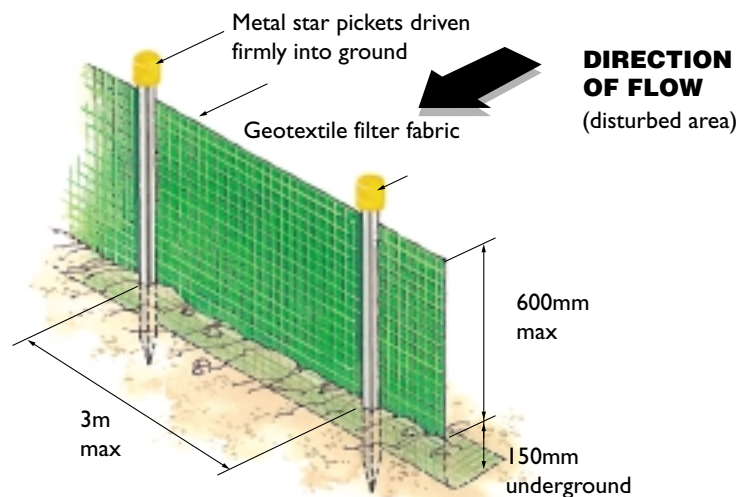
If vegetation needs to be removed try not to do it until immediately before works commence or stage the works to limit the amount of the site that is disturbed at any given time. As you move into a new area, revegetate the finished area. Another way to minimise erosion is to ensure that you only have small amounts of sand, soil and other stockpiles on site at any time. Ensure stockpiles are stored in ways to reduce erosion - see Fact Sheet 8 on *Protected Stockpiles*.

Installing the controls:

The sediment controls need to be in place prior to the commencement of building works. Remember that the sediment controls will need to be altered as construction occurs and the sites drainage patterns change.

Sediment Fence

A sediment or silt fence is the most widely used strategy. It is constructed from heavy duty geofabric. Although a sediment fence looks like shade cloth it is very different and is not interchangeable. A sediment fence is specifically designed to allow the free passage of water and trap sediment



Fact Sheet 14

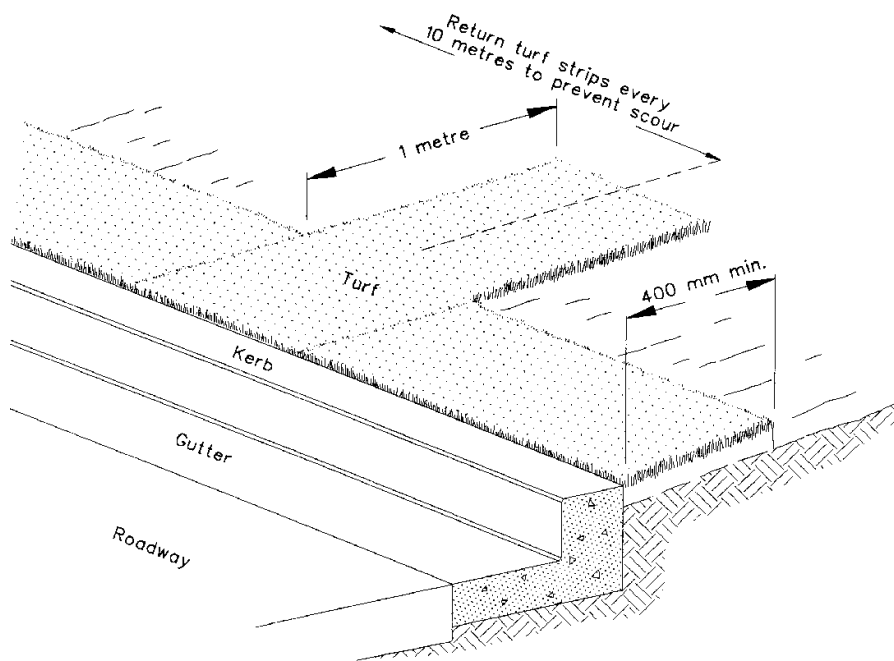
Sediment Fence (continued)

Construction Notes:

1. construct the sediment fence as close as possible to parallel to the contours of the site
2. drive 1.5m long star picket into ground, 3m apart
3. dig a 150mm deep trench along the upslope line of the fence for the bottom of the fabric to be entrenched
4. backfill trench over the base of fabric (where the sediment barrier has to be located on hard pavement that cannot be trenched, a gravity system held firm by its weight eg: gravel sausage can be used.)
5. fix self supporting geotextile to upslope side of posts with wire ties or as recommended by geotextile manufacturer
6. join sections of fabric at a support post with a 150mm overlap

Grass Strip Filters

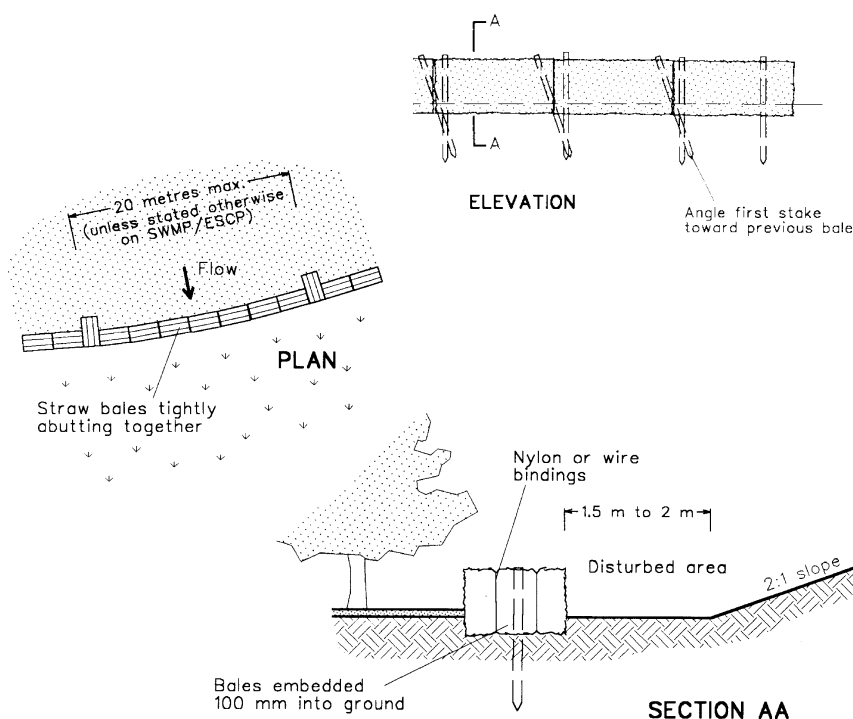
These are strips of undisturbed vegetation or grass planted down slope from earthworks. They provide a simple method of trapping coarse sediment. The flatter and wider the strips are, the more effective they become. They are only suitable on low grades. A 400mm wide grass strip between the kerb and the footpath can be a good last resort sediment control, filtering the water before it enters the stormwater system.



Straw Bale Filters

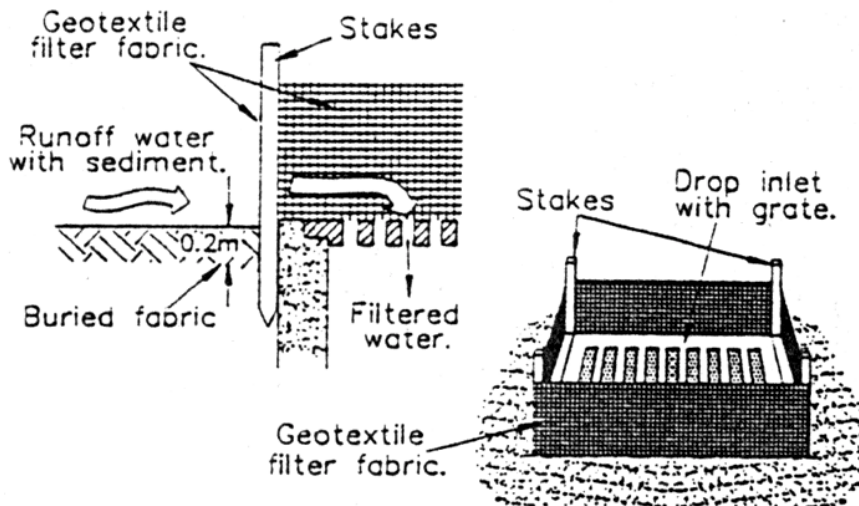
These are straw bales tightly abutted together and partially buried into the ground. They are only suitable for low flows. Filter fabric can be placed in front of them adding to the sediment stoppage. It is recommended that at least 4 bales are used as during a storm any less result in the water simply hitting the bales and flowing around them. This defeats the purpose of using them, which is to slow the water and have it filter through the bales with the sediment settling out.

Straw bales are usually used incorrectly. Seek Council guidance if unsure.

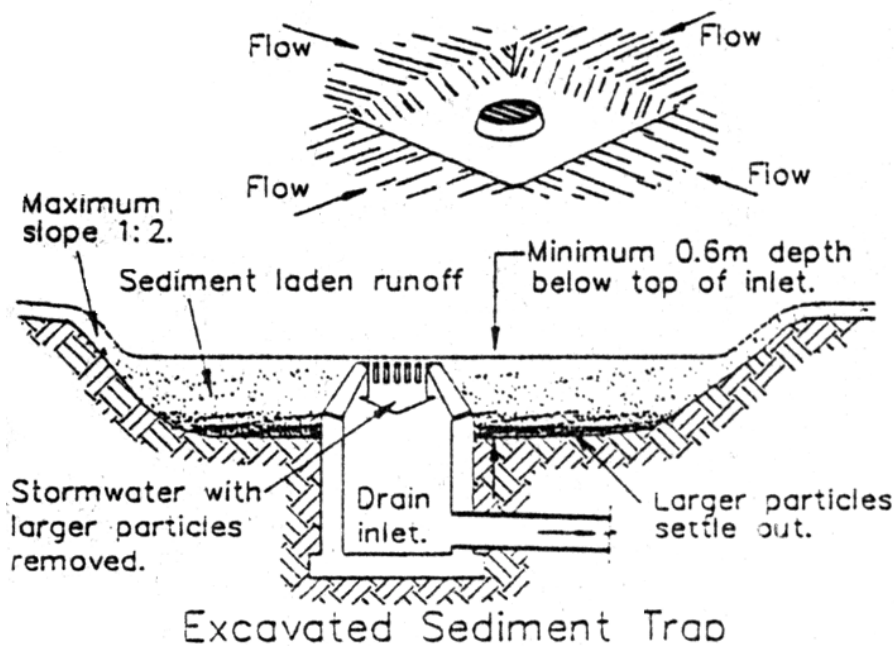


Sediment Traps / Ponds

These are basins designed to capture a concentrated sediment laden flow and store it under still conditions enabling the silt to deposit at the bottom of the trap. The effectiveness of the traps to remove fine particles may be improved by the placement of filter fabric along the uphill face of the embankment.



Geotextile Filter Fabric Drop Inlet Sediment Trap.



Maintenance of the sediment controls:

Sediment controls will naturally fill up with sediment and need to be maintained to stay effective. This involves removing the built up sediment as well as ensuring that they are still in good working condition.

Often sediment controls will be moved during works and they should be checked daily to ensure they have been put back in place properly.

Straw bales deteriorate and can end up polluting waterways. Their average life is 3 months and should be inspected regularly. Enclosing bales in sediment fence reduces this risk. At the end of their life they can be used as mulch on gardens. Sediment fences should also be checked regularly for holes.

Some Councils do not allow straw bales to be used, so check with them when planning your controls.

Soil and water controls should be kept in place until works are completed. If landscaping is not completed prior to handover ensure that the new owners are aware of their responsibility to prevent pollution from entering the stormwater system.



Suppliers of Sediment Control Equipment

There are a large number of companies that supply sediment control equipment listed in Outdoor Design Source and the Yellow Pages. While we do not necessarily endorse any particular company or product we thought it useful to list some company details as a starting point for you:

Total Erosion and Pollution ph: 02 9524 0155

GSE Lining Technology ph: 02 9821 2977

Hardware House

Maccaferri Pty Ltd ph: 02 9648 3800

Mulch Mat Products ph: 02 9905 5344

Naturelink Environmental ph: 02 4578 4588

Polyfabrics Australia Pty Ltd ph: 02 9829 5599

Spraygrass Landscapes ph: 02 9627 4352

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15. Soil and Water Management Plans
16. Stabilised Site Access

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Soil and Water Management Plans



'Do it right on site' is a project to help the construction industry protect the environment and achieve the many benefits that come from doing so.

Soil and Water Management Plans

What are they?

A Soil and Water Management Plan (also called an erosion and sediment control plan) is the formal plan designed to control erosion and sedimentation on a building site. It details the specific methods of erosion and sediment control that will be used to meet the specific site conditions at the various stages of construction. A Soil and Water Management Plan will be required by Council prior to issuing a construction certificate (either at DA stage or as a condition of consent).

Why are they important?

The Building and Construction Industry has a large impact on the environment, in particular our waterways. Sand, soil, cement slurry, paint and other building materials that enter our waterways kill fish and aquatic plants, silt up streams, and block stormwater pipes, leading to increased flooding. Due to the high number of construction sites even small amounts of pollution from each site is enough to cause significant damage to our waterways. Soil and Water Management Plans help in reducing pollution from building sites.

What do I need to do?

Develop a Soil and Water Management Plan along with other site documentation. The plan needs to include a minimum of:

- Basic site information
- Property boundary
- North point
- Contours initial and final
- Date
- Author
- Construction details
- 'Site' or 'disturbed area'
- Vehicle access point
- Location of stockpiles and secure chemical storage area
- Location and details of all temporary and permanent soil and water management controls
- Staging of works - the Soil and Water Management Controls will need to be altered as the site is developed and drainage patterns altered. The phases and controls to be used for each phase should be specified (major projects only)
- Location of all drains, downpipes, pits and watercourses
- Location of vegetation to be removed
- Revegetation program
- Stormwater management
- Integration with onsite detention / infiltration
- Stormwater discharge point if proposed

Other details may be required depending on the scale of the development and the specific requirements of the site- Council can advise on this and provide you with example Plans. Remember the example Plan will need to be modified to meet the needs of your specific site.

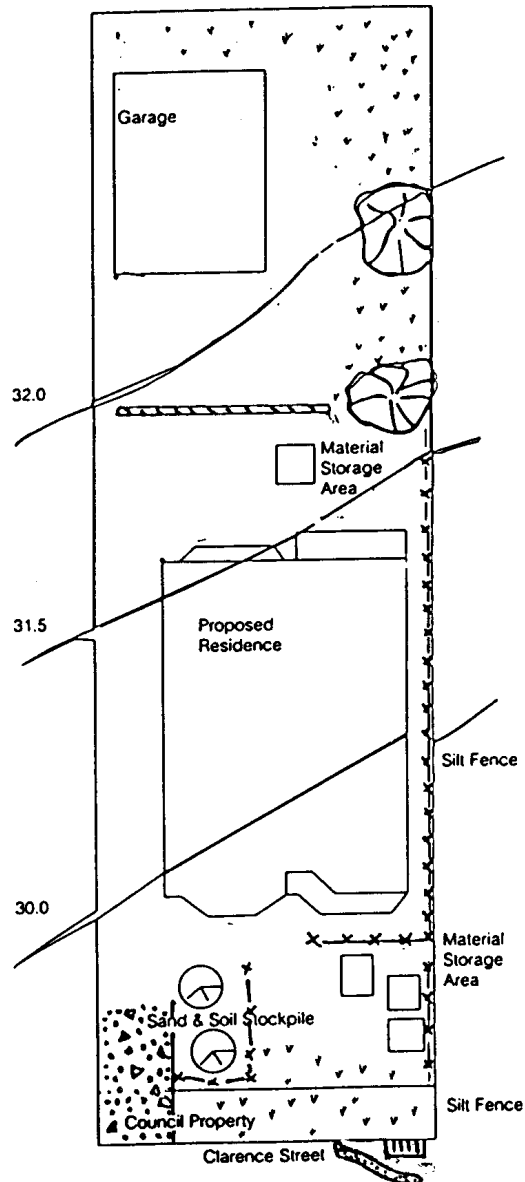
Councils may accept written plans stating what you will do to control sediment and erosion for smaller sites and developments that involve a minimum amount of earthworks, clearing or delivery of building materials. Contact the local Council for more information.



Fact Sheet 15

Example: Soil & Water Management Plan for Larger Sites

sample
only



Note

- 1 All erosion and sediment control measures to be inspected and maintained daily by site manager
- 2 minimise disturbed areas
- 3 all stockpiles to be clear from drains, gutters and footpaths
- 4 drainage is to be connected to stormwater system as soon as possible
- 5 roads and footpath to be swept daily
- 6 If you do not comply you may be liable to a \$750 or \$1500 fine

Legend

- Undisturbed vegetation
- Silt Fence
- Stockpiles
- Gravel access
- Geotextile fabric filled with gravel
- water diversion
- Stormwater pit

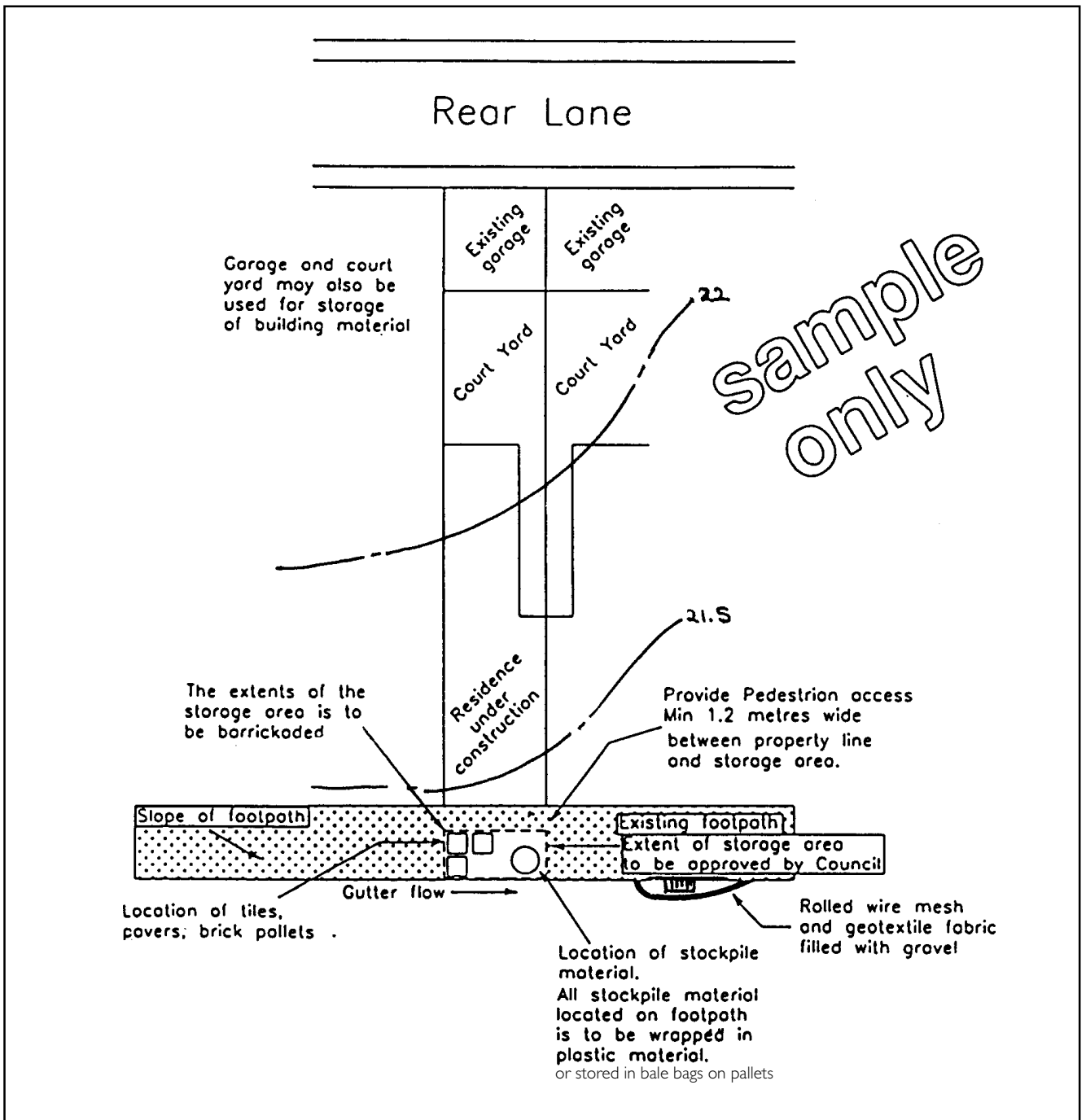
Drawn by: Mr House
Date: 02/08/00

Location:
3 Smith Street, Bankstown

Scale: Not to Scale

Applicant: Mr Andrews





Example: Soil & Water Management Plan for Small Restrictive Site



Note

- 1 All erosion and sediment control measures to be inspected and maintained daily by site manager
- 2 Existing garage and court yard can be used as storage area for building materials
- 3 Council approval must be obtained prior to the placement of any materials on the footpath
- 4 all stockpiles to be clear from drains, gutters and footpaths
- 5 drainage is to be connected to stormwater system as soon as possible
- 6 roads and footpath to be swept daily
- 7 If you do not comply you may be liable to a \$750 or \$1500 fine

Legend

- Stockpiles 
- Geotextile with gravel 
- Footpath 
- Stormwater pit 

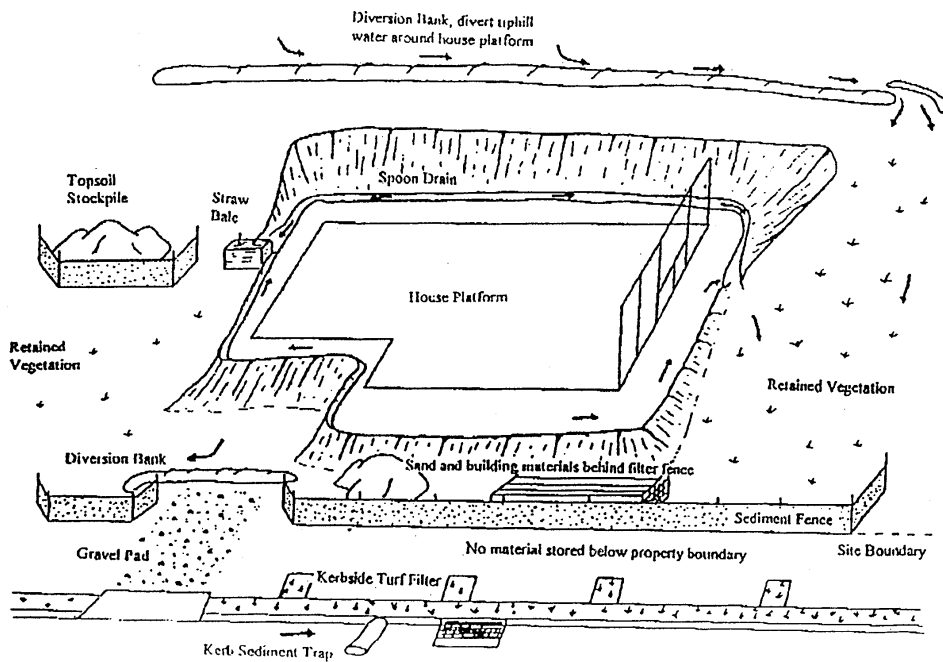
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Example: Soil & Water Management Plan for Larger Site



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Stablised Site Access



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Stablised Site Access

What is it?

A single entry/exit point for the site that is stabilised to reduce the tracking of sediment off the site on to Council's road and the stormwater system.

Why is it important?

A stabilised track allows vehicles to enter and exit the site safely during all weather conditions without either destroying valuable grass or carrying large amounts of mud and dirt on to the paved road surfaces. It provides a clean, dry surface for vehicles to enter and unload. The stabilised site access has a rough coarse surface which traps mud from vehicle tyres as they roll across it.

Mud and dirt have significant impacts on our waterways. They smother animals and plants that live on the bottom of creek beds. They settle and make the creek shallower. Many native plants and animals can not survive this and die. Even though mud and dirt are 'natural' they are still serious pollutants that must be prevented from entering our waterways.

What do I need to do?

Before building commences:

Identify the best location to place the entry/exit point- ideally it should be in an elevated position with little or no water flowing to it from upslope and away from any down slope stormwater pits. All deliveries should be able to be made through this point. Document it on your Soil and Water Management Plan and ensure staff are aware of its importance.

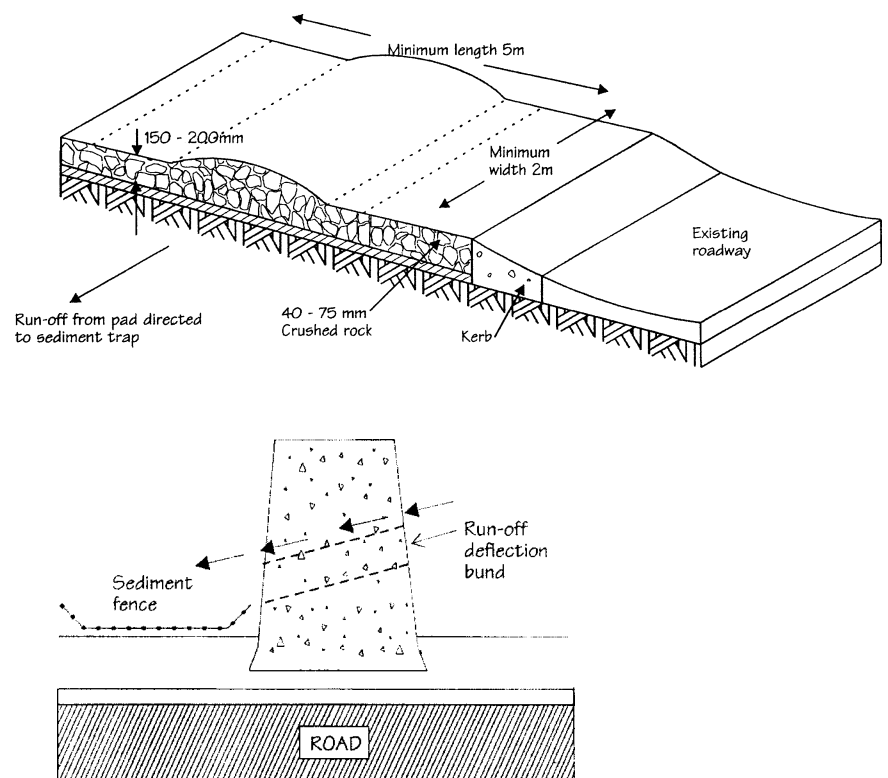
Installing the stabilised access point:

The recommended construction method for stabilising the access point is laying down 200mm of aggregate or recycled concrete greater than 40mm in size. (note: crushed sandstone is not suitable).

Where the access area slopes toward the road, a diversion hump should be installed across the stabilised area to direct stormwater run-off to the side where it can be filtered by a sediment fence. If the construction process enables it the permanent driveway can be laid and used as the access point.

Construction notes:

1. Strip at least 150mm of topsoil, level area and stockpile in space available
2. Compact subgrade
3. Cover area with needle punched geotextile
4. Construct a 200mm thick pad over geotextile using aggregate at least 40mm in size. Length ideally from kerb to building footprint.
5. Construct diversion hump 300mm thick immediately within boundary to divert water to a sediment fence or other sediment trap



On larger sites cattle grid or shaker grids can also be installed at the access point. These allow the wheels to turn a couple of times and shake off excess dirt. If mud still remains wheels can be washed as long as the wash water does not drain to the street. It should drain to a detention area on site to allow the sediment to settle out and the water to evaporate or can be pumped into undisturbed grassed areas where it can soak into the ground.

Maintenance of the stabilised access point:

As vehicles use the stabilised access point they will slowly compact the gravel or rock. If the access point becomes smooth it will no longer help control sediment as it is the rough surface that slows water flows and shakes off mud and dirt from tyres. It is therefore important to monitor the surface of the access point and to add new gravel or rock as needed. Roads should be inspected for any sediment that has escaped the site at the end of each day and swept if necessary. This should also be done when ever rain looks likely.



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