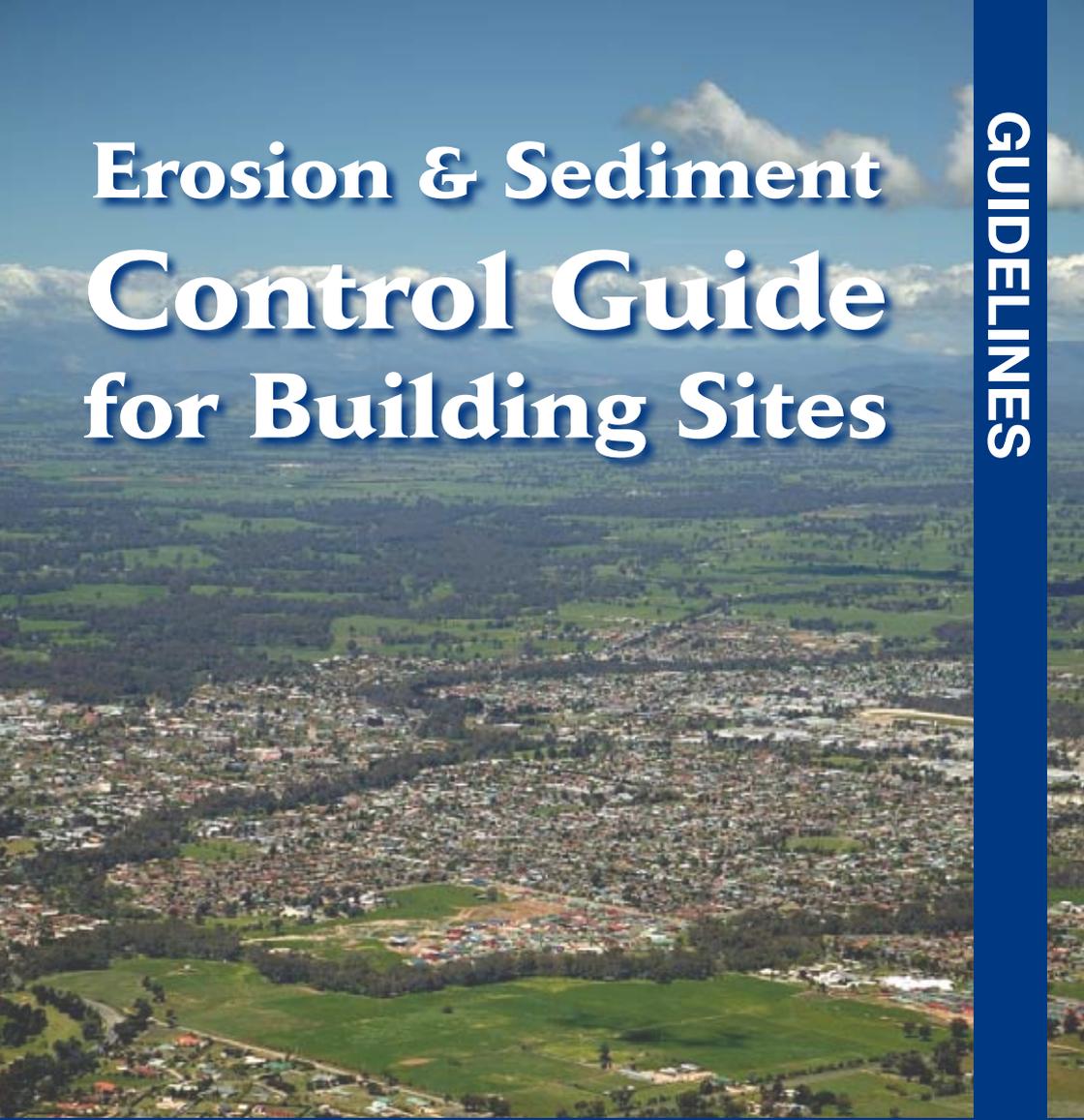


# Erosion & Sediment Control Guide for Building Sites

**GUIDELINES**



## **This booklet has two aims:**

1. To provide simple and practical ideas to reduce the chance of polluting the stormwater system.
2. To help contractors comply with Council and State regulations in regard to the stormwater system. Always check with the local Council about the local regulations.

## **Who is this booklet for?**

- Builders
- Landscape Gardener's
- Demolition Workers
- Trades People
- Home Renovators
- People who supply sand, soil and concrete

## **Who was the book developed by?**



*Pure*



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- 1.2 Improved Practice
- 1.3 Why
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## 1.1 It's the Law

This document provides a practical guide to Best Practice techniques for the minimisation of stormwater pollution from building sites. The Guidelines have been produced to assist persons involved in the construction industry to comply with their statutory responsibilities.

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.

Activities that cause stormwater pollution include:

- (1) Unsecured litter, rubbish and waste on site: bins or skips not being used to stop litter being blown across and off the site.
- (2) Sediment discharge: water running off the site carrying soil into the gutters and the stormwater system.
- (3) Mud of roads: vehicles driving onto the building site and then carrying mud from their tyres onto roads.
- (4) Deliveries and storage of sand, soil and screenings in places where they are washed into the stormwater system by rain.
- (5) Concrete washings, paint, thinners (chemicals): washing equipment in gutter that lead to the stormwater systems and creeks.

## 1.2 Improved Practices

Part of Improved Practice is the management of an activity to achieve ongoing minimisation of its environmental harm using cost effective measures. These practices are assessed against those currently used nationally and internationally.



## 1.3 Why?

Soil erosion on construction sites can be a major source of stormwater pollution. Soil, sand, sediment, plastic & litter washed from construction sites all have the potential to cause both short and long term problems when deposited in our drains, creek and rivers.



Some common impacts of poor sediment controls include:

- Blocked drains which can cause flooding of neighbouring properties.
- Loss of valuable topsoil, limiting growth of vegetation.
- Deterioration of the water quality of local creeks and river systems that are often our source of drinking water increasing costs of downstream water treatment.
- Increased phosphorous in river, leading to toxic algal blooms and weed infestations.
- Loss of aquatic life.
- Muddy water reducing aesthetic beauty of waterways.



## 1.4 Benefits

- More marketable sites
- Earlier sales
- Earlier completion
- Reduced downtime
- Reduced risk of fines/loss of bond
- Fewer public complaints
- A better public image
- Reduced clean up costs
- Sites do not get as boggy
- All weather access
- Reduced stockpile losses

## 1.5 Who is Responsible

The short answer is everyone (including sub-contractors & suppliers). We must all take responsibility.

- The owner or developer carries responsibility for commissioning the work and therefore some responsibility for controlling the work.
- The builder or manager has prime responsibility for controlling and supervising the construction operation including all site works.
- The site supervisor or foreman is responsible for coordinating and establishing good practices on site.
- The individual trades carry responsibility for their work and actions.

## 1.6 Site Rules

1. Plan before your start work
2. Limit disturbance when excavating
3. Divert upslope stormwater
4. Install a sediment fence
5. Wash equipment in a designated area
6. Place sands and soil stockpiles behind a sediment fence
7. Leave the footpath vegetated
8. Store all hard waste and litter in a designated area.
9. Restrict vehicle movement to a stabilised access.



## 1.7 Useful North East Supplier Information

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

### Litter Containers

Contact your local waste contractors or:

**Cleanaway:**

Wodonga Phone: 02 6024 4590

**JJ Richards:**

Wodonga Phone: (02) 6056 3444

**North-East Bin Hire:**

Rutherglen Phone: 0421 271 96:

**Benalla Waste:**

Benalla Phone: (03) 5762 7240

**Naish Waste:**

Wangaratta Phone: (03) 5721 4714

**Alpine Waste Services:**

Myrtleford (03) 5752 2266

### Sediment Control Fencing / Gravel Sausages

**State Wide Rivers**

Phone: (03) 9702 9757

**Geofabrics Australasia:**

Phone: (03) 8585 9100

[www.geofabrics.com.au](http://www.geofabrics.com.au)

### Ground Protection

**Pro-floor:**

Phone (03) 9804 3455

### Temporary Fencing

**Essential Builders Aids:**

Albury Phone: (02) 6021 4633

**Australian Temporary Fencing:**

Phone: 13 17 16

**Readyfence:**

Benalla Phone: 0429 400 333

**AAA Adaptable Fence Panels:**

Wangaratta Phone: 0417 382 742

**Black & White:**

Wangaratta Phone: 1300 735 887

### Portable Toilets

**Essential Builders Aids:**

Albury Phone: (02)6021 4633

**Wangaratta Equipment Hire:**

Phone: (03) 57214989

### Temporary Flexible Downpipe

If it is not possible to have downpipes connected to the stormwater system as soon as the roof is on. Use temporary flexible tubing or another temporary connection to run the stormwater from the downpipe to the nearest stormwater drain. Visit your local Plumbing Store for supplies.

## 2.1 Plan before you start work on site.

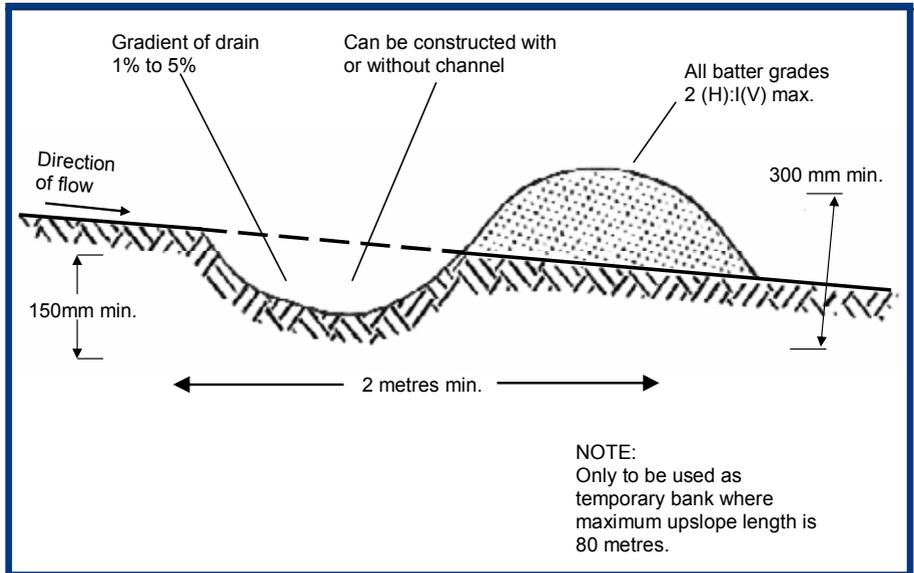
An erosion and sediment control plan is a simple plan which outlines where control measures will be placed on the site. These plans need to communicate to all involved; councils, developers, builders, subcontractors, private certifiers, home owners and regulators, how stormwater pollution is to be contained on the site.

The construction of earth banks should be undertaken to divert upslope water around the unvegetated land during construction. This minimises erosion by water sheeting.

Standard Erosion & Sediment Control Plans are to be adopted for all construction sites.

## 2. Erosion & Sediment Control Plan (ESCP)

**Figure 1. Earth Bank Connection**



## 2.1 Ways you can reduce erosion & control sediment on a building or construction site

Follow these site management practices and you will help reduce impact on our waterways....

### DIVERT UPSLOPE STORMWATER

Where possible to do so, divert upslope stormwater around all lands that do not have a protective vegetative area.

Water sheeting over the ground is one of the most effective causes of soil erosion and should be minimised.

### LIMIT DISTURBANCE WHEN EXCAVATING

Preserve as much of the vegetated area as possible. Vegetation improves the appearance of the site, greatly reduces the erosion hazard and can be a very effective natural sediment filter. The erosion hazard of well-vegetated lands is often less than 1 percent of those that have been cleared.

### RESTRICT VEHICLE MOVEMENT TO A STABILISED ACCESS

Restrict all vehicle movements onto the site to a stabilised access. This allows all-weather entry/exit reduces how much soil is carried to the street and may provide a permanent base for the future driveway.

### STORE ALL HARD WASTE AND LITTER IN A DESIGNATED AREA

Store all hard waste and litter on the site in a way that will prevent it being blown onto neighbouring lands or wash into the stormwater system.

### LEAVE THE FOOTPATH VEGETATED

Apart from the stabilised entrance, maintain a well vegetated (grassed) footpath. Keeping lands vegetated is the single most important thing that can be done to reduce erosion hazard.

### INSTALL A SEDIMENT FENCE

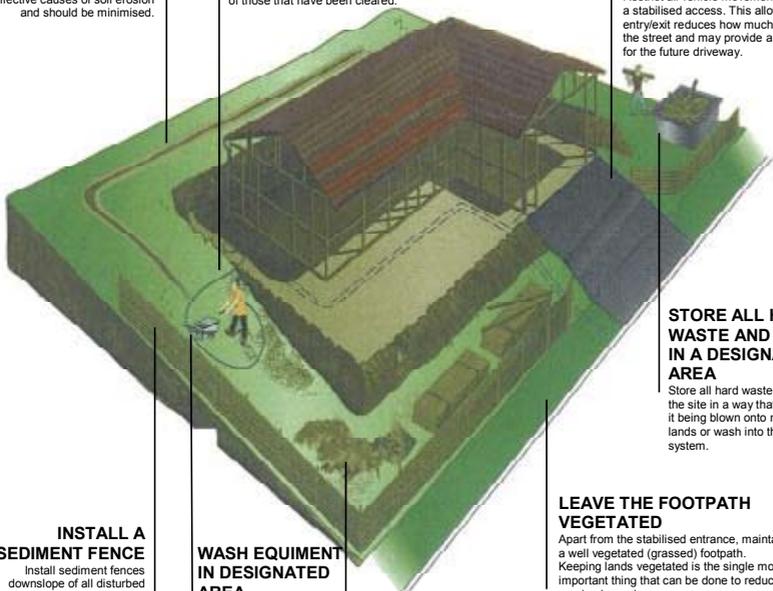
Install sediment fences downslope of all disturbed lands to filter coarse sediment before it gets into the gutters, drains and watercourses.

### WASH EQUIPMENT IN DESIGNATED AREA

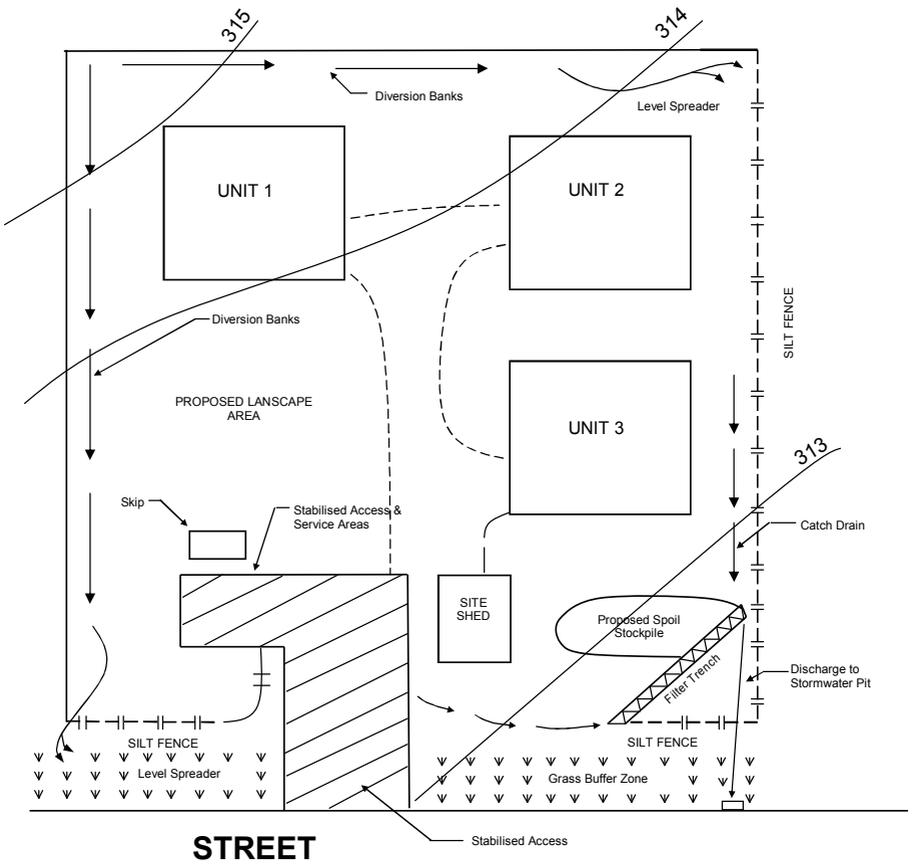
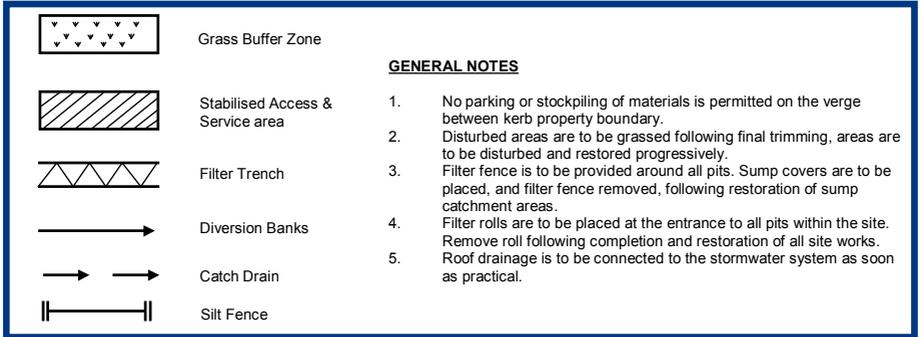
Wash all equipment, including that with concrete waste in a designated area that does not drain to the stormwater

### PLACE SANDS AND SOIL STOCKPILES BEHIND A SEDIMENT FENCE

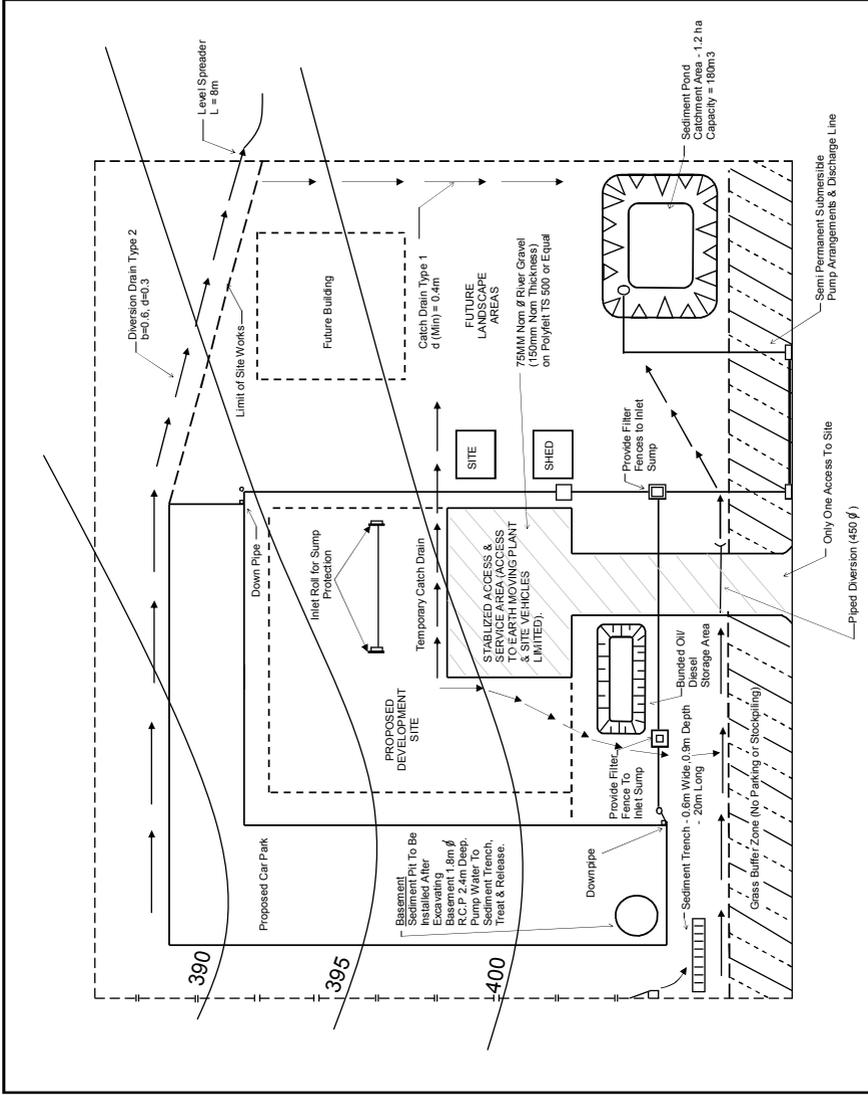
Place all stockpiles totally on the site well away from drainage paths and, where they comprise erodible materials such as sand and soil, behind a sediment barrier. Ensure soil and cement bags are covered at the end of each day if rain or excessive wind are likely.



**Figure 2. Control Plan for Multi Dwelling Development.**



**Figure 3. Control Plan for Commercial/Industrial Development.**



	Sediment Trench
	Stabilized access & service area
	Grass Buffer Zone
	Diversion Drains
	Catch Drain
	Boundary Fence
	Silt Fence
	Filter fence to flood way sump

**GENERAL NOTES**

1. Security fence is to be erected around the sediment pond. Minimum fence standard is 1.8. high wire mesh on posts at 3m centres, corners to be braced.
2. No parking or stockpiling of materials is permitted on the verge between kerb and property boundary.
3. Disturbed areas are to be grassed following final construction. Areas are to be disturbed and restored progressively.
4. Filter fence is to be provided around all plantation sumps, sump covers are to be placed, and filter fence removed, following restoration of sump catchment areas.
5. Filter rolls are to be placed at the entrance to all kerbside sumps within the site. Remove roll following completion & restoration of all site works.
6. Roof drainage is to be connected to the storm water system as soon as practical.
7. Following completion and restoration of site, fill sediment pond and compact to 95% M.M.D.D provide 100mm topsoil and dry-land grassing.

# 2. EROSION & SEDIMENT CONTROL PLAN (ESCP)

## 3.1 Limit disturbance when excavating.

Any earthworks should be kept to a minimum, and should only be commenced immediately prior to construction.

It is important to maintain as much soil coverage as possible with the use of grass, mulch, gravel or erosion control matting.

Where practicable, maintain kerb vegetation in a healthy state during the construction process.

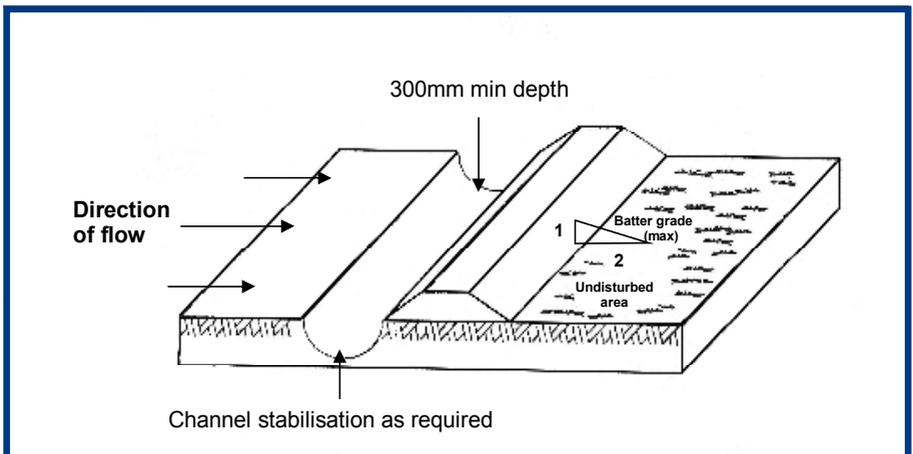
Vegetation down hill of the work site is especially important for filtering out sediment.



## 3.2 Diversion of Up-Slope Water.

Where stormwater runoff from more than 0.5 HA feeds into the work site, upslope water should be diverted around the soil disturbance. Stormwater can be diverted with the use of small turf, geo-textile lined drains, or with the use of diversion banks. Diverted stormwater should be discharged onto stable ground (e.g. turfed areas) and should not be diverted into neighbouring properties unless written permission is obtained from the land owner (s).

**Figure 4. Diversion of Up-Slope Water**



## 3.3 Sediment Controls

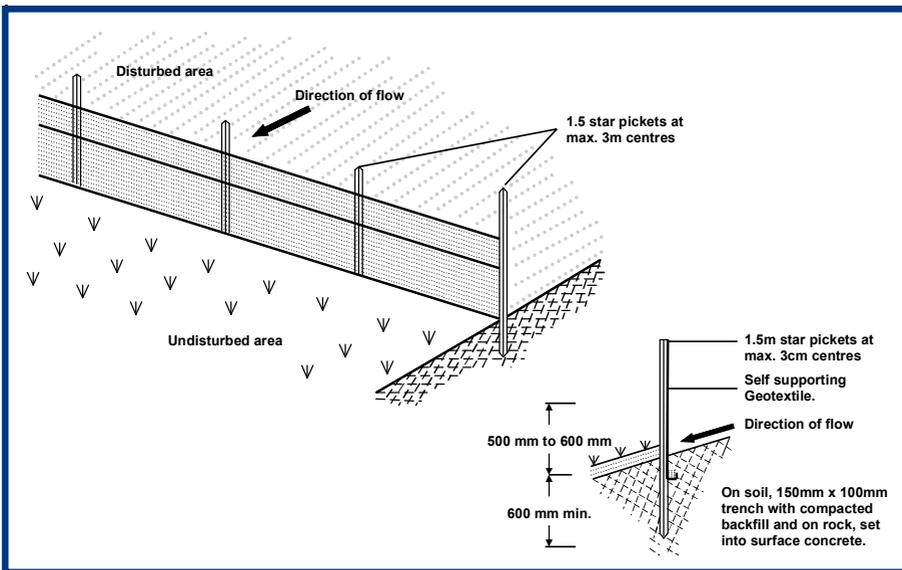
A sediment barrier needs to be installed along the lower side of the soil disturbance. The most efficient sediment barrier for construction sites is usually specially manufactured geo-textile sediment fence.



The use of filter cloth or shade cloth is not recommended. Wire tied sediment fences have the advantage of being readily hooked from their support posts during working hours to allow the unloading of materials. For reasons of public safety and sediment controls efficiency, sediment barriers should not be located outside property boundaries. Sediment barriers should not be placed on the road. Sediment barriers placed in front of roadside stormwater inlets are rarely effective and at best usually result in the sediment being washed down the street and into the nearest open gully inlet.

Where necessary you should contact your local Council to discuss an approved sediment plan before construction takes place.

**Figure 5. Sediment Fence Construction**



## 3.4 Wash equipment in designated area

**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.

**Control Method 2:** Get rid of concrete slurry on site.

- Collect wash water from concrete mixers in a wheel barrow and dispose of in your wash area.

**Control Method 3:** Clean equipment off before washing.

- Brush dirt and mud off equipment before you wash it.
- You will need less water to clean this equipment.

**Control Method 4:** Clean painting tools carefully.

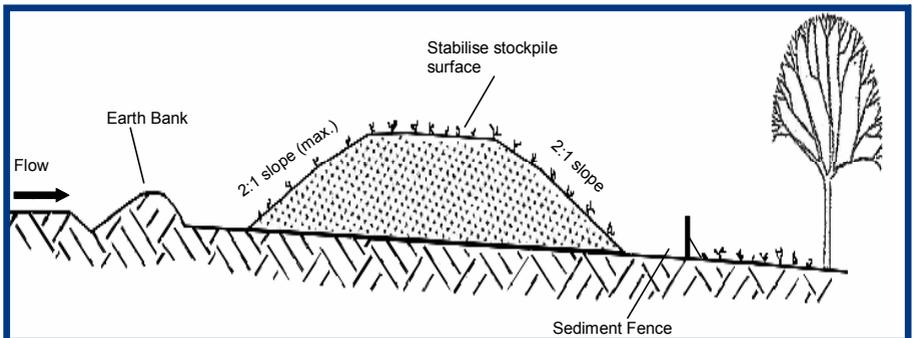
- Spin rollers and brushes to remove paint before you wash them.
- Use one container to wash the brush and another to rinse it.
- Let first container stand overnight to let solids settle. Then pour out water on ground if not too dirty and put settled solids in a bin.
- Wash oil based paints in solvent baths until clean.

## 3.5 Stockpiles and storage of materials



Stockpiles and construction materials are not allowed to be stored on the footpath or within the road reserve without Council permission. Where necessary, stockpile losses can be minimised with the use of covers. All stockpiles and construction materials should be located within sediment controls.

**Figure 6. Topsoil stockpiling instruction**



## 3.6 Litter and Construction Waste



All hard waste must be stored on-site in a way that prevents material loss caused by wind or water. Smaller materials such as litter should be contained in covered bins or litter traps formed on three sides by a geo-textile wind break.

One third of all waste going into landfill comes from construction and demolition sites. This waste includes:

- Bricks - Tiles - Concrete - Timber - Packaging - Plaster - Polystyrene
- Vegetation - Metals - Soil

### Methods to control Litter

#### Plan ways to reduce waste before you start the job

- Make a list of all things you are going to do to reduce waste or to reuse or recycle materials on the job.

#### Design and order only what you need.

- Design to standard sizes as this reduces waste.
- Don't estimate the materials you will need.
- Negotiate with suppliers to take back unused materials.
- Negotiate for delivery of supplies on an 'as needs' basis.

#### Use prefabricated products

- Buy prefabricated products such as frames and trusses whenever possible. This greatly reduces waste.

#### Team up with other builders to recycle

- If you are building on an estate you may be able to share the cost of recycling with other builders.

#### Separate materials for recycling.

- Ask bin hire companies and recycling contractors to supply clearly marked bins. Materials may be sorted into cardboard, plastic and metal for recyclers in your area.

## 3.7 Stabilised Entry/Exit Point

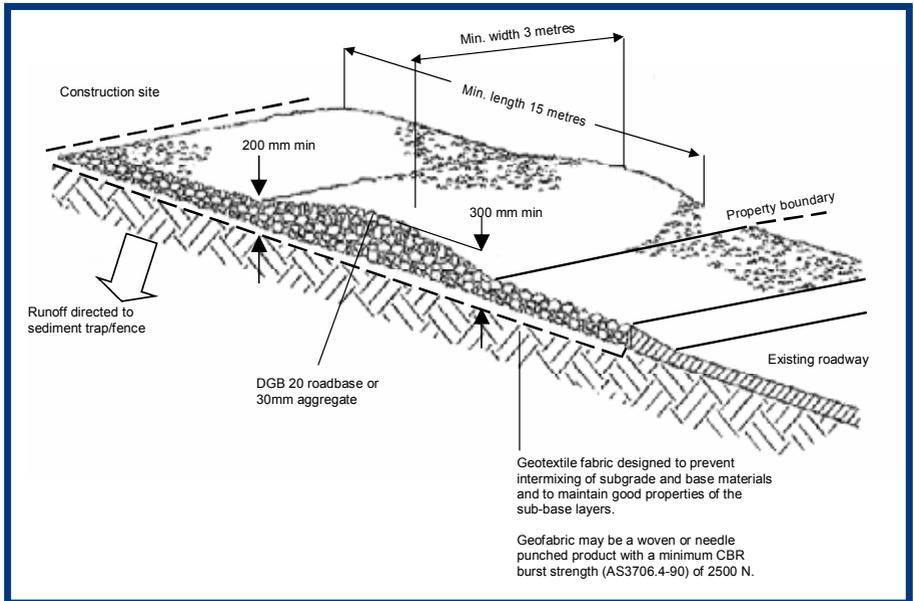
The entry/exit point of the site should be managed such that sediment is not tracked off the site, and restricted to one stabilised location. Note that an appropriate location for the construction entrance may not necessarily be the location of the permanent driveway.



The entry/exit pad should extend from the kerb or road reserve to the building slab, and where it slopes toward the road, a hump should be installed across the pad to deflect stormwater runoff.

Council should be contacted regarding a Road Opening Permit.

**Figure 7. Entry/Exit Construction**



### 3.8 Leave the Footpath Vegetated

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

- Acting as a cushion. Rain drops are unable to move soil particles when they hit the surface.
- Slowing the flow of water across the ground. Fast water is able to carry more soil particles off site.
- Roots hold the soil together so it cannot be moved.
- Grassed areas act as a filter, trapping soil particles.

Decide what areas of vegetation you are going to keep on site. Mark trees, shrubs and grassed areas that you are keeping. Protect areas close to the boundary, drains and gutters, and where surface water flows may carry sediment off site.



### 3.9 Construction Operations

Construction operations such as tool and paint washings, as well as brick, tile or masonry cutting should be done within the property boundaries. Where practicable, these activities should be done on a permeable surfaces or up hill of an infiltration trench. This especially applies to water-cooled cutting activities that generate polluted wastewater.



### 3.10 Early Roof Water Connection

Temporary or permanent downpipes should be installed prior to roof inspection. The early connection of roof water to the stormwater system will reduce site wetness and the generation of on-site mud. This has been shown to reduce downtime following storm events and decrease average building construction time.

## 4.1 Service Trenches

Service trenches should be backfilled, capped with topsoil and compacted to a level at least 75-100mm above the adjoining ground level. This allows for some subsidence of the fill material and ensures the fill is sufficiently compacted to avoid erosion at a later time.



## 4.2 Site Clean-Up

In the event of sediment leaving the site immediate action should be taken to remove materials from the road and not washed down the gutter. Following storms, the road reserve and sediment barriers should be inspected and all excessive sediment residue should be removed.



### 4.3 Site Rehabilitation

All areas disturbed by construction activity should be promptly and progressively stabilised (e.g. revegetated) so they can no longer act as a source of sediment. All erosion and sediment control devices should be kept in place or until the site is fully stabilised.



### 4.4 Maintenance of Control Measures

All drainage, erosion and sediment control measures need to be regularly checked and maintained in good working order. Best Practice includes anticipation of potential risk and being prepared for abnormal circumstances and emergencies.

- The entry/exit pad will require reapplication of crushed rock if excessive sediment build-up occurs.
- Erosion in drainage channels should be repaired with rock, turf or erosion control matting.
- Sediment fences should be replaced if the fabric is ripped or otherwise damaged.



## Plan before you start work on site. ✓

- Plan before you start work on site.
- Sediment control fence on lowest side.
- Stockpiles away from lowest point.
- Marked trees and vegetation to keep on site.

## Keep mud off road and on site. ✓

- Crushed rock crossover.
- Trucks keep to crushed rock areas.
- Mud removed from tyres before leaving site.
- Clean road if muddy.

## Keep litter contained on site. ✓

- Site fencing in place.
- Litter bin in place with lid closed.

## Stop erosion on site. ✓

- Catch drains on high side of site
- Vegetation areas
- Downpipes

## Contain stockpiles on site. ✓

- Straw bale filters.
- Sediment control fence.
- Gravel inlet filters.
- Block and gravel inlet filters.

## Clean and wash up on site. ✓

- Cutting and clean up area on site
- Clean equipment off before washing
- Sediment filters down slope