Shoalhaven City Council

Shoalhaven Builders Guide

Best Environmental Practice

June 2020

Acknowledgement of country

We acknowledge the traditional owners and custodians of this country and their continuing connection to the land through culture and community. We pay our respects to Elders past, present and future.

Contents

Introduction

This booklet contains helpful information on:

- Best practices for your building site
- How to control and minimise your environmental impact
- How to prevent erosion and sediment runoff reaching gutters, drains, streams, rivers, lakes and beaches

This guide is designed to help you manage your environmental impact and comply with the Protection of the Environment Operations Act 1997.

It is intended to provide easy, effective and realistic advice on how to adopt control methods to support good site practices so you can manage your site and minimise (or totally remove) your impact on waterways and the wider environment.

By developing and working to your Erosion & Sediment Control Plan or Soil Water Management Plan, you will prevent pollution to land, air and stormwater drains which flow into our streams, rivers, lakes and beaches.

Sediment laden water from a construction site exiting a storm-water pipe

Environmental Considerations

In the Shoalhaven many people are already doing a lot to help protect the waterways. Protection is important so we can continue to enjoy clean waterways and future generations (your children and grandchildren) will be able to enjoy them as well.

We are counting on you to think about how your work will affect the land, water or air where you are working. Due to the high number of construction sites throughout the Shoalhaven, even the smallest amounts of pollution from each site is enough to cause significant damage to our waterways. Although you may consider the amount of sediment lost from a single building site to be insignificant, the cumulative effect of all development sites on aquatic environments can be catastrophic. Sand, soil, cement slurry, paint and other building materials that enter our waterways can kill fish and aquatic plants, silt up streams and block stormwater pipes leading to increased flooding.

With your commitment and by using this guide, you can help protect our unique waterways and encourage others to do the right thing.

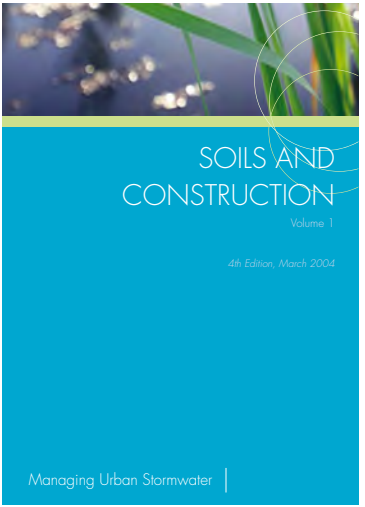
Sediment laden water from a construction site entering Jervis Bay

Legal Considerations

It is an offence under the Protection of the Environment Operations Act 1997 for sediment to leave a construction site. The only defence to this is showing due diligence.

How do you show due diligence? By creating plans and implementing erosion and sediment controls to at least the minimum standard outlined in Managing Urban Stormwater: Soils and Construction, Landcom, 2004, also known as 'The Blue Book'.

The Blue Book is freely available online and can be found at www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Water/Water-quality/managing-urban-stormwater-soils-construction-volume-1-fourth-edition.pdf



Under the Protection of the Environment Operations Act 1997, penalty infringement notices of up to $8,000 may be issued to builders, owner/occupiers or landscapers of land where pollution has the potential to, or has entered gutters, drains and waterways.

A Council Authorised Officer may also issue the following notices:

- Clean up notices
- Prevention notices
- Compliance cost notices

NSW GOVERNMENT

Pre-construction & Site Layout

Pre-planning of erosion and sediment controls is essential. Plans for most sites should include the controls outlined in this guide as a minimum.

Erosion & Sediment Control Plan

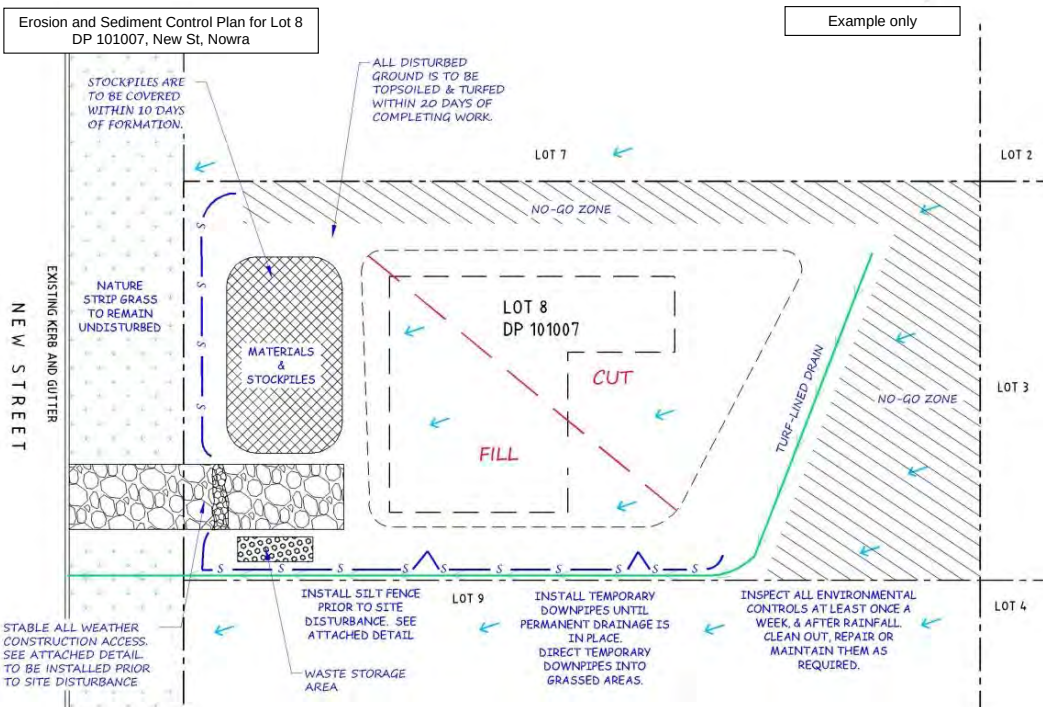
For construction sites less than 2,500m2, an Erosion & Sediment Control Plan (ESCP) is required. An ESCP is a simple plan, no calculations required. The ESCP should show the site layout, the proposed building, contours and erosion and sediment controls that will be implemented.

Soil Water Management Plans

For construction sites greater than 2,500m2, a Soil & Water Management Plan (SWMP) is required. A SWMP is a more detailed plan which requires calculations including the Revised Universal Loss Equation. SWMP's are generally a multiple page document, are broken up into stages of the development and usually require a sediment basin as a control measure.

Erosion and Sediment Control Plan for Lot 8
DP 101007, New St, Nowra

Example only

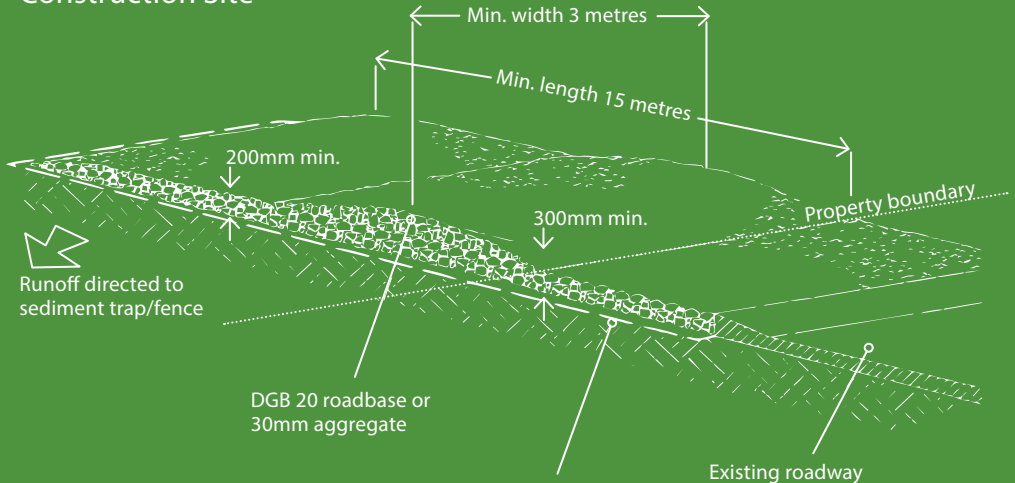


Stabilised Site Access

Site access should be installed prior to any work being carried out.

- Take some time to choose a suitable access point.
- The access point should be lined with needle punched Geofabric and constructed of DGB 20 road base or 30mm aggregate, ensure you compact it.
- The entrance/exit should be topped up with aggregate as required to form a bump large enough (200mm minimum) to contain runoff from your site.
- Once you have made your site access point, make sure everybody uses it.

Construction Site



Geotextile fabric designed to prevent intermixing of subgrade and base materials and to maintain good properties of the sub-base layers.

Geofabric may be a woven or needle-punched product with a minimum CBR burst strength (AS3706.4-90) OF 2500 N.

Site Stabilisation

The most effective way to avoid erosion is to avoid soil disturbance. If soil disturbance cannot be avoided, the use of ground cover to stabilise a site is the next best option.

Hydroseeding

Turf/ready lawn

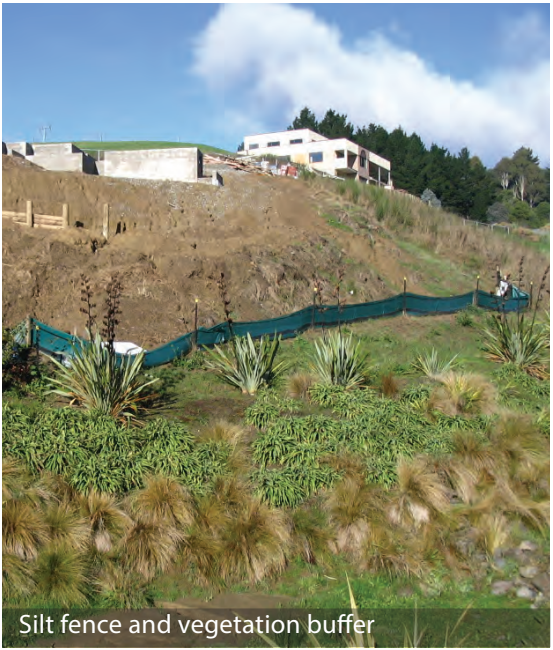
The following is a list of types of ground cover that can be used to stabilise disturbed soils:

- **Grass Seed (Flat Sites)** - This is an option over spring and autumn months. Requires regular watering. Not recommended if water usage is difficult or expensive.
- **Straw Mulch (Flat Sites)** - This can be used as a short-term measure through winter and summer when grass seed growth is slower.
- **Turf/Ready Lawn (Flat Sites)** - Easily laid on a well-prepared level area. Be sure to follow the manufacturer's instructions. Continue with ongoing maintenance.
- **Wood Mulch/Wood Chip/Bark Chip (Flat Sites)** - Wood mulch, wood chip and bark chip can be used as cover for exposed areas and for landscaping. They are more suited to level sites and can handle a small amount of disturbance.

Site Stabilisation

- **Compost (Flat/Sloping Sites) -** Compost works well on sloping sites. Spread the compost over exposed areas. This will stabilise the ground and act as a base for vegetation.
- **Hydroseeding (Flat/Sloping Sites) -** You will need to contact a local contractor to apply this option. It provides more immediate protection.
- **Material Coverings (Flat/Sloping Sites)** - Use well-pegged or tied-down tarpaulins, plastic sheeting, geotextile or fibre matting. These all provide temporary protection for soil from wind and rain. Requires regular maintenance.
- **Geo-Binder (Stabilising Polymers) (Flat/Sloping Sites)** - Geo-binders can be used to quickly stabilise and minimise dust on worksites. Geo-binders are spray applied and are useful for stabilising large areas that need to be set aside or fenced to prevent damage to stabilised areas from workers and machinery.

Geo-binder



Silt fence and vegetation buffer

Stockpiles

Covering your stockpiles is the best way to prevent them from eroding.

- Where possible, avoid stockpiles by only ordering the supplies you need and have waste materials removed from site.
- The location of stockpiles should be outlined in your ESCP or SWMP. Stockpiles should be placed away from any surface water including: streams, lakes, rivers, waterways, stormwater systems, gutters, kerbs and channels.
- Stockpiles should be within the sediment control measures on your site and have a sediment fence installed downslope.
- Once a stockpile has been formed it should be covered as soon as possible, when not in use and before rain or wind.

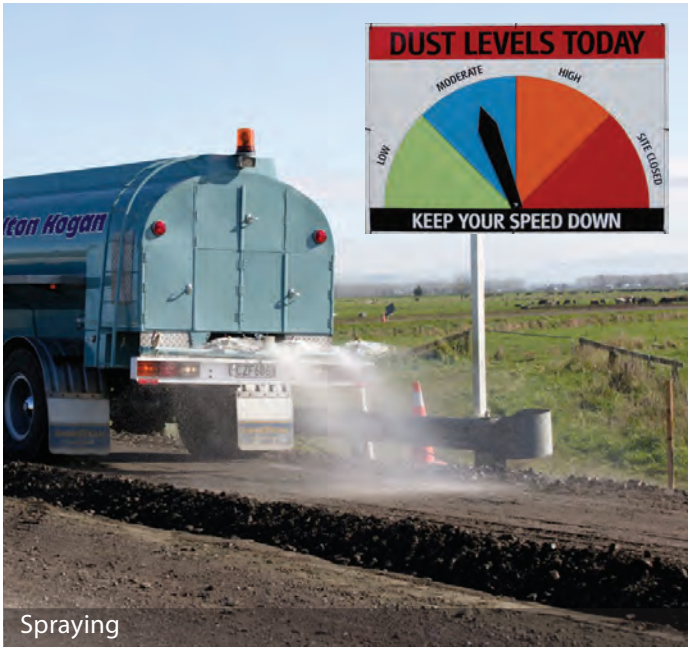
Covered stockpile

Dust Control

Dust control is particularly important for larger construction sites. A dust management plan should be incorporated into your SWMP.

You can control dust by:

- **Spraying** water lightly on exposed areas with a sprinkler, a hose on fine spray, or a k-line (short term).
- **Covering** exposed areas with well-fixed plastic sheeting, tarpaulins or other geotextiles (short term).
- **Covering** exposed areas with compost, wood mulch, geo-binders, gravel, hydroseed or grass if the area will be exposed for longer periods (medium/long term).
- **Avoid driving** over stabilised areas. Limit your speed when driving around site (medium/long term).



Spraying

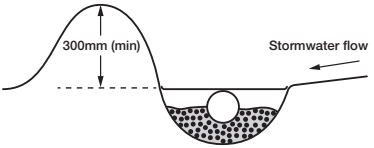

Spraying

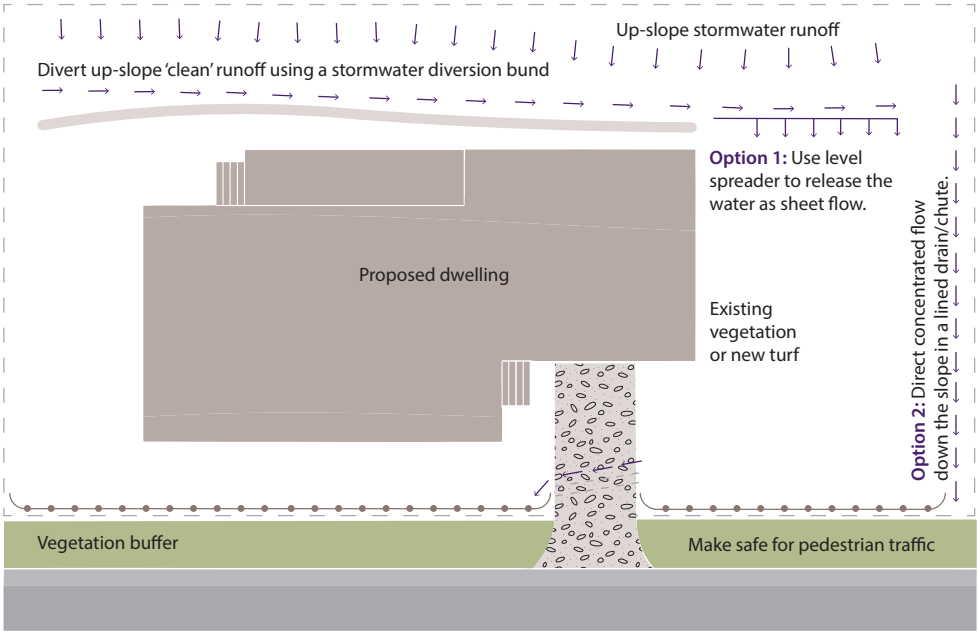
Diversion of Clean Runoff Around Site

Diversion bunds can be formed to help divert clean stormwater around the works area to prevent runoff onto open or disturbed ground.

- Re-direct clean stormwater runoff from above your site and across more stable areas such as grass into the nearest kerb and gutter, or into a roadside swale so that extra stormwater does not run through your site and cause problems.
- Stormwater that hasn't entered your site can be diverted with the use of small turf or geotextile lined catch drains, or with the use of diversion banks.
- Diversion channels need to be stabilised with ground cover that can withstand a concentrated flow of water.


Diversion bund

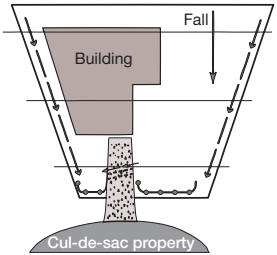


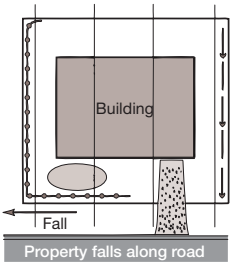

Up-slope stormwater runoff
Divert up-slope 'clean' runoff using a stormwater diversion bund
Option 1: Use level spreader to release the water as sheet flow.
Proposed dwelling
Existing vegetation or new turf
Option 2: Direct concentrated flow down the slope in a lined drain/chute.
Vegetation buffer
Make safe for pedestrian traffic

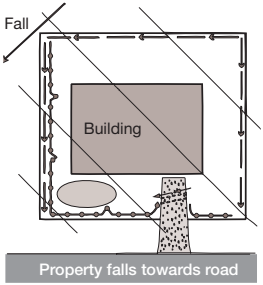
Sediment Fences

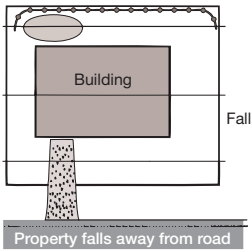
Plan and install sediment fences before you start work on your site. If you leave it until there's a problem, it's too late!

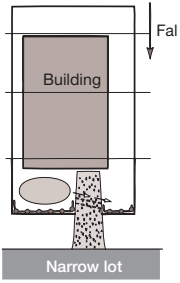
- A sediment fence is a barrier to stop sediment runoff leaving a construction site and needs to be installed downslope.
- Check the fence weekly and before and after any heavy rainfall. Dig out and remove any sediment build-up.
- If you think the location of the fence on your plan is wrong, contact the plan designer to discuss amending the plan, there is no point installing the fence if it is not going to work.

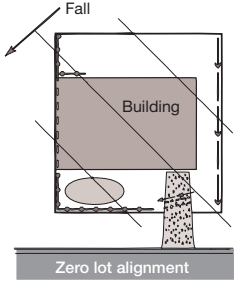










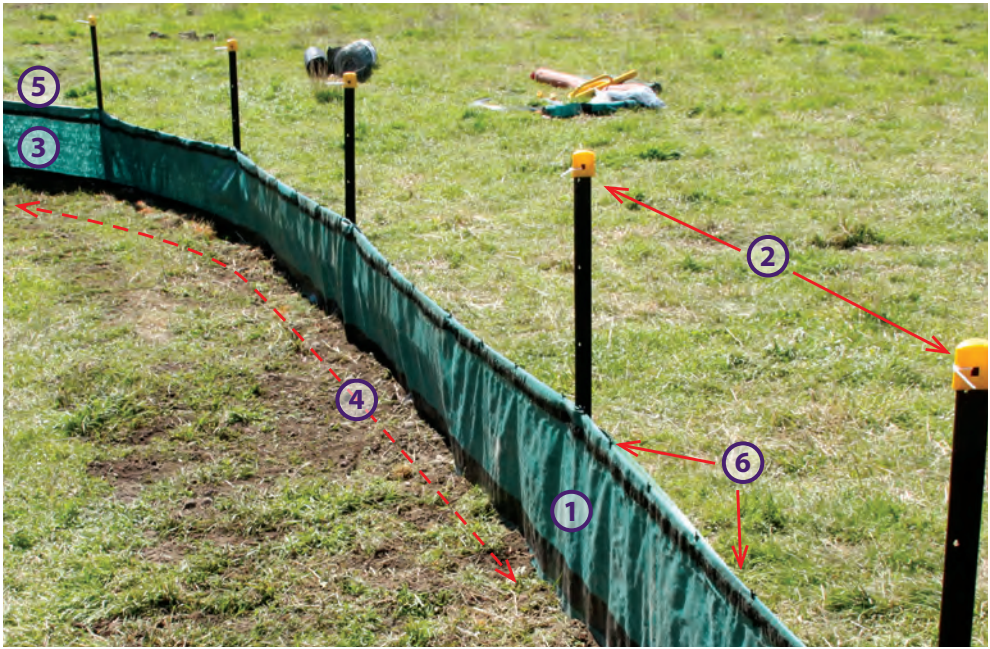


KEY

Contour lines —— Fall (runoff direction) Sediment pond Sediment/silt fence Site access

How to Install a Sediment Fence

1. **Use** approved geotextile filter fabric, contact your supplier to make sure you get the right product.
2. **Install** 1.5-metre-long star pickets a maximum of 2.5m apart, drive them to a minimum depth of 400mm. Place safety caps on all your star pickets.
3. **Install** wings/returns at either end of the sediment fence projecting up-slope at least 500mm to prevent flow bypass (stormwater running around the fence and leaving your site).
4. **Cut** a trench (a minimum of 150mm deep) on the up-slope side of the star pickets for the bottom of the sediment fabric to be entrenched.
5. **Beginning** at one end with the first star picket, thread wire ties or other fixing material recommended by the manufacturer through the star pickets. For extra strength, you can add a second wire.
6. **Fix** geotextile filter fabric with wire ties to the upslope side of the star pickets ensuring it goes to the base of the trench. Join sections of fabric at a support post with a 150mm overlap. Back fill the trench over the geotextile fabric and compact it thoroughly.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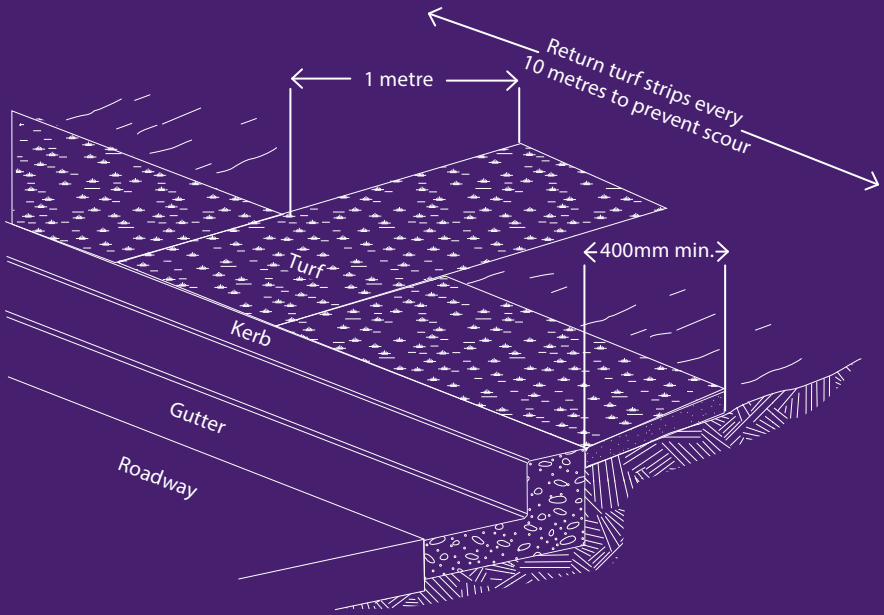
3
2
4
6
1

Kerbside Turf Strips

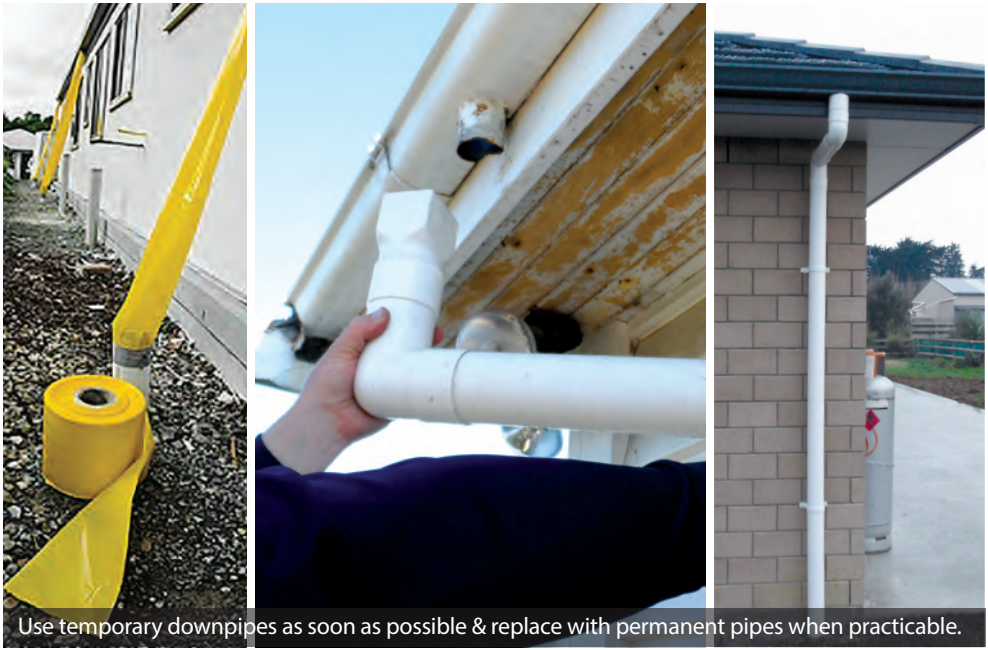
- In general, nature strips should be left undisturbed, if the nature strip has been disturbed and lacks vegetation, a turf strip can be installed along the kerb to help reduce the amount of dust and sediment generated and filter out sediment from runoff.
- The flatter and wider the turf strips are, the more effective they will become. For best results it is advised that the whole nature strip is planted.
- Turf strips will stabilise a disturbed site quickly and easily and act as an excellent erosion & sediment control device.


Return turf strips every
10 metres to prevent scour
1 metre
400mm min.
Turf
Kerb
Gutter
Roadway

Connection of Downpipes

If the roof is on, the downpipes need to be connected. If the permanent downpipes cannot be installed straight away, temporary connections will need to be installed.

- During construction, you can divert clean roof runoff to the roadside gutter or drain by connecting a temporary nonperforated pipe to the downpipe outlet.
- Use temporary downpipes as soon as possible, check regularly and maintain until replacing with permanent pipes when practicable.
- Make sure the pipe is in a place where it will not be damaged or driven over.



Use temporary downpipes as soon as possible & replace with permanent pipes when practicable.

Stormwater Sump Protection

To prevent runoff of sediment laden water from reaching gutters and drains, use a combination of the following measures:

1. **Catch Pit (Sump Protection):** Install a specially designed bag inside the drain sump to catch any dirty or silty runoff which allows water to flow through.
   Do not use *for concrete or paint wash water.*
2. **Covering:** If the drain grate can be lifted, use a barrier cloth or plastic sheet over the sump and hold it in place by using the grate. This must prevent any water seeping through. Only use this method when there is no risk of causing flooding elsewhere.
3. **Bunding:** Use a sediment sock/tub, sandbags or mesh & gravel inlet filter to trap sediment while still allow water to flow through to prevent flooding.
   Do not use *for concrete or paint wash water.*

1 Catch pit

2 Covering

3 Bunding

Dewatering

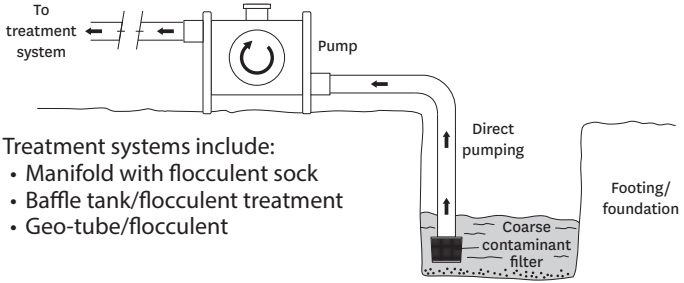
- If your construction site has a sediment basin or the excavations become waterlogged, you will need a dewatering management plan as part of your SWMP or ESCP.
- Generally, the water contained in a sediment basin or waterlogged excavation will not meet the required Total Suspended Solid (TSS) concentration of 50mg/L or less for the water to be discharged into the environment.
- Flocking agents such as gypsum or alum can be added to basins or settling tanks to coagulate the fine sediment. As the fine sediment within the dirty water coagulates, they become heavier and fall out leaving cleaner water with lower concentrations of total suspended solids.
- Sediment basins and water pumped or syphoned from excavations will need to be flocked with gypsum or other flocking agent or treated by other means to meet the 50mg/L of TSS before it is discharged back into the environment.

Baffle/settling tanks

Spear syphon system

- It is a good idea to have the water tested by a suitably qualified environmental consultant before any water is discharged offsite. Keep a record of the test results to show that you are meeting requirements.

Direct Pumping



Treatment systems include:

- Manifold with flocculent sock
- Baffle tank/flocculent treatment
- Geo-tube/flocculent

Maintenance

Proper maintenance of erosion and sediment controls is vital to their success.

An effective maintenance program should include regular checks, at least once a week and before and after a rain or wind event.

- Keep an eye on the weather.
- The stabilised access point will require reapplication of aggregate if excessive sediment build-up occurs.
- Remove sediment build up from the base of sediment fences. If the fabric is ripped or otherwise damaged, replace it. Retrenching may also be needed.
- Erosion in drainage channels should be repaired with rock, turf or erosion control matting.
- Be prepared to modify your controls, if a control has failed make modifications accordingly.


Incorrect


Correct

Waste Management

- Your SWMP or ESCP should identify the location of your waste receptacle.
- Ensure your waste receptacle is adequately closed in and covered to prevent rubbish blowing away.
- Reduce the amount of materials you start with. Buy only what you need.
- Reuse the materials you have on site. Anything you can reuse is one thing less to buy.
- Recycle what waste you can. Buy materials that you can recycle and divert waste from landfill.
- Set up ways of separating your waste on site. Sort your waste into separate bins rather than throwing everything into one skip.
- Landfill waste is the most expensive option and should be your last resort.
- Earn some money. Some wastes, such as scrap metal, can be sold on as a resource.


Incorrect


Correct

Storage & Handling of Hazardous Materials

Take the time to plan where to store any hazardous materials. Have the right equipment and procedures in place to deal with any spills as soon as they happen.

Store hazardous materials:

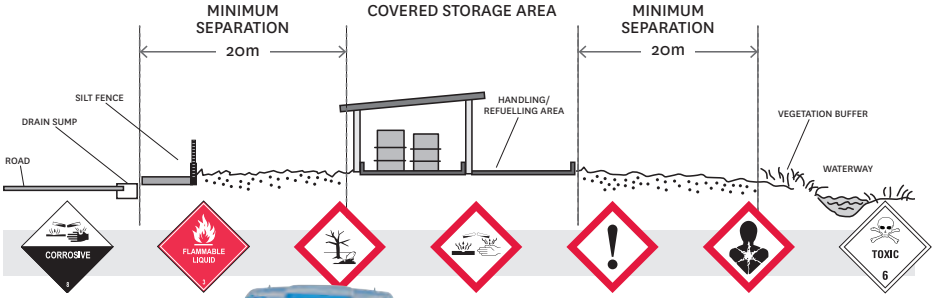
- Away from stormwater drains and waterways
- On an impermeable surface (e.g. concrete)
- Inside a bunded area
- Under cover
- Secure from vandalism/theft
- Away from high traffic areas

Make sure you:

- Have a spill kit on site and train your staff how to use it
- Label all storage containers
- Handle hazardous materials away from gutters and drains
- Contain spills and do not wash down the drain

For more information, go to **epa.nsw.gov.au**

Storage and handling diagram



Blue spill kits for general spills.

Yellow spill kits for chemical spills.

Red spill kits for oil/fuel spills.

Working with Concrete

Concrete wastewater is highly toxic. If it reaches streams and waterways, it will kill fish and plant life.

Instead, deal with it by following these four easy steps:

1. **Check –** weather forecast. When possible choose a dry day.
2. **Contain –** the wash water. Make a bunded area at the base of your worksite.
3. **Capture –** all wash water on your worksite in the bunded area.
4. **Clear –** the bunded area by pumping the wash water into a container (1000 litre cube or similar). To be hauled to an approved disposal facility.

***Please do not** pour concrete or asphalt wastewater into gutters, drains or stormwater sumps.*

Paint Wash Water

It is an offence to wash paints and other chemicals into stormwater drains.

- Use a contained wash system – buy, hire or build your own.
- Remove excess paint from brushes, rollers and trays before washing.
- Keep paint and wash water away from hard-sealed surfaces leading to gutters, stormwater drains and waterways.
- Return unused/left-over paint to your paint supplier.
- Dispose of your paints and paint wash water correctly.
- Please do not pour paint or paint wash water into gutters, drains or stormwater sumps.

Warning: Incorrect and unlawful disposal of solid or liquid waste may result in a **fine or prosecution**.


Contained Wash Systems
Dulux
DANGER
DO NOT ENTER
Resene
WashWISE
Reclaimer

Plaster Wash Water

Please do not put plaster wash water down stormwater drains.

- Use a contained wash system – buy, hire or build your own.
- Dispose of any unused wash water correctly.

1. **Wash/clean up**
2. **Settle (overnight)**
3. **Separate (clear water from solids/sludge)**
4. **Reuse (clear water for new mix)**

Warning: Incorrect and unlawful disposal of solid or liquid waste may result in a **fine or prosecution**.


1 Wash up
Sludge/solids
3 Separate
2 Settle
Clear water
4 Reuse/recycle
Envirosolutions
Envirowash
ES 160P SYSTEM

Revegetation

Sediment control devices must be left in place until 70% revegetation cover has been established.

- Vegetation is the most effective form of soil and erosion control. After a job is completed it is very important to re-establish vegetation to protect against the effects of erosion.
- All areas that have been disturbed during construction need to be promptly stabilised to prevent sediment leaving the site.
- Sediment controls need to be maintained until 70% revegetation cover is established or other type of ground cover has been installed (for example concrete or paving).
- When a site is handed over to a new homeowner, they need to understand their legal obligation associated with erosion and sediment control, especially if a sub-contractor is employed to complete landscaping works.


Incorrect


Correct

Acknowledgements

This booklet is based on content developed by Environment Canterbury Regional Council.
Reproduction requires consent from both Shoalhaven City Council and Environment Canterbury Regional Council.

Erosion & Sediment Control Plan provided by Strategic Environmental & Engineering Consulting.

Page 37 - Proper maintenance of erosion & sediment controls image provided by Janine Koppel, Lake Macquarie City Council

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Regional Council
Kaunihera Taiao ki Waitaha

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