

# Erosion & Sediment Control Guidelines for Building Sites

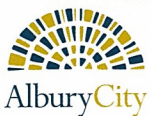


Guidelines

Stormwater Pollution

Site Planning & Material Storage

Site Clean-up & Rehabilitation





## INTRODUCTION

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 building industry to comply with their statutory environmental responsibilities.

## BEST PRACTICE

Part of Best 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.



## WHY

Soil erosion on building sites can be a major source of stormwater pollution. Soil, sand, sediment, plastic and litter washed from building sites all have the potential to cause both short and long term problems when deposited in our drains, creeks 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 the Murray River system, increasing costs of downstream water treatment
- ✦ Increased phosphorus in river, leading to toxic algal blooms
- ✦ Loss of aquatic life
- ✦ Muddy water reducing aesthetic beauty of waterways.





## BENEFITS

Some of the benefits to home owners, builders and the industry include:

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

National and International experience shows that the cost of effective pollution management on building sites is greatly reduced within the first few years as builders become experienced with the various techniques.

## WHO IS RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL ?

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 has prime responsibility for controlling and supervising the building operation including all site works.
- ★ The site supervisor or foreman is responsible for coordination and establishing good practices on site.
- ★ The individual trades carry responsibility for their work and actions.

## PRINCIPLES OF EFFECTIVE STORMWATER POLLUTION CONTROL

1. Sensible site planning (Erosion and Sediment Control Plan)
2. Diversion of up-slope water (where appropriate)
3. All weather site entry/exit point
4. Minimisation of site disturbance and duration of disturbance
5. Installation of sediment controls along the lower edge of the site
6. Appropriate location and protection of stockpiles
7. Connection of roofwater downpipes as soon as practicable
8. Trapping run-off from tool and paint washing, and brick and tile cutting etc.
9. Regular maintenance of all control measures
10. Compaction of backfilled trenches
11. Revegetation and stabilisation of the site



## EROSION AND SEDIMENT CONTROL PLAN (ESCP)

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; builders, subcontractors, private certifiers, home owners and regulators, how stormwater pollution is to be contained on the site.

In the Albury/Wodonga area erosion and sediment control measures are required where more than 250 square metres of land will be disturbed for building & construction sites:

- ✦ Standard Erosion & Sediment Control Plans are to be adopted for all **single dwelling building sites**. See plans 1- 4 for guidance.
- ✦ Special Erosion & Sediment Control Plans are required to be submitted for approval with **Multi-Dwelling and Commercial/Industrial development** at the time of development application. See plans 5 and 6 for guidance.

Where appropriate, ESCP's should include, but not be limited to the following:

- ✦ Property boundaries
- ✦ General soil description
- ✦ Existing and final contours, including location of cut and fill banks
- ✦ Existing and final flow drainage paths
- ✦ Limits of clearing (where applicable, eg. on large properties)
- ✦ Location of vegetated buffer strips
- ✦ Stabilised construction entry/exit point
- ✦ Location of soil and sand stockpiles
- ✦ Location of all proposed temporary drainage control measures
- ✦ Location of proposed erosion control measures
- ✦ Installation sequence and maintenance requirements for all control measures
- ✦ Notes on who is responsible for establishment, maintenance and removal of all erosion and sediment control measures

## SITE PLANNING

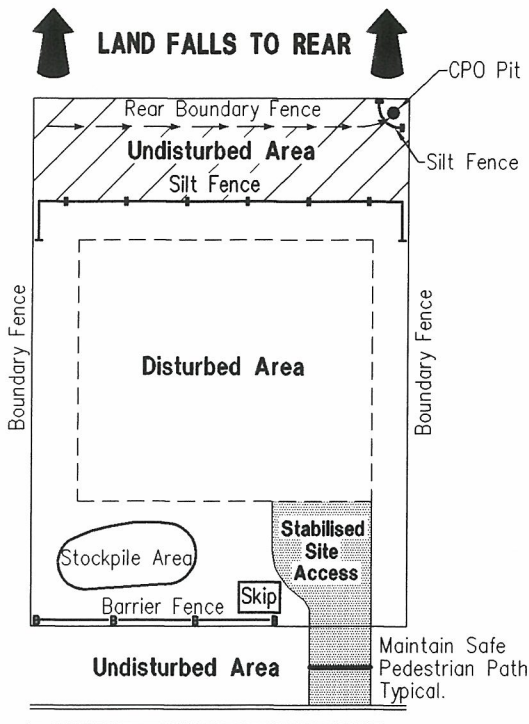
When planning the site layout, building location and earthworks, it is possible to minimise the number of control devices and their interference with the building process with a little forward thinking.

- ✦ Minimise the reshaping of the land (eg. cut and fill)
- ✦ Provide for the stormwater to flow around the building area and any unstable batters
- ✦ Allow room for a sediment fence to be located along the lower end of the disturbance
- ✦ Construct pole homes on steep properties
- ✦ Avoid long, steep, unstable driveways
- ✦ Avoid stripping and excavating until ready to build
- ✦ Varyify Council drainage discharge points, flow paths and access requirements

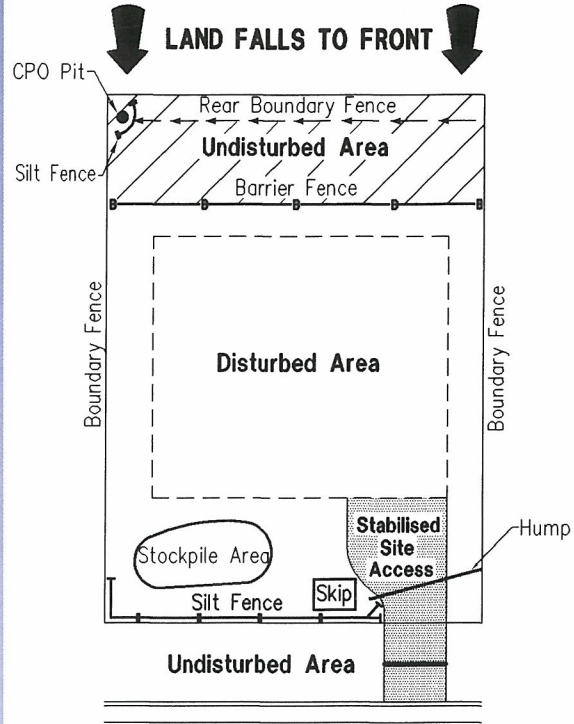




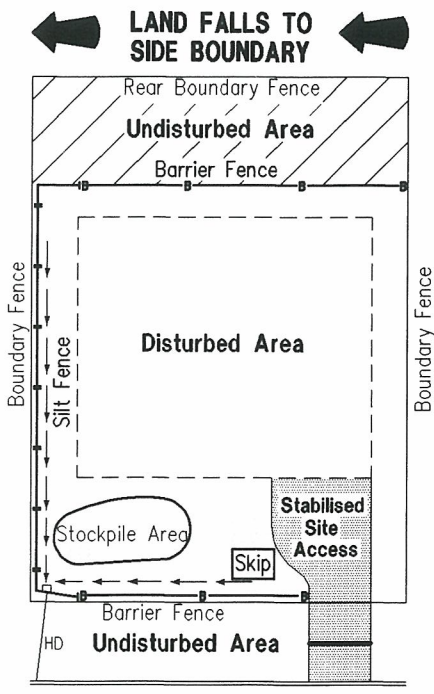
for Single Residential Buildings



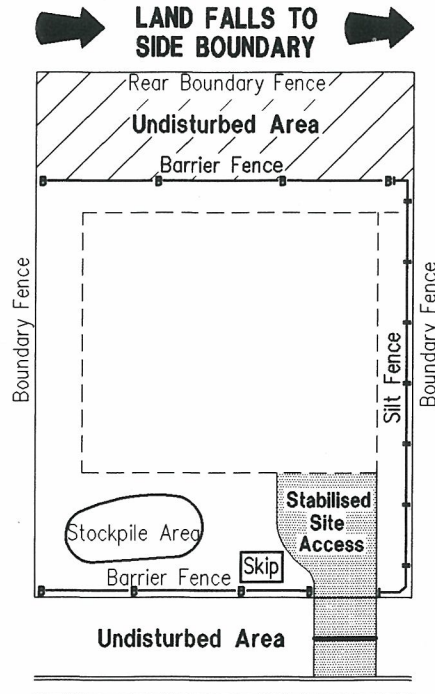
STREET PLAN 1



STREET PLAN 2



STREET PLAN 3

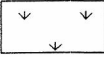
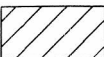

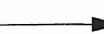
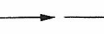
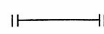


STREET PLAN 4



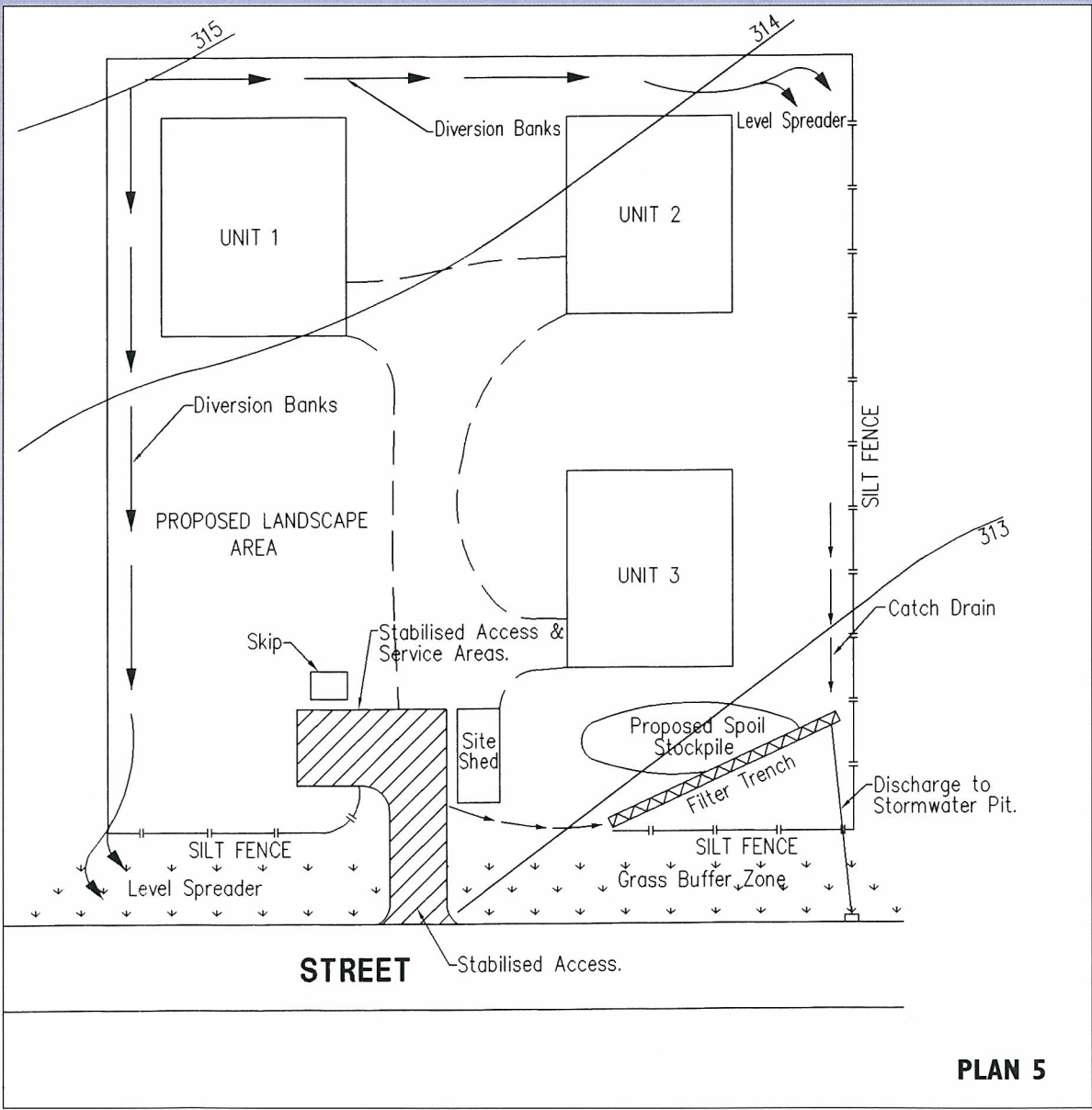
for Multi Dwelling Development

**LEGEND**

-  Grass Buffer Zone
-  Stabilised Access & Service Area
-  Filter Trench
-  Diversion Banks
-  Catch Drain
-  Silt Fence

**GENERAL NOTES:**

1. All measures are to be in accordance with the "Guidelines for Erosion & Sediment Control on Building Sites"
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 trimming, areas are to be disturbed and restored progressively.
4. Filter fence is to be provided around all pits. 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 pits within the site. Remove roll following completion and restoration of all siteworks.
6. Roof drainage is to be connected to the stormwater system as soon as practical.



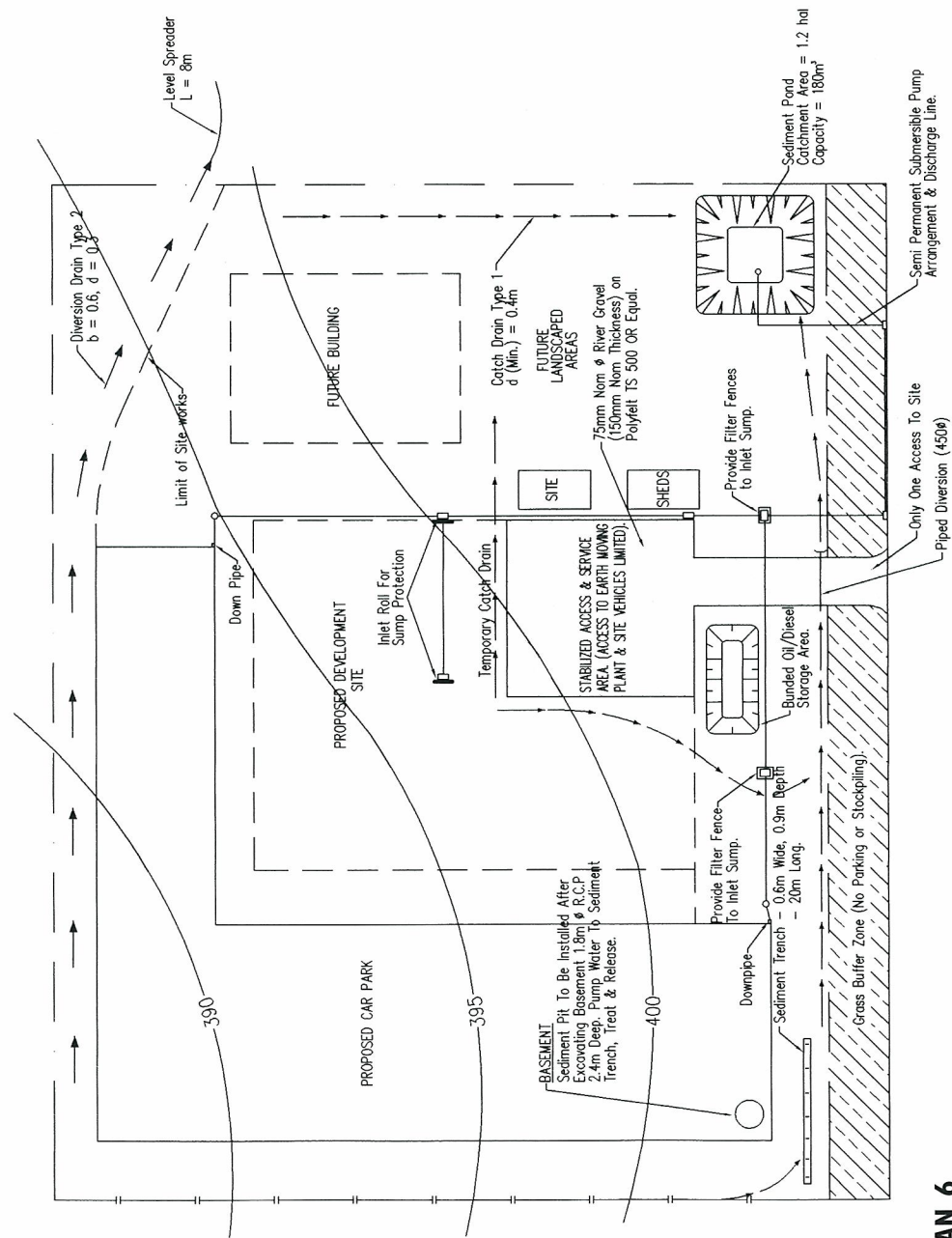


for Commercial/Industrial Development

- LEGEND**
- Sediment Trench
  - Stabilised access & service area
  - Grass buffer zone
  - Catch drain
  - Diversion Drains
  - Boundary fence
  - Silt fence
  - Filter fence to flood way sump

**GENERAL NOTES:**

1. All measures are to be in accordance with the "Guidelines for Erosion & Sediment Control on building sites".
2. 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.
3. No parking or stockpiling of materials is permitted on the verge between kerb and property boundary.
4. Disturbed areas are to be grassed following final trimming areas are to be disturbed and restored progressively.
5. 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.
6. Filter rolls are to be placed at the entrance to all kerbside sumps within the site. Remove roll following completion & restoration of all siteworks.
7. Roof drainage is to be connected to the storm water system as soon as practical.
8. Following completion and restoration of site, fill sediment pond and compact to 95% M.M.D.D. provide 100mm topsoil and dryland grassing.



**PLAN 6**



## EROSION AND SEDIMENT CONTROL INSTALLATION SEQUENCE

1. Establish a single stabilised entry/exit point
2. Install sediment fence(s) along the low side of the site
3. Divert up-slope water around the work site and stabilise channels
4. Clear only the areas necessary
5. Stockpile topsoil within the sediment controlled zone
6. Stabilise exposed earth banks (eg. vegetation erosion control mats)
7. Install on-site waste receptacles (mini-skips, bins, wind-proof litter receptors)
8. Commence building activities
9. Install roof downpipes prior to frame inspection
10. Maintain all control measures in good working order
11. Revegetate or otherwise stabilise the site

### STABILISED ENTRY/EXIT POINT

Where possible, the entry/exit point of the site should be managed such that sediment is not tracked off the site. Where practicable, the entry/exit point should be 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 to the building slab. Where the entry/exit pad slopes towards the road, a 200mm high bund (hump) should be installed across the pad to deflect stormwater run-off to the side where it can be filtered by a sediment fence.



### MINIMISE DISTURBANCE

The nature of urban construction is such that many sites require significant earthworks. These earthworks should be kept to a minimum, and should only be commenced immediately prior to building.

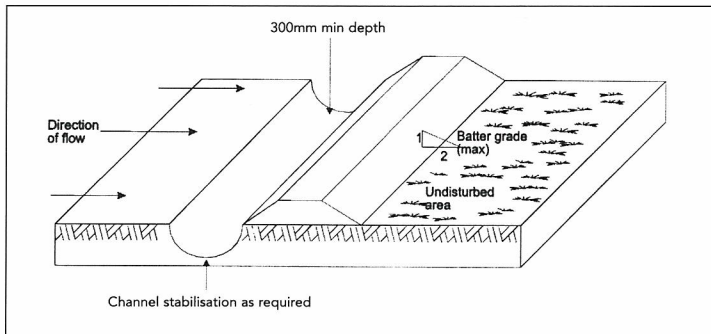


It is important to maintain as much soil coverage as possible with the use of grass, leaf litter, mulch, gravel or erosion control matting.

Vegetation down-slope of the work site is especially important for filtering out sediment. Where practicable, maintain kerb vegetation in a healthy state during the building process.



## DIVERSION OF UP-SLOPE WATER



Where practical, or where stormwater run-off from more than 0.5 hectare feeds into the work site, upslope water should be diverted around the soil disturbance. Stormwater can be diverted with the use of small turf or geotextile lined drains, or with the use of diversion banks.

Diverted stormwater should be discharged onto stable ground (eg. turfed areas) and should not be diverted into neighbouring properties unless written permission is obtained from the land owner(s).

## SEDIMENT CONTROLS



A sediment barrier needs to be installed along the lower side of the soil disturbance. The most efficient sediment barrier for building sites is usually specially manufactured geotextile sediment fence. The use of filter cloth or shade cloth is not recommended.

Sediment fences on building sites are usually wire tied to steel posts spaced 2 metres apart and buried to a depth of 200mm.

Wire tied sediment fences have the advantage of being readily unhooked from their support posts during working hours to allow the unloading of materials.

For reasons of public safety and sediment control 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.

## STOCKPILES AND STORAGE OF MATERIALS

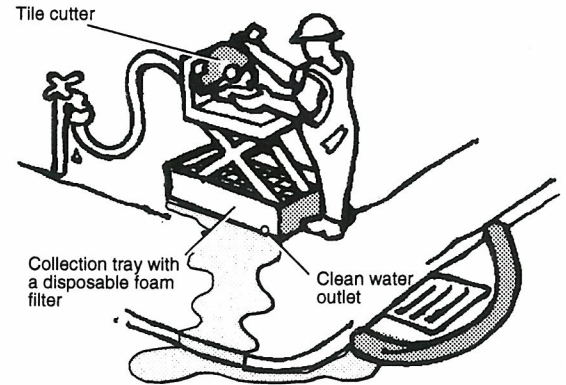
Stockpiles and building materials are generally not allowed to be stored on the footpath or within the road reserve. Where, necessary, stockpile losses can be minimised with the use of covers. All stockpiles and building materials should be located within the sediment control zone. Stockpiles should not be located within an overland flow path.





## BUILDING OPERATIONS

Building operations such as tool and paint washing's, 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 surface or up-slope of an infiltration trench. This especially applies to water-cooled cutting activities that generate polluted wastewater.



## LITTER AND BUILDING WASTE



All hard waste should 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 geotextile wind break.

## 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.

## EARLY ROOF WATER CONNECTION

Temporary or permanent downpipes should be installed prior to frame 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.





## 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 risks and being prepared for abnormal circumstances and emergencies. This should include stockpiling extra sediment fence fabric and posts on-site to facilitate emergency repairs.

- ★ 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



## SITE CLEAN-UP

Accidental spills of soil or other materials onto the road or gutter should be removed prior to storms or at least upon completion of the day's work. Materials should be swept from the road, not washed down the gutter. Following storms, the road reserve and sediment barriers should be inspected and all excessive sediment residue should be removed.



## SITE REHABILITATION

All areas disturbed by building activity should be promptly and progressively stabilised (eg. revegetated) so that it can no longer act as a source of sediment. All erosion and sediment control devices should be kept in place for as long as practical or until the site is fully stabilised.





## **Acknowledgments**

The following organisations are acknowledged for their input into the development of these guidelines:

**AlburyCity**

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**Department of Natural Resources and Environment**

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