



Minimum length 5m

Existing roadway

Run-off from pad directed to sediment trap

40-75mm Crushed rock



With trench

Fabric

fence



Controlling stormwater pollution on your building site

Sediment fence

Run-off deflection bund



Contents

What are the impacts? 2

Erosion and sediment control on residential building sites 2

Environmental law 3

Erosion controls 4

Sediment control 5

Drainage control 6

Building operations 7

Storage of materials on hard surfaces 8

Grouped building lots 8


Erosion and Sediment Control Management Plans . . . 9

Erosion and sediment control daily site check list

An erosion and sediment control check list has been developed to assist builders and site supervisors managing the task of control measure maintenance.

For further information on erosion and sediment control, contact your local council.

LEGEND

-  – Best practice
-  – Not best practice

Introduction

These guidelines provide a practical guide to best practice techniques to minimise stormwater pollution from building sites. They are designed to help people involved in the building industry comply with their statutory environmental duties and avoid large fines.

The following fact sheets provide practical examples of recommended control measures. Included is an easy-to-follow daily site checklist to guide site supervisors.

- 1 Erosion and sediment control daily site check list
- 2 Erosion and sediment control on residential building sites
- 3 Erosion control
- 4 Sediment control
- 5 Drainage control
- 6 Building operations
- 7 Storage of materials on hard surfaces
- 8 Grouped building lots
- 9 Erosion and Sediment Control Management Plans

BEST PRACTICE

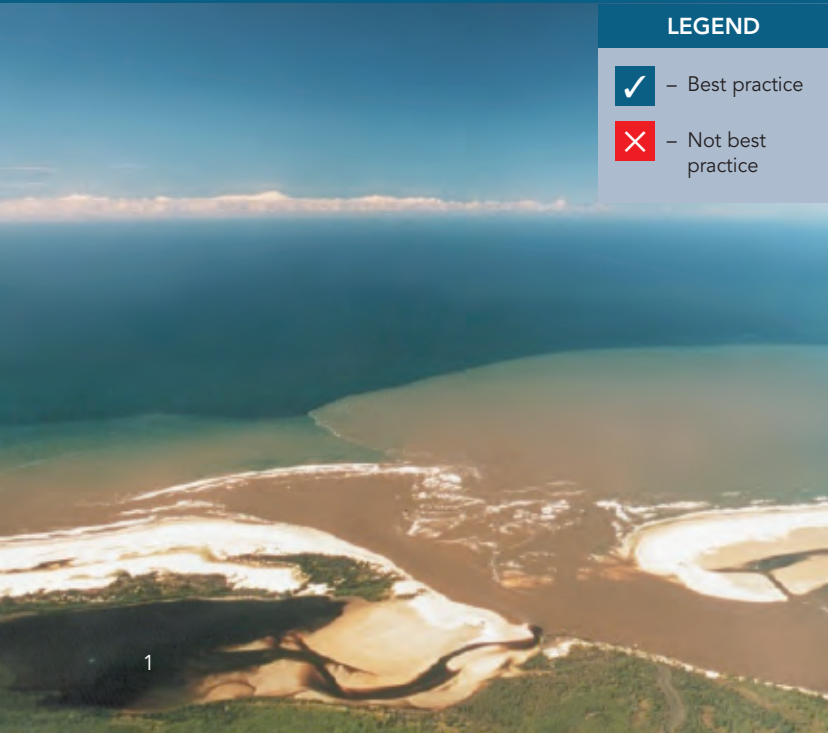
Best practice is the management of an activity to ensure environmental harm is minimised using cost-effective measures. These practices are assessed against national and international standards.

SAVE MONEY TIME AND ENERGY

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

- all-weather site access
- improved wet weather working conditions
- sites do not get boggy
- less mud and dust problems
- reduced stockpile losses
- reduced clean-up costs
- a better public image
- more marketable sites
- fewer public complaints
- reduced risk of fines
- better fishing for everyone
- healthier waterways.

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.





What are the impacts? SEE FACT SHEET 2

Soil, sediment and litter from building sites can be major sources of stormwater pollution, and can cause:

- negative impacts on recreational fishing and the seafood industry
- sediment build-up within waterways which can lead to weed growth
- loss of valuable topsoil
- significant public safety problems when washed onto roads and intersections
- blocked drains and water sensitive urban design features leading to flooding and increased maintenance costs to the community
- significant harm to the environment of freshwater and marine systems through the loss of valuable seagrass habitat for marine creatures
- public health issues from increased algal blooms
- reduced recreational opportunities due to increased turbidity



Mud and dirt on road after rain due to poor on-site erosion and sediment control



Sediment moving out of Moreton Bay into the ocean through Jumpinpin

Erosion and sediment control on residential building sites SEE FACT SHEET 2

Principles of effective stormwater pollution control include:

- sensible site planning
- diversion of up-slope water (where appropriate)
- stabilised site entry/exit point
- minimisation of site disturbance and duration of disturbance
- installation of sediment controls along the lower edge of the site
- appropriate location and protection of stockpiles
- early connection of roofwater downpipes
- trap on-site run-off from tool, paint and concrete washing and brick, tile and concrete cutting
- continual monitoring and maintenance of all control measures
- compaction of backfilled trenches
- revegetation and stabilisation of the site
- development and implementation of Erosion and Sediment Control Management Plans when appropriate.



Control measures in place on a residential building site



SITE PLANNING

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

- minimise the reshaping of the land
- direct stormwater to flow around the building area and any unstable batters
- allow room for a sediment barrier, eg. sediment fence, to be located along the lower side of the disturbance
- design the home to suit the property type, eg. construct pole homes on steep properties
- avoid the permanent use of long, steep and unstable driveways
- avoid the use of exposed aggregate concrete surfaces in areas where the wash-off cannot be contained.



Good site planning



Poor site planning – stockpile over sediment fence, materials and toilet stored outside building site

Sediment Control Zone

The sediment control zone is any area of land disturbance which has potential for the erosion of sediments. This area should be protected by a downslope sediment control measure or device.

Environmental law

SEE FACT SHEET 2

The *Environmental Protection Act 1994*, *Environmental Protection (Water) Policy 1997* and the *Integrated Planning Act 1997* are important pieces of legislation that control the way in which soil erosion and sediment are required to be dealt with on building and development sites.

PENALTIES

Breaches of the *Environmental Protection (Water) Policy 1997* may result in:

- on-the-spot fines under the *Environmental Protection (Water) Policy 1997* (ranging from \$300 to \$600)
- prosecutions under the *Integrated Planning Act 1997* or the *Environmental Protection Act 1994* (fines of thousands of dollars or prison sentences for serious offences)
- the prosecution of individuals and/or companies.



Council officer explaining the *Environmental Protection (Water) Policy 1997*



Erosion controls SEE FACT SHEET 3

MINIMISE DISTURBANCE

- Earthworks should be kept to a minimum, and should only be commenced immediately prior to building works.
- Maintain as much soil coverage as possible with the use of grass, leaf litter and mulch, gravel or erosion control blanket (ECB) or matting.
- Vegetation located down-slope of the work site assists in filtering out sediment. Where practicable, maintain kerb vegetation such as grass and turf strips in a healthy state during the building process.



Stockpiles without protection

STOCKPILES

- Stockpiles and building materials should not be stored on the footpath or within the road reserve. Permission must be obtained from your Council to store materials in these areas otherwise fines may be imposed.
- Minimise stockpile losses with the use of covers.
- All stockpiles and building materials should be located within the sediment control zone, for example up-slope of a sediment fence.
- Stockpiles must not be located within an overland flow path.

SERVICE TRENCHES

Backfill service trenches, cap with topsoil, and compact to a level at least 75-100 mm above the adjoining ground level (either manually or with a small machine). This allows for some subsidence of the fill material, and ensures the fill is sufficiently compacted to avoid erosion at a later time. (Note that trenches must be backfilled in accordance with AS3500).

EROSION CONTROL BLANKETS OR MATTING

Erosion control blankets or matting can be used to minimise soil erosion and stormwater pollution from sites by:

- containing high erosion risk soils
- stabilising steep slopes.

SITE REHABILITATION

All areas disturbed by building activities should be promptly and progressively stabilised, using techniques such as revegetation and landscaping, so they no longer act as sources of sediment.

MULCHING AND GARDEN BEDS

To minimise soil loss, mulch should be applied to open garden beds at a depth of 75-100 mm.

This will assist in plant establishment, minimise water loss and help to control weeds.

Ensure that mulch is stabilised on unstable slopes (e.g. batters and riparian areas) to avoid it washing away and ultimately entering waterways.



Rehabilitate the site promptly to reduce the chances of further erosion



Sediment control SEE FACT SHEET 4

STABILISED ENTRY/EXIT POINT (RUMBLE PAD)

- Manage entry/exit point (rumble pad) so that sediment is not tracked off the site.
- Restrict site access to one stabilised location.
- Recommended construction method for stabilising access points is a 150-200 mm deep pad of minimum 40 mm crushed rock.
- The pad should be at least 2 metres wide and extend from the kerb to the building slab.
- Where the entry/exit pad slopes towards the road, a 200 mm 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.



Stabilised gravel entry/exit point (rumble pad)

Note: The location of the permanent driveway may not be an appropriate location for the construction entrance.

SEDIMENT BARRIERS/FENCES

- Install sediment barriers along the lower side of the soil disturbance.
- The most efficient sediment barrier for building sites is specially-manufactured geotextile sediment fencing.
- Sediment fences on building sites are usually wire-tied to steel or hardwood posts (wire-tied sediment fences have the advantage of being more readily unhooked from their support posts).
- The support posts are spaced no greater than 2 metres apart and the sediment fence buried to a depth of 200 mm.
- For public safety and sediment control efficiency, sediment barriers should not be located outside property boundaries without Council approval.
- Sediment barriers should only be placed on the road as a last resort.
- Sediment barriers placed in front of roadside stormwater inlets are rarely as effective as onsite controls and at best usually result in the sediment being washed down the street and into the nearest open gully inlet.
- Only use proper geotextile sediment fence fabric. Don't use filter cloth or shade cloth.



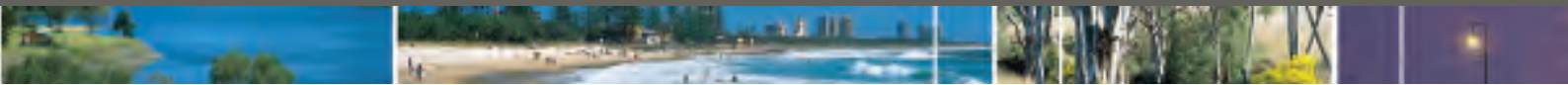
Sediment fence

USE OF SIGNS

Public signs that warn of the need for proper sediment control devices and maintenance are becoming more widely used. Contact your council for further information.



Sediment control information signage



MAINTENANCE OF CONTROL MEASURES

All erosion, sediment and drainage 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. These measures include:

- Stockpile extra sediment fence fabric and posts on-site to facilitate emergency repairs.
- Reapply crushed rock to the entry/exit pad (rumble pad) when sediment build-up occurs.
- Repair eroded drainage channels with rock, turf or erosion control blankets or matting.
- Ensure built-up sediment is removed at regular intervals from sediment barriers.
- Check and replace/repair sediment barriers daily if they are ripped, damaged or no longer anchored.



All measures require regular inspection



Excessive sediment deposits must be removed from entry/exit point (rumble pad) and additional crushed rock applied

Drainage control SEE FACT SHEET 5

DIVERSION OF UP-SLOPE WATER

- Where practicable, divert up-slope water around the disturbed area.
- Stormwater can be diverted with the use of small turf or geotextile lined catch drains, or with the use of diversion banks.
- Diverted stormwater should be discharged onto stable ground (for example turfed areas) and should not be diverted into neighbouring properties unless written permission is obtained from the land owner(s).



Temporary roof water connection

EARLY ROOF WATER CONNECTION

- Temporary or permanent downpipes should be installed as soon as practicable after the roof is laid.
- 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 the average building construction time.



Building operations SEE FACT SHEET 6

Prior to commencing building work

- Obtain all necessary permits, licences and approvals.
- Prepare a site specific Erosion and Sediment Control (ESC) Management Plan and have all necessary ESC materials available.
- Avoid clearing vegetation and excavating until ready to build.
- Where necessary in new estates, temporary revegetation may be required.

Points to consider as part of building operations

- Tool and paint washing, brick, tile or masonry cutting and water-cooled cutting activities should be done within the property boundaries.
- All waste water should be contained on-site where possible.
- Activities should be carried out on a permeable surface or up-slope of an infiltration trench.
- Vehicles should not be parked on the footpath area or verge where they can damage essential vegetation and transport dirt onto the road.
- Contain waste concrete washed from trucks, mixers and barrows on site; do not wash out into stormwater systems as this can clog drains and cause flooding during storm events.

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 or similar device.

When travelling to and from the site, secure load to prevent wind blown litter polluting our waterways and roadsides.



One way to properly store building waste



Poor litter and building waste storage

SITE CLEAN-UP

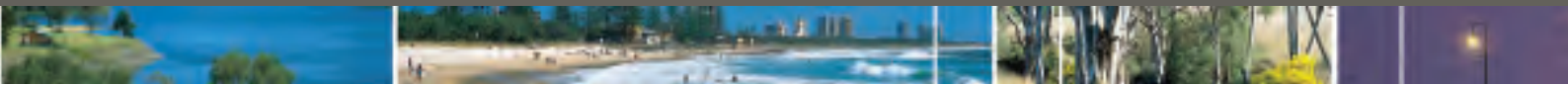
Remove accidental spills of soil or other materials from the road, gutter or any location outside the control of the primary sediment barrier:

- immediately if it is raining or likely to rain during the day
- at least upon completion of the day's work (even if rainfall is unlikely during the night)
- use a broom and shovel instead of hosing to clean hard surfaces.
- clean up food packaging after meal breaks as this litter can enter stormwater systems and waterways.

Following storms, the road reserve and sediment barriers should be inspected and excess sediment residue removed.



Undertake regular site clean-ups



CONCRETE MIXER CLEAN-UP

Fully contain concrete waste washed from trucks and mixer units on-site and store where it cannot be washed from the site, harming the environment.

EXPOSED AGGREGATE CONCRETE SURFACES

- Builders need to demonstrate how they intend to prepare exposed aggregate surfaces without allowing cement residue to flow into stormwater drains or waterways.
- Where practicable, wash cement residue onto pervious surfaces or fully contain it within temporary sediment dams created from tightly stacked sand bags.
- When suitably dry, shovel cement residue into a waste disposal bin.
- At no time should cement residue or wastewater run-off enter the roadside gutter.

This may make it impractical on some sites for exposed aggregate driveways to be constructed. In such cases, an alternative driveway finish must be used.

Storage of materials on hard surfaces SEE FACT SHEET 7

Whenever possible, materials should be stockpiled within the sediment control zone and, where necessary, covered with waterproof sheeting to minimise the potential for transport of sediments in stormwater.

Materials may be temporarily stored on hard surfaces only where it is necessary to place erodible material on hard surfaces to undertake work and no other reasonable options are available.



Don't store stockpiles on hard surfaces without suitable protection

Grouped building lots SEE FACT SHEET 8

When one builder controls more than one building lot, combined-lot sediment control structures may be placed down-slope if:

- the combined sediment control measures provide a level of protection at least equal to that provided by individual lot protection
- The builder accepts responsibility for the ongoing monitoring and maintenance of sediment control devices
- suitable drainage and erosion control measures are applied to each building lot
- a suitable sign is placed in a prominent location outside each lot and/or at the entrance of the estate indicating such controls are in place.



Erosion and Sediment Control Management Plans SEE FACT SHEET 9

Where appropriate, discuss the submission of a management plan with the appropriate building control body. These plans need to communicate to all - builders, subcontractors, private certifiers, home owners and regulators involved in the building – how stormwater pollution will be controlled on the site.

EROSION AND SEDIMENT CONTROL INSTALLATION SEQUENCE

1. Establish a single stabilised entry/exit point (rumble pad).
2. Install sediment fence(s) along the low side of the site.
3. Divert up-slope water around the work site and appropriately stabilise any drainage channels.
4. Clear only the areas necessary (maintaining vegetation on footpath).
5. Stockpile topsoil within the sediment control zone.
6. Stabilise exposed earth banks (for example, with vegetation or erosion control blankets).
7. Install on-site waste receptacles (mini-skips, bins, wind-proof litter receptors).
8. Install roof downpipes as soon as practicable after the roof is laid.
9. Ensure that all control measures are maintained in good working order.
10. Revegetate or otherwise stabilise the site.



- Stockpile is located behind the sediment fence
- Good site planning
- Turf strip well maintained
- Sediment fence well constructed and in correct location



- Stockpile has not been placed behind the sediment fence
- Building waste and litter has not been placed in the skip
- Poor site planning and management

Note: Diagrams and selected photos courtesy of Catchments & Creeks Pty Ltd.

S U P P O R T E D B Y



Gold Coast City Council



Dedicated to a better Brisbane



QMBA
Queensland Master
Builders Association

417 Wickham Terrace
Brisbane QLD 4000
Ph: (07) 3404 6444
Fax: (07) 3832 2361
www.masterbuilders.asn.au



HIA
Housing Industry
Association Ltd

PO Box 3573
South Brisbane QLD 4101
Ph: (07) 3846 1298
Fax: (07) 3846 3794
www.hia.com.au

Copyright 2006

These guidelines are protected by Australian copyright law.
For permission to use any of the material, contact the
Brisbane City Council or Gold Coast City Council. Some photographs
and drawings are owned by Catchments & Creeks Pty Ltd.

HEALTHY WATERWAYS
Because we're all in the same boat



www.healthywaterways.org

