

## What are the impacts? SEE FACT SHEET 1

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

- significant harm to the environment of Moreton Bay through the loss of valuable seagrass habitat for marine creatures
- weed infestation of waterways by sediment settling on the creek beds and transporting nutrients
- loss of valuable topsoil
- significant public safety problems when washed onto roads and intersections
- blocked drains creating flooding and increased maintenance costs
- the potential to effect the bay's recreational and commercial fishing industry.



*Mud and dirt which has been tracked out onto road*



*Sediment moving out of Moreton Bay into the ocean through Jumpinpin*

## Erosion and sediment control on residential building sites SEE FACT SHEET 1

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, 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 outside the sediment fence and building waste not placed in skip

## Environmental law SEE FACT SHEET 1

The *Environmental Protection Act 1994*, *Environmental Protection (Water) Policy 1997* and the *Integrated Planning Act 1997* are important pieces of legislation which control the way in which soil erosion and sediment are 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 2

### MINIMISE DISTURBANCE

- Earthworks should be kept to a minimum, and should only be commenced immediately prior to building.
- Maintain as much soil coverage as possible with the use of grass, leaf litter, 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 in a healthy state during the building process.



*Stockpiles without protection*

### STOCKPILES

- Stockpiles and building materials are generally not allowed to be stored on the footpath or within the road reserve without permission from your Council.
- Minimise stockpile losses with the use of covers.
- All stockpiles and building materials should be located within the sediment control zone, for example behind a sediment fence.
- Stockpiles should 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.



*Rehabilitate the site promptly to reduce the chances of further erosion*

## Sediment control SEE FACT SHEET 3

### 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 5 metres long.
- The pad should 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 barriers and fences 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 posts (wire-tied sediment fences have the advantage of being more readily unhooked from their support posts during working hours).
- 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 effective and at best usually result in the sediment being washed down the street and into the nearest open gully inlet.
- 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 Brisbane City Council on 3403 8888 for information on how to obtain an information sign.



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) if excessive 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 daily and replace 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)

## Drainage control

SEE FACT SHEET 4

### 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.



Temporary roof water connection

## Building operations SEE FACT SHEET 5

### Prior to commencing building work

- Obtain all necessary permits, licences and approvals.
- 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.

## 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.



One way to properly store litter and 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's 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.

Following storms, the road reserve and sediment barriers should be inspected and all excessive 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 6

Whenever possible, materials should be stockpiled within the sediment control envelope and, where necessary, covered with waterproof sheeting.

Materials may be temporarily stored on hard surfaces 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 7

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
- suitable drainage and erosion controls 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 controlled zone.
6. Stabilise exposed earth banks (for example, 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

## Erosion and sediment control daily site check list SEE FACT SHEET 8

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 Brisbane City Council on 3403 8888 or Gold Coast City Council on 5582 8393.

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