

## How to Prevent Stormwater and Waterway Pollution

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.

### 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.

### Entry /Exit Point

Manage entry/exit point (rumble pad) so that sediment is not tracked off the site.

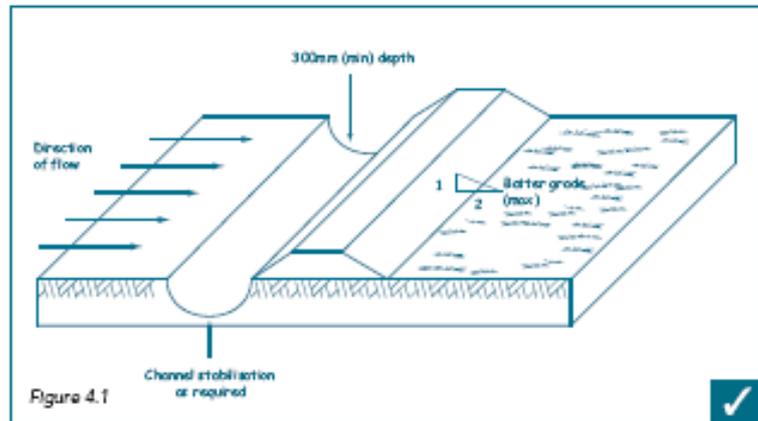
- Restrict site access to one stabilised location. (refer Figure 3.1)
- Recommended construction method for stabilising access points is a 150-200 mm deep pad of minimum 40 mm crushed rock.
- The pad should be at least 2 metres wide and 5 metres long.
- The pad should extend from the kerb to the building 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. (refer Figure 3.2)

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



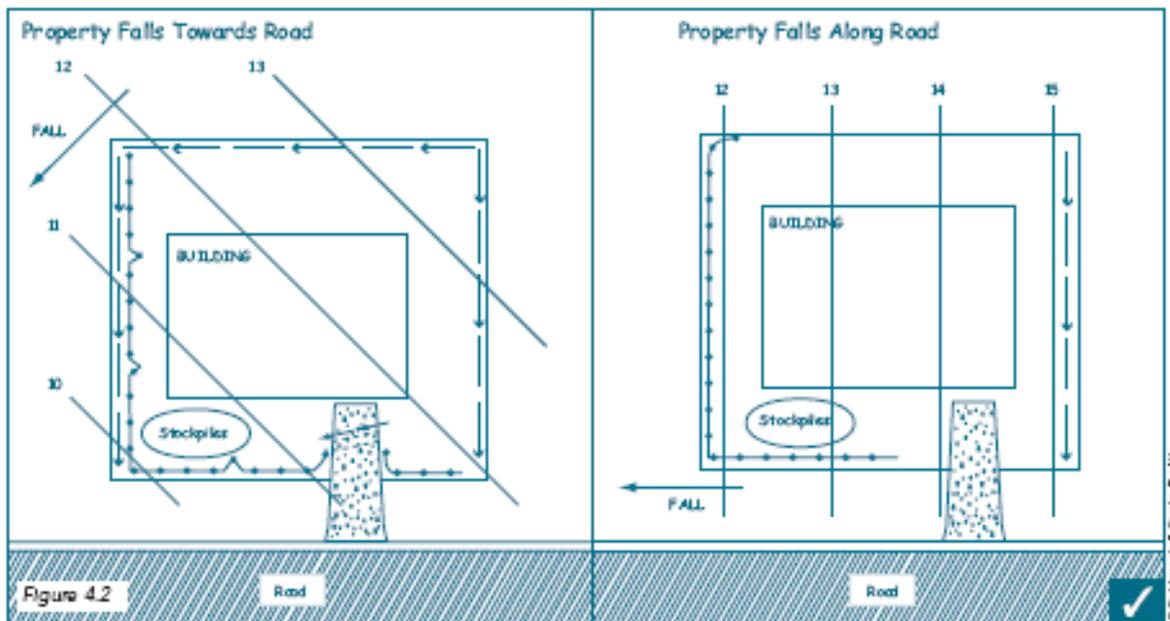
## Diversion of Water

Where practicable, or where stormwater run-off from more than 0.5 ha feeds into the work site, divert up-slope water around the soil disturbance. Stormwater can be diverted with the use of small catch drains or perimeter banks. Line all high flow velocity drains with turf or a geotextile fabric to avoid unnecessary soil erosion (refer Figure 4.1).



Divert stormwater around disturbed area

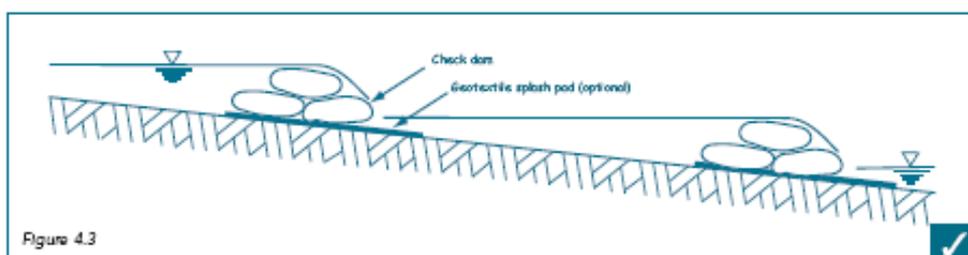
Diverted stormwater should be discharged onto stable areas and should not be diverted into neighbouring properties, unless written permission is obtained from the land owner(s). Avoid directing stormwater towards the site's entry/exit point (refer Figure 4.2).



Examples of how to divert stormwater run-off around the disturbed areas

## Check Dams

Soil erosion in unlined diversion drains can be controlled with the use of check dams constructed from sand or gravel filled bags. Space the check dams so the crest of the down-slope dam is level with the base of the up-slope dam (refer Figure 4.3).



Check dams

## Roof Water Connection

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

## Litter and building waste

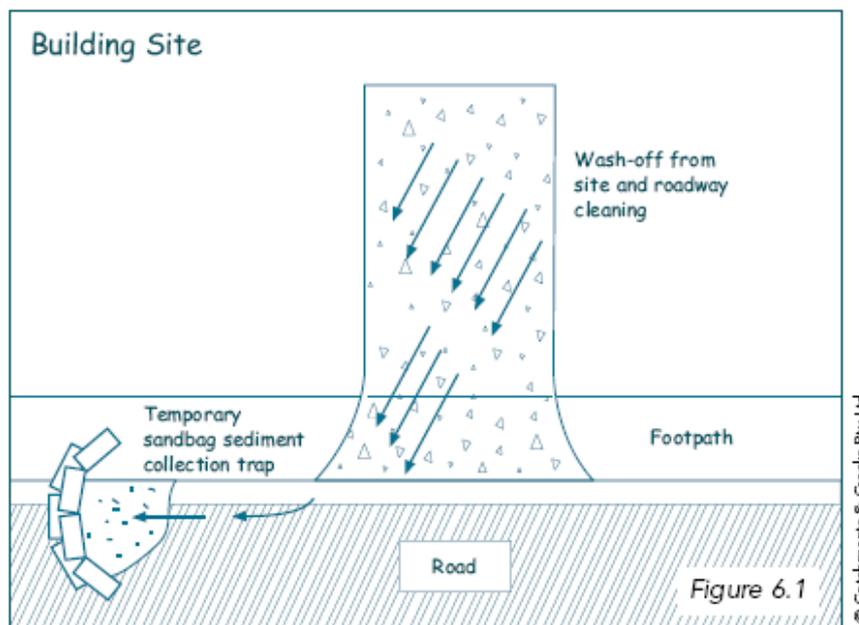
All solid waste should be correctly stored on-site to prevent it from leaving the site either by the effects of wind or water. Smaller materials such as litter should be contained in covered bins or litter traps formed on three sides by a geotextile wind break or similar device.

## Site clean-up

Remove accidental spills of soil or other materials on the road or in the gutters or drains before rainfall and at least on completion of the day's work. Sweep materials from the road – don't wash them down the gutter. Following storms, inspect the road reserve and all sediment barriers and remove any sediment residue.

## Exposed aggregate concrete surfaces

Builders need to demonstrate on an Erosion and Sediment Control Management Plan how they intend to prepare exposed aggregate surfaces without allowing cement wash-off to flow into stormwater drains or waterways. Where practicable, wash cement residue onto pervious surfaces or contain it within a temporary trench (refer Figure 5.1).



At no time should cement residue or wastewater run-off be allowed to enter the roadside gutter. This may make it impractical for exposed aggregate driveways to be constructed on some sites. In such cases, an alternative driveway finish must be used.

## Erosion and Sediment Control Plans

Management plans are given various titles including Erosion and Sediment Control Plans (ESCP), and Soil and Water Control Plans (SWCP). Where appropriate, the submission of a management plan needs to be discussed with the appropriate building control body. These plans need to communicate to all involved – sub-contractors, private certifiers, home owners and regulators – how stormwater pollution is to be controlled on the site.

Where appropriate, ESCPs should include, but not be limited to, the following information:

- . property boundaries
- . general soil description
- . existing and final contours – including location of cut and fill banks
- . existing and final overland flow drainage paths
- . limits of clearing where applicable eg. on large properties
- . location of vegetated buffer strips
- . stabilised entry/exit point (rumble pad)
- . location of soil and sand stockpiles
- . location of all proposed temporary drainage control measures
- . location of all proposed erosion control measures (alternatively, use notes to describe locations) including installation sequence and maintenance requirements
- . permanent site stabilisation measures
- . a statement of whom is responsible for establishing and maintaining all erosion and sediment measures.

## Erosion and Sediment Control Installation Sequence

The timing of works and the installation of control measures has a major influence on the management of stormwater.

- . Establish a single stabilised entry/exit point (rumble pad).
- . Install sediment fence(s) along the low side of the site.
- . Divert up-slope water around the work site and appropriately stabilise any drainage channels.
- . Clear only those areas necessary for building work to occur.
- . Stockpile topsoil within the sediment-controlled zone.
- . Stabilise exposed earth banks eg. vegetation, erosion control blankets.
- . Install on-site waste receptacles eg. mini-skips, bins, reo cages. These should be covered to prevent waste being moved by wind.
- . Commence building activities.
- . Install roof downpipes as soon as practicable after the roof is laid.
- . Maintain all control measures in good working order.
- . Revegetate or otherwise stabilise the site.

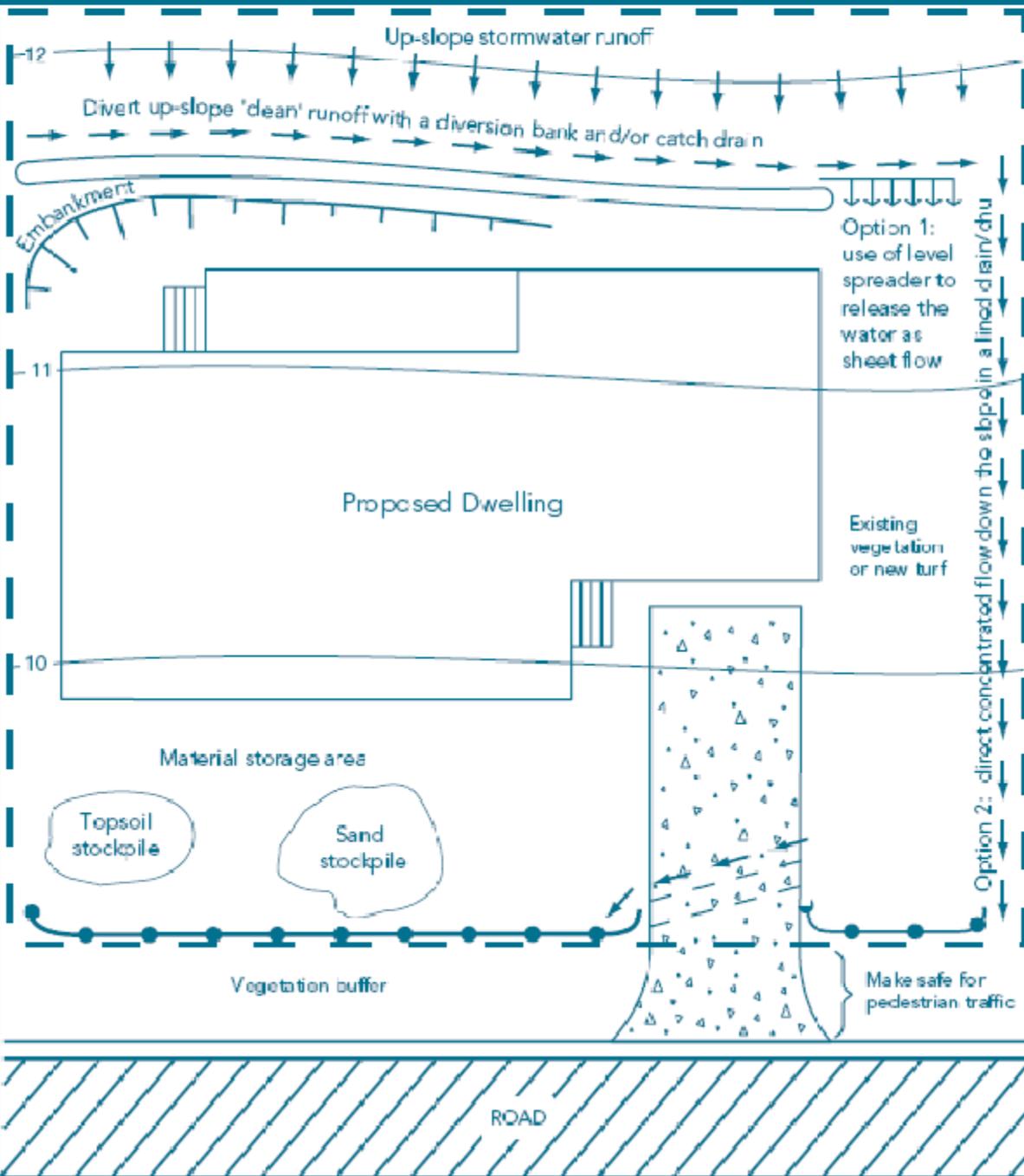
# EROSION AND SEDIMENT CONTROL PLAN

## Legend

	Property boundary		Diversion drain/bank		Entry/exit pad bund
	Dwelling site		Stabilised entry/exit pad		Contour line
	Sediment fence				Level spreader

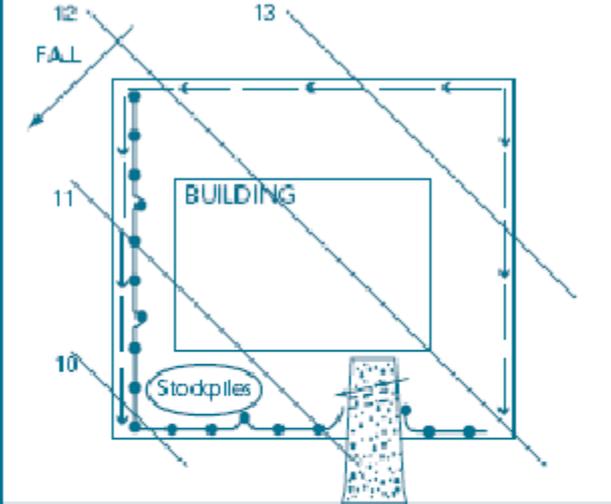
## Notes

1. All erosion and sediment control structures to be inspected each working day and maintained in good working order.
2. All ground cover vegetation outside the immediate building area to be preserved during the building phase.
3. All erosion and sediment control measures to be installed prior to commencement of major earthworks.
4. Stockpiles of clayey material to be covered with an impervious sheet.
5. Roof water down pipes to be connected to the permanent underground stormwater drainage system as soon as practical after the roof is laid.



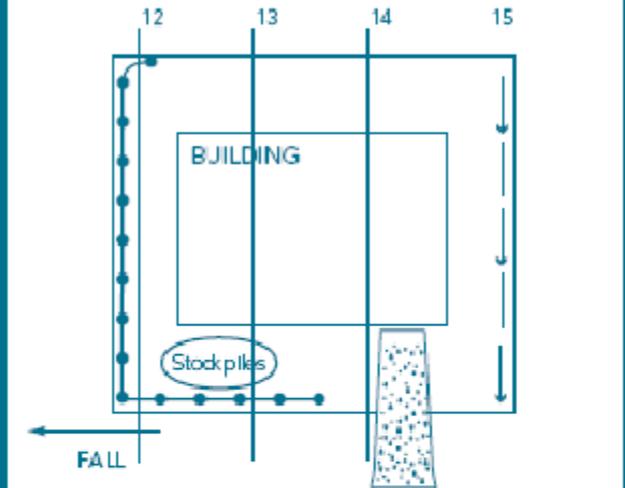
# TYPICAL DRAINAGE AND SEDIMENT CONTROL LAYOUTS

PROPERTY FALLS TOWARDS ROAD



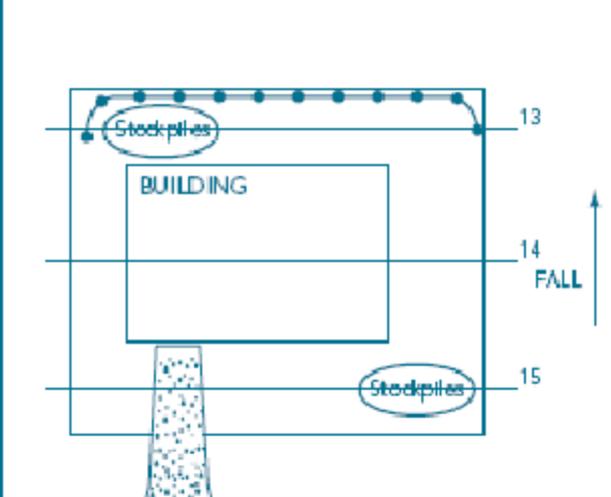
ROAD

PROPERTY FALLS ALONG ROAD



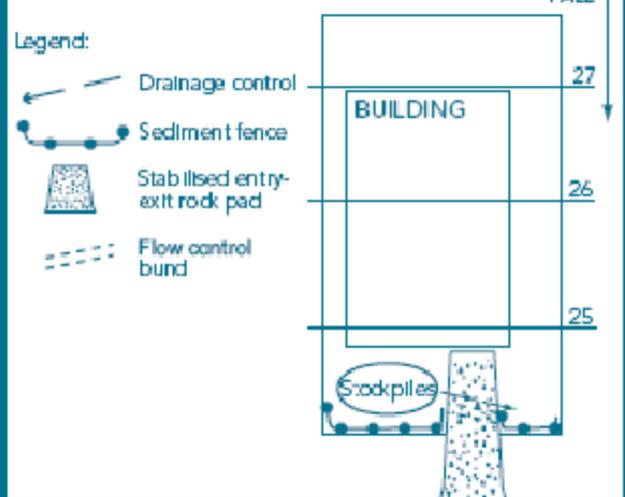
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PROPERTY FALLS AWAY FROM ROAD



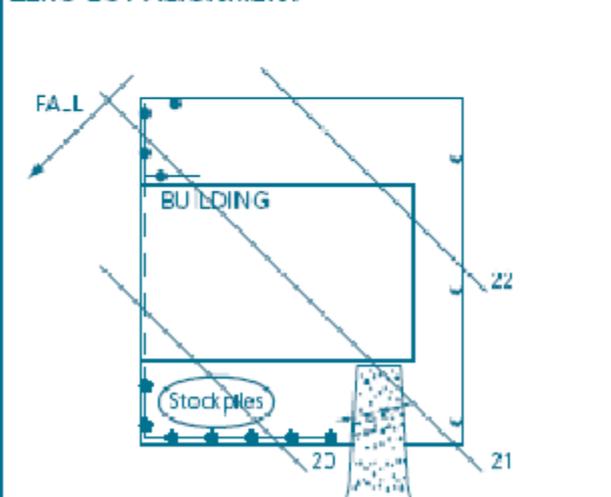
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NARROW LOT



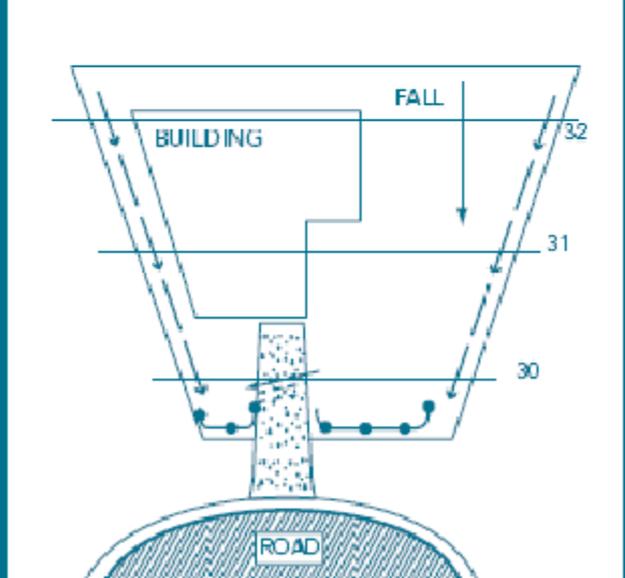
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ZERO LOT ALIGNMENT



ROAD

CUL-DE-SAC PROPERTY



ROAD