

Handbook for
**Pollution Avoidance on Commercial
and Residential Building Sites**
Second Edition



Government
of South Australia



Handbook for Pollution Avoidance on Building Sites - Second Edition

Environment Protection Authority
GPO Box 2607
Adelaide SA 5001

Telephone: (08) 8204 2004
Freecall (country) 1800 623 445
Fax: (08) 8204 9393
e-mail: epainfo@epa.sa.gov.au
Web site: www.epa.sa.gov.au

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Acknowledgement

This handbook is based on information contained within the booklet *Guidelines for Erosion & Sediment Control on Building Sites*, which was developed for 'Keep the Soil on the Site' by the Hawkesbury-Nepean Catchment Management Trust. All material within that publication is based on *Managing Urban Stormwater—Soil and Construction* (3rd Edition 1998), also known as the 'Blue Book' (available from NSW Department of Housing; telephone (02) 9821 6092, (02) 9821 6448; e-mail bluebook@housing.nsw.gov.au).

City of Knoxville 2001, Best Management Practices (BMP) Manual, City of Knoxville Engineering Department, USA.

Disclaimer

This handbook has been prepared to provide information relevant at the time of publishing. It is not a regulatory document. If you need more information regarding legal obligations consult a lawyer, the legislation, the Environment Protection Authority (EPA), your local council, or KESAB environmental solutions.



Printed on recycled paper

WARNING!

\$300

on-the-spot fine may apply

It is illegal to allow soil, cement slurry or other building materials to enter the stormwater system.

*Environment Protection (Water Quality) Policy 2003
and Local Government Act 1999*

Protect Our Waterways





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Introduction

This Environment Protection Authority (EPA) handbook provides a practical guide to best practice in reducing stormwater pollution from building sites.

Construction disturbs soil and creates dust, noise and debris. Run-off from a building site travels down the gutters and drains to creeks, and eventually ends up in a river, lake, or the sea.

You do not have to do everything that is included in this handbook, provided you do not pollute the state's waters.

However, this handbook will help you to comply with the *Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry* (which is now required under the *Environment Protection Act 1993*) as well as the *Environment Protection (Water Quality) Policy 2003* (Water Quality Policy).

Run-off from a single block of land may seem insignificant but, if you consider all the building sites in the region, run-off containing soils, sands and clays (sediment) as well as waste has a huge effect on water quality. Sediment also chokes local creeks, affecting plant and animal life.

Studies have shown that one building site can lose up to four truckloads of soil in a single storm.

It is important to keep the soil on the site.

Everyone on-site is responsible. Preventing site erosion saves money for you and your clients and protects you from prosecution.

Be sure that all your employees and contractors understand what they need to do.



The Law and You

There are many laws, regulations, policies and guidelines to help protect the environment in South Australia. They give guidance to business and industry.

If you break the law, it could be an offence with serious penalties; in most instances, the prosecutor does not have to prove your pollution was deliberate.

Even accidents can result in prosecution.

You and others in your business should be aware of these laws and their penalties, and you must take all reasonable care not to harm the environment.

The principal legislation addressing pollution in South Australia is the *Environment Protection Act 1993* (the Act). That Act states:

A person must not undertake an activity that pollutes, or might pollute, the environment unless the person takes all reasonable and practicable measures to prevent or minimise any resulting environmental harm.

The legislation also includes environment protection policies, which outline recommendations and sometimes mandatory requirements for the protection of a particular aspect of the environment, such as water.

The *Environment Protection (Water Quality) Policy 2003* (Water Quality Policy) states that a person must not discharge or deposit a listed pollutant into waters, or onto land where it is reasonably likely to enter any waters (this includes a pollutant carried by rain or wind).

The Law and You (cont)

Pollutants include:

- soil, clay, gravel or sand
- wastewater from brick, bitumen or concrete cutting
- building construction waste
- building washwater
- concrete waste
- other waste and litter
- sawdust
- washdown water from vehicles.

Under the Water Quality Policy, on-the-spot fines of \$300 may be imposed on builders, owner/occupiers or landscapers of land where pollution has entered, or has the potential to enter, gutters, drains and waterways. Depending on the seriousness of the offence, the EPA may also choose to prosecute through the court.

The Water Quality Policy also makes the *Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry (1999)* a requirement under the Act. Failure to comply with specific requirements in a code of practice or guideline linked to the Water Quality Policy may result in the issuing of an Environment Protection Order (EPO). An EPO may require that a person or agency take specified action within a specified period. Failure to comply with an EPO is an offence.

The authorities who may enforce the Water Quality Policy include the EPA, local councils and State Government agencies.

All owners, managers and operators should ensure that they know about environmental laws and their responsibilities.



The Law and You (cont)

Another law is the *Environment Protection (Air Quality) Policy 1994*, which requires that the best practicable means of control be used to minimise air pollution from an activity. It also specifies maximum exhaust discharge levels for commonly generated substances, such as dust particles.



The Environment Protection Act also provides guidance on noise levels that may be deemed excessive under the Act. Supervisors need to take reasonable and practical steps to ensure that workers under their control on-site (e.g. sub-contractors) do not breach the Act, environmental protection policies or conditions of development authorisation.

In addition, the *Local Government Act 1999* includes provisions for local councils to remove and dispose of rubbish and objects placed on public roads and footpaths, and to order an owner or occupier of unsightly land to clean it up.

Local councils may issue the following notices:

- Enforcement Notice—Development Act
- Environment Protection Order—Environment Protection Act
- Penalty Infringement Notices (expiations).

Building sites that are small, steep, have limited access or are difficult to build on do not provide a defence for non-compliance with the law.

Site Planning

The main objective is to stop sediment, waste and litter from leaving your site. This requires careful planning and forethought. The way you run your building site can have a large impact on the amount of pollution in stormwater run-off.

When planning the site layout, building location and earthworks you should take into account the following:

- the soil erosion and drainage management plan
- the stabilised entry/exit point
- the location of stockpiles and storage materials
- the location of waste management facilities
- an area for brick cutting and concrete works
- a contained area for paint and plastering waste and wash waters
- a wash down area for vehicles and equipment
- the location of noisy equipment so as to avoid annoying the neighbours.

Each of these topics is explained in detail on the following pages.



Soil Erosion and Drainage Management Plan

For any site development, the planning and implementation of a soil erosion and drainage management strategy should be integrated into the initial development plan. The *Stormwater Pollution Prevention Code of Practice for the Building and Construction Industry* states that a Soil Erosion and Drainage Management Plan (SEDMP) must be prepared where:

- there is a high risk of sediment pollution to adjoining land or receiving waters, or
- the total area to be disturbed, or left disturbed, at any one time exceeds 0.5 ha.

A SEDMP is not required if the risk of the development activities affecting stormwater quality are low—for example, if a site is developed at a depth significantly below street level, such as for multi-storey buildings.

The preparation and lodgement of a SEDMP should be a necessary condition for land division, building consent or for civil works. It may be necessary to have the SEDMP approved and certified by a suitably qualified and experienced organisation.

Before construction begins, SEDMPs should be lodged for approval with the relevant local council, along with the engineering design drawings for the land division. Because some smaller issues will need to be addressed at the development's building stage, an updated SEDMP should be provided with application for provisional building rules consent.

Soil Erosion and Drainage Management Plan (cont)

The plan should demonstrate the following major objectives of the site's erosion and sediment control strategy:

- exposure of the least area of land to the risk of erosion for the shortest period of time
- effective control of surface run-off entering and leaving the site
- erosion control works and measures to minimise the amount of site erosion
- sediment collection devices to prevent sediment leaving the site
- provision for stockpiles to be stored within the sediment barrier
- rehabilitation of all disturbed areas as soon as possible—temporary vegetation may be required in new estates
- maintenance of the erosion control and sediment collection devices.

Steps for preparing an effective SEDMP are to:

- investigate the site characteristics
- comment on the effectiveness of the site water management
- integrate all clearing and grading works with the site layout design
- determine the existing and proposed drainage patterns
- select the appropriate erosion control practices
- select the appropriate sediment collection devices
- outline the site rehabilitation program.



Erosion and Sediment Controls

The suggested erosion and sediment controls for a 'typical' development site are to:

- minimise the area of land to be cleared
- protect vegetation with temporary fences
- install sediment fence(s) along the low side of the site
- divert water around the work site and stabilise channels, but do not flood the neighbouring property
- establish a single stabilised entry/exit point
- leave or lay a kerb-side turf strip (for example, the nature strip) to slow the flow of water and trap sediment
- stockpile topsoil within the sediment controlled zone
- stabilise exposed earth banks—for instance, using vegetation or erosion control mats
- fill in and compact all trenches immediately after services have been laid
- install site waste receptacles (mini-skip, bins, wind-proof litter containers)
- sweep the road and footpath every day and put soil behind the sediment controls—hosing down roads and footpaths is unacceptable
- connect downpipes from the guttering to the stormwater drain as soon as the roof is installed
- re-vegetate the site as soon as possible.

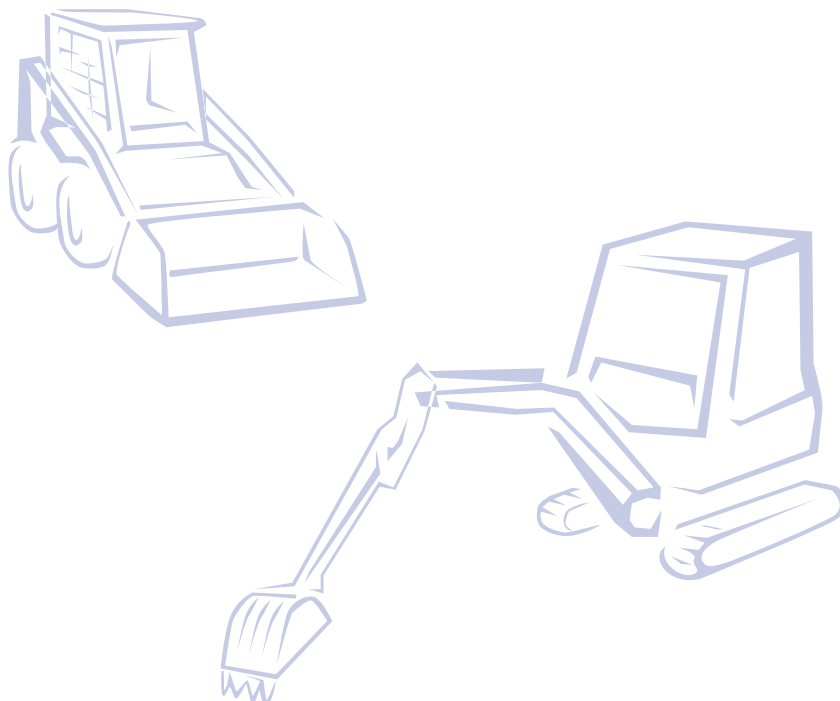
Please refer to the following pages for further details.

Site Excavation

Avoid stripping and excavating the site until you are ready to build. Look to limit disturbance at a site when cutting, filling and excavating the building platform. Any fill needs to be well compacted. Preserving as much grassed area as possible will help to filter sediment from stormwater run-off before it reaches the drainage system.

Dust at a site should be controlled to limit nuisance to nearby residents and pollution of stormwater systems (see page 28).

Vehicles should enter and leave the site by the access driveway to limit the tracking of mud and/or soil onto roads. Always ensure that loads are covered to eliminate materials or litter blowing off. Excavator drivers should remove any sediment left on the road by their vehicles.



Stabilised Entry/Exit Point

Where possible, the entry/exit point of the site should be managed so vehicles do not track sand, soil and clay (sediment) off the site. This access point should be restricted to one stabilised location. (Note that it may not be the location of the permanent driveway.)

It is recommended that a large gravel or aggregate be used to establish the entry/exit point. Make sure that you clearly mark the access point and provide a map for delivery drivers.

Stabilised access points only require periodic maintenance by topping up the rock, although street sweeping on adjacent roads may still be required.

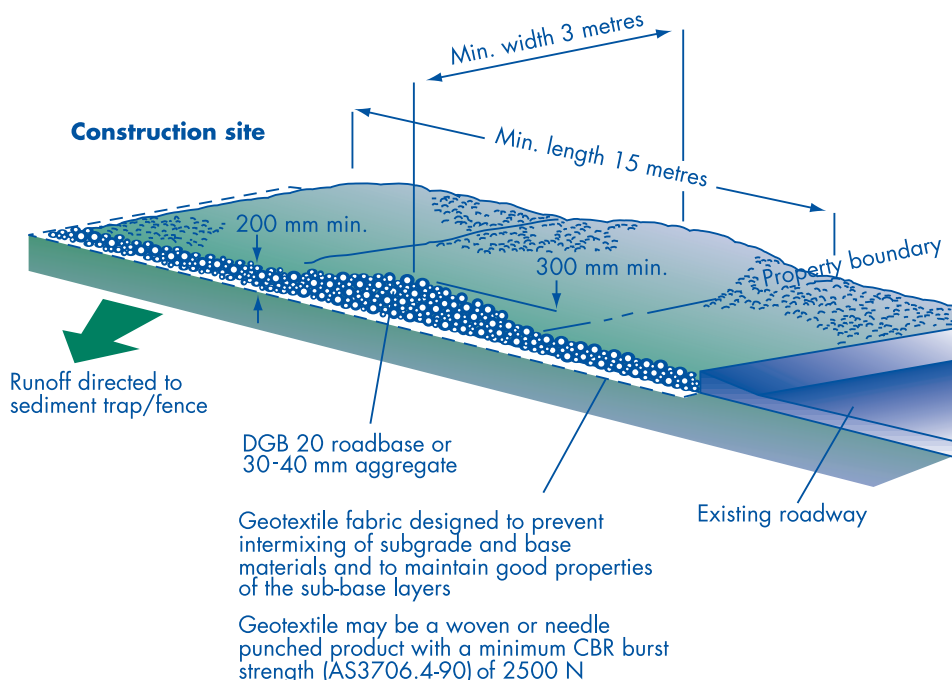
Advantages of stabilising the access point:

- It restricts vehicle movement, therefore allowing the entire site to be more stable and durable in wet weather.
- After wet weather, work can begin more quickly.
- Vehicles are less likely to become bogged.
- Sediment flowing into waterways will be reduced.

Stabilised Entry/Exit Point (cont)

Construction Notes

1. Strip at least 150 mm of topsoil, level area and stockpile on-site if space available.
2. Compact sub-grade.
3. Cover area with needle-punched geotextile.
4. Construct a 200 mm-thick pad over geotextile using aggregate at least 40 mm in size (crushed sandstone is not suitable).
5. Minimum length should be 15 m, or to building alignment.
6. Where possible, the entry/exit point should extend from the kerb to the building footprint, so that a large truck can access the site without leaving the stabilised area.
7. Minimum width should be 3 m.
8. Where the entry/exit area slopes toward the road, construct a diversion hump across the stabilised area and immediately within the boundary to divert water to a sediment fence or other sediment trap.



Washdown Areas

Vehicles and other equipment on construction sites may need to be washed frequently. The washdown water from this equipment contains sediment (soil, clay, gravel and sand), detergents and automotive fluids, all of which pollute our creeks, rivers and beaches.

Allowing these pollutants to enter the stormwater system and our natural waterways is an offence under the Water Quality Policy. Building site supervisors should therefore ensure that an appropriate vehicle and equipment cleaning area is available on site. The following is a guide for the design and operation of a bunded wash area for a building site.

Slope the wash area for washwater collection into a sedimentation basin. This will allow the sediment to settle to the bottom of the basin and the wastewater to evaporate. It can be made using sandbags or hay bales. Alternatively, if there is a large volume of wastewater to be collected, a blind sump (no outlet) should be installed.

Use phosphate-free, biodegradable soaps in small amounts. Avoid using solvents to clean vehicles.

Use as little water as possible by initially spraying the vehicle with a trigger hose and then scrubbing it with cloth rags and squeegees.

If the washbay requires a sump, arrange for a licensed liquid waste contractor to collect the wastewater from the sump and dispose of it appropriately, or obtain permission from SA Water Trade Waste to pump the wastewater to the sewer.

Educate employees and subcontractors on pollution prevention measures and the importance of protecting the stormwater system from pollution.

Sediment Fencing

The most efficient and widely accepted sediment barrier for construction sites is a specially manufactured geotextile sediment fence. Sediment fences act like dams—trapping the sediment while allowing water to leave the site. They are effective in retaining suspended solids coarser than 0.02 mm. Sediment fences are simple to construct, relatively inexpensive and easily moved as development proceeds.

When using a sediment fence, keep in mind that it will be effective within the following parameters:

- A sediment fence is generally not designed to filter heavy flows, and therefore needs to be placed following the contours whenever possible.
- It needs to be trenched-in, at least 150 mm, and buried with the soil compacted so the water flows through, and not underneath.
- The performance of a sediment fence diminishes considerably when crushed—it must remain vertical and keyed into the soil.
- Incorrect installation will allow water to flow through the point of least resistance.
- It should last for up to six months, but requires regular maintenance and weekly checks.
- Damaged fences must be repaired promptly.

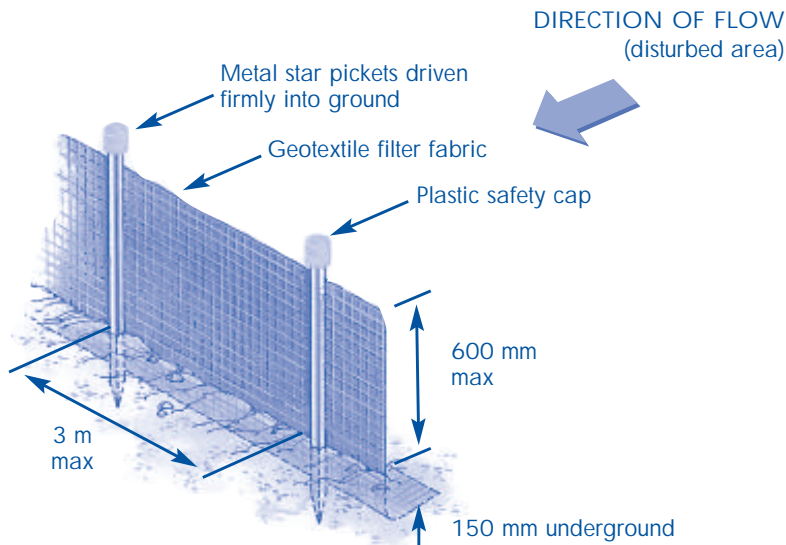
On a typical residential building block (approximately 700 m²), a sediment fence should work well providing it is placed on the low side of the block. If there needs to be a break in the fence for any reason (for instance, an access point) a contour bank/diversion bank or bund will be needed to direct water back to the fence. The sediment fence must have uphill returns at either end to prevent sediment flowing around it.



Sediment Fencing (cont)

Advantages of sediment fences:

- It is a simple strategy that is easily installed, shifted or removed.
- They work well and, if maintained, should last for the duration of the construction stage.



Construction Notes

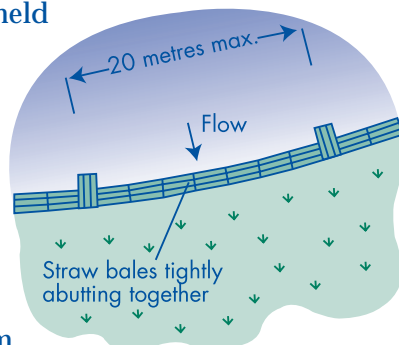
1. Construct sediment fences to follow as closely as possible the contours of the site.
2. Drive 1.5 m-long posts into the ground, a maximum 3 m apart.
3. Staple to 40 mm-square hardwood posts, or wire tied to steel posts.
4. Dig a 150 mm-deep trench along the up-slope line of the fence so the bottom of the fabric is entrenched.
5. Backfill trench over base of fabric and compact on both sides.

Straw Bale Filter

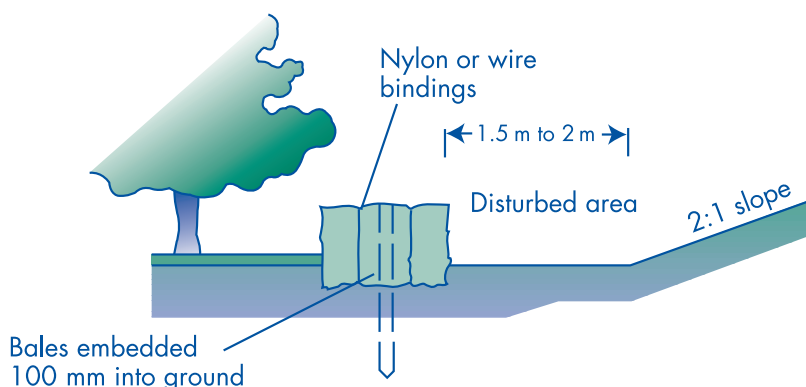
Straw bale filters are suitable for low flows of water. These are recommended for only limited applications, such as to reduce the speed of the flow.

The return of straw bales every 20 m, held firmly in place with star pickets, is recommended to ensure stability.

The minimum number of bales to be used is four. If only two bales are used during a storm, the water will simply hit the bales and flow around, increasing erosion. The bales must dam the run-off and allow the sediment to settle behind the bales.



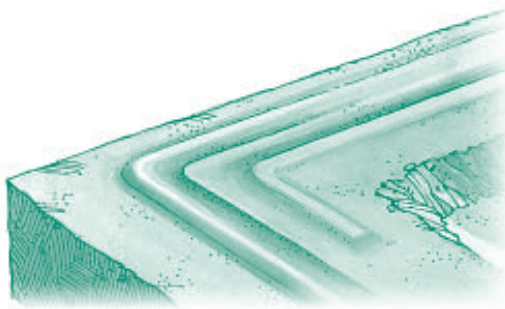
Please note that straw bales do not filter sediment-laden waters. They will only hold water back if installed correctly.



Diversion of Up-Slope Water

Where practical, or where stormwater run-off is more than 0.5 ha, up-slope water should be diverted around the site. Stormwater can be diverted by small turf- or geotextile-lined catch drains, or by the use of diversion banks (see diagram below).

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



Advantages:

- There is less water that must be treated.
- The site is kept drier during wet periods.

Remember—on steep sites, depending on the duration of works and the expected water flows, it may be necessary to line the earth drain with turf or a geotextile fabric to avoid unnecessary soil erosion.

Stockpiles and Storage of Materials

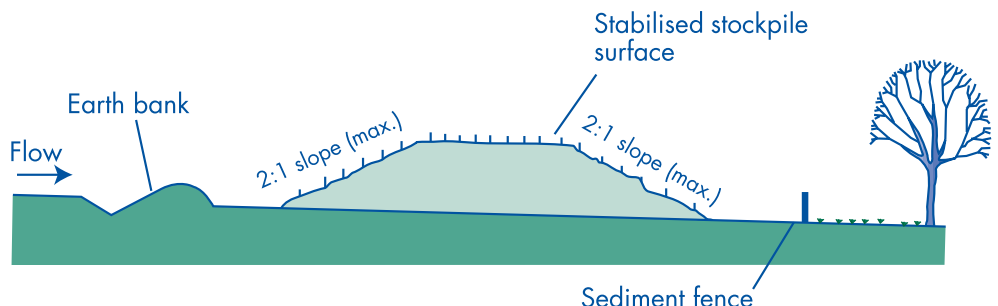
The incorrect storage of stockpiles is a major source of stormwater pollution.

Stockpiles and building materials should not be stored on the footpath or within the road reserve. To avoid damage to the stock and pollution of the waterways, limit the amount of material on-site and remove all materials when work is completed.

Stockpiles and building materials should be:

- covered where necessary to minimise losses
- located behind the sediment controls
- protected from run-on water by placing diversion banks up-slope, and with sediment control structures placed immediately down-slope
- located at least 2 m (preferably 5 m) from hazard areas, especially likely areas of concentrated or high velocity flows, such as waterways, kerb inlet pits, paved areas and driveways.
- less than 2 m in height.

All site workers, subcontractors and delivery drivers need to be advised of their responsibilities to minimise soil erosion and pollution. Delivery drivers must be given a designated location to deliver materials on site. This practice will keep stockpiles away from site access and help keep sediment from being discharged into the stormwater system.



Grass Filter Strips

Strips of vegetation down-slope from earthworks are a simple method of trapping coarse sediment. The flatter and wider the filter strips, the more effective they are. Grass filter strips have little effect in a storm, but can stabilise a disturbed site quickly and form an important part of a sediment control program.

A 400 mm-wide grass strip can be installed next to a kerb to stabilise the area between the kerb and footpath. It is also valuable for trapping sediment in very small storms. For best results, it is advised that the whole footpath is planted.

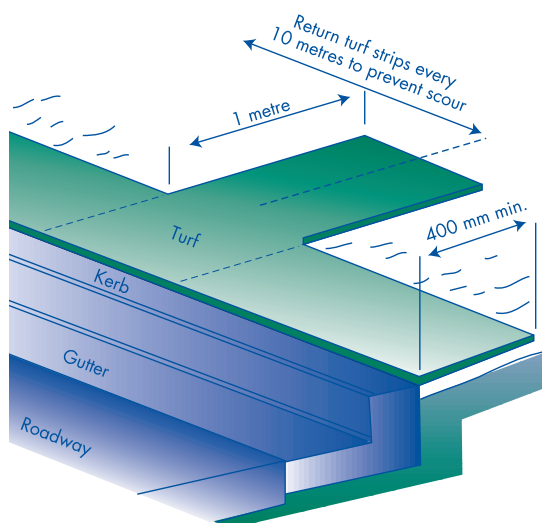
Advantages of grass filter strips:

- They are very effective in removing coarse sediment upstream from detention basins or infiltration structures.
- They prevent sediment travelling from bare soil areas to the drain.

Remember—grass filter strips are only suitable on low grades.

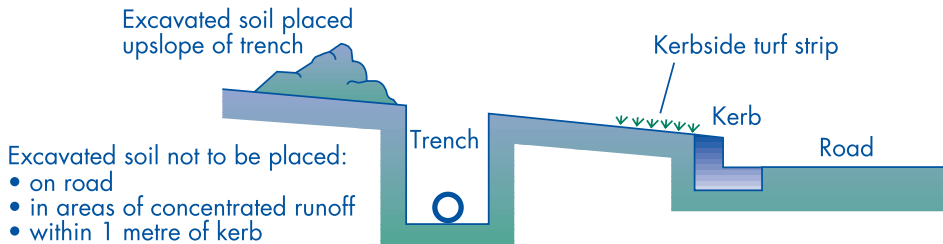
Construction Notes

1. Install a minimum 400 mm-wide roll of turf on the footpath next to the kerb and at the same level as the top of the kerb.
2. Lay 1.5 m-long turf strips (at 90°) every 10 m.
3. Rehabilitate disturbed soil behind the turf strip, in accordance with the soil erosion and drainage management plan (SEDMP).



Service Trenches

Where possible, coordinate the various service connections so that a single trench can be used. Avoid trenching in areas where water flow is likely to concentrate. Alternatively, try to schedule work when rainfall is low.



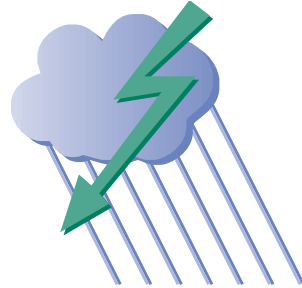
Construction Notes

1. Limit the time trenches are open to less than three days, and avoid opening them whenever the risk of storms is high.
2. Remove and store vegetated topsoil (sod) so that it can be used to provide immediate erosion protection after backfilling.
3. Place the soil on the uphill side of trenches to divert water flow away from the trench line, or use temporary bunds for similar effect.
4. Backfill subsoil and compact to 95% Standard Proctor, then replace topsoil and any sod to match surrounding ground levels.
5. Re-vegetate using original sod or other vegetation.

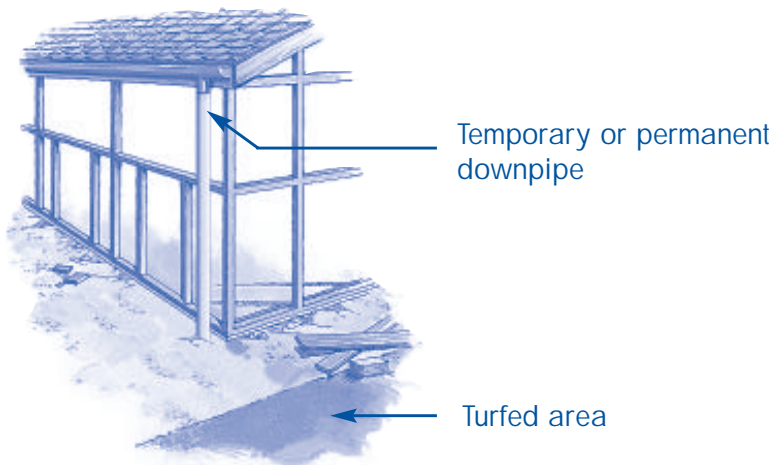


Early Roof Downpipe Connection

Temporary or permanent downpipes should be installed at the same time as the roof is installed. The early connection of downpipes to the stormwater system will reduce site drainage problems as well as downtime following storms.



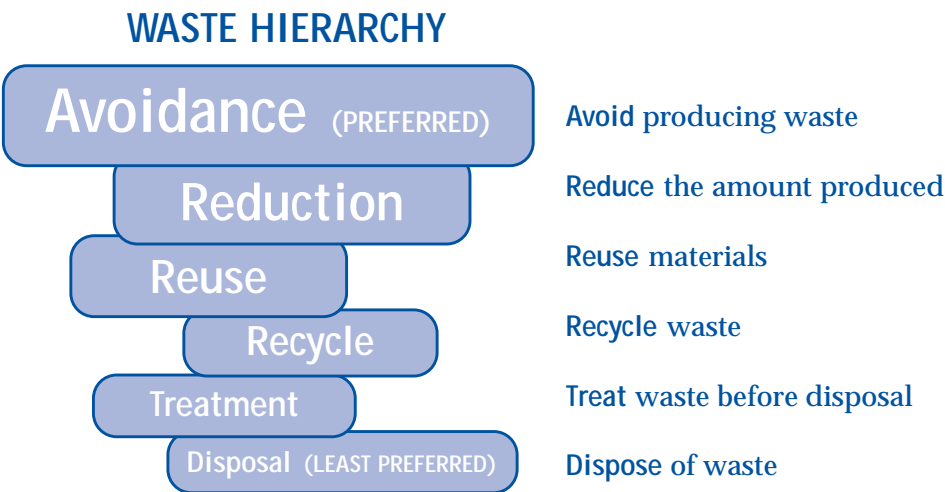
Connecting roof downpipes is a vital process to keep water off the site and 'keep the soil on the site'.



Litter and Building Waste

Australians generate approximately one tonne of waste per person per year, which goes to landfill. Around 45-50% of this is building material.

Waste should be managed in accordance with the waste hierarchy as shown in the figure below.



Avoiding waste production makes economic sense. Where possible, order items such as timber, plasterboard, etc. pre-cut to your required length and size. Order only what is required. If items are left over—for example, bricks and tiles—return the unused quantity to the supplier, or to a second-hand dealer for resale.

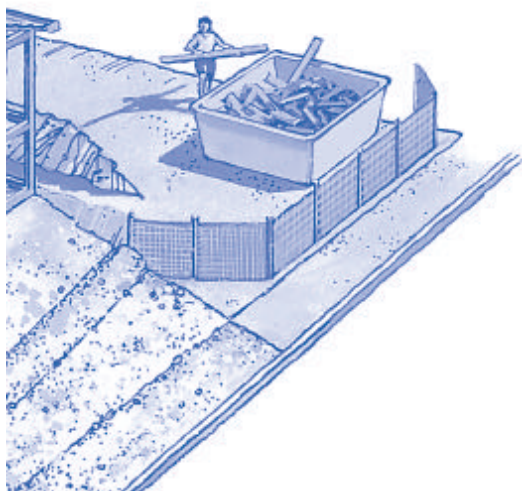
Where possible, consider using materials with recycled content and/or plantation grown timber. This reduces the demand on our natural resources, and encourages the recycling and reuse of waste products.

Use suppliers who will accept back their packaging—for example, return pallets.



Litter and Building Waste (cont)

Most materials from building and construction sites can be recycled. The following list demonstrates some reuse options.



STEEL—electric arc furnaces produce reinforcing bar, mesh and sections from 100% steel scrap.

ALUMINIUM—100% recyclable.

GYPSUM PLASTERBOARD—CSR recycles plasterboard. If disposed to landfill, it produces poisonous hydrogen sulphide and has a foul odour.

TIMBER—can be reprocessed into horticultural mulch or reused.

CONCRETE—unset concrete can be ‘washed out’ at the plant to remove cement. The sand and stone can be reused. Set concrete can be crushed and recycled as aggregate for new concrete or road base and fill.

BRICKS & TILES—can be reused where appropriate or crushed on-site for backfill, aggregate and gravel, using portable crushing plants.

PLASTICS—many plastics can be granulated and reused to make new plastic products for use within the building industry.

MOST GLASS—can be recycled. Construction glass must be separated from other glass such as drink bottles. Glass may be cut and reused or recycled as aggregate for concrete.

CARPET—in good condition can be sold and reused. It can also be recycled into secondary carpets. Some carpet can be recycled as weed barriers or as a covering and food for worm farms.

Litter and Building Waste (cont)

When planning the contracts, waste recovery and disposal must be considered. Organise waste management facilities such as waste bins to match the resource recovery contracts—for example, separate the different wastes to maximise resource recovery and minimise the cost of waste disposal.

Waste that is produced must be kept on-site and managed in an appropriate manner. Litter and waste should not be a visible nuisance. Bins can be covered to minimise any wind-generated litter and dust escaping from the site. Covered bins minimise rain entry, and locked bins discourage illegal use by unauthorised people. Any liquid from the bins (leachate) must be kept on-site, and not be allowed to enter the stormwater drains.

We must reduce waste volumes going to landfill and remove toxic content from materials before disposal.

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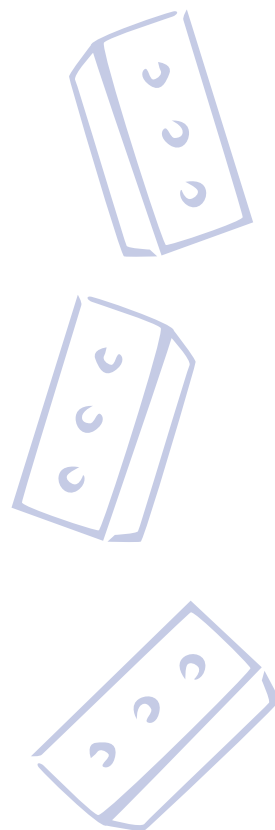


Brick Works

Without adequate care, waste from brick works can easily find its way into the stormwater system and harm our rivers and oceans.

For this reason, all wastewater from brick cutting activities must be prevented from entering stormwater.

- Mortar must not be mixed in gutters or any other location that will drain into the stormwater system.
- Brick cutting activities that generate surplus wastewater should not be carried out on public roads, footpaths or reserves.
- Surplus wastewater from brick cutting activities should be recycled, disposed of into the sewer (with SA Water Trade Wastes Section approval), or discharged into a contained area for drying by soakage.
- Any waste concrete slurry should be allowed to dry and either be disposed of on-site or taken to a licensed waste depot.



Concrete Works

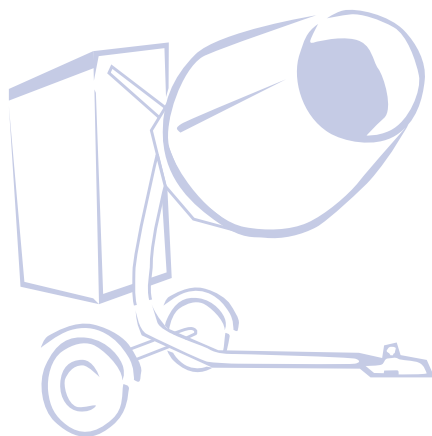
All residues and wastes generated by concrete works must be prevented from entering the stormwater system.

On-site concrete mixing, either by hand or by mechanical means, should be carried out in an area that is capable of containing all excess water, residues and waste.

Where site conditions require the use of concrete pumps from public roadways, temporary bunds must be provided across all down-slope gutters to trap any spilt material. All spilt material must be removed from the roadway and gutter prior to the removal of the temporary bunds.

Concrete mix trucks, pumps and equipment must not be washed down on roadways, footpaths or reserves. Vehicles and equipment should be washed down either on a designated contained area within the site or at a suitably designed and operated washdown facility.

Waste concrete slurry should be allowed to dry and either be disposed of on-site or taken to a licensed waste depot.



Painting and Plastering

Paint waste and wash waters must not be discharged into the stormwater system. Water-based paint cleaning should be disposed of into the sewer or diverted into a contained area lined with newspaper on-site. When it is dry, place the newspaper with paint residue in a solid waste bin.

Oil-based clean up material should be filtered for reuse of the solvent or taken to a waste depot that is licensed to accept these wastes. After filtering, place the paint residue in a solid waste bin.

Unused paint should be kept in the tin or other sealed container and disposed of to a waste depot licensed to receive this waste.

Plastering waste and wash waters must not be discharged into the stormwater system.

All residues and wastes from plastering activities should be allowed to dry within a designated contained area of the site.

Solid waste should either be put into an on-site bin or taken to a licensed waste depot. Solid plastering wastes, such as calcium sulphate, may also be used as a clay modifier in gardens.



Dust Control

The *Environment Protection (Air Quality) Policy 1994* (Air Policy) regulates air pollution emitted by industrial processes and other activities. In addition to minimising pollution from processes, the Air Policy requires goods or materials to be handled, moved and stored in a manner that avoids air pollution. Therefore, removal of topsoil and the importing or storing of soil and other materials must be done with due care to avoid dust.

Dust particles that can be inhaled are known to adversely affect human health, particularly in those with respiratory diseases such as asthma and bronchitis. Airborne dust particles may land on surrounding areas, damaging the amenity of neighbouring properties. They also have the potential to block drains and sediment retaining systems. This can lead to the discharge of pollutants outside of retention areas and subsequent environmental harm.

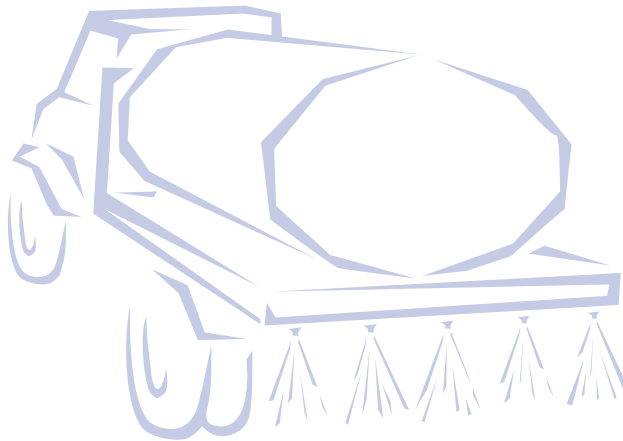
Control dust levels by:

- regularly and lightly watering dust-prone areas; however, prevent excess watering as it can cause damage and erosion
- during windy periods, limiting the movement of soil, construction work such as earth moving, and the use of high-speed abrasive disc saws and sanders
- minimising the lifting height of the loader bucket when transferring soil or rubble from front-end loaders to trucks, and controlling its unloading speed to reduce wind-borne dust
- controlling the speed of dumping from tip trucks



Dust Control (cont)

- covering or stabilising materials during transport into and within the construction site
- lightly watering access tracks and roads regularly, and compacting (where possible) to minimise dust levels and provide a hard-wearing surface (also see pages 11-13)
- limiting vehicle traffic to essential vehicles only and applying speed limits—slower speeds produce less dust and road wear
 - speeds in excess of 10 km/h are not recommended on sites next to residential premises because of dust impact
 - on large sites, speed limit signs should be posted.



Noise Control

While construction activity is often inherently noisy, the general environmental duty under the Environment Protection Act requires all reasonable and practicable measures to be taken to prevent, or minimise, any unreasonable impacts.

This duty relates not only to activity associated directly with construction, but extends to secondary activity such as concrete trucks parked on roadways, concrete mixers located on footpaths, and excessive noise from radios and mobile phones.

The types of measures that satisfy the duty will be specific to each site, but the following limits should be observed:

- regular construction activity should be restricted to between 7 a.m. and 7 p.m. Monday to Saturday, and between 9 a.m. and 7 p.m. on Sundays and public holidays
- noise levels in residential areas should not exceed 45 dB (A) outside these hours, except where unreasonable delays, costs or safety issues would arise and can be justified.

When operating within the prescribed hours, then all reasonable and practicable measures must be taken to minimise the noise impacts.

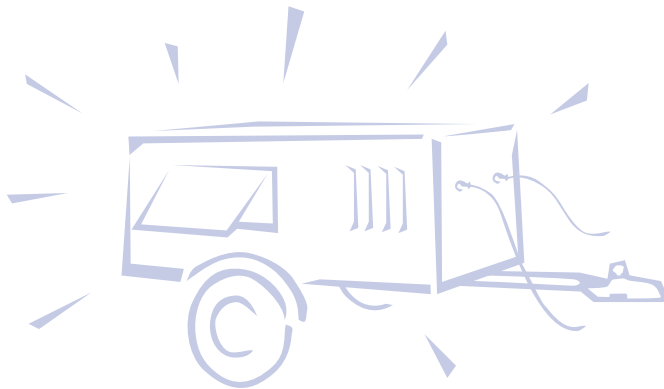
These may include, but are not limited to the following:

- Extremely noisy activities such as brick cutting, jack hammering or the like, in close proximity to residential areas, should not occur before 9 a.m.
- Noisy equipment should be located away from homes or a barrier provided to shield the noise.
- During breaks in work activity, wind down equipment such as generators, bobcats, cranes and the like to the minimum possible.



Noise Control (cont)

- Use properly maintained mufflers and other proprietary noise reduction devices on equipment, and ensure these devices are installed and operated effectively.
- Take due care when loading or unloading materials such as scaffolding to avoid metallic 'clanging' or impulse-type noises.
- Ensure mobile phones, radios and the like are used close to personnel and the workforce rather than operated to service a large proportion of the site.
- Use alternative, quieter processes where these processes provide the same result and are used on other similar sites.
- Ensure that equipment is not operated if maintenance or repairs would eliminate or significantly reduce noise from that equipment.



Maintenance of Control Measures

The proper maintenance of erosion and sediment controls is vital to their success. The site manager should check the operation of these each day and organise repair or maintenance as required. After a storm, the effectiveness of the established controls can be assessed.

An effective maintenance program should include on-going modification to plans as development progresses. Plans are usually based on a specific landform, but as development proceeds changes occur in slope gradients and drainage paths.

Best practice includes anticipating potential risks as well as being prepared for abnormal circumstances and emergencies. This could include storing extra sediment fence fabric and posts on-site for emergency repairs, or ensuring that the sediment control contractor's phone number is readily available on-site.

Maintain control measures by:

- reapplying aggregate to the entry/exit point if excessive sediment build-up occurs
- cleaning any catch drains
- repairing erosion in drainage channels with rock, turf or erosion control matting
- replacing sediment fences if the fabric is ripped or otherwise damaged (retrenching may also be needed)—sediment fences work well if they are maintained on a weekly basis and/or after each storm
- keeping an eye on the weather.



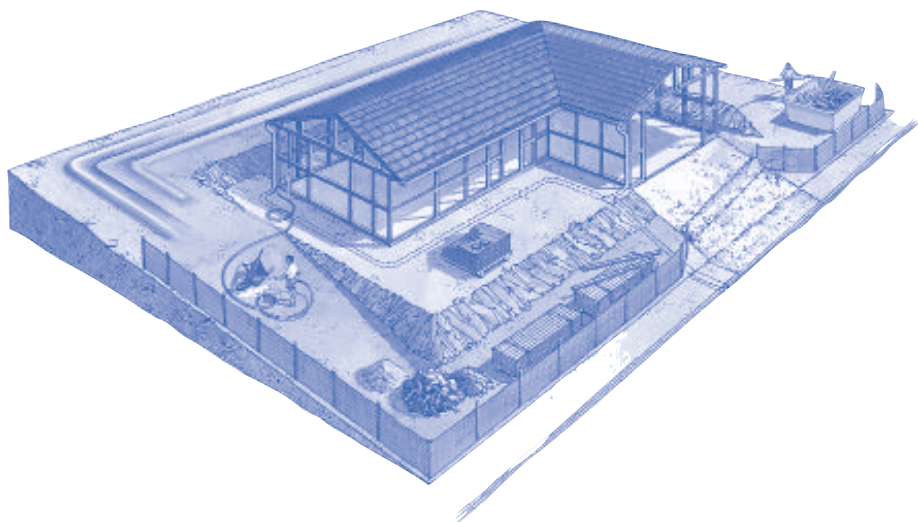
Site Clean-Up and Rehabilitation

Accidental spills of soil or other materials onto the road or gutter should be removed at the end of the day's work. Materials should be swept from the road, not washed down the gutter. Following storms, the roadway and sediment controls should be inspected and all excessive sediment residues removed.

All areas disturbed by construction should be promptly stabilised—for example, re-vegetated—so they can no longer act as a sediment source.

If the site has not been rehabilitated, and is handed over to a new homeowner, the homeowner needs to understand their legal obligation concerning erosion and sediment control, especially if a sub-contractor is employed to complete landscaping works.

Builders should provide advice to homeowners on practical ways to reduce erosion from building sites until re-vegetation cover has been established, or other measures installed in accordance with a local council's requirements.



Contacts

The following list of phone numbers and web sites may be useful when seeking further information about your rights and responsibilities concerning local planning and environmental issues.

35

Construction Industry Training Board

www.citb.org.au

(08) 8172 9500

Environment Protection Authority

www.epa.sa.gov.au

(08) 08204 2004 or

Freecall 1800 623 445 (country callers)

Housing Industry Association

www.buildingonline.com.au

(08) 8346 5091

KESAB environmental solutions

www.kesab.asn.au

(08) 8234 7255

Master Builders Association

www.mbasa.com.au

(08) 8211 7466

Recyclers and Waste Disposal

www.recycling.sa.gov.au

or look under 'Recycling Services' or 'Waste Reduction and Disposal Services' in the Yellow Pages

www.yellowpages.com.au

SA Water Trade Waste Branch

Commercial

(08) 8207 1412 or

(08) 8207 1415

Industrial

(08) 8207 1350

www.sawater.com.au



Contacts (cont)

Local Government Contacts

www.lga.sa.gov.au/public/councils.htm

Adelaide	8203 7203
Adelaide Hills	8408 0400
Alexandrina	8555 7000
Barossa	8563 8444
Barunga West	8635 2107
Berri Barmera	8582 1922
Burnside	8366 4200
Campbelltown	8366 9222
Ceduna	8625 3407
Charles Sturt	8408 1111
Clare & Gilbert Valleys	8842 2700
Cleve	8628 2004
Coober Pedy	8672 5298
Coorong	8575 1008
Copper Coast	8821 1600
Elliston	8687 9177
Flinders Ranges	8648 6031
Franklin Harbour	8629 2019
Gawler	8522 9211
Goyder	8892 0100
Grant	8721 0444
Holdfast Bay	8229 9999
Kangaroo Island	8553 2015
Karoonda East Murray	8578 1004
Kimba	8627 2026
Kingston	8767 2033

Contacts (cont)

Le Hunte	8680 2002
Light	8525 3200
Lower Eyre Peninsula	8676 2106
Loxton Waikerie	8584 7221
Mallala	8527 2006
Marion	8375 6600
Mid Murray	8569 1600
Mitcham	8372 8888
Mt Barker	8391 1633
Mt Gambier	8721 2555
Mt Remarkable	8666 2014
Murray Bridge	8539 1100
Naracoorte Lucindale	8762 2133
Northern Areas	8664 1139
Norwood Payneham & St Peters	8366 4555
Onkaparinga	8384 0666
Orroroo/Carrieton	8658 1260
Peterborough	8651 3566
Playford	8254 0222
Port Adelaide Enfield	8405 6600
Port Augusta	8641 9100
Port Lincoln	8682 3033
Port Pirie	8632 1222
Prospect	8269 5355
Renmark Paringa	8586 6609
Robe	8768 2003
Roxby Downs	8671 0010
Salisbury	8406 8222



Contacts (cont)

Southern Mallee	8577 8002
Streaky Bay	8626 1001
Tatiara	8752 1044
Tea Tree Gully	8397 7444
Tumby Bay	8688 2101
Unley	8372 5111
Victor Harbor	8551 0500
Wakefield	8862 0800
Walkerville	8344 7711
Wattle Range	8733 0900
West Torrens	8416 6333
Whyalla	8640 3444
Yankalilla	8558 2048
Yorke Peninsula	8832 0000





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