

1 Planning your site

Plan your site

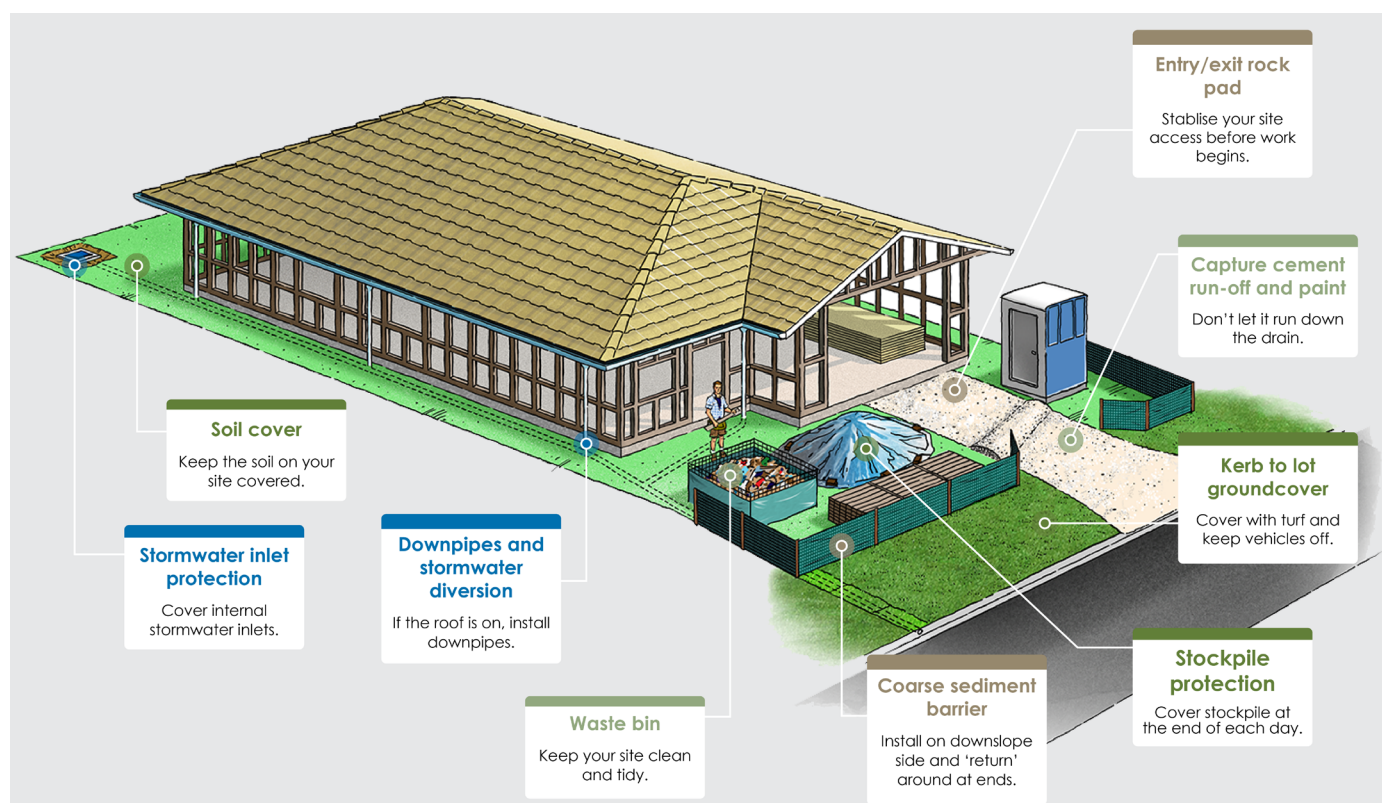
Planning points

- Ensure ESC plans are developed in conjunction with the stormwater and construction plans – this will reduce construction costs and improve outcomes.
- Design the site to match its conditions (soil, topography, and existing vegetation) and avoid unnecessary land clearing.
- Prepare an ESC site plan and display it on site so it is easily accessible.
- Plan your site from job start to job finish (pre-start requirements to client handover).
- Schedule the civil earthworks to avoid wet season, especially in high rainfall areas.
- Get your drainage and ESC measures in early, prior to bulk land clearing.
- Minimise the extent and duration of soil disturbance and allow for quick site re-establishment. Revegetate your site as soon as surrounding construction is complete.

- Check and maintain your ESC measures weekly and prior to rain.
- Prepare a staff ESC training plan for all workers (at induction and annually).
- Ensure ESC equipment is available on site and easily locatable.

An ESC plan should:

- Include areas to be cleared and where soil is to be retained.
- Be prepared by a suitably qualified ESC professional.
- Contain clear, concise information on site set out.
- Display the contact information of the responsible parties (ESC plan preparer and site ESC manager).
- Include maintenance requirements and technical notes.
- Be checked and updated as the site evolves.



Erosion protection
 Sediment control
 Drainage control
 Other pollutant controls

Find out more at waterbydesign.com.au/esc

2 Erosion protection

Soil cover

Covering soil is the best way to stop erosion caused by rain and wind. Unlike sediment barriers (such as sediment fences), which capture eroded coarse sediment, erosion controls can stop both coarse and fine sediment from eroding in the first place.

How

- Only clear the area necessary to undertake building work. Keep as much existing soil cover on your site as possible.
- Only clear immediately before commencing building work, not weeks or months in advance.
- Cover bare soil as soon as possible. Rather than waiting for building work to finish, find a temporary covering that can be walked on during the building stage.

Some examples to cover soil include:

Surface Type	Soil Cover Type
Slopes and batters	• Erosion control blankets • Turf and vegetation • Hydromulch
Service trenches	• Turf • Gravel
Stockpiles	• Tarps • Geofabric • Builder's plastic
Area between kerb and lot	• Turf
All other exposed soil around the building site	• Mulch and gravel • Turf • Spray-on soil binders

Maintenance

Regularly check your soil cover before and after rain. If bare soil is visible, you need to add more cover.

Site Rehabilitation

Revegetate and landscape your site as soon as building works are complete.

ESC Tip

Choose cover types that can withstand the expected traffic movements, such as mulch, gravel or turf.



(Source: Catchments and Creeks Pty Ltd)



Hydromulch before (Source: Healthy Land and Water)



Hydromulch after (Source: Healthy Land and Water)



Spray on soil binder (polymer) (Source: Healthy Land and Water)

Find out more at waterbydesign.com.au/esc

3 Erosion protection

Kerb to lot groundcover

Using a kerb to lot groundcover prevents soil from eroding, filters overland flow and helps keep your site looking clean and tidy.

How

- Cover any bare ground between the kerb and the lot with turf.
- Avoid storing stockpiles of soil within this zone where it can easily wash into stormwater drains.
- Check your local council's requirements before storing materials outside the lot.

Maintenance

Protect your groundcover by keeping vehicles and materials out of this zone. This will reduce the need to replace turf, saving you time and money.

ESC tip

Protect the road verge against erosion and sediment run-off.

Did you know...

The area between your lot and the kerb is typically public land. If you need to store materials or equipment in this area, talk to your local Council first as a footpath closure permit may be needed.

Parking or storing materials on the grass verge or footpath is not recommended as it will damage the turf and increase erosion and sediment run-off. That could mean a fine!



(Source: Healthy Land and Water)

(Source: Healthy Land and Water)

Find out more at waterbydesign.com.au/esc

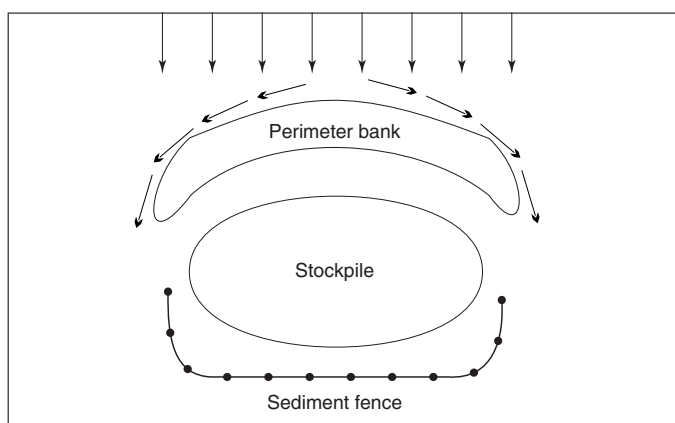
4 Erosion protection

Stockpile protection

Building materials are expensive. Save money and time by protecting your stockpiles.

How

- Keep stockpiles within your lot boundary and well away from drainage paths.
- Keep stockpiles at least 0.5 metres away from sediment barriers (e.g. sediment fences) as this damages the barriers and makes them ineffective.
- Cover and secure your stockpiles against wind and rain.
- Keep stockpiles out of overland flow paths. If this is not possible, direct water run-off around the stockpile with a Perimeter bank made of compacted soil, or a row of sandbags on the up-slope side. Refer to the diagram below.



A Perimeter bank being used to direct water around a stockpile.
(Source: Catchments and Creeks Pty Ltd)

Maintenance

Conduct a daily check to ensure stockpiles are covered and contained.

ESC tips

Cover it when not in use.



(Source: Healthy Land and Water)

Bag it if space is tight.



(Source: Catchment and Creeks Pty Ltd)

Remember! Your topsoil is full of living organisms that are critical to soil health. Only use breathable covers such as hessian or geofabric.

If the topsoil needs to be stored for longer periods of time, consider applying a hydromulch or other temporary ground cover for maximum benefit.

Find out more at waterbydesign.com.au/esc

5 Drainage control

Stormwater diversions

Diverting roof stormwater and groundwater

Without downpipes, rainwater gushes from the roof onto bare dirt which increases erosion on your site.

Installing downpipes could remove around 50% of the water that falls on your site. This means less erosion and less mud, so you get back onto site quicker after rain.

Stormwater entering a site from outside the lot boundary can increase soil erosion on your site and increasing sediment that must be cleaned up.

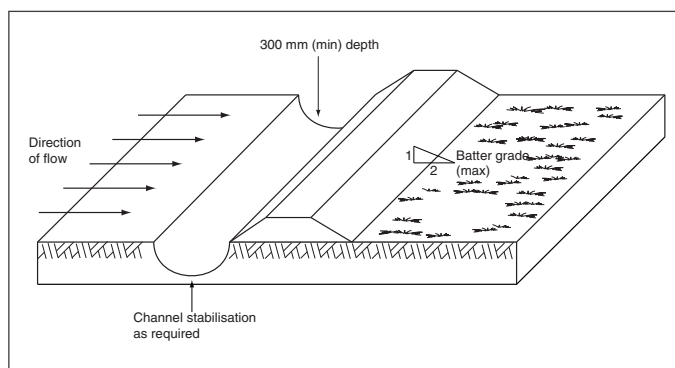
If the area of land upslope of your site is greater than 1,500m² (approximately three typical house lots), or if run-off becomes an erosion problem, divert this water away from your site by using a lined Catch Drain.

When diverting upslope stormwater run-off, ensure that Catch Drains are adequately stabilised to prevent erosion (i.e. by lining the drain).

The Catch Drain should:

- Be lined with geotextile fabric, UV resistant builders plastic or turf to minimise erosion.
- Be located within your site, not your neighbour's.
- Be a minimum of 300mm in depth.
- Be discharged safely to the roadside gutter or a stormwater drain (not neighbouring properties), without causing erosion.

Refer to the diagram below for a typical Catch Drain detail.



Typical Catch Drain detail.
(Source: Catchments and Creeks Pty Ltd)

Did you know...

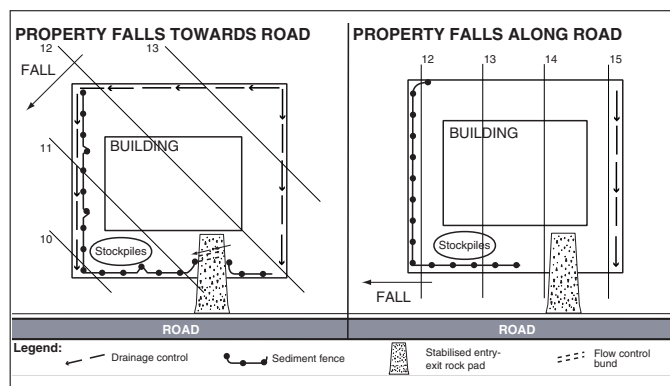
If water flows onto your site, then you are responsible for managing it.

This includes any erosion or sediment it produces. That is why diverting stormwater around your site can save you time and money over the duration of the build.

ESC tip

The diagram below shows typical locations for drainage controls. In situations where water is entering your site

If water is entering your site from one concentrated point, instead of using a Catch Drain, you could use a PVC pipe laid horizontally across the ground to collect and convey stormwater to the road or drain.



(Source: Catchments and Creeks Pty Ltd)

How

As soon as the roof goes on, connect either permanent or temporary downpipes securely to the gutter-drops and the underground stormwater system.

Maintenance

If you see a downpipe not connected – connect it back up or report it to the site supervisor.

Find out more at waterbydesign.com.au/esc

6 Drainage control

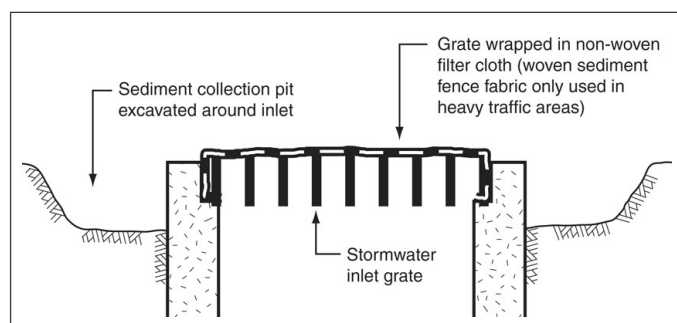
Stormwater inlet protection

If your lot drains to an internal stormwater inlet pit, it needs to be protected. Stormwater inlet protection prevents coarse sediment from entering and blocking stormwater pipes, which can flood properties. They avoid the cost and hassle of unblocking drains and explaining the problem to your customer and the local council.

As this control device only captures coarse sediments and not fine sediments, it should only be used after erosion and drainage controls have been installed (e.g. soil cover and downpipes).

How

- Ensure you have covered soil to prevent erosion and installed your drainage controls (e.g. downpipes).
- Wrap filter cloth over the stormwater inlet grate.
- Dig a trench around the pit to allow water to pool and the sediment to settle-out.
- Stabilise all other areas around the pit (e.g. with turf).



Stormwater inlet protection detail.
(Source: Catchments and Creeks Pty Ltd)

Maintenance

Inspect and remove built-up sediment after each rain event. Don't wash the soil into the stormwater drain – it's against the law and you could face a fine!



Source: Brisbane City Council

Did you know...

If soil or sediment gets onto the road an offence may have already been committed. It is better to stop the sediment before it gets to the road by following the simple steps in these factsheets.

Check with your local council about using sediment controls in road reserves, as some do not allow it due to the risk of blocking stormwater inlets and creating a potential safety hazard.



Source: Brisbane City Council

Find out more at waterbydesign.com.au/esc

7 Sediment control

Entry/exit rock pad

Entry/exit rock pads prevent the site entrance from becoming boggy and reduces sediment from being tracked onto the road.

This not only helps avoid council fines, but makes your site look clean and tidy for potential home buyers.

How

Install the rock pad before allowing vehicles to move on and off the site by:

- Preparing an area at least 2 metres wide from the kerb to the building slab (or a minimum of 10 metres long).
- Laying geotextile filter cloth on the base to help stop clayey soils from coming up through the pad.
- Covering the geotextile filter cloth with 40mm to 75mm diameter crushed rock at least 150mm to 200mm thick.
- Making the rock pad safe for pedestrian footpath traffic by covering the larger rocks with smaller 25mm to 50mm aggregate or gravel.

The key dimensions for an entry/exit rock pad are shown in the diagram below.

ESC tip

On clayey soils, laying geotextile filter cloth under the rock pad can significantly increase its lifespan, reducing maintenance time and money.



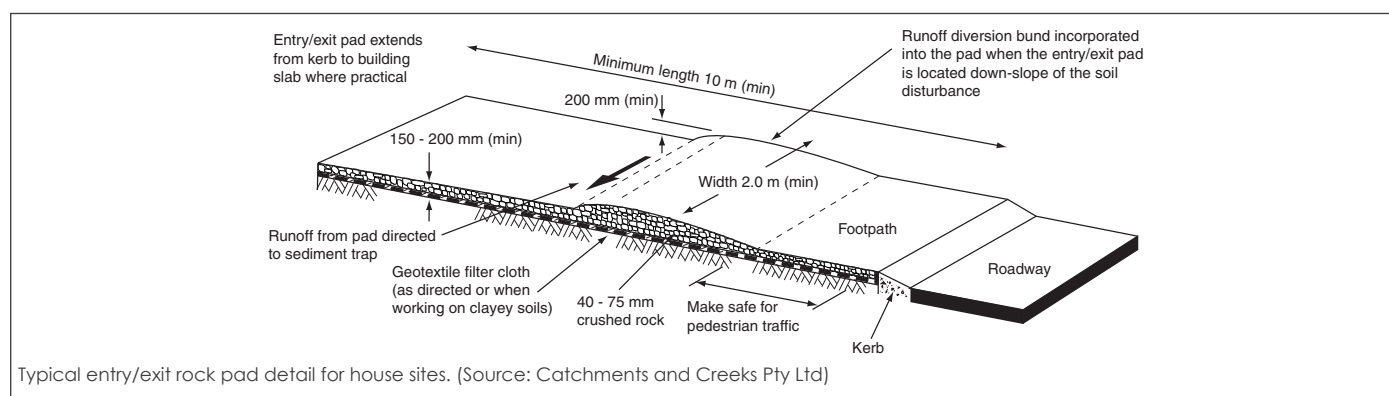
Source: Brisbane City Council



Source: Healthy Land and Water

Maintenance

- Avoid placing stockpiles on the rock pad as much as possible.
- If the rocks become clogged with sediment, refresh or replace them.
- Should any dirt get into the gutter or on the road, sweep it up and place the dirt behind a sediment barrier.
- Do not wash dirt down the gutter or into drains. It is against the law and you could face a fine!



Find out more at waterbydesign.com.au/esc

8 Sediment control

Coarse sediment barrier

Covering the exposed soil on your site (i.e. erosion control) is the best way to stop sediment pollution. Where this is not possible across the entire site, an effective sediment barrier will be needed.

Sediment barriers trap coarse sediments such as sand and gravel. They are not as effective as erosion control measures (such as soil cover), which stop both coarse and fine sediment. Therefore simply putting up a sediment barrier, such as a sediment fence, may not be sufficient to prevent erosion or stop sediment pollution.

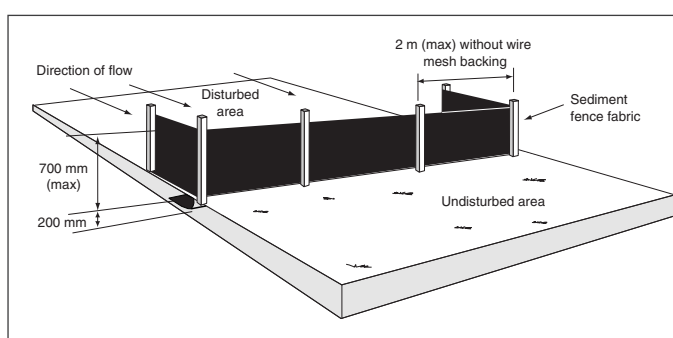
If you are uncertain about whether you have sufficient soil cover you should install a sediment barrier or talk to your local council.

How they work

A sediment barrier acts like a small dam to slow water and allow sediment to settle to the ground. To do this, it needs to be 'returned' at the ends as shown in the diagram below.

A common mistake when installing a sediment barrier is to put it in a straight line without 'returning' it. If the barrier is not 'returned', water will flow around the ends of the barrier instead of ponding behind it.

Slowing down and ponding the water is important as this allows the coarse sediment to drop out of the water.

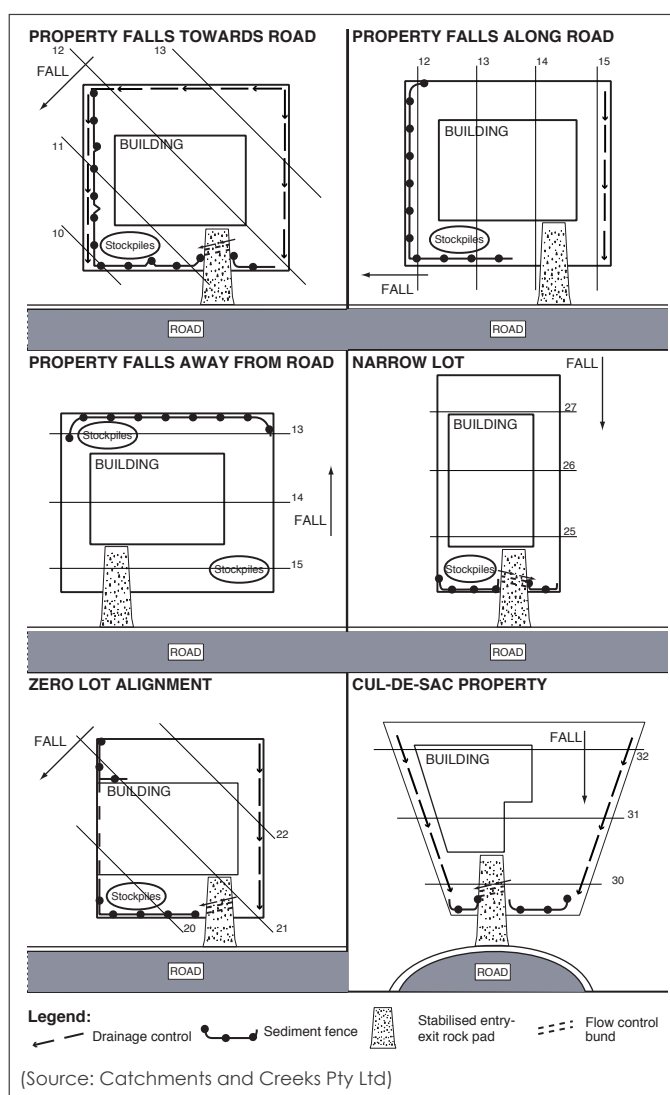


Typical sediment fence installation detail showing 'returns'.
(Source: Catchments and Creeks Pty Ltd)

Location

- Install on the downslope side of the disturbed area and, where possible, parallel to the contour (along a line of constant land level).
- Make sure the sediment barrier is within your lot boundary.

Use the diagrams below as a guide to work out where to put the sediment barrier on your site.



ESC tip

Install returns at each end of the barrier e.g. at the corners of the lot and the driveway entrance. The returns should be at least 1.5 metres long and placed in an up-slope direction to catch water.

Find out more at waterbydesign.com.au/esc

Sediment barrier types

All sites are different in some way. The size, steepness and direction your site slopes will affect which type of sediment barrier best suits your site.

If your site is small and flat (i.e. less than 2% slope and less than 500m² in area), then the following sediment barrier types can be considered:

- Mulch berms - formed from tub-ground wood mulch to form a continuous barrier.
- Rock berms - made from 20–40mm diameter 'clean' aggregate to form a continuous barrier.
- Sediment socks/fibre rolls - permeable tubes filled with a filter media such as gravel, compost or other organic fibres such as straw and placed to form a continuous barrier.
- Low sediment fences - small, flat sites (i.e. less than 500m²) usually have less run-off so a lower height sediment fence (at least 300mm high) may be an option if not considered a trip hazard.

If installed and maintained correctly, these sediment barriers may be used effectively on your site. Be aware that some of these sediment barrier types can be easily damaged and require regular maintenance.

If in doubt, check with your local council.

Sediment fences

Sediment fences are the most common coarse sediment barrier. If your site is steeper than a 2% slope, is more than 500m² in area, or slopes towards one corner of the site - a sediment fence is recommended. This also applies in high rainfall areas where there is more run-off to manage.

Sediment fence installation

1. Dig a trench 200mm deep where you want the sediment fence to go – don't forget the returns. Place the excavated soil on the upslope side of the trench so it is easier to backfill the trench later on.
2. Install support posts along the downslope side of the trench using 40mm square hardwood. The posts should be no more than 2 metres apart and driven at least 300 – 400mm into the ground.
3. Attach the fabric to the support posts using heavy duty staples or tie-wire, starting at one end of the fence line and ensuring that the lower 300mm of fabric lays down into the trench. Ensure that the fabric is drawn taught between each post as it is secured.
Try and use one continuous roll of sediment fence

fabric to avoid joins and gaps that can let water flow through. The finished height of a sediment fence should be at least 450mm above ground level.

4. Backfill the trench to cover the bottom of the fabric with soil and compact as needed to firmly anchor the fabric to stop water flowing under the sediment fence.



Typical sediment fence.
(Source: Healthy Land and Water)

Maintenance

All sediment barriers need to be regularly checked and properly maintained in full working order to remain effective. If they are moved, damaged, become compacted or fill up with sediment then you need to reinstate them ready for the next rain event.



Mulch berm with upslope 'return' being used on small, flat house lots.
(Source: Catchments and Creeks Pty Ltd)

Did you know...

In all cases the barrier must be high enough to trap the likely amount of coarse sediment from the site when it rains. Note that many of these alternative sediment barriers can be easily damaged by equipment and foot traffic, and will require regular inspection. If these barriers are not well maintained then your site could face a fine.

Find out more at waterbydesign.com.au/esc

9 Other pollutant controls

Capture cement runoff and other 'wet trades'

Sediment is not the only pollutant generated from building sites. Preparing or finishing new concrete surfaces (i.e. acid washing, exposed aggregate driveways) can clog stormwater infrastructure and pollute our waterways. Allowing pollutants to enter stormwater drains and waterways without effective controls in place is an offence under the law.

Prevent wash-off from concreted surfaces by capturing all residue and wastewater before it enters the roadside gutter or the stormwater system (i.e. pipes and inlets). If this is not possible an alternative product or finish should be used.

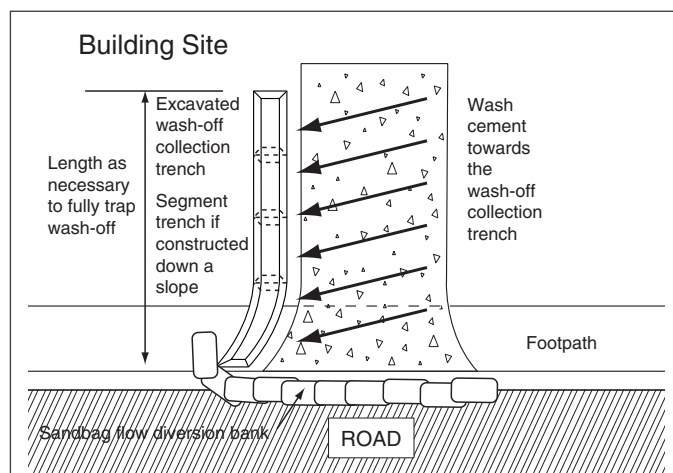
Exposed aggregate driveways are a common example of where both the solid residue (i.e. sand/cement slurry) and the water run-off (which has a very high water pH) can clog stormwater pipes and pollute waterways. Some examples of how you can manage exposed aggregate surfaces to prevent stormwater pollution can be found below and shown in the diagram on the right.

How

- Dig a trench along the length of the driveway.
- Place sandbags around the bottom end of the driveway trench to form a small dam. Ensure the dam is large enough to capture all run-off and ensure there are no gaps between the sandbags.
- Wash cement residue into the collection trench and the dam using the least amount of water necessary.
- Capture all residue on-site, do not let it wash down the roadside gutter or stormwater drains.
- Remove all residue and put it in a suitable location where it can be disposed of. You may need to stop occasionally to remove residue from the trench to prevent it over-topping your controls.

ESC tip

Contain all waste water on-site and appropriately dispose of any residue.



Example of wastewater management on an exposed aggregate driveway.

(Source: Catchments and Creeks Pty Ltd)

Other building site pollutants

Paint, plaster and other waste materials are harmful to our waterways. Prevent them from entering the stormwater system by:

- Washing equipment, tools and paint brushes/rollers only within a contained area that cannot reach the stormwater system.
- Containing run-off from water-cooled saws used to cut bricks, tiles and masonry.
- Whenever possible, do this within the property boundary on a permeable surface and upslope of a sediment barrier.
- Contain all wastewater on site and appropriately dispose of any residue.



Find out more at waterbydesign.com.au/esc

10 Other pollutant controls

Waste management

Proper waste management not only maintains a clean and tidy work site, it keeps litter and building waste off the street and out of our waterways. A clean and tidy site promotes quality and professionalism to your clients.

How

- Minimise waste generation where possible – the less waste generated the less you need to manage.
- Put rubbish in on-site waste bins, such as a skip bin or a mesh cage.
- Wrap mesh cages to keep small items from falling or blowing out (e.g. with sediment fence fabric).
- Cover the waste bin when not in use and at the end of each work day to prevent litter blowing away.
- Remember to empty waste bins when full.

Did you know...

Dumping leftover concrete or building waste on a vacant block without the consent of the owner of the block is illegal. Fines for illegal dumping apply.

Other people dumping waste in your skip bin without your permission is also illegal.

Illegal dumping can be reported to the Department of Environment and Science: <https://report-littering-dumping.ehp.qld.gov.au/>

ESC tip

A clean site sends a positive message about your business.



Typical fabric wrapped mesh cage.
(Source: Healthy Land and Water)



Keep all rubbish in skip bins or mesh cages.
(Source: Healthy Land and Water)



A messy site could turn potential clients away.
(Source: Healthy Land and Water)

Find out more at waterbydesign.com.au/esc