

# Compost Filter Berms

## SEDIMENT CONTROL TECHNIQUE

Type 1 System		Sheet Flow	✓	Sandy Soils	✓
Type 2 System	[1]	Concentrated Flow		Clayey Soils	✓
Type 3 System	✓	Supplementary Trap		Dispersive Soils	

[1] Theoretically these berms have the potential to act as Type 2 sediment traps if constructed large enough and positioned such that damage by pedestrian/vehicular traffic and shifting fill is prevented.

Symbol 



Photo 1 – Berm placed down-slope of a stockpile



Photo 2 – Berm showing a breach point (centre) with flow passing over the berm

### Key Principles

1. Primarily used to collect the coarser sediment particles, but significant filtration and pollutant adsorption can occur if the berm is not breached by the required design flow.
2. Berms primarily work by ponding water up-slope of the berm to allow coarse sediment particles to settle under gravity; therefore, it is essential for the berm to be placed along the contour in order to gain maximum benefit.
3. The filtration and pollutant adsorption benefits of compost berms allow them to out perform traditional *Mulch Filter Berms*.

### Design Information

The composted material must comply with the requirements of AS4454.

Maximum drainage area of 250m<sup>2</sup> per 10m length of berm in sheet flow conditions.

The dimensional requirements of compost berms are specified in Table 1.

Table 1 – Minimum dimensions of self-supported compost filter berms

Location	High (min)	Top width (where practical)	Base width (min)	Berm side slope (max)
General use	300mm	100mm	600mm	1:1
Slopes steeper than 4:1 (H:V)	450mm	100mm	900mm	1:1

Table 2 provides the recommended maximum spacing of compost filter berms down slopes.

**Table 2 – Recommended maximum spacing of compost filter berms down slopes**

Land slope (H:V)	Bank slope (%)	Maximum spacing (m)
flatter than 50:1	flatter than 2%	35m
20:1	5%	25m
10:1	10%	20m
5:1	20%	12.5m
4:1	25%	10m
steeper than 3:1	steeper than 33%	not recommended

**Description**

A sediment-trapping system that utilises a small self-supporting embankment of well-composed organic matter to both ‘settle’ (through ponding) and ‘filter’ sediments from flow passing through the berm.

Filter berms may also be contained within a geotextile tube, in which case the allowable base width equals the berm height.

Also known as *Filter Berms* and *Compost Berms*. However, the primary purpose of a ‘compost filter berm’ is to promote the filtration of sediments from water passing through the berm (i.e. sediment control). On the other hand, the primary purpose of a ‘compost berm’ may be to control the movement of stormwater runoff (i.e. *Flow Control Berm*).

**Purpose**

Used to both ‘filter’ and ‘settle’ sediment from sheet flow.

Compost filter berms can adsorb fine, particulate and dissolved nutrients, and metals from water passing through the berm.

Compost filter berms are commonly used as an alternative to a *Sediment Fence* in areas of sheet flow runoff where pedestrian and vehicular traffic is not expected to damage the berms.

**Limitations**

Not suitable for land subjected to concentrated flow.

Not suitable for active work areas where the berm is likely to be damaged by pedestrian or vehicular traffic.

**Advantages**

Compost filter berms can filter pollutants from low discharge flows.

Unlike a *Sediment Fence*, a self-supporting compost filter berm may be left in-situ to become an integral part of the vegetated slope.

Compost products represent a sustainable recycling of domestic and commercial garden waste.

**Disadvantages**

Only suitable for small catchment areas.

Easily damaged by pedestrian or vehicular traffic.

**Common Problems**

Berms placed along the top of cut slopes (i.e. off the contour) cause flow diversion rather than sediment capture.

Berms can be easily damaged allowing flows to breach the berm.

**Special Requirements**

Compost certification must comply with the requirements of AS4454.

Application is usually by pneumatic systems using a special berm-forming device.

Ensure both ends of the berm are adequately turned up the slope to prevent flow bypassing prior to water passing over the berm.

**Location**

Compost filter berms **must** always be located along the contour (i.e. a line of constant land elevation).

Best used as a sediment control system in locations where:

- stormwater runoff may contain small quantities of fine, particulate, or dissolved nutrients or metals; or
- there is the potential for ongoing sediment-laden runoff for a limited period after vegetation establishment.

### **Site Inspection**

Ensure the berm has been placed along the contour such that water will pond evenly along the length of the berm.

Check for damage to the berm, and actual or potential wash-outs points.

### **Materials**

Composts must comply with the requirements of AS4454.

- Well-decomposed 100% organic matter produced by controlled aerobic (biological) decomposition.
- Maximum of 1% of inert material.
- Maximum soluble salt concentration of 5dS/m, and pH range of 5.0 to 8.5.
- Moisture content of 30 to 50% prior to application.

### **Installation**

1. Refer to approved plans for location and extent. If there are questions or problems with the location, extent, material type, or method of installation contact the engineer or responsible on-site officer for assistance.
2. When selecting the location of a compost filter berm, to the maximum degree practicable, ensure the berm is located:
  - (i) totally within the property boundaries;
  - (ii) along a line of constant elevation (preferred, but not always practical);
  - (iii) at least 1m, ideally 3m, from the toe of a fill embankment;
  - (iv) away from areas of concentrated flow.
3. Ensure the berm is installed in a manner that avoids the concentration of flow along the berm, or the undesirable discharge of water around the ends of the berm.
4. Ensure the berm has been placed along the contour such that water will pond evenly along the length of the berm.
5. Ensure both ends of the berm are adequately turned up the slope to prevent flow bypassing prior to water passing over the berm.
6. Ensure 100% contact with the soil surface.

7. Where specified, take appropriate steps to vegetate the berm.

### **Maintenance**

1. During the construction period, inspect the berm at least weekly and after any significant rain. Make necessary repairs immediately.
2. Repair or replace any damaged sections.
3. When making repairs, always restore the system to its original configuration unless an amended layout is required or specified.
4. Remove accumulated sediment if the sediment deposit exceeds a depth of 100mm or one-third the height of the berm.
5. Dispose of sediment in a suitable manner that will not cause an erosion or pollution hazard.

### **Removal (if required)**

1. When disturbed areas up-slope of the berm are sufficiently stabilised to restrain erosion, the berm may be removed.
2. Remove any collected sediment and dispose of in a suitable manner that will not cause an erosion or pollution hazard.
3. Rehabilitate/revegetate the disturbed ground as necessary to minimise the erosion hazard.