

Schedule 12

Rainfall Runoff Management for Cultivated Soil

Compliance with Rule 5.5.32(b)(iii) is achieved by ensuring all sediment laden stormwater from cultivated land is directed to silt traps (excavated pond-like areas) or long bunded areas. There are four components to a silt trap:

- The bund or walls
- The detention area
- The overflow or spillway
- The discharge mechanism or snorkel.

The following specifications for the design and construction of silt traps and bunds are extracted from "Doing it Right Franklin Sustainability Project Guide to Sustainable Land Management".

Bund or walls

1. These must be thoroughly compacted; otherwise they can blow out in storm events. Compact each 200mm layer of material added to the height of walls. Usually a minimum of three passes with compacting or heavy machinery over each new surface layer is required.
2. Establish vegetation cover. It may be necessary to pin down coarse shade cloth to stabilise the slope face, and plant with grasses such as Yorkshire fog, Wana cocksfoot, Vulcan tall fescue, Browntop or Creeping bents.
3. If clay has been used to build a bund it will be necessary to add a layer of topsoil over the clay to promote grass establishment. Fertiliser should also be applied.

Detention Area or Silt Trap Capacity

Silt traps should have the minimum capacity or detention area specified in Table 1.

Table 1: Silt Trap Capacity

Catchment Area	Slope*	Row Length	Capacity	Silt Trap and Bund Capacity Examples [^]
Less than 5ha	<6° or 10%	<200m	50m ³ per ha of cultivated soil catchment	1ha catchment, trap dimensions = 5m x 5m x 2m = 50m ³
5ha or greater (500m ³ required)	>6° or 10%	<200m	100m ³ per ha of cultivated soil catchment	5ha catchment, trap dimensions = 19 x 19 x 1.4m = 505m ³

*Measure the slope as the steepest angle of the nearest 50m of land to the silt trap.

[^] These silt trap dimensions are one example only of how to achieve the required trap capacity.

Overflow or Spillway

An overflow or spillway discharges the excess water runoff in major storm events and can prevent bunds from breaking. Spillways and discharge pipes should be constructed in accordance with Figures 1 and 2 of the "Doing it Right: Franklin Sustainability Project Guide to Sustainable Land Management" and the criteria listed.

Select the spillway position carefully to minimise construction and later maintenance.

1. Position the spillway so it is not directly in line with water entrance points. This avoids short circuiting.
2. If possible, situate the spillway on firm, undisturbed ground.
3. Ensure spillway runoff discharges won't cause erosion.
4. Ensure that the minimum spillway width is 1.5m per ha of cultivated soil catchment.
5. Ensure that the spillway is level across its width.
6. Make sure you protect the spillway sides against erosion, using either coarse shade cloth and sowing grass, or by placing large rocks on the sides (especially in areas where soil type is silty or sandy).

Snorkel or discharge pipe

The snorkel or discharge pipe drains the silt trap between rainfall events.

How do I install the pipes?

1. The pipes are placed at the lowest point of the silt trap, and should discharge to an erosion-proof outfall. This may be the water table, a drain or stream.
2. Avoid crushing the pipe during installation. The soil should be thoroughly compacted around the pipe by hand held methods.
3. Use non-perforated pipe through the bund wall, for example, solid PVC pipe.
4. For the upstand, use solid drainage pipe with six rows of 10mm diameter holes, drilled at 50mm spacings.
5. Use an 88° elbow to join the upstand and the pipe. It may be necessary to install a waratah into the ground next to the pipes for support.
6. Ensure the top of the snorkel is 100mm below the spillway.

How large should the pipes be?

Pipe diameters	Catchment Area
100mm	<1ha
150mm	1-2ha
225mm	>2ha but less than 4 ha

For catchments larger than 4 ha multiple pipes will be required.