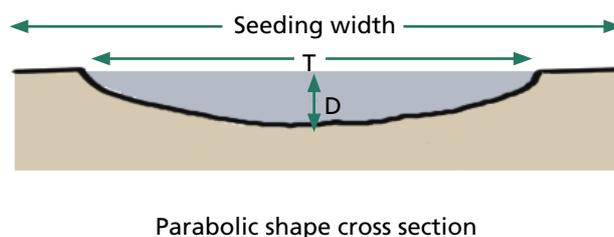
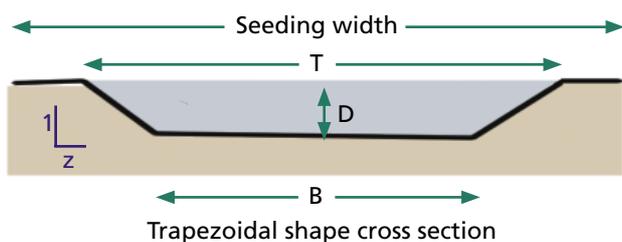


8 Interceptor drains and bunds

Complexity			Environmental value			Cost		
[Progress bar: 1/3 filled]			[Progress bar: 2/3 filled]			[Progress bar: 1/3 filled]		
Low	Moderate	High	Low	Moderate	High	Low	Moderate	High

Definition & purpose

Interceptor drains are small channels with a minor ridge along one edge that collects and directs surface water to a desired location such as a stable outlet or sedimentation pond. The drains and bunds can either have a natural grass lining or, depending on slope and design velocity, a protective lining, or gravel bed. They protect sensitive areas or work areas from upslope runoff and erosion; ensure that sediment-laden stormwater will not leave the site without treatment (e.g. diversion to a sedimentation pond); and divert water.



Location

Typical locations are diversions around sensitive areas like streams and wetlands, around soil stockpiles and on-site sewage soakage areas, and along roads.

Work window

Identify habitats to be protected (e.g. native bush, wetlands, streams, nesting sites). Avoid disturbance of these sites.

Treatment objectives

1. Significant habitats and the work site are protected from runoff, erosion and excessive sediment deposition for a 2-year return period, 24 hour-duration storm.
2. The interceptor drain and bund must be stabilised quickly so they do not contribute to the erosion problem they are addressing.
3. The drains and bunds are not a safety hazard.

Before you start

- Consult with District/Regional Council staff – they will provide advice. Resource consent may be required.
- Consider other management measures such as sediment detention ponds and grassed waterways to complement the interceptor drain and bund.
- Plan to complete the interceptor drains and bunds before other works that may cause erosion.

Procedures

As with all structural measures to control sediment and erosion, frequent inspections and maintenance must occur with interceptor drains and bunds. The following guidelines should be used when conducting inspections and maintenance:

- Inspect temporary facilities before, during and after significant storm events and at least once per week during operations.
- Damage from storms or normal construction activities such as tyre ruts should be repaired as soon as practical.

For disturbed areas that are not to be cultivated the preferred approach is to grass the area as soon as possible after construction. In some cases rapid natural re-vegetation occurs. If erosion is observed, the bunds should be grassed.

Bund of compacted earth

Sensitive area to be protected

Permissible channel velocities depend on the slope and degree of channel stabilisation. In general, the maximum velocity for an earth channel is 1 m/s, and for a grassed channel or coarse gravel bed it is 2.5 m/s. For higher velocities a liner or cobble-boulder bed is required.

If an abrupt change in slope is required, grade control structures must be installed.

Side slopes depend on the location and size of bunds. If a large grassed embankment is to be mowed, the maximum slope should be lower than 1 in 3. For small bunds, a 1:1 slope is acceptable.



The bund will normally be constructed from the cut material of the drain. The earth should be compacted as it is placed. Maximum depth of flow in the swale would generally be ~0.5 m based on a 2 year design storm peak flow. Positive overflow must be provided to accommodate larger storms.

Mark out the site and confirm the location and dimensions with the consent authority (if required). Ensure that runoff water and sediment are directed to sediment ponds. Clean water diversions should flow to a controlled outlet (e.g. established grass or coarse gravel) to prevent erosion at the outlet. Use onsite material to develop the ditches and bunds.

Bund of compacted earth

Sediment pond

Additional reading

NRCS. 1995. Diversion. *Conservation Practice Standard 362*. National Resource Conservation Service, United States Department of Agriculture.

Quilty, J.A., Hunt, J.S.; Hicks, R.W. 1978. *Urban erosion and sediment control*. Soil Conservation Service Technical Handbook No. 2. Ministry for Conservation and Water Resources, New South Wales.