

# Decanting earth bund



## DEFINITION

A temporary berm or ridge of compacted earth constructed to create impoundment areas where ponding of run off can occur, and suspended material can settle before run off is discharged.

## PURPOSE

Used to intercept sediment-laden run off and reduce the amount of sediment leaving the site by detaining sediment-laden run off.

## APPLICATION

Decanting earth bunds can be constructed across disturbed areas and around construction sites and subdivisions. Keep them in place until the disturbed areas are permanently stabilised or adequately replaced by other means.

Decanting earth bunds can assist the settling of sediment laden run off, and are particularly useful for controlling run off after topsoiling and grassing before vegetation becomes established. Where works are occurring within the berm area, compact the topsoil over the berm area as bunds adjacent and parallel to the berm. This will act as an impoundment area and controlled outfall while also keeping overland flow away from the construction area.

## DESIGN

- Decanting earth bunds need a constructed outlet structure and spillway, (see follow sections of this guide). The depth should be measured from the base of the decanting earth bund to the top of the primary spillway.
- Construct the decanting earth bunds such that the maximum contributing catchment does not exceed 0.3ha
- Lay the discharge pipe at a 1-2 per cent gradient, compact fill appropriately and incorporate an anti-seep collar.
  - Ensure all anti-seep collars and their connections are watertight.
- Use a flexible thick rubber coupling to provide a connection between the decant arm and the primary spillway or discharge pipe. Fasten the flexible coupling using strap clamps and glue and /or screws to prevent it coming off.
- Ensure the section of pipe leading through the decanting earth bunds and continuing downslope below the decanting earth bunds is non-perforated.
- On earthwork sites with slopes less than 10 per cent and less than 200m in length, construct the decanting earth bund with a minimum volume of 2 per cent of the contributing catchment (20m<sup>3</sup> for each 1000 square metres of contributing catchment).
- On sites with slopes greater than 10 per cent and/or 200m in length, construct decanting earth bunds with a minimum volume of 3 per cent of the contributing catchment (30m<sup>3</sup> capacity for each 1000 square metres of contributing catchment).

- Where possible, install the discharge pipes through the embankment as the embankment is being constructed.
- Fully stabilise the external batter face by vegetative or other means immediately after construction.
- Ensure all external bare areas associated with the decanting earth bund are stabilised in a manner consistent with the guidelines, such as mulch, cloth or vegetation.

## DESIGN – EMERGENCY SPILLWAY

**Stabilise the emergency spillway by lining it with a strong woven low permeability geotextile overlaid with a soft non-woven needle punched geotextile. Ensure the geotextile is pinned at 0.5m centres over the full area of the emergency spillway.**

If there is sand, pumice or other erodible material under the spillways geotextile lining, install a waterproof layer underneath the geotextile, and an alternative method to pinning the geotextile is as follows:

- Bury the edges of the geotextile as per Figure 1.
- Connect a No 8 gauge wire between two waratah standards on either side of the spillway invert, tighten to hold the geotextile down as shown in Figure 1.
- If there is sand, pumice or other erodible material in the decanting earth bund embankment then an antiseep collar must be installed during the construction of the embankment.
- Ensure that all decanting earth bund embankments are compacted appropriately, particularly around the outlet pipe.
- Where possible, construct emergency spillways in well vegetated, undisturbed ground (not fill) and discharge over long grass. The emergency spillway must be located behind the decant system as far away as possible from the inlet.
- If the emergency spillway is constructed on exposed soil, provide complete erosion protection by means such as grouted riprap, asphalt, erosion matting/ geotextile or concrete.
- Construct the emergency spillway with a minimum of 100-150mm freeboard height above the primary spillway invert.
- The minimum emergency spillway dimensions are 2 metres wide with 250mm freeboard

**Figure 1:**

**Connect to waratah on both sides, tighten wire**



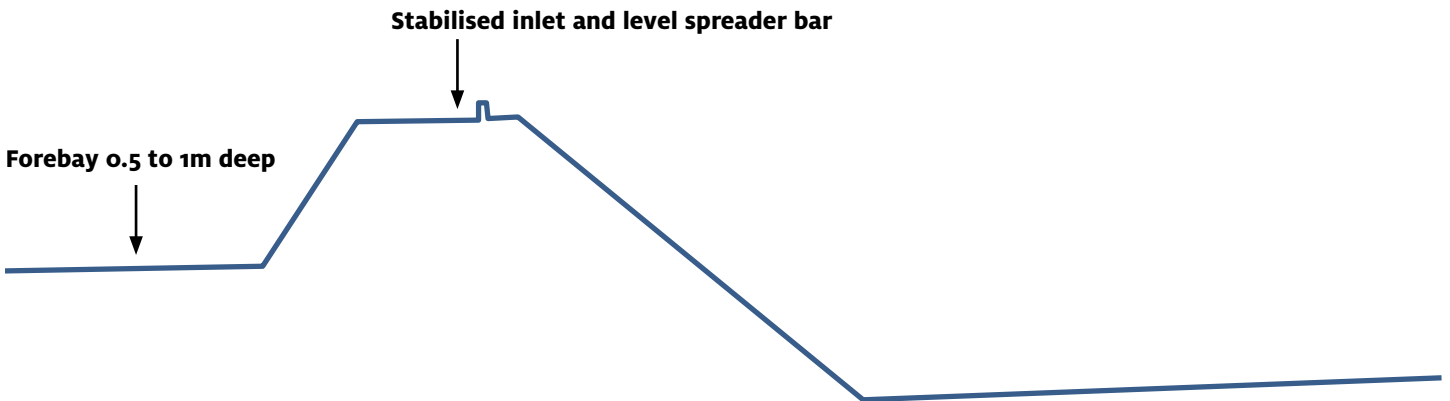
<b>Waratahs</b>	
<b>No 8 gauge wire</b>	

## DESIGN – OPTIONAL FOREBAY

Benefits include the ability to clean deposition from the front of the control structure without damaging the 'clean' discharge side of the control.

- Construct a forebay with a volume equal to 10 percent of the pond design volume.
- The forebay is to extend the full width of the main pond and is to be 0.5 to 1 m deep.
- Inlets into the forebay are to be stabilised.
- Access to the forebay is to be maintained at all times to allow easy and frequent removal of accumulated sediments by an excavator.
- Sediment should also be removed after every large storm event and or when 20% of the pond volume is accumulated sediment.

**Figure 2:**

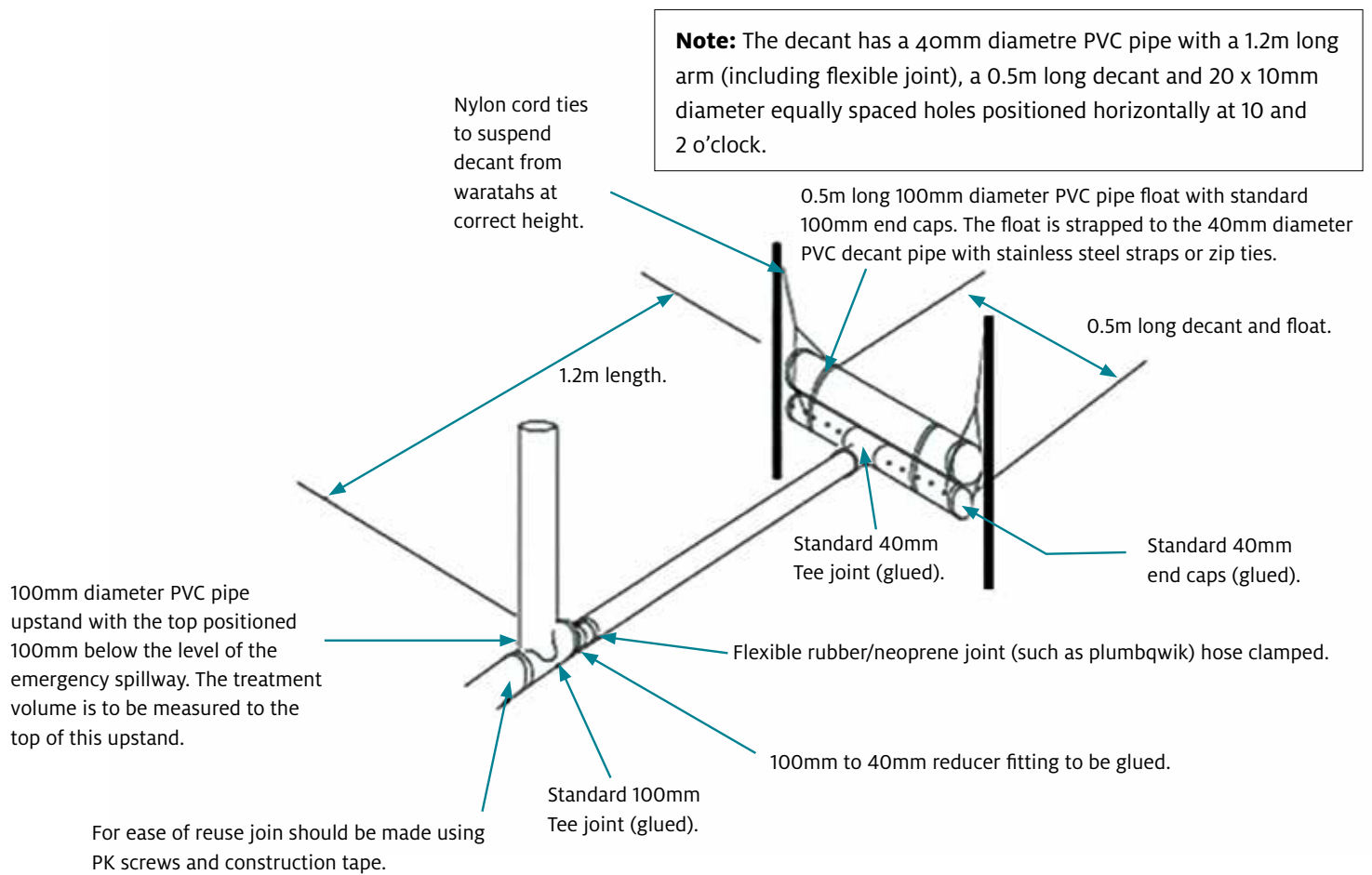


## DESIGN – T-BAR DECANT

T-bar decants must be able to operate through the full live storage depth of the sediment retention pond.

- Position the decant inlet to provide 50 per cent live storage volume with a minimum distance of 5m of flat ground from the inlet. Otherwise raise the inlet so the dead storage level extends out at least this far.
- The decant rate is to be equal to 3 litres per second per hectare. Set the decant rate by drilling the correct amount of 10mm holes in the decant. For a 1,000 square metre contributing catchment 13 X 10mm holes will provide 0.3 litres per second. For a 1,500 square metre contributing catchment 20 x 10mm holes will provide 0.45 litres per second.
- The DEB must be set up so that all inflows enter as far as possible away from the decant.
- Ensure that a primary spillway (upstand riser) is constructed as part of the T-Bar decant, as detailed in figure 3.
- Ensure that the T-bar decant float is securely fastened with steel strapping directly on top of the decant arm and weight it to keep the decant arm submerged just below the surface through all stages of the decant cycle. This will also minimise the potential for blockage of the decant slots by floating debris.
- Position the T-bar decant at the correct height by supporting the decant arm between waratahs as detailed in figure 3.

**Figure 3: 40mm decant with upstand for decanting earth bund.**



## MAINTENANCE

Inspect and maintain decanting earth bunds regularly and after each rainfall event to check for accumulated sediment which may cause overtopping. Check any discharge points for signs of scouring and install further armouring or other stabilisation if scouring is evident.