

Stormwater and Sediment Field Day

Auckland Botanic Gardens 2008

Decanting Earth Bund Demonstration

Decanting earth bunds (DEB's) are currently in a state of evolution. Changes to the device as depicted in TP90 have been considered for a number of years now, and some of the changes have already been initiated through conditions of consent.

A study was commissioned by the ARC Stormwater and Sediment Team to assess the efficiency of TP90 DEB's and to identify potential improvements to their design and construction. This study is in the final stages, and will be used to support changes to the DEB design advocated by ARC.

Members of industry have also implemented improvements to the TP90 DEB design, largely with respect to the decanting system. This feature is seen as having the largest impact on the treatment efficiency of a DEB, and is potentially a simple and cost-effective improvement.

The DEB demonstration at the 2008 Field Day has been installed to highlight the differences between the current TP90 novacoil upstand decant system, and the potential revised floating t-bar decant system. The design for the proposed t-bar decant has not yet been finalised. However a detail drawing of a system currently being utilised on a development within the region is shown below for reference.

What is a Decanting Earth Bund?

A temporary berm or ridge of compacted soil (including topsoil) constructed to create impoundment areas where ponding of runoff can occur and suspended material can settle before runoff is discharged.

Where to Use a Decanting Earth Bund

DEB's can be constructed across disturbed areas and around construction sites and subdivisions to control catchments of less than 0.3 ha. Keep them in place until the disturbed areas are permanently stabilised or adequately replaced by other means. DEB's are particularly useful for controlling runoff after topsoiling and grassing before vegetation becomes established. Where works are occurring within the berm area, compact the topsoil over the berm area as a bund adjacent and parallel to the berm. This will act as an impoundment area while also keeping overland flow away from the construction area.

Key Design Features of a Decanting Earth Bund

- DEB's need a constructed outlet structure and spillway as designed for sediment retention ponds (see Part B, Section 2.1 of TP90).
- Alternatively, construct an outlet of perforated pipe connected to a non-perforated pipe that passes through the bund and either discharges to the gutter or directly to a stormwater inlet.
- The section of pipe within the impoundment area should be supported by a rigid post. See the detailed design drawing below.
- The top opening of the perforated pipe should be 100 mm lower than the stabilised spillway.
- The section of pipe leading through the bund and continuing downslope below the DEB must be non-perforated.
- The maximum contributing catchment should not exceed 0.3 ha.

A number of additional requirements for DEB's have been implemented through conditions of consent issued by ARC over the past few years. These include:

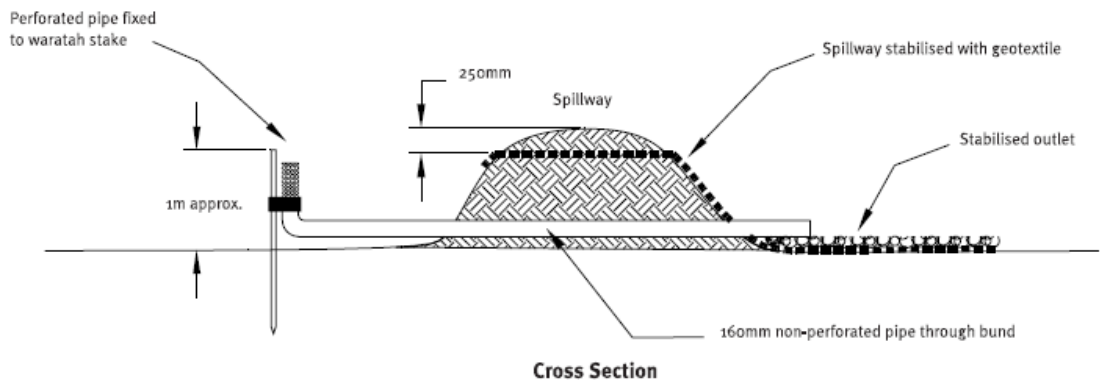
- DEB's sized to provide 2m³ of storage for every 100m² of contributing catchment,
- a minimum length to width ratio of 3:1,
- a level impoundment area,
- a single perforated novacoil upstand outlet, and
- a stabilised emergency spillway with minimum width of 2m.

Maintenance of a Decanting Earth Bund

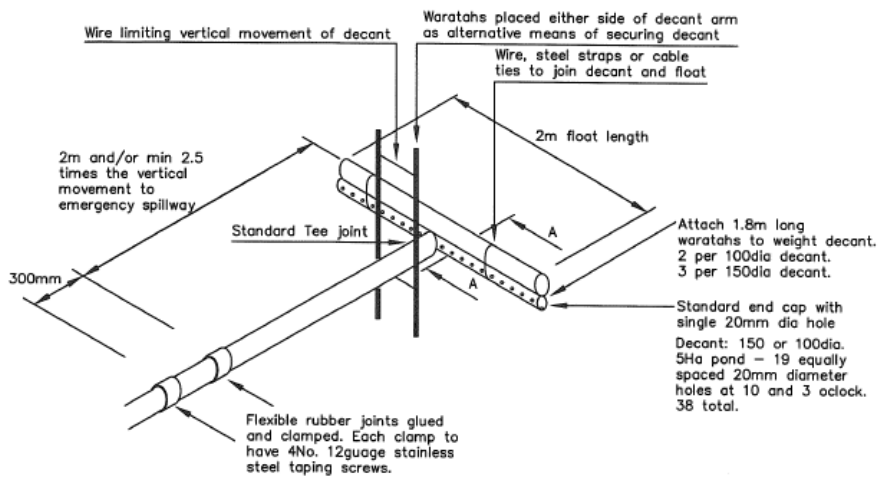
DEB's should be inspected and maintained regularly and after each rainfall event to check for accumulated sediment which may cause overtopping. Discharge points should be checked for signs of scouring, and further armouring or other stabilisation should be installed if excessive erosion is evident.



Standard TP90 DEB demonstration at Field Day 2008



Standard TP90 Decanting Earth Bund cross-section



Potential revision to TP90 for a floating decant design

