Peat Dams - Method of Installation
Restoration Technique 1

(This method of installation should be read in conjunction with Peatland Re-wetting & Design Specification Sheet – 01 – Peat Dams)

Peat Dams (also known as Peat Plugs) are a rewetting technique to raise general water levels in small to medium sized ditches. The types of ditches include small grip drains, single medium drains, some forestry drains and large peat cracks. Some locations of high water flow or steep slopes may restrict the use of this technique. Peat dams use insitu peat to create the dam which blocks water flow in the ditch and raises peat water levels in the surrounding land. The peat for the dam is taken from a borrow pit within the ditch upstream of the dam location. Typically the dam should be at least 1.5m in length to provide enough peat to provide structural integrity and depth of peat to hold back water. The ultimate aim of a peat dam is to raise water levels and push water out of the ditch to the sides, thus reversing the drying effects of the ditch.

Dam Location

The location of the dam is determined by the restoration objectives, on-site conditions and constraints. Typically, peat dams are spaced 8m – 15m apart, but this depends on the gradient of the peat surface and ditch conditions. Usually the steeper the gradient, the closer the dams need to be to ensure water backs up to the next dam. There is a general rule to install a dam at every 30cm of ditch fall. This may not always be viable and dams installed at every 10-15m apart will be sufficient. The installer needs to examine the ditch and ditch sides, looking for cracks in the peat and other water loss features. The peat dam must extend outwards beyond the ditch sides and any peat cracks, to ensure water does not flow around the dam. The final dam width is wider than the ditch.

Installation Procedure

- The excavator first removes any vegetation from the ditch sides and ditch bottom and places this to one side of the ditch to be re-used later.
- Next the excavator digs out the sides of the ditch to expose wet ‘putty’ peat and digs out beyond the peat cracks (if present). The degraded or cracked peat is removed and placed to one side of the ditch for use later.
- The newly exposed ditch bottom must be dug out to a depth of one bucket full to allow the operator to inspect the peat below. If the exposed peat is confirmed wet ‘putty’ peat the peat dug out is returned to the ditch bottom by turning over and pressing/squashing down by the back of the excavator bucket. This is essential to ensure the squashed peat joins with the ditch peat to create a seal which restricts water flow.
- To construct the core of the dam, peat is taken from a borrow pit, created in the ditch upstream of the dam. To expose wet ‘putty’ peat the vegetation and/or degraded peat from the borrow pit is scrapped off and placed to one side. This exposes the wet ‘putty’ peat. This is dug up and placed in to the core of the peat dam. Each bucket full must be pressed and squashed down to ensure the peat is joined together to create a seal.

- To complete the core of the dam, it is crucial the wet 'putty' peat is wider than the original ditch, and aim for a finished height of at least 20cm above ground level. This will allow for settling after installation.
- To complete the dam, the degraded peat is placed on top of the dam core. This is pressed and squashed down firmly. Finally, the vegetation put to one side is placed on top of the degraded peat and pressed down firmly using the back of the excavator bucket. Finished dam height is about 30cm above the ditch sides. This will allow for settlement in a few months.
- Finally, the borrow pit must be finished off by placing the degraded peat back in to the borrow pit. The pit sides are pulled in to create shallow sides and the previous vegetation placed back in. This is pressed down firmly to finish off the bottom of the borrow pit and leave it as shallow as possible.

Fig. 1
Example of a small peat plug dam installed on a lowland raised bog

NOTE: the finished dam is wider than the ditch and protrudes above ground level (up to 30cm). The dam length is at least 1.5m in length. The borrow pit (open water area) is upstream of the dam.

Machinery & Equipment

All machinery must be low ground-pressure tracked machines with a PSI below 3.5. Bio-hydraulic oils must be used and the machines should be clean and free of oil/fuel leaks. Some locations may require the use of bog mats to work on very wet ground. Digger buckets should be chosen appropriately to create the dam size required.