

Impacts of drainage on Freshwater Pearl Mussel

Freshwater Pearl Mussels depend on a constant supply of clean water for their survival. The principle threat to this essential supply is land drainage. Drainage of peat soils causes quicker run-off of water through the catchment which causes more severe flooding during wet periods and lower flows during dry periods. In addition, drains provide the conduit for the other two main Freshwater Pearl Mussel threats: nutrients and sediment.

Impacts of drainage on farmers' score

Depending on their characteristics, drains can reduce a farmers' habitat score or whole-farm score and this in turn affects their payment. In many instances where points are being lost on a habitat quality or whole-farm scorecard, an appropriate supporting action can be put in place to improve the score without impacting the agricultural enterprise.

Deciding on the right drain management option

Supporting actions aimed at reducing flow should normally only be considered for artificial drains that have not fully stabilised or naturalised. The only instance where flow measures would be appropriate in a naturalised drain is when the drain is having a drying effect on the surrounding habitats (such as bog or wet grassland).

Is it a naturalised drain; a drain; or a natural watercourse?!

Tips to help distinguish between them:

Bank structure and vegetation: Where banks are stabilised and fully vegetated implies that it is a natural watercourse or a drain that has become naturalised.

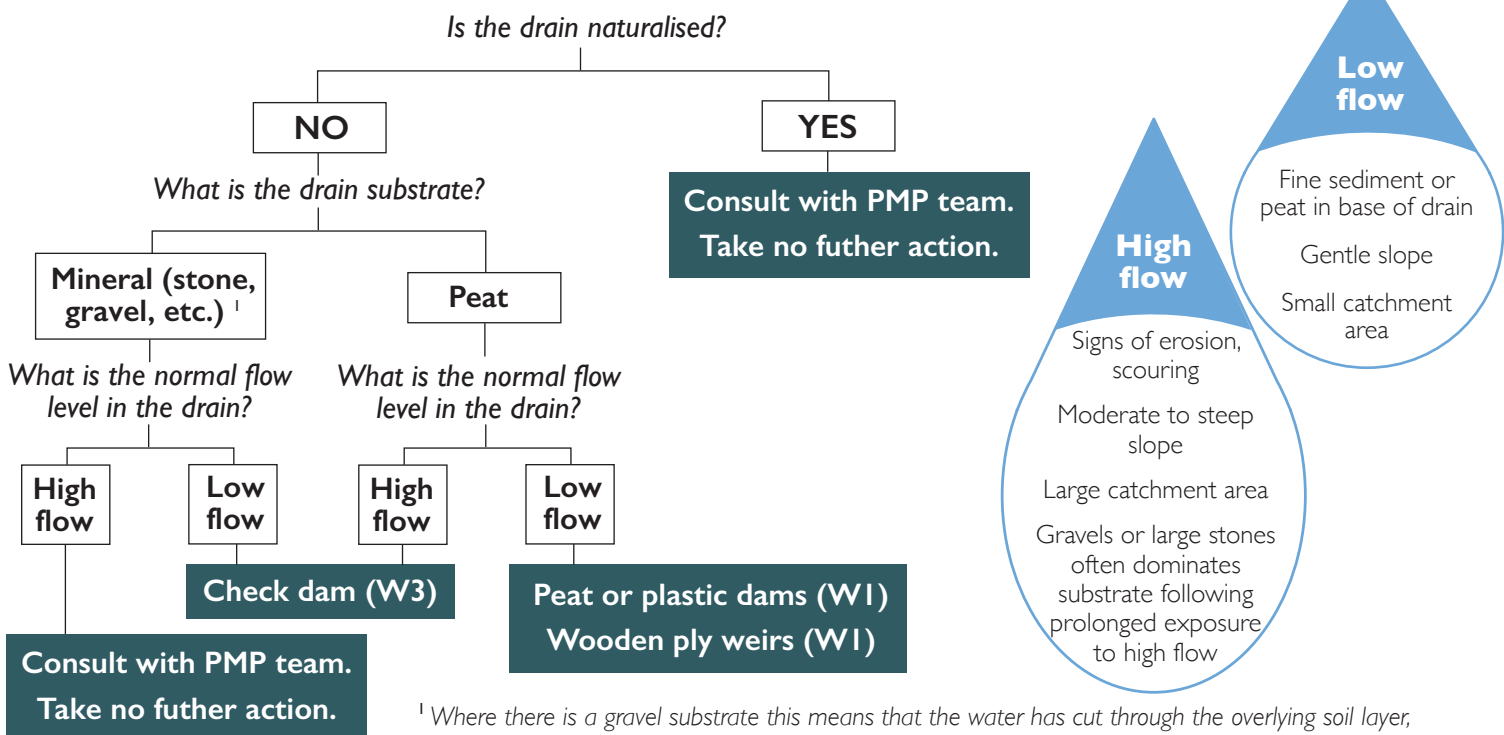
Meanders: Drains are typically straight linear features whereas natural watercourses follow the contours of the land and typically have a meandering course.

Substrate: Bare peat and fine sediment substrate is typically characteristic of a drain. Gravel and stony substrate can occur within a naturalised drain or a natural watercourse. Vegetated substrate implies low flow conditions and can be typical of a naturalised drain.

Map tip: Ordnance Survey of Ireland maps of rivers and streams are a useful resource to check. Natural watercourses are usually (not always) included on these maps whereas drains are not usually shown.



SLOWING THE FLOW - CHOOSING THE BEST OPTION:



¹ Where there is a gravel substrate this means that the water has cut through the overlying soil layer, which can be mineral or peat. If it is peat, then a check dam may be appropriate regardless of flow.

Peat substrate

Damaged peatlands result in faster flow of water through the catchment, decrease water quality and cause higher levels of flooding, both of which are serious threats to Freshwater Pearl Mussels. In addition, damaged peatland can become a source of greenhouse gases due to the breakdown of carbon-rich peat. PMP habitat and whole-farm scores may also be reduced due to the presence of drains.

Bog restoration can reverse these negative impacts and restore the bog. It does not result in flooding of lands but seeks to restore the natural water table within the bog.

This action restores the bog hydrology through drain-blocking using peat or plastic dams (W1).

Installation of Peat Plugs (W1)

On areas of deep peat, particularly blanket bog, peat plugs provide an ideal solution. These plugs should be generally be carried out using an excavator with a grading bucket. Each plug is securely fitted and forms a suitable crossing point for livestock. The number of plugs/dams required depends on the slope of the drain. The steeper the slope, the more plugs / dams required.



Installation of Wooden ply dams (weirs) or Plastic dams (W1)

In areas of shallow peat, where machine access may not be possible, or where a farmer prefers not to use peat plugs in the short-term, wooden dams or weirs are a useful short-term alternative for slowing the flow and reducing siltation. These comprise the use of marine ply wood that is cut to fit the size of the drain with a 'V' notch to allow any over-topping to occur in the central channel, thereby reducing the risk of bank erosion during very wet periods.

Plastic dams can be used where access may not be possible or where obstacles such as roots of trees are present.



Gravel/mixed substrate

Check (leaky) dams (W3)

Check dams slow the movement of water, particularly during high flow events. They typically comprise loose, clean, stone or wood, depending on the level of flow and exact purpose, to form a porous dam. They have the effect of creating a pool on the upstream side during high flow periods. They need to be installed *in series* to be effective. Over time the bed of the drain should become stabilised.

