

Best practice in raised bog restoration in Ireland



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Best practice in raised bog restoration in Ireland

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Raised Bog Restoration Guidance Note

Costs:

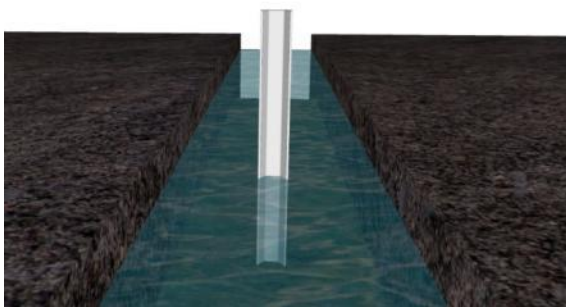
Varies with drain dimensions – typical high bog drain c. 1m deep estimated to cost c. €90 to block including materials and labour.

Risks/optimum time of year for operations:

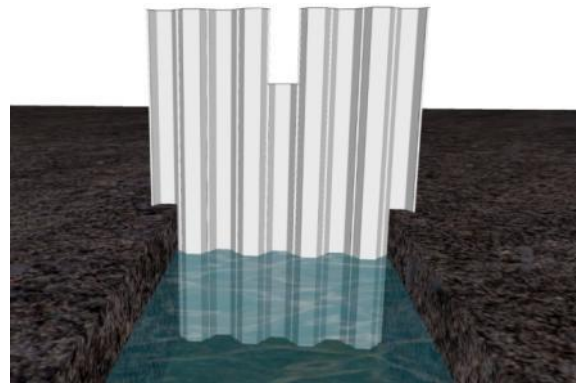
Potential impacts on water table in surrounding areas must be assessed, particularly for drain blocking on cutover areas. Optimum time of year for operations is summer months when water levels are lowest making working conditions more favourable. However, work can be carried out throughout the year provided conditions are suitable.

Installation schematic:

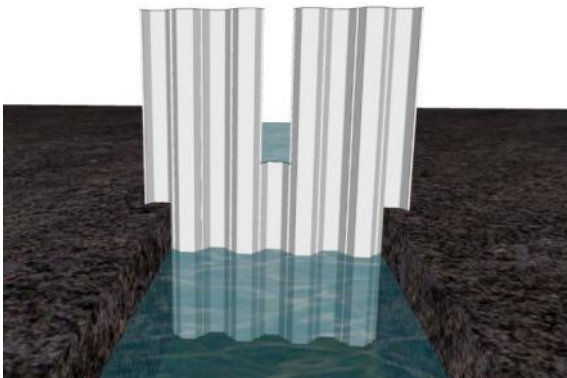
1. Push first pile into centre of drain and drive until secure



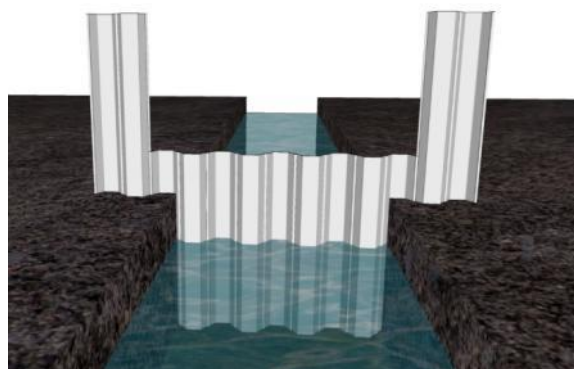
2. Guide adjacent piles into position



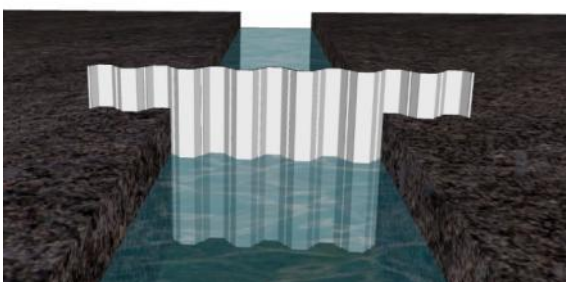
3. Drive piles to final position (starting with centre)



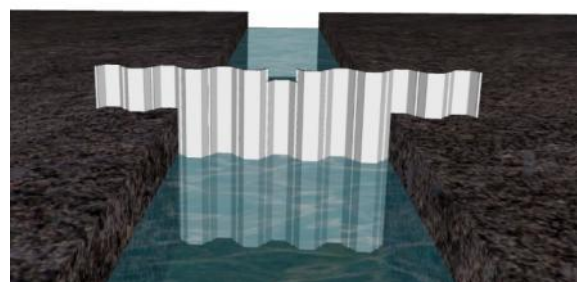
4. Ensure dam extends into bog by minimum of 50cm



5. Drive all piles to final position



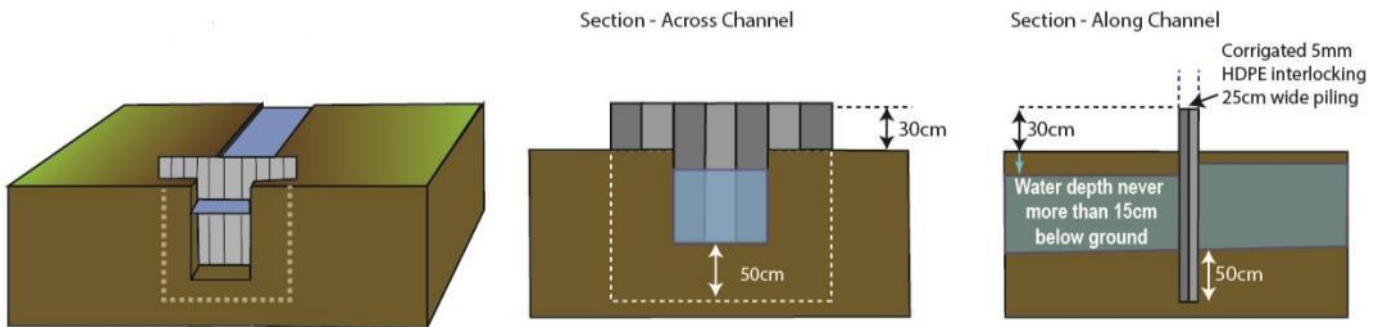
6. If significant flow is expected create a notch in the dam



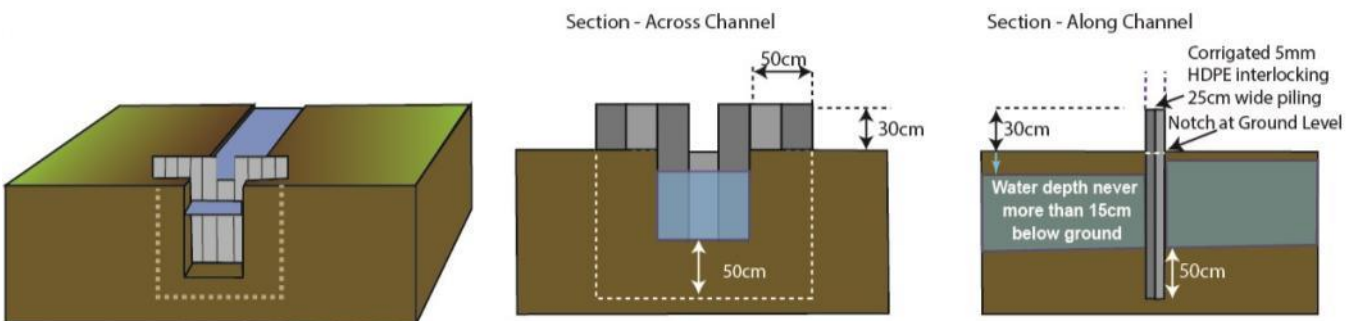
Raised Bog Restoration Guidance Note



Completed plastic dam:



Completed plastic dam with overflow notch (if significant flow is expected):



References:

McDonagh, E. (1996). *Drain Blocking by machine on Raised Bogs*. National Parks and Wildlife Service, Dublin.

The Plastic Piling Company. Website, available at: <http://www.plasticpiling.co.uk/>



Raised Bog Restoration Guidance Note

Measure:	Partial blocking of drains
Description:	
<p>Partially blocking drains involves raising water levels as high as possible but at the same time not so high as to cause undesirable hydrological impacts on adjacent land or access tracks. It is also used where flow in the channel is too significant for the channel to be completely blocked. Partially blocking drains is typically undertaken through the use of plastic dams or where very significant flows are anticipated (e.g. a watercourse adjoining a bog) bespoke weirs.</p> <p>Partially blocking drains is usually carried out within high bog or cutover areas in order to improve, in as far as possible, hydrological conditions, to promote development of peat forming conditions, or to offset impacts caused by groundwater upwelling which may be causing subsidence of high bog.</p>	
Examples of where this has been used:	
<ul style="list-style-type: none">• Aughrim Bog NHA	
Installation method:	
<p>Considerable site-specific design is required to ensure that an appropriate approach is used. In cases where partial blocking is carried out using plastic dams the following general approach should be taken:</p> <ul style="list-style-type: none">• A field survey of drains should be carried out to determine whether this measure is applicable, the most appropriate material to use and to establish an appropriate design height. This will require a detailed hydrological study.• Plastic dams should then be installed following a slightly amended approach to complete blocking using plastic dams, as follows:<ul style="list-style-type: none">○ Push the first plastic pile into the centre of the drain, ensuring it remains vertical.○ Drive the pile into the peat further until it is held firm using a large rubber mallet (if necessary protect the top of the plastic using a timber batten).○ Once the centre pile is in a secure position guide adjacent piles into position, pushing into the peat and using the rubber mallet to drive into a firm position.○ The dam should extend beyond the width of the drain into the bog, typically by a minimum of 50cm to ensure the dam is held firmly.○ Once all piles have been positioned and are secure they should be driven to a final position, starting from the centre and driving all the piles in the drain down until they reach the design height.○ Piles towards the outer edge should be driven into the peat until they are secure (remaining approximately 10-20cm above the surface).○ The plastic piles within the drain should extend at least 50cm below the base of the drain if the peat is very firm. If the peat is weak the plastic should be driven in further until the plastic is held secure.	



Effectiveness:
<p>Success of partially blocking drains is likely to vary significantly depending on site-specific conditions. If the aim is to establish peat-forming conditions then success of partial blocking will depend on the elevation to which water levels can be raised.</p> <p>In cases where partial blocking is undertaken to offset upwelling of regional groundwater, only limited success is likely in reducing groundwater upwelling; however this may slow the rate or limit the extent of loss of active raised bog habitat from high bog.</p>
Maintenance Requirements & cost:
<p>Maintenance requirements are low provided dams are installed correctly. Most damage will typically occur within the first year of installation during times of high flow. This may require a survey to check dam integrity and identify locations where dams require replacement or where reinforcement is required.</p>
Lessons learned:
<ul style="list-style-type: none">• Relatively new measure that has not been applied widely to date in Ireland. Further lessons will need to be learned following application of this measure at specific locations.• Plastic dams can fail if they are not installed correctly or can be ineffective in some situations e.g. where cracks are present in the peat.• Requires checks to ensure integrity of dam is maintained.



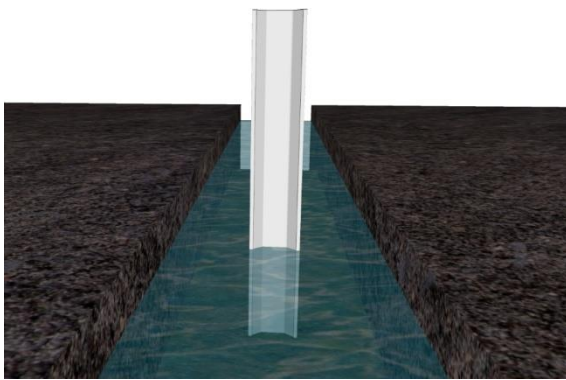
Costs:
Varies with drain dimensions and materials used – typical cost for partial blocking of high bog drains (c. 1m deep) using plastic dams = c. €100 to block including materials and labour.

Cost for more complex bespoke weirs are likely to be considerably more expensive and will vary depending on factors such as anticipated flows and drain dimensions.

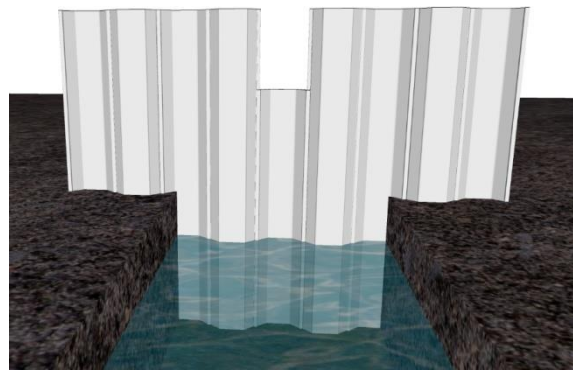
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Installation schematic:

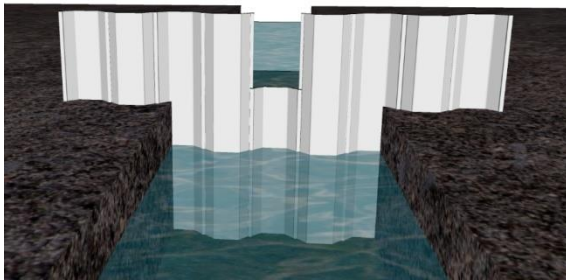
1. Push first pile into centre of drain and drive until secure



2. Guide adjacent piles into position



3. Drive piles until they are held secure



4. Drive centre piles to design height

