Jacobs VolkerStevin Environment Agency

Littleborough Flood Risk Management Scheme: Landscaping and Operation

Information Booklet

How the Scheme Operates

Gale West:

- The Scheme is an impounding reservoir made up of embankments and a sheet piled wall along the railway. The flow control structure will restrict the amount of water from the River Roch which is released downstream. In times of flood, additional flow will not be able to pass through the structure and will impound within the reservoir. After a flood event, the water will drain in a controlled manner through the flow control structure.

Gale East:

- In normal flow the watercourse continues along its alignment to the east of the railway line. In times of flood, additional flow will spill over a control weir through a culvert under the railway line and into the Gale West reservoir, where additional storage will be utilised.

There will be triggers for flood alerts and warnings. Please sign up here: Get flood warnings by text, phone or email - GOV.UK

The reservoir structures will operate (fill and empty) passively, without needing staff on site. However, the operation plan for the site will include supervision and presence from Environment Agency staff.

Tree Planting

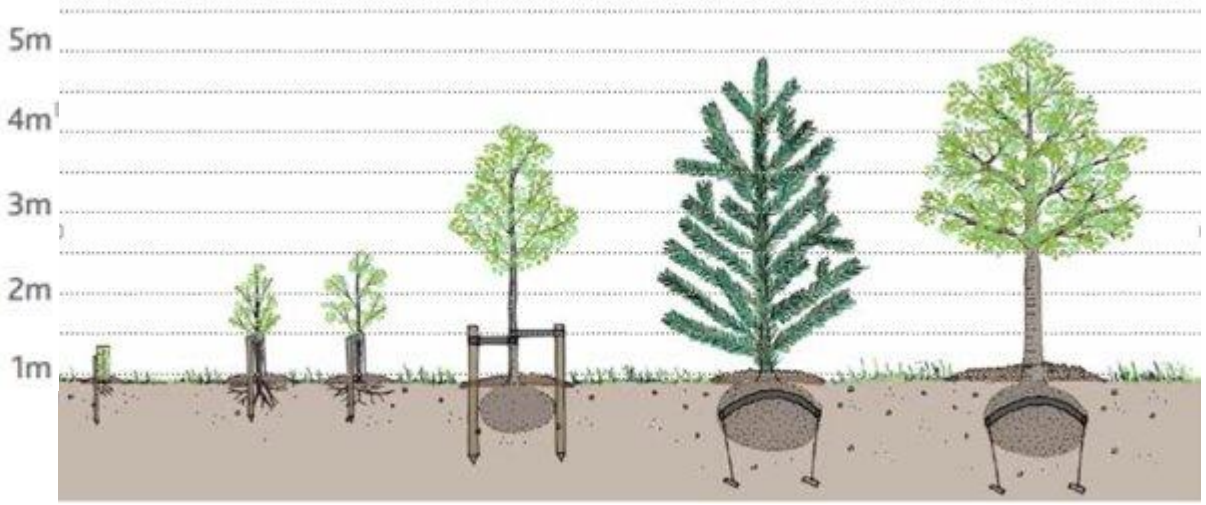
Phase 1B proposed planting plans*	Individual standard Trees	Hedgerow (m/number of transplants)	Wet woodland number of transplants	Woodland planting number of transplants	Woodland enhancement number of transplants	Small tree/scrub planting number of transplants
Gale West	60	98m/495		250	188	1465
Gale East	25					562
Grove Lodge		76m/380	463	166	136	
TOTALS	**85**	**174m/875**	**463**	**416**	**324**	**2027**

Phase 1A planting (completed):
7 trees at Todmorden Road
32 trees and 54 shrubs at Riverstone Bridge
TOTAL: 39 trees and 54 shrubs

* approx. figures

Plant Growth Over Time

Most new trees will be ‘transplants’, which allows for the trees to establish over a number of years and gives them the best chance of survival. Planting as young trees also enables greater absorption of carbon from the atmosphere.



- “Transplants” are a name for young trees that get “transplanted” from the seed bed.
- “Feathered trees” have multiple branches from the base of the tree, as opposed to “standard” trees, which have a clear stem up to a specific height.
- “Extra Heavy” and “Semi Mature” refer to the size of the trees – these are more established trees giving more immediate impact in the landscape.

To help the trees establish, they will be planted during the dormant season (November to March)

Tree Removals and Re-use

We are very selective with which trees are removed and keep total numbers as low as practically possible.

We phase the removal of trees to align with the programme of works on site. We also remove trees outside of bird-nesting season. Where unavoidable and trees need to be removed during bird breeding season, this is done following inspection by a qualified ecologist who will confirm that it is safe to do so without impact to nesting birds.

It is not always possible to replace trees, as they can interfere with the operation of the flood defence. The reservoir structure is subject to strict safety and inspection standards and only grass is permitted on and near to the embankments to ensure structural integrity and visibility for inspection.

Where possible, we will replace trees and plant new ones in areas away from the impounding structures and defences, with a limited number of water tolerant species planted within the basin floor. This is part of our habitat and landscaping plans.

When we remove trees, the wood is collected and repurposed where possible. We have donated wood chippings to local community groups and charities to help with planting and footpath surfacing. We have also given wood to the landowners where they have requested it. We do not profit from the wood removed in any way.

Tree chippings used at the Littleborough Allotment Society

Tree chippings used for footpath creation

Trees cleared from Littleborough site being used for Natural Flood Management works

Grove Lodge

Water Environment Regulations improvements include:

- Bank height reduction (left bank) to increase woodland wetting
- Creation of small channels (left bank) to increase woodland wetting
- Management of non-native invasive species
- New woodland and field layer planting
- Removal of a small weir to enable better passage for fish
- Creation of a wetland within the woodland

At Grove Lodge there will be approximately 2000m^2 and 1500m^2 of woodland planting and enhancement

Woodland enhancement areas include:

- Selective felling of non-native tree species
- Selective felling of tall, spindly native tree species, to encourage stronger growth in the remaining and newly planted trees
- Opening up of tree canopy to allow light to ground layer and to riverbanks
- Localised planting of native shrubs/ground flora, especially in glades
- Invasive non-native species management

In order to encourage the natural habitats of the wet woodlands there will be no formal footpaths. There will be signage informing about the likelihood of inundation.

Grove Lodge

At Grove Lodge there is evidence of otters in the River Roch. Therefore, as part of the works at Grove Lodge, there will be an otter holt/lay-up created from site-won material and log piles created from site-won material.

Example chamber construction

Example final construction

Example fencing

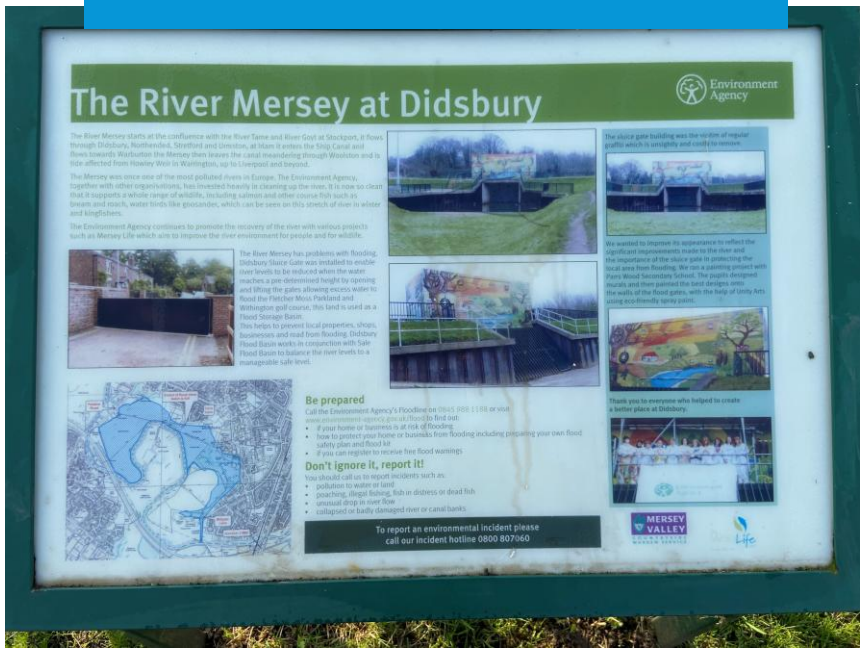
There will be bird and bat boxes and seating areas

Reservoir Landscaping

- Key clamp railing will be used around the outfall structure. Timber post and rail fencing will be used elsewhere.
- The embankments will be planted with grass and wildflowers, with areas of grasscrete and formal grass where required by reservoir regulations.

Example fencing

Example information board



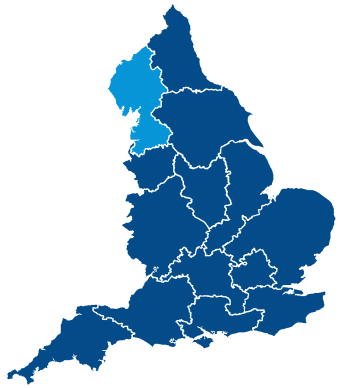
Reservoir Planting Examples

Kersal Flood Basin, Salford

Planting will be similar, with native wildflowers sown on the embankment, where reservoir regulations allow

‘The Right Plant in the Right Place’

We have chosen particular plant species for the following reasons:



- Soil suitability- plants which will grow well in the conditions on site
- Biodiversity benefits- wildlife friendly
- Resilience to disease
- Native to the UK and local provenance to the North West of England
- Suitable for the environment e.g. wetland species in wet areas, such as willow/alder/birch, and species which can recover from floodwater inundation
- Plants which are non-invasive and have shallow roots, which won’t affect the structural integrity of the reservoir
- Easy to maintain
- Appropriate planting density

Photos of plant species

Tree Planting

Wild cherry '*Prunus avium plena*'

Alder '*Alnus glutinosa*'

Downy birch '*Betula pubescens*'

Silver birch '*Betula pendula*'

Hazel '*Corylus avellana*'

Bird cherry '*Prunus padus*'

Woodland Planting

Alder '*Alnus glutinosa*'

Silver birch '*Betula pendula*'

Downy birch '*Betula pubescens*'

Hawthorn '*Crataegus monogyna*'

Sessile oak '*Quercus petraea*'

Goat willow '*Salix caprea*'

Photos of plant species

Scrub & Informal Hedge Planting

Hazel '*Corylus avellana*'

Guelder Rose '*Viburnum opulus*'

Hawthorn '*Crataegus monogyna*'

Scrub Planting

Field Maple '*Acer campestre*'

Blackthorn '*Prunus spinosa*'

Wildflower Planting

Sedge '*Carex*'

Iris '*Iris*'

Purple loosestrife '*Lythrum salicaria*'

Meadowsweet '*Filipendula ulmaria*'

Spearmint '*Mentha spicata*'

Maintenance

Typical maintenance activities include:

- The grass on the impounding embankments will be cut ~3-4 times a year (6-8 weeks depending on growing season).
- The spillway and access tracks will be cut 6-8 weekly through the growing season.
- The basin floor and wildflower areas will have minimal management (up to 1 cut a year and smaller interventions i.e. sapling pulling).
- The debris screens on the control structure will be cleared regularly. There will be sensors and cameras (specifically pointed to the structures) to aid the planning of this work.
- At Grove Lodge, the sheet pile wall and access track will be maintained by the Environment Agency, 1-2 times each year. The woodland habitat will be managed in partnership with a 3rd party.

The Environment Agency will maintain the Flood Storage Reservoir assets and the access paths

Contact Information

If you have any questions or would like to get in touch, we'd be happy to help.

You can contact us by:

Email:
rochdaleandlittleborough.FAS@environment-agency.gov.uk

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