West Wolds Slow the Flow

https://www.westwoldsslowtheflow.org.uk

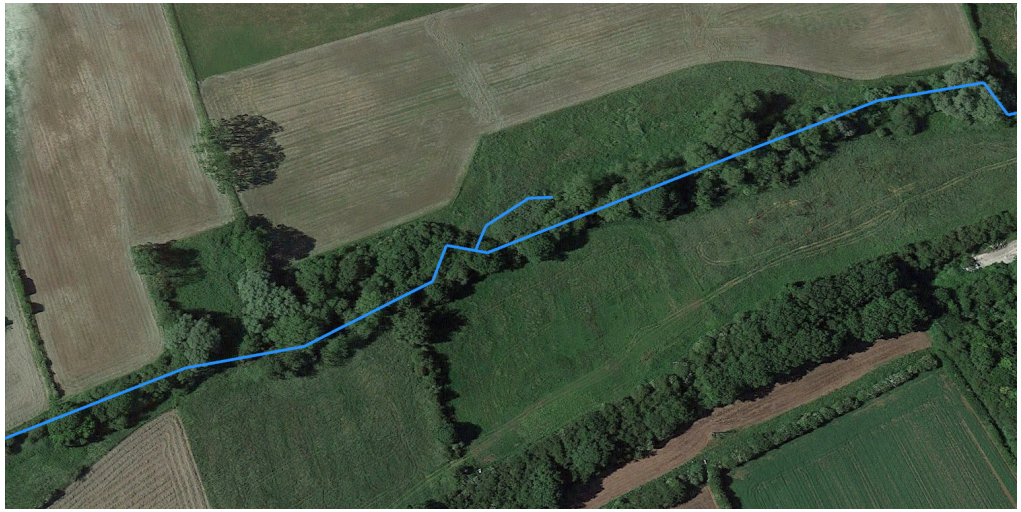
info@westwoldsslowtheflow.org.uk

Drewton Beck Natural Flood Management Work, 2024

Report on work carried out 6-8 March, as part of the West Wolds Slow the Flow project, by East Yorkshire Rivers Trust

1. Introduction

1.1. This report describes Natural Flood Management (NFM) work work carried out on a section of Drewton Beck, east of North Cave, (below) during 6-8 March 2024.



2. Objectives

2.1. The original concept for the work along the beck was to skylight sections of around 10m length, leave 10m, and repeat, subject to conditions and features encountered. This would result in removal of up to 50% of the canopy along a 400m length, although no large trees were to be removed.

2.2. Leaky barriers were to be installed at intervals. The overall purpose is to improve biodiversity whilst making the valley floor more natural, presenting greater roughness to the passage of water and thus 'slowing the flow'.

Arboricultural Team

3. Work completed

3.1. This work was carried out by East Yorkshire Rivers Trust under the direction of their project manager and ecologist, Matt Arnold. The tree work team comprised 3 arborists who are EYRT's trusted arboricultural contractors.

3.2. In addition, a team of volunteers from Bishop Burton Agricultural College, attended on the first day, 6 March, assisting in clearance and leaky barrier creation in a location well away from the more substantial vegetation clearance being undertaken upstream. This group comprised one lecturer and five students, who found the work both enjoyable and educational, as a notable opportunity to engage in conservation work within the context of flood management.

Bishop Burton students

4. Outcomes

4.1. The original objectives have largely been achieved, albeit with some adaptation in response to identified conditions and features. To look at the tree line from the field above the beck, it is hardly possible to see what has changed, due to the retention of major trees.


View of valley from north, after the works

4.2. On closer inspection along the beck, a number of areas have been sky-lighted, principally by pollarding or coppicing of the substantial amount of willow along the valley floor. This has been done in a smaller number of longer sections of around 20m in length, resulting in sky lighting of perhaps 20-30% of this length of the beck.


Pollarded willows


Leaky barriers


Leaky barriers

4.3. Ideally, we would like to fly the drone over this section, to get a comparison with the pre-work situation, and to be able to map the location of the works - it is difficult to establish the locations when in amongst the trees.

4.4. Drone photographs could be added to an update of this report to provide more visual records of the work done.

4.5. As noted in previous correspondence, it was found that the beck already had many instances of natural woody debris dams, the beck sometimes finding its way completely under and around willow boughs across its path.

Existing woody debris

Leaky barriers

4.6. New leaky barriers have been created, mostly of lighter-weight branches, pinned on either bank to prevent mobility. It is anticipated that these will trap an amount of debris and leaves flowing down the beck, resulting in slightly more substantial barriers which will influence currents and create different depths and speeds of water, to provide more varied habitat for fish spawning and fry.

4.7. The sky-lighting will also aid greatly in providing richer habitats with a wider variety of vegetation.

4.8. Two upstream v-notch weirs were also introduced. These are two logs forming an open v-shape which points upstream. They help to create slightly faster currents through the open part, which helps to move the sediment and potentially create gravel beds. To the side of the logs, slacker areas of water are created which favour fish fry.

4.9. Overall, due to the extent of natural willow growth across the beck, the EYRT team has a high confidence that there would be no downstream mobility of the introduced material, as anything displaced would be caught by the existing trees and vegetation cover. At the same time, the nature of the valley in this section is that it has a steep bank to the south side (ERYC Estate) and flatter, more open floodplain to the north side (Hotham Estate), none of which is in cultivation, and which has been the subject of conservation (through being fenced off from adjacent pasture) to encourage lowland fen habitat. Should any minor displacement of the beck in this area occur as a result of the leaky barriers, this will simply increase the variation of the habitat and favour the fen characteristics. This is a part of the valley floor variation and roughening, referred to in the project objectives.

Sky-lighting to open the canopy and allows light into the stream bed and valley floor

V-notch weir

5. Possible future works

5.1. The greater part of the work carried out was pollarding and coppicing before the start of the nesting season. This allows us to review the fallen material, see the beck more clearly and decide where other interventions might usefully be introduced, with the approval of the landowners. Certainly the material exists, in the form of some substantial coppice poles cut from existing willows. Introducing greater roughness, than has been possible in this first stage of work, would be beneficial for both flood risk reduction and habitat variation.

5.2. The project ecologist noted that the beck had a high level of silt within it, which would appear to be silt from arable fields upstream - for example, large amounts of field run-off silt was noted at the highway entrance to Drewton Farm, which inevitably finds its way down to the beck. This silt clogs the beck and substantially reduces the amount of open gravel (the natural condition of a chalk stream bed). The gravel is key to providing habitat for invertebrates as well as spawning areas for fish. It would be worth considering ways to reduce this run-off, both from a field health standpoint, (it is valuable topsoil that belongs in the fields) and also to prevent the beck becoming overly clogged and affected by pollutants from the soil.

5.3. It would be beneficial to consider returning to the beck and introducing a number of appropriate marginal and shrub species to increase biodiversity in this section. EYRT and WWSTF partners will advise further.

Heavy silting on stream bed

Silt from adjacent field running across Drewton Farm entrance and down to Drewton Beck

6. Material

6.1. As noted, there is a now a useful amount of coppiced material in several locations along the beck. This can be allowed to simply lie as dead wood, providing improved nesting and roosting opportunities for native and game birds; some of it could be used to create new leaky barriers within this section of the valley; and some could be extracted to be used to make leaky barriers upstream, or potentially downstream, in future phases of work to the valley yet to be agreed.

Pollarded willow poles

7. Conclusion

7.1. WWSTF and EYRT are grateful to Hotham Estate and the ERYC Estate and tenant, for allowing access to this section of the Drewton Beck valley. We trust that this work will be seen as valuable and complementary to the landowners' corporate and agricultural/conservation objectives, whilst demonstrating the low-impact characteristics of this form of Natural Flood Management (NFM).

7.2. We place a high value on the fact that this is the first implementation of NFM on the West Wolds project. As well as giving us experience and greater credibility, it also provides our own local examples of NFM features, which are extremely helpful in illustrating the approach for other landowners, thereby helping to increase uptake elsewhere.

7.3. We look forward to continuing to work with Hotham and ERYC Estates, to improve upon these first steps and hopefully to create more flood management interventions in other locations along our becks and watercourses.

Students create a leaky barrier

RevA - typo correction + revised wording para 5.1 13/3/2024