

Water Framework Directive Delivery

River Frome Rehabilitation Plan: Louds Mill 2013

Background

The reach downstream of Louds Mill was an over wide channel with little marginal vegetation and poor in channel bed morphology. During low flows the river was spread over the whole width of the channel leading to a shallow river. Spawning potential in the reach were limited due to compacted and over silted gravels. There was also very little cover and in channel structure provided by tree and in channel woody debris.



The River Frome Rehabilitation Plan states the main proposals to improve the SSSI condition and WFD objectives of unit 1b and to incorporate as part of the Louds Mill Enhancement were to: a) **reprofile banks** (to narrow the low flow channel and improve the marginal zone) b) **to reprofile river bed** (to clean the gravels of silt break its compacted nature – improving spawning potential) c) introduce **large woody debris** to the reach (d) **new riparian tree planting** (willow whips to be inserted into the bank edges and soft margins at key locations).

Planning

The design was produced internally by the EPE Environment Programme Delivery team. Support was given by the landowner (Duchy of Cornwall), the tenant and Dorchester Fishing club, who manage the fishing.

There were no water voles identified on site during surveys. Hemlock Water Dropwort was observed which require removal from site if uncovered through bank reprofiling (they are poisonous to cattle). There were no Himalayan Balsam located in the reach itself but the mill channel adjacent has extensive Himalayan Balsam growing. Poplar trees on the left hand bank would provide most of the woody material required for the project.



Delivery

The project reach is adjacent to the EA's Louds Mill Depot so it made sense to request Operations Delivery to deliver the Louds Mill project. As part of 3 similar projects on the Frome under the River Frome Rehabilitation Plan the intention is to develop and enhance in house skills and understanding of river restoration projects so future delivery can be as efficient and effective as possible.



Apart from the project itself the Operations team had to create a temporary crossing point that separated the depot from the field adjacent to the river allowing direct access for their machinery. This required permission

from the Biodiversity team as water voles were known to be present in the Mill Channel banks.

For the project itself limbs from the adjacent Poplar trees (north bank) were selected and felled in preparation for use as Large Woody Debris (LWD). Approximately 30 limbs were felled and laid in the field allowing easy access for selection for each woody structure site throughout the reach.





In locations where the limbs were to be used in channel, trenches in the bank were dug with at least a third of the limbs length buried providing a secure structure. In this reach high concentrations of gravel within the bed stopped the normal technique of using wooden stakes from being used.

Woody material helps trap sediment during higher flows and encourage natural berm creation and channel narrowing. The brash used would also provide habitat for invertebrates and refuge for fish fry.

Bank reprofiling was carried out on two section of the left hand bank. First the turfs were removed, and the subsoil was pushed into the channel. Bed material was then pulled on top to create a protected toe for the new bank edge. This technique helped narrow the channel by between 1-2 metres. The turfs were then placed on top to help encourage vegetation to regrow providing protection during the higher flows.



The river bed was uniform providing little habitat during lower flows. The existing gravels were reprofiled using an excavator creating deeper pools and gullies and a faster flowing deeper channel known as the thelwag. During this part of the project many large rocks were discovered in the bed. These were unnatural to the Frome; their impact was to harden the bed making it virtually impossible for salmonids to spawn. With a lot of effort most of these stones were removed from the bed releasing the gravels below. The stones were used in places to provide more support for the newly created berms and banks. Some stones were left sitting on the river bed which created small scale flow variations and scour. These features will keep silts from settling maintaining fresh gravels ideal for spawning.

Added Value

To gain access to the site with the large excavator the Ops team had to create a temporary crossing point over the mill channel. This was carried out by laying pipes into the channel and covering with gravel. There were numerous discussions held on site as to making use of the gravel at the projects end as opposed to removing as a waste



material. After agreement from the Biodiversity team some of the gravels were to be left in the mill channel providing additional in channel habitat. The remaining gravels were then removed and used to firm up an existing ford and cattle crossing point at the top end of the reach. The bank edges of the ford were very soft and a possible source of sediment entry to the channel. The gravels added firmed up the base thus minimising bank erosion during the fords use and high flows. Excess gravels were also added to the ford itself creating additional spawning habitat for salmon and trout.

Lessons Learned

The key issue regarding this project only became apparent after its completion. Comments received from the Dorchester Fishing Club described concern over the installation of the woody material. The concerns were related to the size of the wood in the channel and how it could come loose during high flows. The Project Manger has since described how the limbs were buried in trenches within the bank which wouldn't have been visible post works. This technique should ensure no movement during high flows. The comment regarding the size of wood in the channel is probably valid. As a result of burying the larger end of the limb on the bank it in some cases only left thinner branches in the water. In hindsight larger limbs should have been sourced in some locations to ensure the part of the limb in the water was as large as possible. If over the winter some of the wood isn't having the desired affect there is an option to source several larger limbs and fix those at key points next year.

EA Cost: £11k Reach Length: 150m LWD: 10 Structures Bank reprofiling: 55m

All enquiries about the Loud's Mill restoration project and the River Frome Rehabilitation Plan contact Aly Maxwell on 01258 483390 or follow the link to the Environment Agency's website for further information: <http://www.environment-agency.gov.uk/frome>

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