



Berrick Salome Parish Drainage Group (BSPDG)

October 2024

B4009 to Roke (HSH End) Baffled Ditch Flow Control Project

Summary

BSPDG have been selected for grant funding from OCC for the installation of Baffle Barriers to control and retain the flow of excess water that drains via the ditch from the B4009 to Roke (Home Sweet Home end) where it joins the village drainage watercourses heading across to the west and, ultimately, out towards the river Thames. This will utilise water control practices currently established successfully in other villages and towns to reduce the volume of water flowing through the parish at times of excess rainfall, allowing that excess to flow through gradually once the intensity of the rainfall subsides.

The barriers will allow sufficient water to pass to maintain a manageable flow. They are designed and will be located with the assistance of experts from OCC and SODC.

Installation is expected to be completed in 2024 and it is expected to be fully functional in January 2025 and beyond.

Maintenance and repairs (although expected to be rare) will be undertaken by BSPDG and other volunteers under the responsibilities of the Parish Council.

This document is intended to provide fairly comprehensive details of the project and answer most questions parishioners may have. Should there be anything beyond this that you would like to know, please contact BSPDGadmin@berricksalome-pc.gov.uk or Jim Whitworth, BSPDG Chair, at jim.whitworh@berricksalome-pc.gov.uk

Introduction

The **BSPDG** was formed in February 2024 as a Parish Council sponsored initiative to provide medium to long term focus to create both volunteer-driven activities to maintain and improve parish drainage infrastructure and to access public bodies' grant funding for larger projects to reduce the impact of higher rainfall on that infrastructure.

Oxfordshire County Council (OCC) has become the lead public authority in our area for the coordination and public funding sourcing/distribution for such activity. They work with Parish Councils, the District Councils and various other agencies to focus efforts on successful solutions and harnessing new design and technology to counteract the apparent increase in rainfall and other water drainage issues as our climate appears to be changing. In addition to managing funding, they have established a team of subject matter specialists who work with other County and District departments to provide existing Engineering, Ecological/Environmental and Infrastructure (e.g. Highways) specialisations.

During its first two months, following drainage related issues in the parish, BSPDG set out to map the various streams, ditches and culverts carrying water across our villages (and note some that have fallen into disuse over time) and build an initial understanding of where potential issues may occur and, maybe, could be avoided if some action is taken. This coincided with some, already in progress, voluntary actions that cleared some blocked or partially blocked watercourses and demonstrated what could be done.

In April 2024, OCC notified all local councils of availability of grant funding for specific related projects and invited submission of proposals within a very limited timeframe. BSPDG hurriedly put together two project proposals from its issue mapping exercise and one potential project based on longer term management of excess water flows as they reach the parish from "upstream" sources. These projects were scrutinised, amongst many others from across the county, by the OCC specialists and they decided to offer funding for our initial long term water flow management project – Baffled Flow Control for the Ditch that brings water into the parish drainage system from between the B4009 and Roke.

Since receiving and accepting the funding offer in early June, BSPDG has worked to design the Flow Control Baffles and their installation (in consultation with OCC specialists, SODC Engineering, OCC Biodiversity/Ecology and others) source potential materials/contractors, conduct land surveys and agree the necessary permission from the landowner and farmer where the installation will take place.

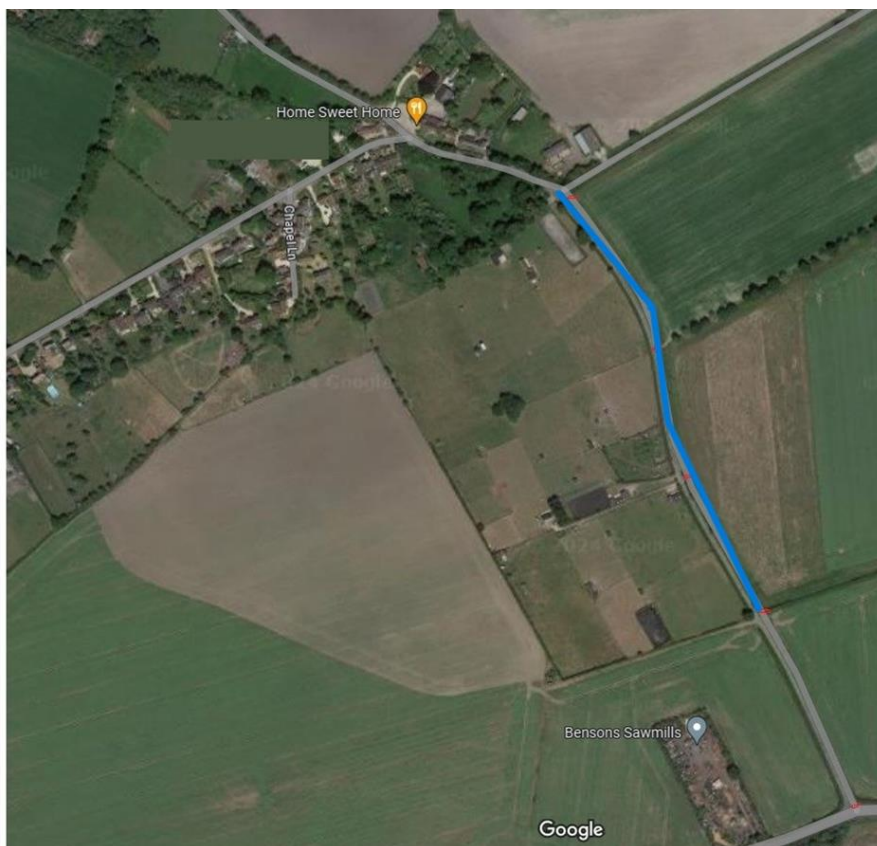
Following agreement in September between the Parish Council and the landowner of the terms and conditions for the installation of the ditch baffles, BSPDG are now able to share more details of the project with all parishioners.

The Project

Ground water from the nearby hills and rainwater from the surrounding area enters the parish watercourse from the North and East where it joins the output of several natural springs and the groundwater beneath and the rainwater falling from above the villages themselves. This all heads West and South via various routes, out from the parish ultimately in the direction of the River Thames. The project is aimed as being an initial step towards holding back the incoming flow during periods of exceptionally heavy rainfall to prevent the parish drainage infrastructure from being inundated. As the rainfall subsides, the water that has been temporarily slowed is able to gradually flow through the parish within the capacity that is then again available.

By demonstrating that we can successfully conduct such a project and that it would be beneficial at other locations around the parish, it is anticipated that funding in future years may be made available to undertake similar projects in those locations, subject to gaining the permission of the appropriate landowners.

Location:



The location for this project has been chosen for several reasons, primarily:

- A known, associated but not necessarily overwhelming, risk of excess water reaching the culvert entering Roke before crossing under the road beyond the HSH and flowing behind properties into the stream flowing behind the Allotments.
- The concept that a relatively small-scale installation may hold back sufficient water to make a difference without major, huge cost, engineering works.

- Individually small Baffle Barriers required without massive, visually obtrusive retaining structures.
- Ease of access for installation.
- Little, if any, risk of detrimental results – it can only reduce the risk for neighbouring properties and any risk to the surrounding farmland can be mitigated by adjusting the flows without adding more water to nearby drainage than would have otherwise been present without the baffles.

Design Concepts:

Installing a number (4 – 6) of semi-permeable barriers (Baffles) at intervals along a ditch creates the equivalent of storage pond areas that drain into each other before joining the flow into the village. Under conditions of normal rainfall and drain off from the surrounding landscape, a gap under each baffle allows a restricted but relatively unchanged flow along the ditch. As the rainfall and drain off increases, it can no longer fully flow under each baffle and water builds up in each section between baffles. Different gaps under each baffle allow all the sections to gradually fill. An amount of controlled “leakage” between the timbers that make up each baffle allows for some gradual transfer from one section to the next whilst the overall graduated height of each baffle (based on the overall height of the ditch and the slope of the landscape from one end of the ditch to the other) allows water to flow over the top from one section to another when the first (furthest from the village) section is full. Ultimately, if the whole ditch becomes full to the top of the baffles and rainfall continues at higher than normal rate for a longer period, the overflowing water will join the village drainage system at the same rate as today. But the period over which the water has been held back will have ensured that, at that point, the drainage infrastructure will not have been overwhelmed already and there will be sufficient capacity to cope with the additional flow for a longer period. The expectation is that periods of excessively high rainfall are limited in time and the additional storage, flow control of the baffles and delay in higher volume of water entering the village will combine to allow the excessive rainfall to ease and the stored water to enter the system gradually over a longer period thereafter.

The Design Concepts have driven the detailed design process alongside the requirements for executing such a project in a ditch in a working arable farmland environment where it has been important to consider the practicalities of setting barrier heights below the field surface height (to avoid potential damage to farm machinery close to the ditch) and minimising/eradicating any potential intrusion of retaining structures into the cultivated field area. Similarly, detailed design has incorporated restricting the clearing and construction activity to the areas immediately around each individual barrier, allowing natural seasonal die-back of vegetation and only using untreated components to minimise any disturbance to the surrounding natural environment. The ditch has been professionally surveyed for potential ecological impact. Results show no apparent risk and further monitoring will take place during installation, with any required remedial action being undertaken to meet appropriate recommendations.

Baffle Barrier Design:

Each Barrier will be constructed by the installation of one retaining steel “H” Beam at each end, driven into the ground to a depth of 3m from approximately 100mm below the ground level on

the field side of the ditch. One open side of the “H” profile will be embedded in the bank of the ditch, the other will face the ditch and remain open to receive the timber sleepers that will form the barrier. The retaining Steel “H” Beam on the road-facing side of the ditch will be installed to a height matching the other beam. The ground directly above the “H” section will be cleared to leave the section visible and accessible. Where the inner (ditch facing) opening of the “H”-Beam reaches the base of the ditch, it will be filled with concrete to a suitable depth (we anticipate 400 mm to 500mm or thereabouts) and to a level to be specified for each barrier above the level of the base of the ditch (we anticipate between 75mm and 125mm). These concrete “pads” formed on site will be level from one side of the ditch to the other and will determine the initial and minimum height above the ditch base that the lowest sleeper in each barrier will sit. Later adjustments can be made by inserting wedges between the lowest sleeper and the concrete pads.

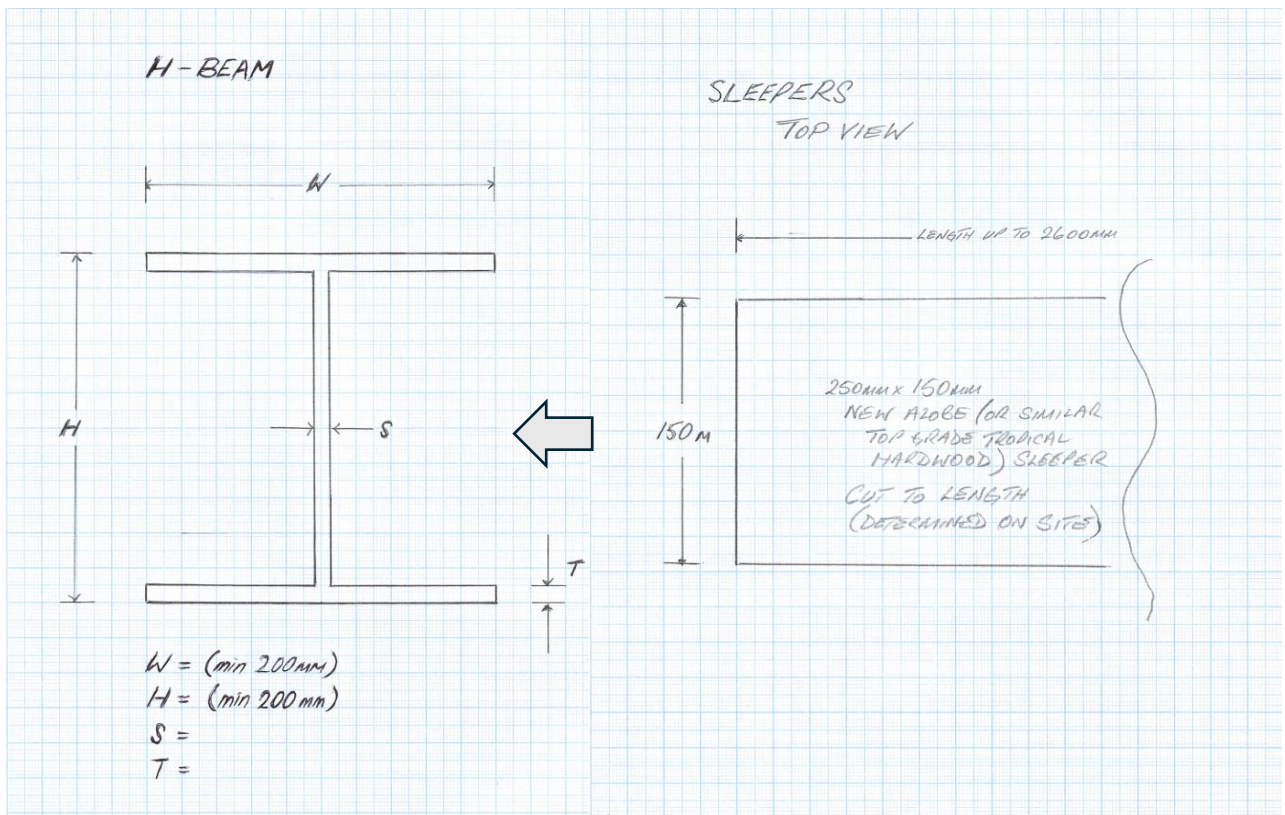
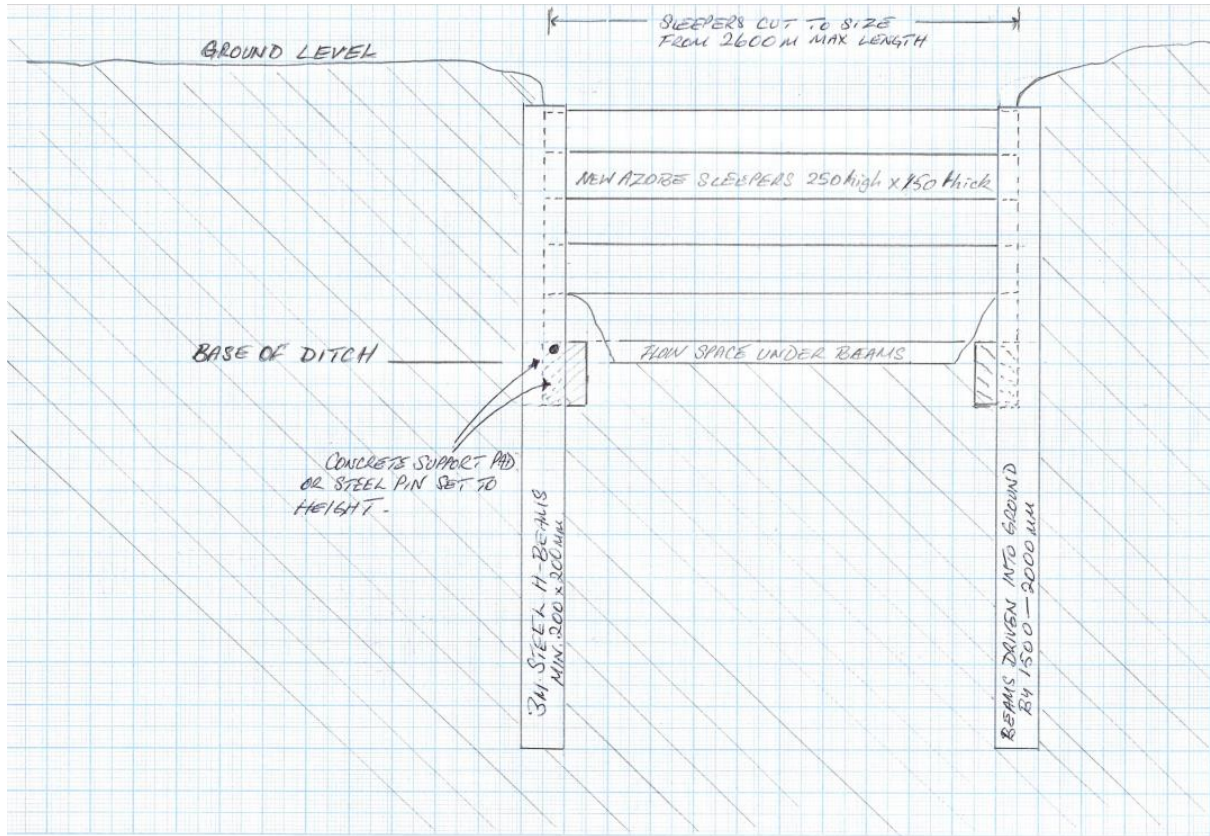
Anticipated Specification for the retaining beams:

Retaining Steel “H” Beams – each beam will be 3000mm long with a minimum cross-section of 200mm x 200mm and a minimum weight of 50kg per m. The open sides of the “H” section will be of equal depth and a minimum internal width of 170mm or thereabouts (to accommodate 150mm wide wooden sleepers).

Once the retaining steels and concrete pads have been installed as above, an appropriate number of wooden sleepers will be slotted into the open section of the steel beam at each end.

Anticipated Specification for wooden sleepers:

Wooden Sleepers – approximately 250mm deep x 150mm wide x length to suit. New or reclaimed untreated Azobe or similar sustainable high grade Tropical Hardwood suitable for permanent installation in water and installation in areas that may be submerged or dry seasonally each year. Whilst natural variations in the timber are expected, there should be no cracks or “features” that would risk its structural integrity in situ. As the ditch is part of the local network of watercourses that flow into streams and ponds and provide habitat for wildlife, it is essential that the timber has not been treated with any chemical substance, paint, oil or preservative in any way.



Timescale

During October, BSPDG are sourcing quotations from contractors and, subject to OCC approval to release funds, will be seeking to award the installation contract for work to commence as soon as possible thereafter. Installation is not expected to take many days and should cause little, if any disturbance to day-to-day activity in the vicinity. However, as seasonal preparation and crop planting will probably happen around the same time, the project will be flexibly scheduled to accommodate that and will undertake as much work as possible from the roadside rather than on the field, with potential minor obstruction to traffic from time to time for a day or two.

Following installation, there will be a period of monitoring and possible adjustment undertaken by members of the BSPDG. It is expected that the baffles will be in place and functional in January.

Future Activity

During this autumn BSPDG intends to drive and support any necessary parish efforts to monitor and maintain culverts, ditches and streams where it is not possible to ensure that relevant owners of riparian responsibilities undertake such maintenance in accordance with those responsibilities.

We will investigate issue that indicate increased risk of drainage failure and endeavour to find solutions. We will also maintain a productive dialogue with Thames Water, OCC Highways and other agencies, hoping to make more progress with long standing issues that they are responsible for.

Once the Baffled Ditch Flow Control Project is fully installed and up and running, we hope to see positive results, good local feedback and enthusiasm from local landowners that may give us the opportunity to bid for funding for one or more similar projects around the parish next year and beyond.