CASE STUDY 4

# FIELDHOUSE FARM
## THE DINGLE

*FARMING FLOODPLAINS for the FUTURE*

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| **Catchment** | Sow (tributary) |
| **Holding Type** | Arable (with some riparian grassland) |
| **Existing Land Use** | Small wooded valley & riparian pasture |
| **Project Area** | 4.33ha [Total holding : 99ha] |
| **Techniques** | Water control structure ; woody debris ; pond alterations ; watercourse diversion |

Watercourse through The Dingle

View across disconnected floodplain (before works)

New channel feeding into rehabilitated scrape

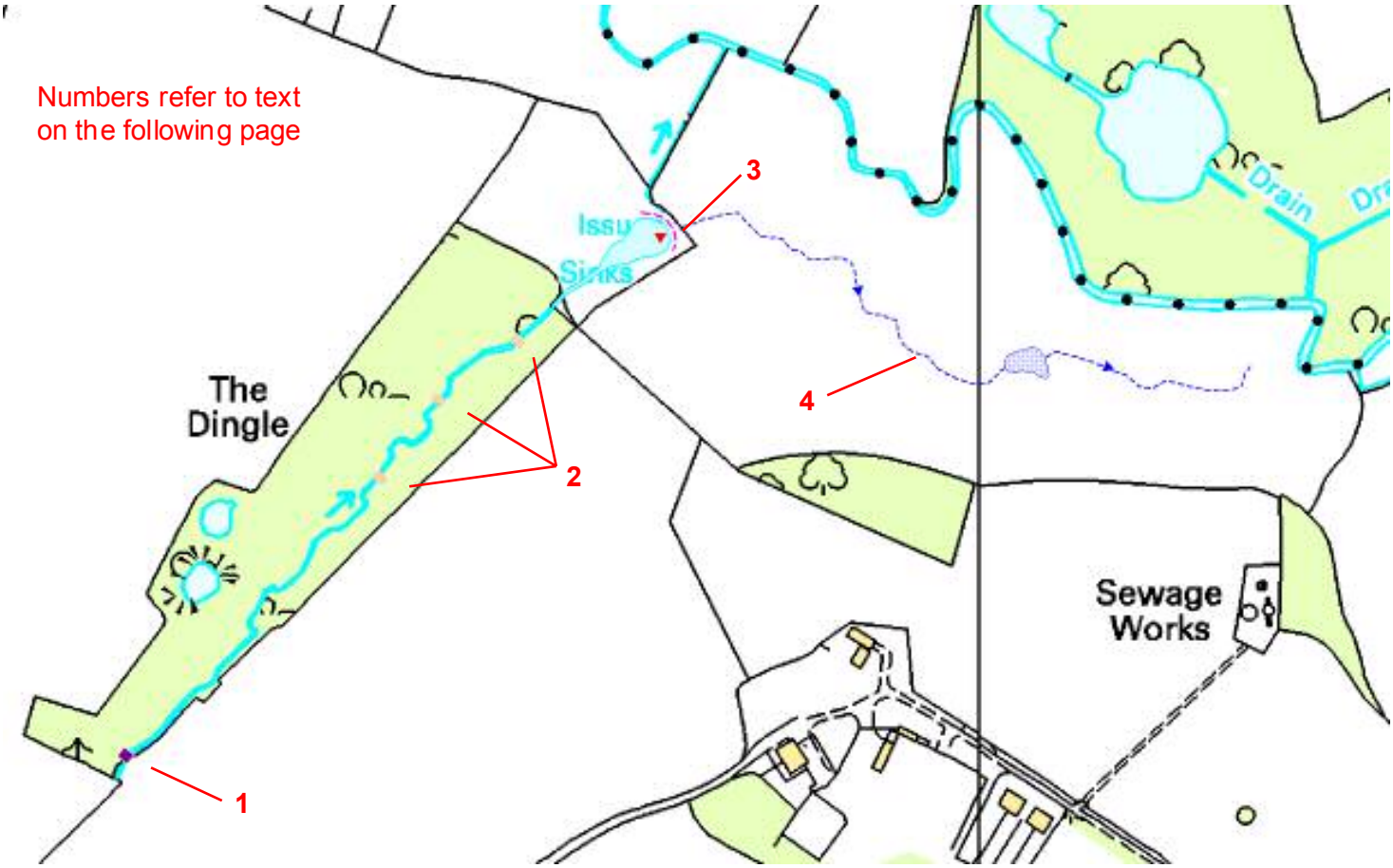
## Background

Located in the middle reaches of the River Sow, Fieldhouse Farm is primarily an intensive arable holding growing cereals and oilseed rape. Grassland fields adjacent to the river are grazed by cattle reared for an associated dairy enterprise. Woodland is a notable habitat on the holding, including areas associated with the floodplain of the River Sow and tributary watercourses.

The landowner has been prepared to co-operate with the project, being keen to enhance the countryside where possible, although this on the proviso that it should be at no direct cost to the farm business.

## The Project

This project focussed on a tributary of the River Sow, draining water from adjacent farmland and a nearby main road. Piped throughout its upper reaches, the watercourse emerges in a small valley woodland (a designated County Wildlife Site known as 'The Dingle'), through which it flows for approximately 420 metres before entering a recently created pond, then over-flowing to a short ditch direct to the River Sow. Comprising a number of elements, the overall aim of the project was to slow and attenuate flows, reducing the time taken for them to reach the main river.






Relict brick pillars, and new water control structure

### Consultations.....

- Biological Records
- Natural England (re CSS agreement and funding)
- Environment Agency (re need for consent)

### .....& Consents

- Flood Defence Consent

New channel, immediately after works and flowing with water

**1** Within 15 metres of the watercourse emerging in The Dingle, the remains of a water control structure survive, comprising brick pillars apparently designed to take drop boards. Although the original purpose is long forgotten, the pillars remain sound and the topography upstream appropriate to allow storage of water. A structure has therefore been re-instated, constructed using re-cycled plastic tongue and groove boards. Designed to be retained in place permanently, an aperture in the bottom board allows 'normal' flows to pass unimpeded. However, once the capacity of the aperture is exceeded water backs-up and is stored to an average depth of 0.4 metres, beyond which the structure simply over-tops.

**2** Utilising material arising from the thinning of the surrounding woodland, a number of debris dams are to be created in the channel. Comprising small logs and large branches, appropriately staked or dug into the banks to secure them, the structures will act as 'leaky barriers' allowing a restricted downstream flow of water. The dams are located to bring maximum benefits – either utilising storage capacity in deeper sections of channel, or encouraging water to more readily spill out of the channel in wider sections of the valley floor. This item of work is yet to be completed.

**3** A bund, 0.6metres in height, has been constructed around the downstream end of the existing on-line pond, designed to increase capacity such that the pond can temporarily store peak flows.
The previous outflow from the pond comprised three 150mm pipes, all of which took water via a cattle drink to a ditch running direct into the River Sow. All of these pipes have been capped (although one cap is perforated to allow a continued supply of water to the cattle drink) and replaced with three new 150mm pipes, incorporated into the new bund. Under 'normal' flow conditions the existing level of the pond is maintained by a single pipe. The other two pipes are fitted with 90° bends and risers, such that once the capacity of the one pipe is exceeded water backs-up and is stored in the pond upto the level of the risers (an additional 0.5metres, equating to 245m$^3$ of storage), which then carry any excess flow downstream.

**4** The revised outflow from the pond has been aligned to feed a new 370 metre channel excavated across the historic floodplain of the River Sow (now disconnected following engineering of the river). Averaging 0.2 metres deep and 2.4 metres wide, the contractor was encouraged to create a channel that meanders as naturally as possible across the site, incorporating an existing but generally dry scrape (re-profiled to create a permanent shallow on-line feature), and stopping approximately 30 metres short of the River Sow, allowing water to naturally filter to the main river. The shallow dimensions of the channel mean that it creates beneficial habitat, and during peak flows will readily over-spill to take advantage of the 'lost' storage capacity of the floodplain.

## Future Management

- The flood management elements of the scheme require minimal on-going maintenance. The upstream water control structure and pond outflow pipes will require periodic checking and removal of any blockages. The debris dams in the woodland and the new channel should be self-sustaining.
- The riparian grassland will continue to be extensively grazed in accordance with the relevant Countryside Stewardship Scheme prescriptions.

Pond before and after alteration, plus detail of revised pond outflow

## Benefits

**HYDROLOGICAL**

It is the combination of elements that brings the flood management benefit of this project. Although difficult to quantify, the restrictions in the existing channel and increased distance over which water now flows will slow downstream conveyance. The new features provide attenuation, the cumulative storage capacity estimated at 1450m$^3$.

**HABITAT**

The debris dams increase the geomorphological diversity of the existing channel and promote a wider mosaic of wetland habitat through the valley floor of The Dingle.
A new 370 metre channel has been created, together with the rehabilitation of a shallow scrape. It is anticipated that the new features will enhance the area of 'floodplain' for lapwing which have historically nested on the site.
As mitigation for the loss of some conifers planted around the downstream end of the pond, 30 metres of native hedgerow have been planted.

**FARM BUSINESS**

The project has been completed with minimal impact on the main farm enterprises and with no direct cost to the landowner (as per his request).
The riparian grassland is already included in the holding's Countryside Stewardship agreement under the grazed pasture (P1) option with raised water level supplement (GW), meaning no additional annual payments are immediately available. However, it is considered that the works will allow entry into a higher paid option when the agreement is renewed to Higher Level Stewardship.

## Costings

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| Earthworks (pond + new channel) | £ 4309 |
| Materials (water control structure) | £ 70 |
| Debris dams | £ Free |
| **TOTAL** | **£ 4379** |

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| Natural England Grant (via CSS) | £ 1593 |
| Landowner Contribution | £ Minor re-seeding |
| Farming Floodplains for the Future | £ 2786 |

[Prices excluding VAT]