

CASE STUDY 1

CHURCH HOUSE FARM

Catchment	Sow (Meece Brook)
Holding Type	Intensive dairy unit
Existing Land Use	Maize
Project Area	5.0ha [Total holding : 84ha]
Techniques	Re-connection of floodplain ; wetland habitat creation

FARMING FLOODPLAINS for the FUTURE



New outfall pipe

Land west of railway - before, immediately after works, and six months on



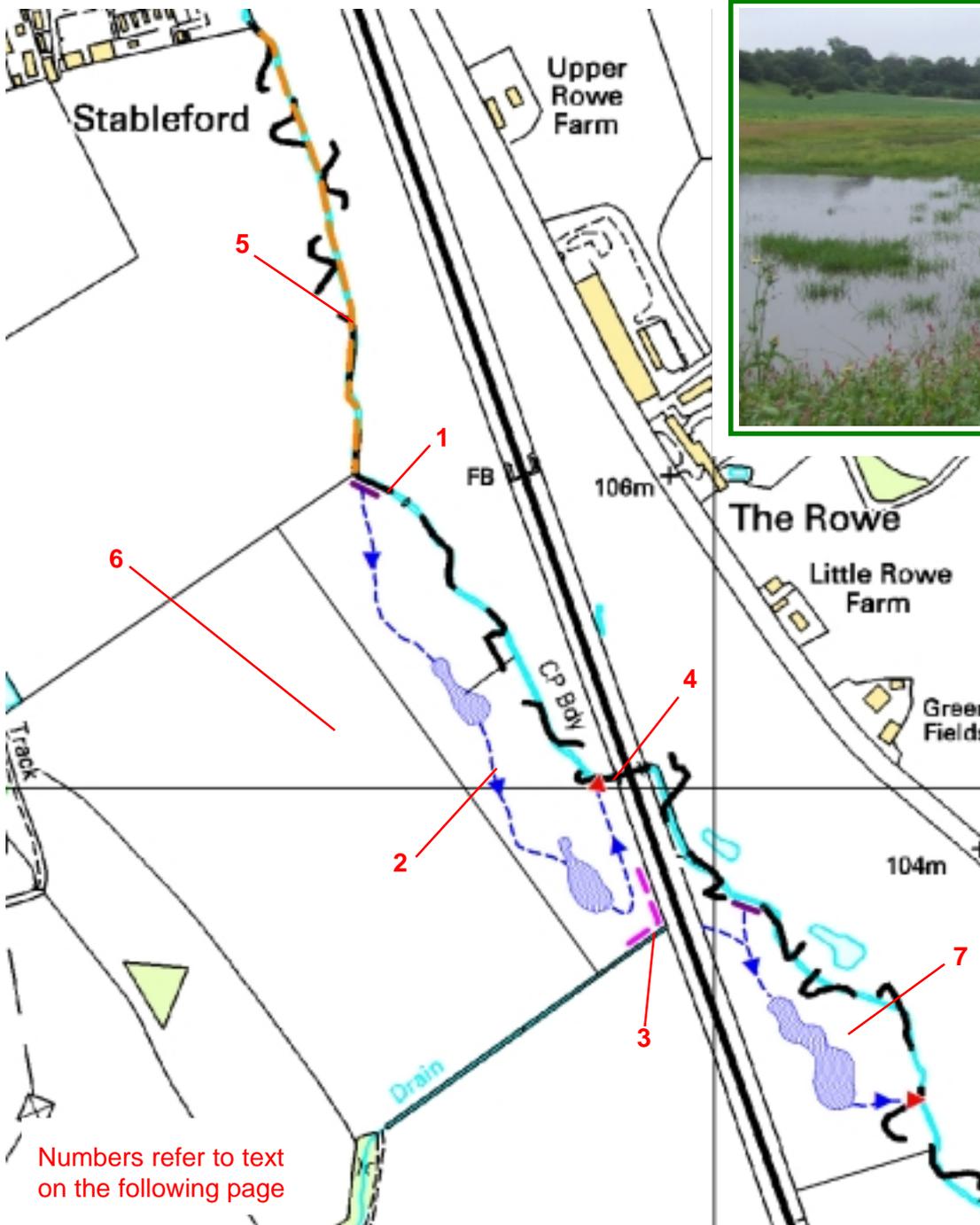
Background

Church House Farm is an intensive dairy farm with a herd of 230 cows. Land use is divided between 23ha of permanent grass, around 28ha of temporary grass, with the remainder cultivated to grow fodder crops (maize, and more recently cereals, for whole-crop silage).

Struggling with some drainage issues, and following rejection of an HLS application, the landowners approached the Farming Floodplains for the Future project. They sought a scheme that might improve elements of agricultural management, provide wildlife benefits, and importantly show that intensive agriculture and the meeting of environmental objectives can be compatible.

The Project

The main focus of the scheme is lower-lying ground running down to the Meece Brook. Although valuable land for the farm, being gently sloping with good soil, cultivation and crop success were however limited by the extent to which water stood in the field, both adjacent to the Brook and further upslope. A compromise was devised whereby the land nearest the Brook has been re-profiled, to re-connect the floodplain to the previously engineered watercourse (and thus provide increased flood storage), and converted to permanent wet grassland providing summer grazing for the farm. Spoil thus generated has been moved out of the floodplain and used to agriculturally 'improve' adjacent ground. A second area, abandoned for agriculture for a number of years, has provided a further opportunity for habitat enhancement and creation of flood storage.



Wetland habitat - six months on

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Consultations.....

- Biological Records
- Natural England (re HLS application)
- Environment Agency (re need for consent)
- Network Rail (re acceptability of proposed works adjacent to major railway line)
- Staffordshire County Council - Rights of Way (re management during works of a footpath crossing the site)

.....& Consents

- None required

- 1 Accentuating a slightly lower section in the bank of the Brook, a spillway has been created, effectively re-connecting the watercourse to 3 hectares of floodplain during peak flows.
- 2 Two large scrapes have been created to add value to the wet grassland habitat, again created by accentuating existing topographical features. The land from the spillway and between the scrapes has been re-profiled to form a wide, shallow 'channel' to guide flood flows across the site.
- 3 Downstream of the second scrape, a bund has been constructed around the edge of the field to prevent water entering a field boundary drain. Instead water is taken back to the Brook via a new channel.
- 4 Water drains from the site via a new outfall comprising a 300mm pipe with flap valve. During peak flows the valve will be forced shut, trapping water flowing onto the floodplain via the spillway, and thus creating temporary flood storage. Once Brook levels subside the valve will re-open allowing the draining of surplus water. Associated with this outfall, minor raising of the Brook banks was required to ensure effective water control and maximisation of storage extent.
- 5 Upstream of the new wet grassland, the original steep-sided banks of the Brook have been re-profiled, drawing them back to create a range of new marginal features. While primarily intended to enhance the habitat associated with the Brook, early indications are that while not reducing the flooding of adjacent land, it has improved drainage off the field once peak flows have passed.
- 6 All surplus spoil generated by the scheme was transported out of the floodplain and used to fill substantial hollows and allow the re-profiling of the field upslope, the aim being to eliminate standing water and improve drainage so as to enhance the landowners' ability to effectively crop the land.
- 7 Across the main West Coast railway line running through the valley, approximately 2 hectares of ground that had become too wet to be managed for agriculture has been abandoned, allowing the development of a rush-dominated sward. Following the same design principle as applied to the land to the west, a spillway has been cut into the Brook bank, the land re-profiled to create a wide channel and shallow scrape, with outflow back to the Brook controlled by a pipe with flap valve. Spoil not required to fill low spots in the Brook bank has been spread over slightly higher ground alongside the railway.



Land east of railway - before and after works



Issues

- Although the extent of water standing in the arable area is much reduced, it has not been completely removed as originally intended, subtle topographical variation preventing effective surface drainage to the floodplain.
- With the works carried out in wet winter conditions, their 'footprint' became extended, resulting in inappropriate reductions in topsoil over a small part of the arable area, with a consequent impact on crop performance.
- Features within the floodplain were completed 'by eye'. Subsequent to completion of the works it is considered that water levels retained in the scrapes (and associated channel) are slightly too high, impinging on the grassland and compromising the flood storage capacity of the scheme. It is also considered that the spillway may need to be slightly lowered.
- An agreed programme of remedial works planned for summer 2010 should resolve these outstanding issues.

Future Management

- The flood management element of the scheme should be self-sustaining, maintenance restricted to ensuring the outflow pipes are not blocked. For the time being on-going monitoring is required to assess whether the spillway has been set at an appropriate height.
- The 5 hectares of wet grassland habitat are being managed in accordance with an HLS agreement on the holding. Once the sward has effectively established on the land west of the railway (having been sown with a mix of grasses suited to wet sites), the new habitat will be managed through summer and autumn grazing, with the aim of creating conditions suitable for breeding lapwing. The land east of the railway is not easily accessed by livestock and is therefore subject to an annual cutting regime to control the extent of rush growth. In the long term, the scrapes may require de-silting.



Re-profiling of Brook - before and after works

Benefits

HYDROLOGICAL	Re-connection of over 4 hectares of floodplain to the Meece Brook, with the capacity to attenuate some 4050m ³ of water.
HABITAT	<p>Creation of 3ha of wet grassland habitat including two scrapes. It is hoped that this will enhance the success of key wetland species, notably lapwing and yellow wagtail that have previously been recorded breeding on the farm.</p> <p>Enhancement of 2ha of rush pasture (including a further scrape), providing habitat more suited to snipe (again recorded on the farm).</p> <p>Enhancement of 335m of watercourse through re-profiling of banks to create bays, berms and shallow margins.</p>
FARM BUSINESS	<p>Successful re-application to Natural England means that the farm now has an HLS agreement. In addition to substantial assistance with capital costs, the agreement generates £2353 per annum, of which £1674 is directly associated with the improved wetland habitats (through options HK13 (Creation of wet grassland for breeding waders) and HK10 (Maintenance of wet grassland for wintering waders and wildfowl))</p> <p>Works on the adjacent arable land have improved its ability to be managed and therefore its potential profitability. Initial works have not proved entirely successful (see 'Issues' box) but this should be resolved by remedial works planned for summer 2010.</p>

Costings

Earthworks (inc materials)	£ 10,893	Natural England Grant (via HLS)	£ 7755
Remedial works	£ TBC	Landowner Contribution	£ Re-seeding costs
TOTAL	£ 10,893	Farming Floodplains for the Future	£ 3138 + TBC

[Prices excluding VAT]