CASE STUDY 7

DEEPMORE FARM

FARMING FLOODPLAINS for the FUTURE

Catchment	Penk (tributary of the Saredon Brook)
Holding Type	Arable
Existing Land Use	Rank meadow
Project Area	4.5ha [Total holding : 44.5ha]
Techniques	Flood storage ; meadow restoration

Rank meadow (before works)

Most northerly storage area, before and after works

Background

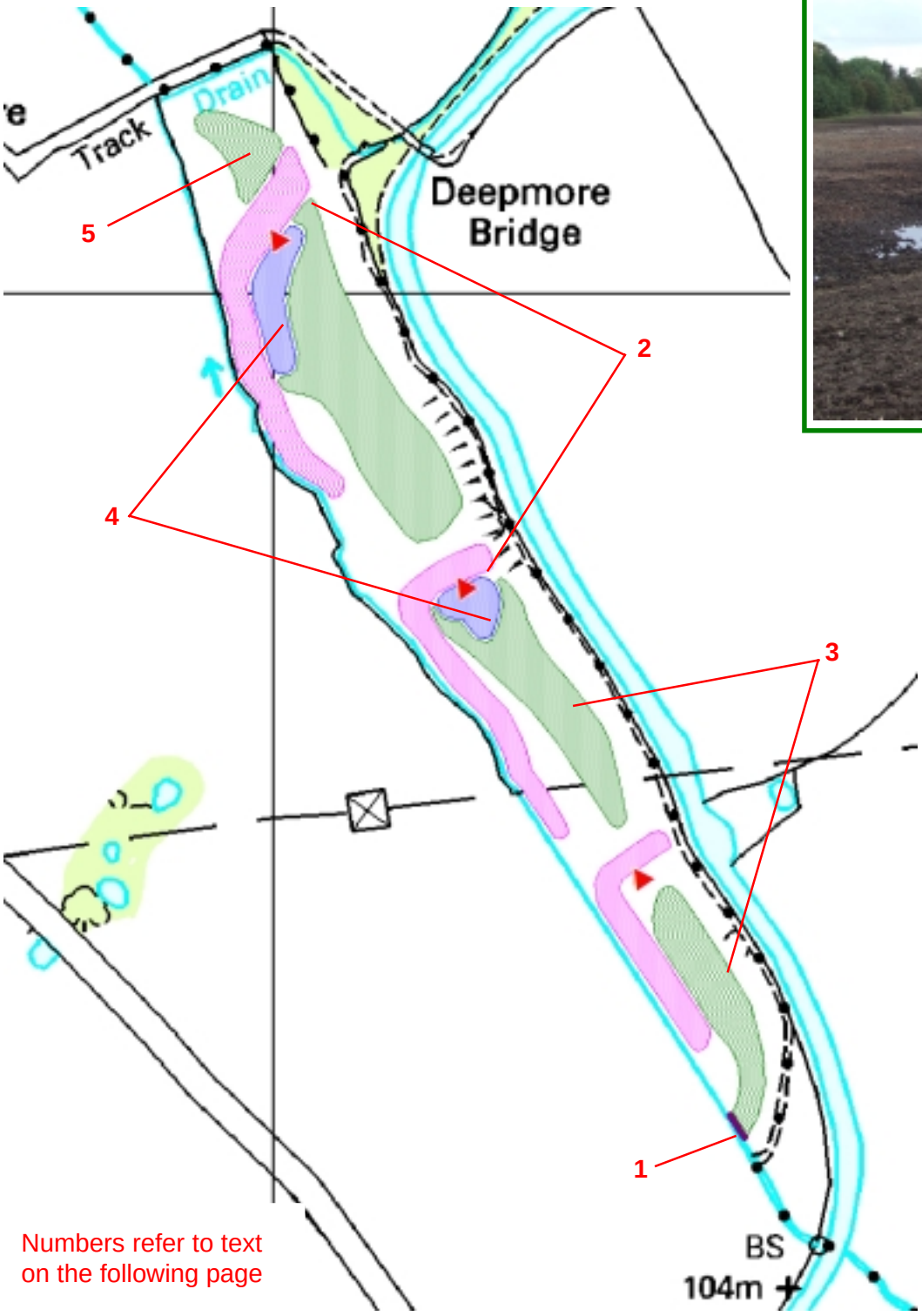
Deepmore Farm comprises a block of predominantly arable land growing cereals and oilseed rape, running down to the Saredon Brook (a key tributary of the River Penk). The exception is a narrow field (bounded on one side by a tributary of the Saredon Brook, and on the other by the Staffs and Worcester Canal), managed as a meadow.

The farms manager for the landowner, Severn Trent Water, has an appreciation of flooding issues from his work in the Trent valley. This project provided the opportunity to make more effective use of the field in question, while at the same time contributing towards corporate (and wider) environmental objectives, including the company's Biodiversity Action Plan.

The Project

Involving major re-profiling, but utilising the existing topography of the site, a flood storage scheme has been created, taking peak flows from the adjacent watercourse. The substantial earthworks also provided an opportunity to restore the meadow sward.

Newly-created pool



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Consultations.....

- Biological Records
- Natural England (re CSS agreement,derogation and funding; plus EIA Regulations)
- Environment Agency (re need for consent)
- National Grid (re power cables crossing the site)
- British Waterways (re weight limits on access bridges)

.....& Consents

- CSS derogation

1 The scheme is designed to function during peak flows in the adjacent brook (although engineered to 1.5 metres deep in places it is known to periodically run bankfull). An existing low spot in the bank towards the upstream end of the site has been extended to act as a spillway allowing water on to the site.

2 There is a natural and reasonably consistent fall across the field both from south to north and east to west, such that any water coming on to the site would readily flow back to the adjacent brook. In order to maximise flood management benefit it is necessary to retain water on the field as long as possible. This has been achieved through the construction of three bunds, running across the field and adjacent to the brook, effectively trapping water on the site. Tying each end of the bunds into existing ground level dictated their maximum height (ranging 0.6-1.2 metres). With the intention being to retain the field as hay meadow, managed with conventional tractor-mounted machinery, the bunds required a large footprint (5-10 metres) in order to generate sufficiently shallow slopes for easy management (this also meaning the bunds are aesthetically appropriate and scaled to the site). Each bund incorporates a 150mm diameter plastic outflow pipe to allow drainage of each flood storage area, and above this an overflow comprising a 5 metre wide depression in the top of the bund.

3 Material for construction of the bunds was won from site, lowering areas of higher ground (by a maximum 0.5-0.8 metres) in such a way as to guide water from the spillway through the site, and to increase storage capacity.

4 In order to enhance the habitat associated with the site, two of the three outflow pipes are set above ground level, such that upstream of the bund water is retained to create a pool and associated wetland habitat, at least on a semi-permanent basis.

5 Minor re-profiling was undertaken downstream of the final bund to ensure water is effectively guided back to the brook.

Spillway

Meadow Management & Restoration

The field is included in a Countryside Stewardship Scheme agreement on the holding, managed under the hay meadow (H3) option. However the way the prescriptions had been drafted meant that it was only being cut one year in three, with the result that the sward was rank, weed infested and species poor. Despite the poor quality of the grassland, its inclusion in a CSS agreement meant that a derogation and a scoping decision under the EIA (Agriculture) Regulations were required from Natural England prior to commencement of the works.

The proposed destruction of 50-60% of the existing sward as a result of the scheme, presented an opportunity for the restoration of a more species diverse sward. To promote this, topsoil was not stripped and replaced, with efforts made to bury it in the bunds where possible, so as to reduce nutrient status and potential weed burden. Based on soil analysis undertaken on completion of the earthworks, Natural England devised a site-specific seed mix (76% grasses (9 species), 24% wildflowers (10 species)). Works were completed in November, the site allowed to settle over winter, with natural regeneration and remaining areas of existing sward being sprayed off prior to sowing the following spring. Regular cutting is required in the first year to promote establishment and control weeds.

Benefits

HYDROLOGICAL	New flood storage scheme, capacity calculated to be 6750m^3
HABITAT	Restoration of 4.5ha of lowland meadow habitat, with diversity increased through the creation of two pools with associated wetland margins
FARM BUSINESS	No direct impact on the main farm enterprises. Although the field is included in a Countryside Stewardship agreement, it was in poor condition – the scheme has resulted in its restoration and increased the likelihood of it being transferred to a higher paid option when the agreement is renewed in to HLS. The scheme also contributes to meeting the utility company's environmental targets.

Future Management

- The flood storage element of the scheme should be self-sustaining, maintenance restricted to ensuring the pipes are not blocked. For the time being on-going monitoring is required to assess whether the spillway is set at an appropriate height.
- Once the new meadow sward has effectively established, it will be cut annually with arisings removed (and aftermath potentially topped at the end of the season) in line with the Countryside Stewradship prescriptions.

Central storage area, before and after works

Costings

Earthworks (inc. materials)	£ 14320
Seed	£ 3749
TOTAL	**£ 18069**

Natural England Grant (for seed only, via CSS)	£ 3749
Landowner Contribution	£ 1000 + re-seeding costs
Farming Floodplains for the Future	£ 13320

[Prices excluding VAT]