

CASE STUDY 5

IZAACK WALTON GOLF COURSE

FARMING FLOODPLAINS for the FUTURE

Catchment	Sow (Meece Brook)
Holding Type	Golf Course
Existing Land Use	'Rough' and ponds
Project Area	0.6ha [Total holding : 57ha]
Techniques	Floodplain restoration ; pond alteration ; woody debris



Existing on-line pond



Floodplain restoration,
before and after works



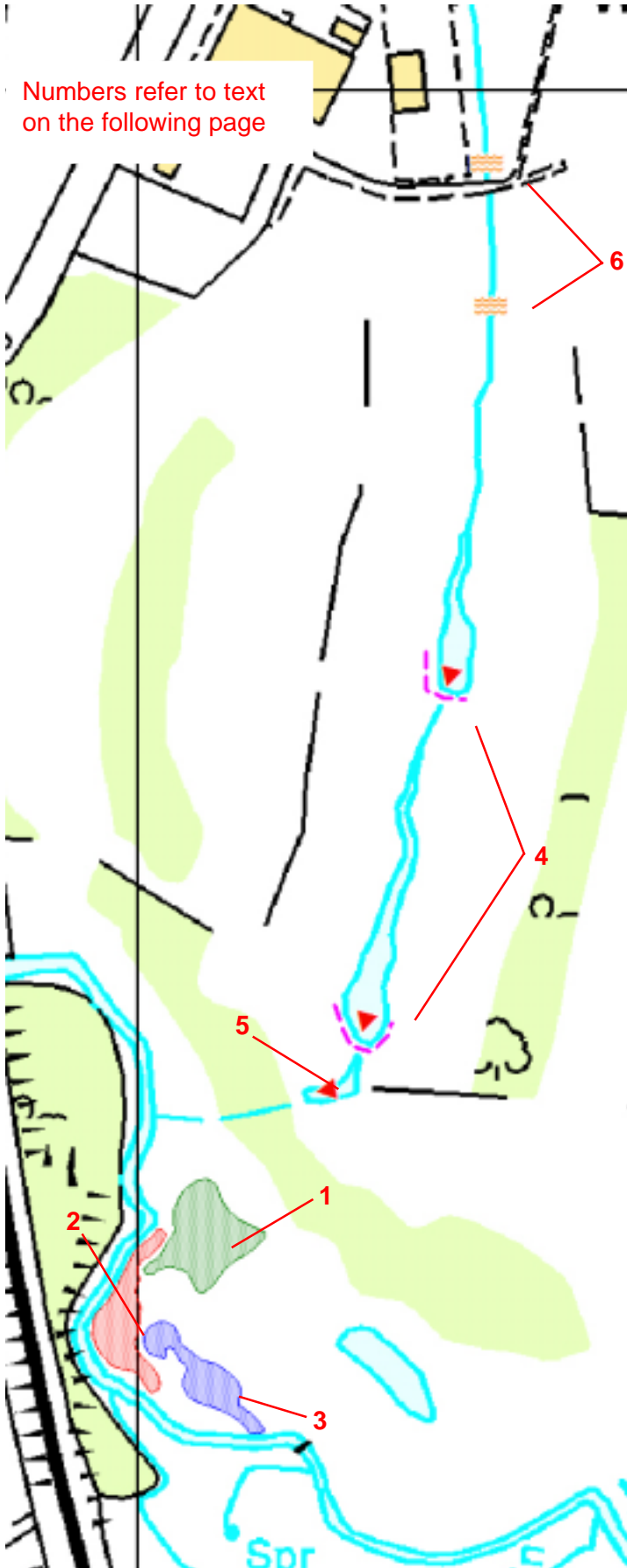
Background

The Izaak Walton Golf Course is a typically intensively managed course running down to the middle reaches of the Meece Brook (a major tributary of the River Sow). The course is crossed by a couple of tributary watercourses taking local drainage (including from the nearby motorway).

Staff from the golf course approached the project with a view to drawing up a scheme that would resolve a flooding problem associated with the golf course itself, but that would also assist in reducing downstream flooding issues.

The Project

A notable section of the fairway of the 13th hole is subject to flooding, lying within the floodplain of the Meece Brook and near to the confluence of one of the tributary streams. Water standing on this fairway meant that the hole could be unplayable for long periods of time. The scheme devised comprises a number of elements intended to increase the capacity of the floodplain and reduce the volume of water reaching the 13th fairway via the tributary stream (which incorporates 3 on-line ponds).



Consultations.....

- Biological Records
- Environment Agency (re need for consent)

.....& Consents

- Flood Defence Consent

- 1 The worst affected area of the fairway (approximately 0.2ha) was re-profiled to promote surface water run-off into the 'rough' occurring within a meander of the Meece Brook. [The golf club organised for this area to be cultivated and re-seeded.]
- 2 Historically mounds of earth, tree stumps and other materials had been dumped within the floodplain of the Meece Brook. Covering an area of approximately 750m², and upto 1 metre in height, this material was removed from the floodplain (and deposited in a large hollow elsewhere on the course). The area has thus been restored to 'natural' ground level, increasing floodplain capacity and promoting flood flows away from the fairway.
- 3 Existing low spots were accentuated to create 0.13ha of permanent wetland habitat within the floodplain, comprising two small, linked pools, with adjacent areas profiled to allow natural regeneration of associated marginal habitats.
- 4 The on-line ponds in the tributary stream have sufficient freeboard to allow storage of additional water. The outflows for the two largest ponds each comprise three 300mm diameter pipes. Under 'normal' flow conditions, the pre-existing pond water level is now maintained by a single pipe. The other two pipes have been altered, fitted with 90° bends (and on the downstream pond, where freeboard is greater, additional risers) such that once the capacity of the single pipe is exceeded, water is backed-up and stored in the pond upto the level of these other pipes, which then carry excess flow downstream. The storage capacity of both ponds has been enhanced with the construction of shallow bunds around their downstream ends. Depths of additional storage is 0.52m (upstream pond) and 0.8m (downstream pond), equating to volumes of 365m³ and 930m³ respectively.
- 5 The third on-line pond outflows through a 1metre diameter concrete culvert. To take advantage of potential storage, a section of railway sleeper was secured in the entrance of the culvert, set at a level to allow 'normal' flows to pass beneath. Once this space is exceeded water backs-up in the pond to the depth of the sleeper, before this is over-topped and water continues to flow downstream through the culvert.
- 6 Upstream of the ponds, the tributary stream flows in a deep, steep-sided channel. To increase use of the channel's capacity, debris dams have been installed in two locations. These comprise small logs and large branches (sourced from a local contractor) stacked in the channel (and dug into the banks to secure them) to form 'leaky barriers' upto 0.75 metres in height. While allowing flows to pass through them, the structures will restrict peak flows resulting in backing-up and temporary water storage. Care had to be exercised in locating the upstream dam to avoid potential adverse impact on a neighbouring landowner.



Debris dam



Third altered pond outflow

Future Management

- Subsequent to re-establishment of a suitable sward on the re-profiled section of fairway, this has returned to normal golf course management.
- The area of new wetland lies within a meander of the Meece Brook that was previously un-managed. In order to retain appropriate wetland habitat that is visible to users of the golf course, a suitable extensive cutting regime will be implemented.
- The revised pond outflows will require periodic checking to ensure there is no blockage.
- The debris dams may require occasional removal of finer trapped debris (which could act to excessively restrict flows), and in the longer term replacement of material or re-building may be necessary as the woody materials rot.

Benefits

HYDROLOGICAL

It is the combination of elements designed to slow flows and attenuate water that bring the hydrological benefits of this scheme. Cumulative flood storage capacity estimated at 2050m³.

HABITAT

Area of floodplain, totalling 0.21ha restored, including two ponds and associated marginal habitat, adding to the amenity of the golf course. Alterations made to existing ponds without adverse impact on existing associated habitat (notably reedbed).

BUSINESS

Although there was a short term impact on the golf course (in terms of use of the 13th hole), it is anticipated that in the longer term the fairway will be less susceptible to flooding and be playable for longer periods (potentially reflected in increased revenues for the club).



Re-profiling of fairway in progress

Costings

Earthworks	£ 2110
Materials (pipes)	£ 343
Debris Dams	£ Free
TOTAL	£ 2453

Landowner Contribution

£ 457

+ labour + fairway restoration

Farming Floodplains for the Future

£ 1996

[Prices excluding VAT]