

Appendix 1

Management Plan for the habitat restoration of the Boating Pond and Tumulus Field

May 2016

Restoration of the landscape, 2016-2017

1. The restored landscape, as shown on figures 1 and 2 at the end of the report, will consist of a large pond with a tree-covered island, bed of reeds and other wetland plants round the southern and western edges of the water, a mix of grassy and flower-rich meadows on Tumulus Field to the west, and a large grassy dam to the south. Paths will encircle the pond.

The pond

2. Vertical sheet piling will continue to form the eastern edge of the pond, but the edges of the pond elsewhere will be softer. Narrow beds of marginal vegetation will line much of the western and southern edges, as well as the island. These beds will be of reed; of reed and other marginal plants such as iris; or of marginal plants without reed. The beds will be permanently fenced on the landward side to prevent access to dogs, and temporarily fenced on the water side, although it may be necessary to retain the water-side fences for several years or even in perpetuity to maintain the vegetation: see below.
3. There will be several lengths of open, unvegetated bank (see figure 1) where it is proposed that there will be a 30cm vertical edge, secured with timbers, dropping into shallow water.

The island

4. The island will be accessible via a causeway. It will be surrounded by beds of marginal vegetation except at one point on the east side, where the original sheet piling will be retained. Besides the existing trees, four more trees and 12 shrubs will be planted. Any areas affected during the works will be re-sown with a seed mix containing grasses and wild flowers.

The dam and spillway

5. Six shrubs will be planted on the dam. Vegetation on the new faces of the dam and the spillway to the south will be established using pre-grown turf reinforced with a geotextile in the soil. The fences will be removed once the sward has established, which should be by spring 2017.
6. The Supervising Engineer has specified a species mix for the turf containing a high proportion of native grasses, with a small number of wild flowers. The dam will be subject to significant public pressure and in addition the Supervising Engineer has instructed that the dam and spillway be mown as often as

necessary to keep the sward to no more than 175mm high, although may be some latitude on the exact mowing regime. For these reasons the swards will become dominated by grasses, which can withstand such management, rather than wild flowers.

7. Wild flower turf will also be laid, and hard-wearing amenity turf on the face of the Bird Sanctuary causeway to the north, but both areas will be mown to keep the sward no higher than 175mm.

Tumulus Field

8. All areas of Tumulus Field disturbed by the works will be sown with mixtures of native plant seeds. There will be three different mixes: one containing just grasses, for heavily used areas; one containing grasses and low-growing wild flowers, for regularly used areas; and one containing a high proportion of wild flowers in the mix. Figure 2 below indicates where these three mixes might be applied, although the final plan will have to await until the new shape of the field has been created. Some areas in the works compound have not been stripped of top soil, for example along the route of a gas pipeline, and these will not be re-seeded or fenced except for any areas which have been affected by machinery. A temporary path through the area will be created along the route of the pipeline.
9. The seeded areas will be fenced until the sward is established, which is likely to take until summer or autumn 2017.

Paths

10. A hogg-surfaced path will encircle the pond close to the water line; from here the bank will mostly slope down to the beds of marginal planting. A hard-surfaced path will be laid about seven metres further up the slope on the western side of the pond, and there will be a footpath along the crest of the dam. The current path on the causeway between the Men's and Boating Ponds will be retained, but will then be half way up the south side of the new dam. In addition there will be two paths running east and west off the top of the dam; these will be of reinforced turf.
11. The island will be accessible via a hogg path on the causeway, but there will be no paths on the island itself.

Angling

12. Angling will continue to be permitted along the northern and eastern edges of the pond. There will be gaps left in the marginal vegetation along the new west and south sides of the pond and on the island, and some of these places will be suitable for angling.
13. Tables 1 and 2 provide a detailed list of tasks required for management of the area in 2016 and 2017.

Long term management

14. The sward on the dam and spillway will be cut several times a year as necessary to keep it relatively short.
15. A network of informal paths will be mown through the new meadows on Tumulus Field. The most flowery areas will be mown once a year, but it not all at the same time; for example, some may be cut in June and some later on. The areas with lower-growing wild flowers will probably be cut about every other year, depending on requirements.
16. The grassland which was not stripped of topsoil and did not need re-seeding will be managed as before the Ponds Project by mowing annually or every two years or so, as required.
17. The small pond, Tumulus Field Pond, will continue to be fenced.
18. The Boating Pond itself should require relatively little management. Aerators in the pond will be turned on when there is a danger of algal blooms forming or a drop in oxygen levels occurring.
19. The water quality in the pond will be monitored regularly, and the composition of the flowery meadow will be monitored annually.
20. Table 3 provides a detailed list of tasks required for management of the area from 2018 onwards.

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Tables

The tables below set list the management tasks required to establish and maintain the pond and the areas of the compound. It assumes that the engineering works will be completed in October 2016, the marginal planting has been installed, the trees and shrubs planted, and the turfing and seeding undertaken.

Table 1: Management in 2016

Area	Task	Expected Timescale	Notes
Tree saplings planted outside compound	Water; replant if required; ensure they are protected from damage	June 2016 onwards as required	Planted by CoL autumn 2015 on former tree lines above upper compound and near cycle track
Areas near site	Cut thistle, ragwort and common hogweed to reduce seeding	June-September 2016	Especially areas nearby on Tumulus Field and possibly also Small Tumulus Field

Table 2: Management in 2017

Area	Task	Expected Timescale	Notes
11 trees and 21 shrubs	Water; replant as required; ensure they are protected from damage	All year	As required.
Pond	Monitor water quality regularly	Spring onwards	
Pond	Undertake a full baseline survey of water quality	2018 or soon afterwards	A full baseline survey would allow comparison of the water quality with conditions before the project.
Pond	Turn on aerator	Spring onwards	As required if oxygen levels drop
Fencing round turfed areas	Remove fencing round areas when the sward is established and ready for public access	Spring onwards	Turfed areas on the dam and spillway should established by spring 2017 from May onwards,.

Area	Task	Expected Timescale	Notes
Faces of Boating and Bird Sanctuary dam and Boating Pond spillway, including side slopes	Mow whenever sward reaches 175mm for dam, 150mm for spillway; possible late cut to 50-60mm	Growing season	Requirement of Supervising Engineer.
Narrow strip of turf between water and path, north and west of pond	Cut to say 50-100mm.	Spring onwards	As required
Seeded areas	Cut and remove arisings	Spring onwards	Required if growth strong or flush of weeds: probably required by summer if not earlier
Re-seeded areas	Control thistle, hogweed, ragwort, bramble and possibly other invasive species	May onwards	Extent of these remains to be seen. Small amounts can be controlled manually, but greater amounts may need herbicide treatment.
Areas of compound which were not stripped of turf	Cut to 50-60mm and remove	Summer	As required
Route of gas pipeline	Mow informal path along route of gas pipeline	April onwards	As required
Fencing round seeded areas	Remove fencing round areas when the sward is established and ready for public access	Summer or autumn	Timing depends on successful establishment
Fencing round marginal planting	Possible removal of waterside fencing	October	Review need to retain for longer before removal.
All reseeded and turfed areas	Monitor sward establishment; re-turf or re-seed if required	Spring onwards	

Area	Task	Expected Timescale	Notes
Informal paths on dam	Mow	Spring onwards	A cut will be required just before public access is allowed, and possibly thereafter depending on the amount of use
Tumulus Field area of compound	Mow informal paths through area	Summer/autumn	Once access is allowed, new informal paths need to be mown through the sward.
Marginal planting	Monitor establishment	October 2016 onwards	Any that fail to establish will need replacing
Turfed and seeded areas	Monitor sward establishment	October 2016 onwards	Any areas which fail to establish will need re-turfing or re-seeding

Table 3: Management in 2018 and thereafter

Area	Task	Expected Timescale	Notes
11 trees and 21 shrubs	Water	Spring onwards	As required until no longer needed.
Pond	Monitor water	All year	
Pond	Undertake a full baseline survey of water quality	Spring/Summer	A full baseline survey would allow comparison of the water quality with conditions before the project.
Pond	Turn on aerator	Spring onwards	As required
Dam faces and spillway, including side slopes	Mow whenever sward reaches 150mm (spillway) or 175mm (dam); possible late cut to 50-60mm	Spring onwards	Requirement of Supervising Engineer
Narrow strip between water and path on north, west and south sides of pond	Cut.	Spring onwards	As required

Tumulus field areas	Cut and remove	May onwards	Mow paths as required. Cut other areas at differing times; specification to be drawn up one planting plan has been agreed.
Fencing round wetland planting	Possible removal of waterside fencing of marginal planting	As required	Review need to retain for longer before removal.
All reseeded and turfed areas	Monitor sward	Summer	
Wetland planting	Monitor	Spring on	

Figure 1: Overview of pond, showing paths and marginal planting

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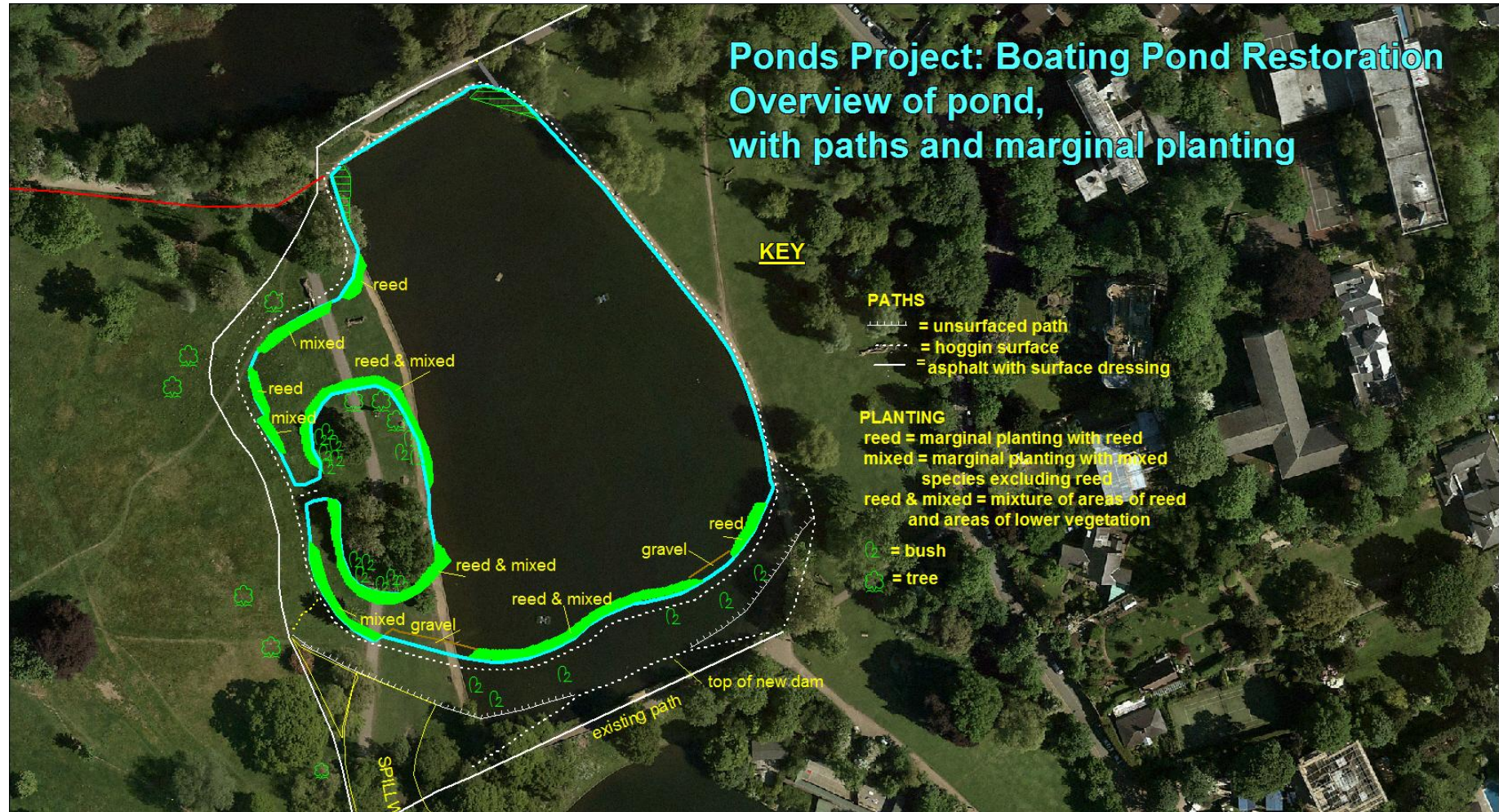


Figure 2: Proposed restoration of Tumulus Field

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