

Appendix 1

Management of the Highgate and Hampstead Ponds

Introduction

This report summarises the proposed management of the Highgate and Hampstead Ponds following completion of the Hampstead Heath Ponds Project. It does not cover management of the wildflower meadows on Tumulus and Pryors Fields.

Part 1 describes the new Ponds Project habitats and outlines what management is required, both during establishment phase and subsequently, to maintain them. Part 2 considers management of the ponds which is unrelated directly to the Ponds Project.

Part 1: the new Ponds Project habitats and their management

A range of new habitats have been created through the Ponds Project; this section describes them and outlines their proposed management. Their locations are listed in Table 1 below and they are mapped schematically in figures 1 and 2.

The new habitats

Marginal vegetation

Beds of marginal emergent vegetation now line edges of ten ponds, adding nearly two hectares of wetland planting to the Heath. They are composed of reed alone; of reed plus other marginal plants such as sedges and purple loosestrife; or of marginal plants without reed. The beds of vegetation are currently fenced to prevent access to people, dogs and waterfowl; the latter would graze the vegetation and prevent good establishment.

Marginal vegetation is a very important wildlife habitat which had been substantially lacking from the Heath's ponds. It benefits a wide variety of species, including fish, birds, invertebrates and amphibians, harbours beneficial microorganisms and also filters the water, maintaining good water quality. The plants also soften the appearance of the ponds, creating a more attractive and natural look.

Pools and scrapes and streams

Pools and wetland scrapes were created above the Ladies Pond, at the Bird Sanctuary and south of the Catchpit dam, and a new embayment was made at the Bird Sanctuary to extend the reedbed. These will all provide excellent habitat for wetland wildlife. About 60 metres of stream formerly piped below ground were brought to the surface.

Aerators

Aerators have been installed in all the ponds and these will also improve water quality by raising oxygen levels, especially in warm weather, and reducing algal growth.

Grassland and wild flowers

Most of the grassland of Hampstead Heath is heavily dominated by grasses, and disappointingly lacking in 'wild flowers'. The Ponds Project sought to increase species diversity where possible. It was a requirement of the Supervising Engineer that turf was layed on the spillways and most of the dam faces, and a special turf was used which contained 20% wild flowers seeds 80% native grasses.

It is also a requirement that the dam faces and spillways be mown sufficiently frequently to maintain a relatively short sward, and this, as well as public pressure, will reduce the number of plants flowering. However, the lower-growing species, such as red clover and bird's-foot trefoil, should be able to bloom where footfall is not too great, providing nectar for bees, moths, butterflies and other insects. A herb-rich seed mix was used instead of turf on the slopes of the Boating Pond Island; this does not require frequent mowing.

Over 600 wild flower plugs and bulbs were planted at Stock and Hampstead no. 1 Ponds. Further planting of wild flowers is anticipated at the Ladies Pond.

Trees and shrubs

About 50 trees and 130 shrubs were planted, many of them close to ponds. All are native species apart from two London planes replacing two which had to be felled at Hampstead No. 2. They included oak saplings which were transplanted from the Heath, maintaining local provenance, and elms which are resistant to the Dutch Elm Disease which ravaged the tall elm trees common on the Heath until about the 1970s. The new trees will provide landscape and wildlife benefits.

Hibernacula, wood piles and bat boxes

Two amphibian and grass snake hibernacula were built at the Bird Sanctuary, and brash and log piles were constructed by four Ponds. Twelve bat boxes were put up a further eight are to be added in early spring 2017; some of these are near ponds.

De-silting

Silt was removed during the Ponds Project from the Stock, Ladies, Men's, Viaduct and Mixed Bathing Ponds. The Viaduct Pond was particularly badly silted, with especially shallow water even threatening the continued existence of the northern section. The substantial amounts of silt and logs which were removed should result in notable improvements to the ecology of this pond.

Table 1: Summary of new pond-related habitats by location

Location	Marginal vegn, m ² approx.	Flowery turf on dams and spillways etc.	Wildflower meadows	Tree / shrub planting	Wildflower plugs and bulbs	Trees and shrubs	Hibernacula and brash and wood piles	Streams, channels, pools and scrapes	Other
Stock Pond	44	√			√		Brash/wood piles	Section of stream brought above ground	
Ladies Pond	40	√		√	√ (planned)	√		Pools and scrapes	
Bird Sanctuary							2 hibernacula plus log piles	Scrapes and 30m of new channel	New embayment for reedbed expansion
Boating Pond	670	√	√ (island slopes)	√		√			
Men's Pond	228			√	√	√			New wet bay at NW corner
Highgate no. 1 Pond	96	√							
Vale of Health Pond	40	√					Brash/wood piles		
Viaduct Pond	56	√		√		√			Rock rolls installed to hold back marsh
By Catchpit Dam	10	√		√		√		New seasonal pond; section of steam brought above ground	New silt trap
Mixed Pond	208	√		√		√	Brash/wood piles		Rock rolls to hold back marsh
Hampstead no. 2 Pond	94			√		√			Further small reedbed to be planted near platform
Hampstead no. 1 Pond	276	√		√	√	√			
Other									12 bat boxes installed near ponds, 8 more to be added

Figure 1: The new Ponds Project habitats on the Hampstead chain of ponds (not to scale)

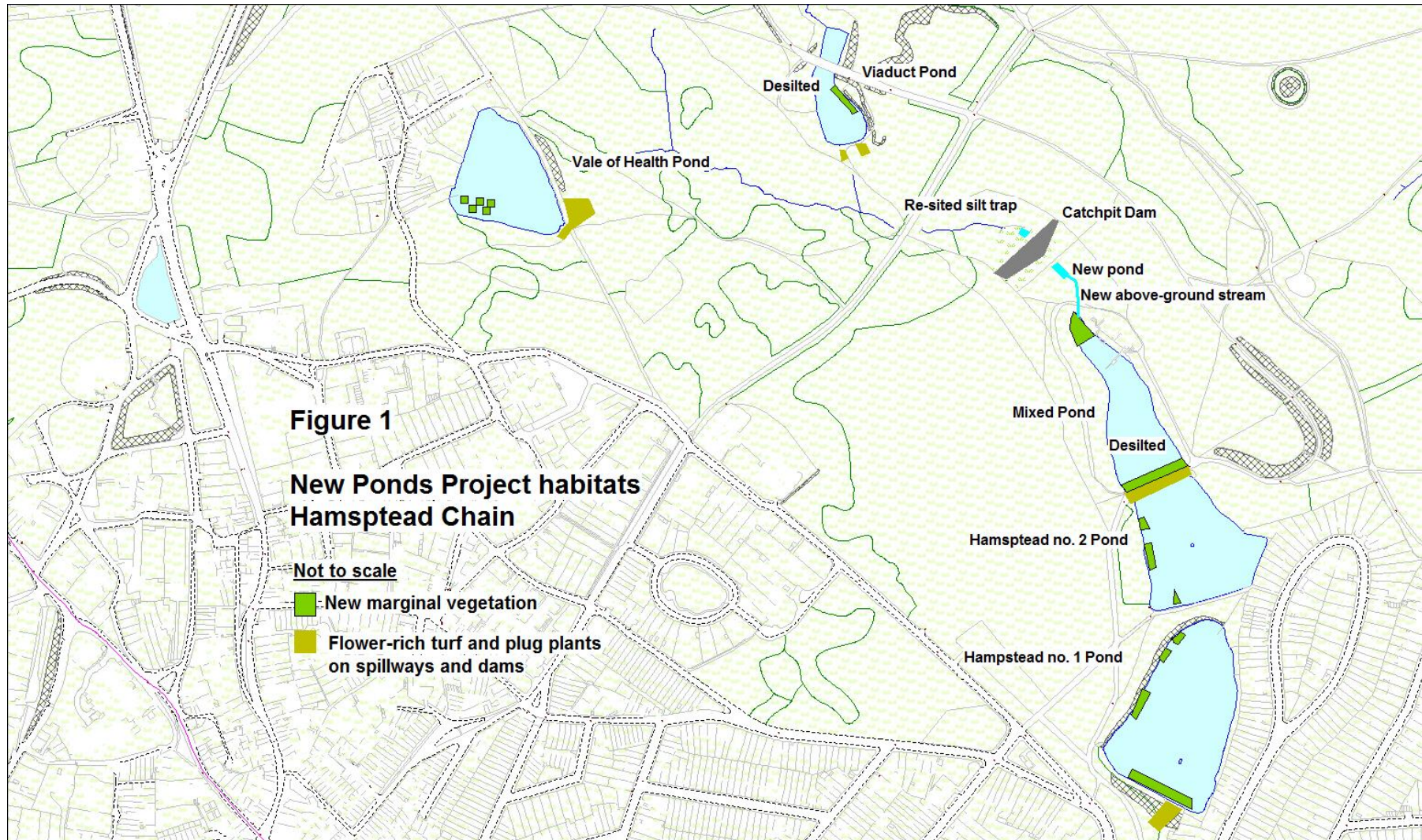
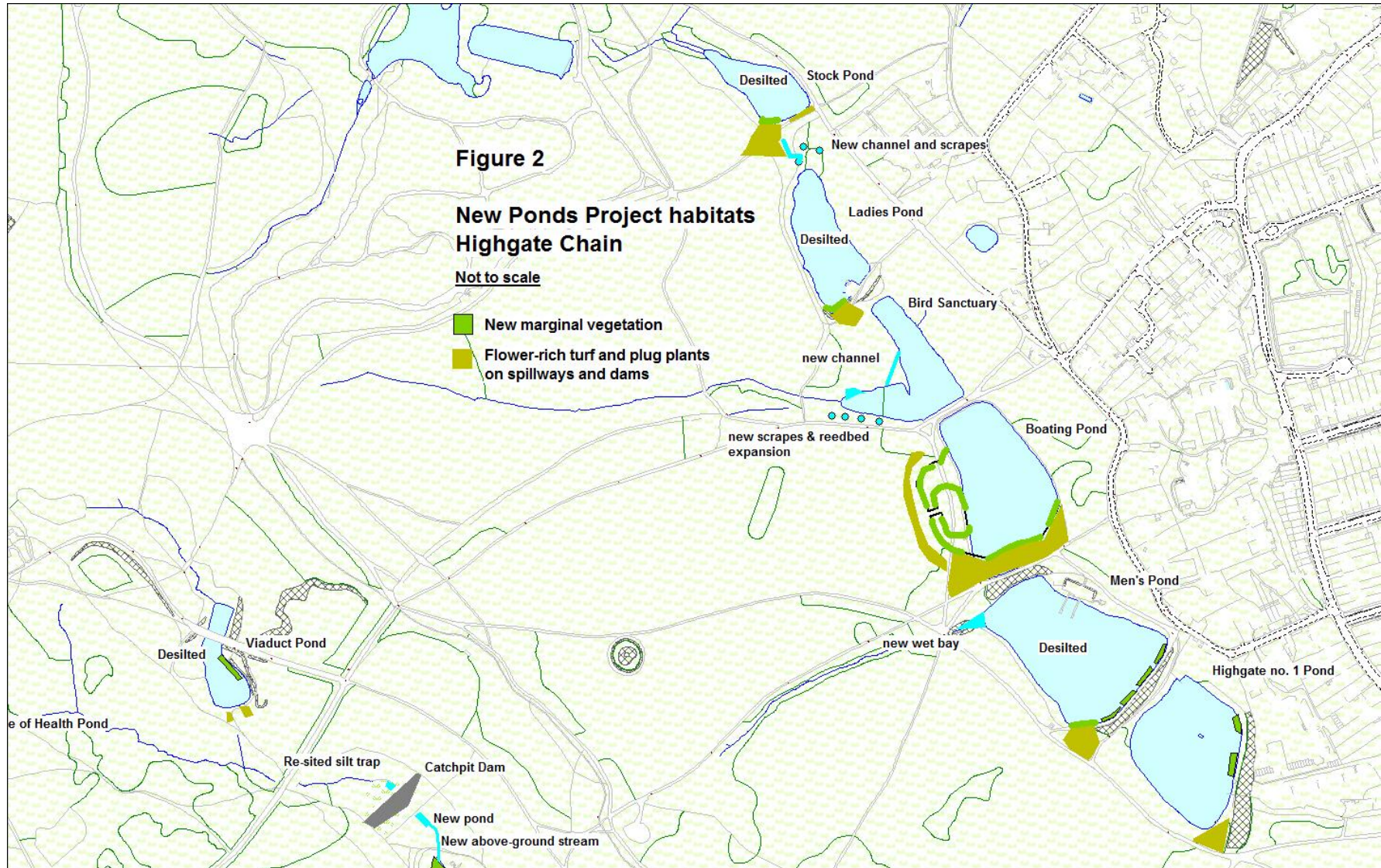


Figure 2: The new Ponds Project habitats on the Highgate chain of ponds (not to scale)



Management of the new ponds-related habitats

Monitoring

All the new habitats need to be monitored, so that any problems can be addressed, such as weed growth and plants or seed mixes failing to establish. Walk-over surveys will be made during the establishment phase; detailed quadrat surveys may be more useful later on. The on-going long-term programme of monitoring of amphibians will be extended to suitable new wetland habitats.

Water quality is monitored regularly in all the ponds affected by the Ponds Project. Visual checks are made weekly throughout the year, and oxygen levels are measured weekly during the warm months. This programme will be continued. A fuller baseline survey was undertaken in 2013, before works began, and this should be repeated in 2020/21 or soon afterwards to assess the impact of the works on water quality, macro-invertebrates and aquatic macrophytes.

Marginal vegetation

In the first 1-2 years, any gaps in the aquatic vegetation will need to be replanted by the contractor.

Both the land and water sides of the beds of marginal plants are currently fenced to prevent access by dogs, people and water birds, apart for two gaps at the Boating Pond cut to allow access to the island for swans. The landward fences will need to be retained, but ideally some fencing on the water-side of the wetland areas should be opened up or removed once the vegetation is established. However, caution is required: fencing round the older reed beds on the Boating Pond was temporarily taken away some years ago, resulting in serious erosion of the vegetation by dogs and water birds, and the fence had to be replaced. As a trial, in 2017 it is proposed to open up panels in waterside fencing where the vegetation is well established, for example at the Men's Pond. If this does not result in too much damage from grazing by birds further panels will be removed.

Over the years, plant remains will gradually build up in the reedbeds, raising the soil levels. This is a natural process: shallow reedbeds are not permanent habitats and dry out unless managed. The habitat is degraded as the aquatic vegetation loses its vigour and is gradually replaced by plants of drier places, such as willow and alder, resulting in a loss of value to wildlife, such as amphibians and aquatic invertebrates. Thus a long term programme of occasional rotational cutting back the vegetation, removing inappropriate species such as shrubs and trees. Eventually re-excavating the reedbeds will be needed. At this stage it is impossible to determine just when this will first be necessary or the required frequency, but for comparison the regime for the Bird Sanctuary reedbed is an 8-year rotation.

Streams, channels, pools and scrapes

From time to time open water will need to be maintained in channels, pools and scrapes by removal of some of the vegetation as required. Silt removal will also be needed to maintain water depth, especially in the shallower features. A slow flow of water is ideal to reduce erosion and sedimentation.

Aerators

Aerators will be maintained in good working order. They will be turned on as required when water quality has been or is likely to decline, e.g. in hot weather or after heavy rainfall.

Wild flower turf, seeded areas and plugs

The Supervising Engineer has specified a complex regime for cutting the wildflower turf laid on the spillways and dams. This varies from a single cut in late spring/early summer to up to ten cuts through the growing season, every time the grass reaches 175mm in height. It is hoped that this programme can be rationalised and the frequency reduced in some places.

The slopes of the Boating Pond Island were seeded with grass and wild flowers. Careful management will be needed in the first couple of years, 2017 and 2018. If the seeds do not germinate well they may need resowing, and additionally there may be problems with unwanted invasive species such as creeping thistle, which will have to be controlled by pulling or cutting as herbicides cannot be used close to water. Subsequently the slopes will be cut once a year between June and September as part of the Heath's annual grassland cutting programme. More intensive cutting may be required if creeping thistle is pervasive.

Crocoshia, also known as montbretia, has colonised an area just below the stilling basin at the Ladies Pond, its corms having been accidentally distributed from nearby during earth moving operations. This non-native plant can be invasive and efforts will be made to reduce it.

Trees and shrubs

Planted trees and shrubs will need to be watered until they are established, and some may not survive and need replacing.

Hibernacula, wood piles and bat boxes

Hibernacula should require little maintenance apart from annual cutting back of the south face. Wood piles will be built up as they gradually rot and subside, and new ones will be constructed. Bat boxes will need checking annually.

The Boating Pond Island

Currently no access is permitted, but this does not necessarily have to be the case once the vegetation has established. Discussions are currently in progress on the best option: public access to all; all the island reserved for wildlife, with no public access; or part fenced for wildlife and part with public access with or without dogs. Long term management depends on what option is chosen. If part is reserved for wildlife, additional features may be added, such as bird and bat boxes, wood piles, hibernacula and shrub planting.

The bottom edges of the causeway are currently muddy, and it is planned to plant marginal vegetation here in spring 2017.

Part 2: Other management issues

Management issues concerning the ponds which not just related to the Ponds Project are discussed here.

Angling

Angling is permitted at the Men's, Model Boating, Vale of Health, Viaduct and Hampstead No. 2 Ponds. An overall angling policy is intended, to help clarify issues such as the rules for fishing, stocking/restocking and fish health.

Control of invasive species

Himalayan balsam is present near most of the ponds, and needs control by regular pulling or cutting in the growing season. Giant hogweed grows in the Bird Sanctuary and is cut below ground annually, and Japanese knotweed grows along the Stock Pond causeway, where it is also controlled. There is now an area below the Ladies Pond spillway where *Crocsmia* is abundant and this also needs control.

Dogs

Dog swimming in the ponds can disturb wildlife, particularly swans and waterfowl, disturb silt, and cause erosion of the banks. Recognising this, dog swims are provided at Highgate No.1, Hampstead No.1 and the Vale of Health Ponds. However, further consideration needs to be given to the extent of dog access to the other ponds across the Heath.

Shading and leaf litter

Several of the ponds are heavily shaded by nearby trees. Resulting leaf litter causes siltation and the shading restricts marginal and aquatic vegetation which would otherwise oxygenate and filter the water and provide wildlife habitat. Trees and shrubs are judiciously cut back from some of the more affected ponds, as detailed in Table 2 below.

Siltation

Approximately 1000m³ of silt was removed from the Mixed Bathing pond as part of the Ponds Project but it was not fully de-silted. Swimmers are still experiencing higher than expected levels of silt in the swimming area and the pond would benefit from further de-silting in the future. The possibility of de-silting Hampstead No. 2 Pond is being considered using funds identified in the Cyclical Works Programme, and revisiting the Mixed Pond will be considered as part of that project.

Table 2: Management unrelated to the Ponds Project

This table identifies management works associated with the Hampstead and Highgate ponds and surrounds which is not directly associated with the Ponds Project. All these items are included in the 2017/18 Annual Work Plan. Additional items for the Bird Sanctuary are contained in a management plan which will be presented to Committee .

All or several ponds	
Manage routine incidents, & assist Wildlife Rescue experts in dealing with distressed water fowl. Assist Constabulary in preventing & investigating dog attacks	Every year
Reinstate dragonfly monitoring scheme	Every year
Use a boat to check for and remove line & tackle & other debris during the fishing season	Every year
Ensure fishing regulations are understood & adhered to & assist Constabulary in checking permits & rod licenses. Update signage	Every year
Try to increase marginal vegetation on the ponds	Every year
Check & clean pond inlets and outlets, especially before predicted storms	Every year
Monitor ponds for general problems and algae scums, and ensure warning notices are promptly put up & taken down	Every year
Alleviate problems such as duckweed blooms and oxygen crashes when required	Every year
Control invasive species such as Himalayan balsam, Japanese knotweed, giant hogweed, crocosmia and where necessary, creeping thistle, bramble, common hogweed and ragwort	Every year
Stock Pond	
Continue to selectively thin & lift bankside trees NE of the pond to increase light levels & reduce leaf litter; remove dead elms	As required
Clear round wild service tree saplings	Every other year
Re-open canopy above northern marsh area. Remove seedling alders and dogwood	Every few years as required
Cut back scrub encroaching onto northern marsh area. Cut back to dead hedge	Every other year
Ladies Pond	
NW edge of pond: remove woody debris from water & coppice 15m section of bankside to encourage emergent vegetation & reduce debris encroachment into the swimming area	Annually

Cut northern wet meadow area to prevent scrub encroachment.	Annually
Bird Sanctuary	
Multiple management tasks to manage the important habitats of the pond and surrounds: management plan currently in draft	Various
Boating Ponds	
None	
Men's Pond	
Maintain windows onto pond at trig points	Annually
Highgate no 1 Pond	
Maintain 2 open viewing windows and prevent shading of marginals by coppicing willows on 3 year rotation. Windows should be re-coppiced if required to maintain view.	2 sections a year, rotation of 3 years
Make access improvements to dog swim	2017 then as required
Maintain windows onto pond at trig points	Annually
Vale of Health Pond	
None	
Viaduct Pond	
On south-west side of Viaduct pond, cut back hedge to top of fence below bench to create view of pond	Annually
Cut bramble and blackthorn suckers etc. in grassland by hedge	Annually
Coppice willow and silver birch and raise alder crowns along east bank, especially where impeding growth of emergent vegetation	Every 5 years
Remove bramble and saplings from gorse area east of Viaduct. Coppice any degrading gorse, and consider planting more	As necessary
Weed planted heather on exposed east bank	Annually
Mixed and Hampstead Nos. 1 and 2 Ponds	
None	

Conclusion

- Hampstead Heath Ponds Project has significantly enhanced the habitats associated with the ponds
- Restoration will require careful monitoring to ensure problems and failures are identified and corrected
- A range of broader management issues will need addressing
- The 2017/18 Annual Work Programme and Projects Plan will be updated to include the additional works identified in this report.