(Draft) HAMPSTEAD HEATH PONDS AND WETLANDS PLAN

Contents

1. Why a plan?

1. The ponds on Hampstead Heath have diverse histories, usage and differing water quality. They are an integral part of the historic landscape, and provide great conservation and biodiversity value, as well as a recreational resource for Heath users. Longer term the ponds themselves require planned periodic management interventions, such as desilting, for them to continue as open water bodies. This work has been carried out periodically on the three bathing ponds, and some of the smaller water bodies to maintain them as open water. The continued desilting of the larger ponds will be increasingly challenging to fund and there is a requirement to explore alternative options to desilting operations.

2. Alongside the management of silt accumulation there are other planned conservation and habitat management operations to maintain the ponds themselves and their immediate environs. These are encapsulated in the Annual Work Programme (AWP) and Compartment Management Plans (CMP). However, a critical part of this work is ecological monitoring.

3. Three of the ponds are classified as large raised reservoirs under current legislation, in the form of the Flood and Water Management Act 2010. As such there are compliance duties that require attention including biannual inspections, the recording of detailed information about the reservoir such as water levels and depth, volume, dam crest height, and details of leakages and repairs as well as monitoring of the dam structures and flood alleviation measures.

4. The management of water quality for aquatic fauna, and recreational use is a major component of this Plan. A balance needs to be struck between the recreational usage of the ponds and the nature conservation value of the waterbody, ensuring the ponds remain an enduring feature for both public enjoyment and biodiversity.

1.1 Plan outcomes

5. The new Pond and Wetlands Plan aligns with the Heath Vision and the Hampstead Heath Management Strategy 2018 – 2028 strategic outcomes.

    - Conservation of the principal ponds and wetlands as landscape features for the next 20 years.
    - Increased biodiversity value on all the principal ponds and wetland habitats.
    - A sustainable and affordable long-term plan for managing silt build up in all ponds.
    - Resolution of existing conflicts between biodiversity and recreational aspects of the ponds and wetlands habitats on Hampstead Heath.

1.2 Plan scope

6. This plan aims to highlight some of the issues involved in managing the Heath ponds with a focus towards the biodiversity considerations. The ponds are also an important recreational resource and a balance between the sometimes-competing aspects is sought.
    - This plan does not go into detail regarding the health and safety aspects of the ponds which are covered in a separate Water Safety Policy and associated operating procedures.

- The plan also doesn't discuss the bathing ponds in detail, as this has been addressed in the Swimming Review dated March 2020.

7. Whilst recommendations have been made, further analysis and research is required to make detailed decisions on aspects such as sediment management.

2. Introduction to ponds on Hampstead Heath

8. Hampstead Heath contains over 40 distinct waterbodies (Appendix 2) ranging in size from small ephemeral pools to large reservoirs. All the waterbodies are believed to have been created artificially either through deliberate actions or as a result of previous activities, such as sand digging on the Sandy Heath. In terms of size they can be broadly allocated to 3 different categories (large, medium and small). They can be further categorised by their current usage which includes conservation, amenity, formal and educational. All the waterbodies also have some degree of wildlife value, which will be a major consideration in this plan. In addition, the English Heritage managed Kenwood Estate has 2 large lakes and some ephemeral pools, including a sphagnum rich pool area. These ponds are directly connected to Highgate chain of ponds through a stream, so need to be considered in any future strategy.

2.1 Larger reservoir category ponds

9. Thirteen larger ponds including 3 large raised reservoirs, can be found across Hampstead Heath, the majority of which were created by the damming of tributary streams between the late seventeenth century (Hampstead Water Company was established in 1692) and early nineteenth century. There are the Highgate Valley ponds, formed along one tributary branch of the River Fleet, including two at the top of this chain on English Heritage land at Kenwood – Wood Pond and Concert (or Thousand Pound) Pond.

    - Stock Pond
    - Kenwood Ladies' Bathing Pond
    - Bird Sanctuary Pond
    - Model Boating Pond
    - Highgate Men's Bathing Pond
    - Highgate No1 Pond

10. To the west are the Hampstead Valley ponds, formed along another tributary branch of the River Fleet. Starting at the top of the chain, these are:

    - Vale of Health Pond
    - Viaduct Pond
    - Hampstead Mixed Bathing Pond
    - Hampstead No2 Pond
    - Hampstead No1 Pond

11. Over on West Heath and Golders Hill Park is another chain of ponds, formed along a tributary of the river Brent. These are:

- Leg of Mutton Pond
- Swan Pond

12. The larger ponds will form the focus of the Ponds and Wetlands Plan, largely due to the diversity of usage as well as the more extensive management requirements involved.

2.2 Medium non reservoir category

13. This includes the more formal ponds such as Whitestone pond and the Lily pond in Golders Hill Park but also the larger of wildlife ponds across the Heath Extension and Sandy Heath. These ponds to some extent have similar management issues as the larger ones including desilting issues but will generally have less amenity use.

2.3 Smaller ponds

14. The third category of ponds are a scattering of ponds which are too small to have been allocated any formal or recreational use and include several which have been created in recent years specifically for wildlife value including the Tumulus and Cohens fields ponds. Educational ponds also come into this category such those in the Old Orchard Garden and Secret Garden.

15. The main concern with these ponds is that as they are small, they could succeed in doing what all ponds are trying to do, that is, turn into land, in a relatively short time. Some of these ponds are ephemeral in nature but can often have a greater wildlife value than the larger lakes. As such maintenance of and opportunities to increase the number of these smaller waterbodies is desirable.

3. Pond management issues

3.1 Eutrophication

16. Most of the Heath's larger waterbodies are classed as eutrophic (nutrient enriched) or hyper-eutrophic (hyper nutrient enriched). That is, they all have a great deal of nutrients in the water column and sediments which can aid plant/algae growth. These nutrients are from a variety of natural (leaf litter, plant recycling, bird faeces, spring inflows and meteorological etc.) as well as human sources (including fishing bait, dog faeces, drain inflows from the Heath and neighbouring properties, pollution from sewers, fertilisers from garden run-off and bread associated with bird feeding). This is not a new phenomenon and records show the ponds have been nutrient enriched for at least this century and likely for large parts of their history. The nutrients will remain in the pond and are only likely to increase as time goes by unless reductions in inputs are achieved or removal is undertaken as nutrients stored in the sediments can persist for decades. Plants and algae are very good at taking up these nutrients and growing extremely rapidly, particularly when conditions are conducive such as warm weather, little disturbance and good water clarity. These conditions can change from year to year and can result in large differences in algae or plant growth. Some ponds can appear visually to be relatively unchanged but can have greatly differing water chemistry, oxygen levels and indeed algal growth from one year to the next.

17. Some of the symptoms of the elevated nutrient levels can include:

- Fish deaths through a reduction in oxygen levels. This can occur particularly after the rapid dying off of algal blooms or plants.
- Invasive vegetation growth, such as duckweed ‘carpets’ or other invasive plant growth including New Zealand water fern and crassula growth. These can block out light and cause oxygen crashes and the death of other pond vegetation.
- Water quality issues on bathing ponds such as algal blooms some of which may be Blue-green algal blooms.
- Visually ‘unattractive’ proliferations of blanketweed.

18. A 2006 hydrology consultancy report indicated that dog faeces may be a major contributing factor to nutrient enrichment with up to 95% of phosphorous loading from this source.

3.2 Sediment levels

19. All the ponds on Hampstead Heath would eventually revert to land if no intervention was to take place, although the timescale of this vastly varies between ponds. This would of course not only impact the ponds ecology, but it’s uses as an amenity resource. Different ponds may require interventions at shorter time intervals than others. Sediment is also a sink/store for nutrients which has been briefly discussed above.

20. Sediment removal is not necessarily an ecological issue/decision and amenity and visual appearance may be more of a priority. For instance, it may be ecologically beneficial to allow a pond or water body to silt up in order to increase the extent of reedbed for example.

3.3 How much is too much sediment?

21. This is not a simple question to answer as each water body functions differently, has a different profile and usage.

- It may be possible to define too much sediment as when it interferes with its amenity use or is becoming detrimental to the pond’s ecology? However, without knowledge of current siltation rates or even current pond profiles this decision is limited to a visual or subjective appraisal and future planning and budgeting becomes difficult.
- Desilting can of course improve water quality but is largely done to prevent a pond converting to dry land. Desilting for ecological reasons requires a good deal of analysis and monitoring/testing to see whether changes are taking place. Desilting can itself be detrimental to pond ecology and often the pond can greatly change in character afterwards. Thus, unless desilting for amenity reasons then it may be best to do on ponds that have very little ecological value or have lost that value.
- How far can a pond be allowed to silt up before action is taken? Whilst a pond may have a huge quantity of silt it may still be deep enough to swim in for example. However, large volumes may be unmanageable to remove in terms

of cost, time taken or available drying space if allowed to reach a certain level.
- In order to be able to decide which ponds require sediment removal further baseline Bathymetric surveys are required.

3.4 Bathymetric analysis 2019

22. Bathymetric analysis has recently been completed on the Heath pond chains. The aim of this was to determine current depth levels as well as an indication of the sediment volumes established within the pond. It should be noted that the sediment volumes can only be used as a rough estimate, and they are based on bathymetric analysis undertaken as part of the Ponds Project. This will aid long-term planning and allow for more informed decisions. A PhD student is currently undertaking research work on Highgate No.1 pond which may give an idea of the sedimentation rates and thus give an idea of the rate of succession.

23. Table 1 (page 8) gives a summary of the sediment levels in the larger ponds and an estimated cost if all the sediment was to be removed. It is not usually possible to remove all the sediment from within a water body unless the pond is drained, and the sediment levels can only be considered as a rough guide as can the costs. Draining ponds, whilst allowing for a greater volume of sediment to be removed, will have a major temporary impact on the aquatic life using the ponds. Fish would need to be relocated and the lack of water can be detrimental to the aquatic invertebrates' present.

24. Drainage of the Hampstead Heath ponds was the method employed throughout the 20th Century and the Highgate Men's Bathing Pond was the last pond to be completed by this method in 1992. Whilst the aquatic ecology is shown to recover quickly, the ponds are also not available for amenity use during and for some time after works. The Highgate Men's Bathing Pond was closed for at least 6 months with part of this time allowing for the pond to refill. Recent desilting works as part of the Hampstead Heath Ponds Project and more recently have employed either suction dredging or larger digging equipment floated on pontoons. Whilst reducing the time taken for the works, these methods are not usually able to remove the same quantities of sediment and underwater obstructions can further reduce the effectiveness of such methods. The future methods for each pond will thus depend on many factors and are likely to be pond specific.

25. The rows highlighted yellow are subject to review and are awaiting an update with regards to the volumes removed as part of the Ponds Project.

26. It is proposed to desilt the Swan, Lily and Water Garden ponds in the winter of 2020/21. Whilst resources are allocated annually for desilting works, the estimated costs above indicate that if full desilting is required on the larger ponds then a capital bid would be required to carry out the works.

27. Figure 1 (page 9) shows an example of the maps produced in the recent surveys. As well as giving an idea of depth profiles for pond management they also give updated profiles for health and safety aspects of each site.

28. Figure 1 also gives an indication of the natural succession of the ponds to drier land. The original mapped outline of the pond is shown in light blue and the

current depth profiles in the shaded colours. Although, the depth equipment used was limited to a depth of approximately 15cm and some of the areas were inaccessible, the map above shows much of the eastern side of the pond is no longer water. A large part of this eastern edge is now a mixture of dry and wet reedbed providing important habitat on the pond.

Pond name	Silt Volume (m^3)	Estimated total removal costs (£)	Date last desilted
Swan	700	103,385	1988
Leg of Mutton	391	57,700	Unknown
Lily	93	13,735	1988
Seven Sisters	Unknown	N/A	2010 (Selected ponds)
Whitestone	Unknown	N/A	Landscaped 2010
Vale of Health	5,951	878,885	Unknown
Viaduct	2,769	408,948	July-Aug 2016
Hampstead Mixed Bathing Pond	1,550	228,876	Mar-Apr 2018
Hampstead No.2	11,172	1,650,036	Unknown
Hampstead No.1	13,072	1,930,567	Unknown
Stock	2,909	429,566	Nov-15
Kenwood Ladies' Bathing Pond	1,103	162,841	Feb-16
Bird Sanctuary	4,081	602,698	1988 (western arm only)
Model Boating	14,451	2,134,276	2015
Highgate Men's Bathing Pond	430	63,517	Dec-15
Highgate No.1	11,920	1,760,534	Unknown
Water Garden	180	26,585	Unknown
Extension No.7	Unknown	N/A	Unknown
Sandy Heath Main	Unknown	N/A	Unknown

Table 1: Estimated sediment volumes and removal costs

29. The bathymetric data can now in part be used to assess how best to manage the sediment levels and the scale of any interventions covered below, Further bathymetric analysis has been identified from this report in order to update the figures for the hard-bed level which form the basis of the sediment estimates.

3.5 Climate change

30. The City of London is scheduled to adopt a new Climate Action Strategy in October this year. The Strategy aim is to reach Net 0 by 2040 and there will be a range of measures implemented to achieve this including increasing carbon sequestration and storage across the Open Spaces alongside biodiversity enhancement and resilience measures.

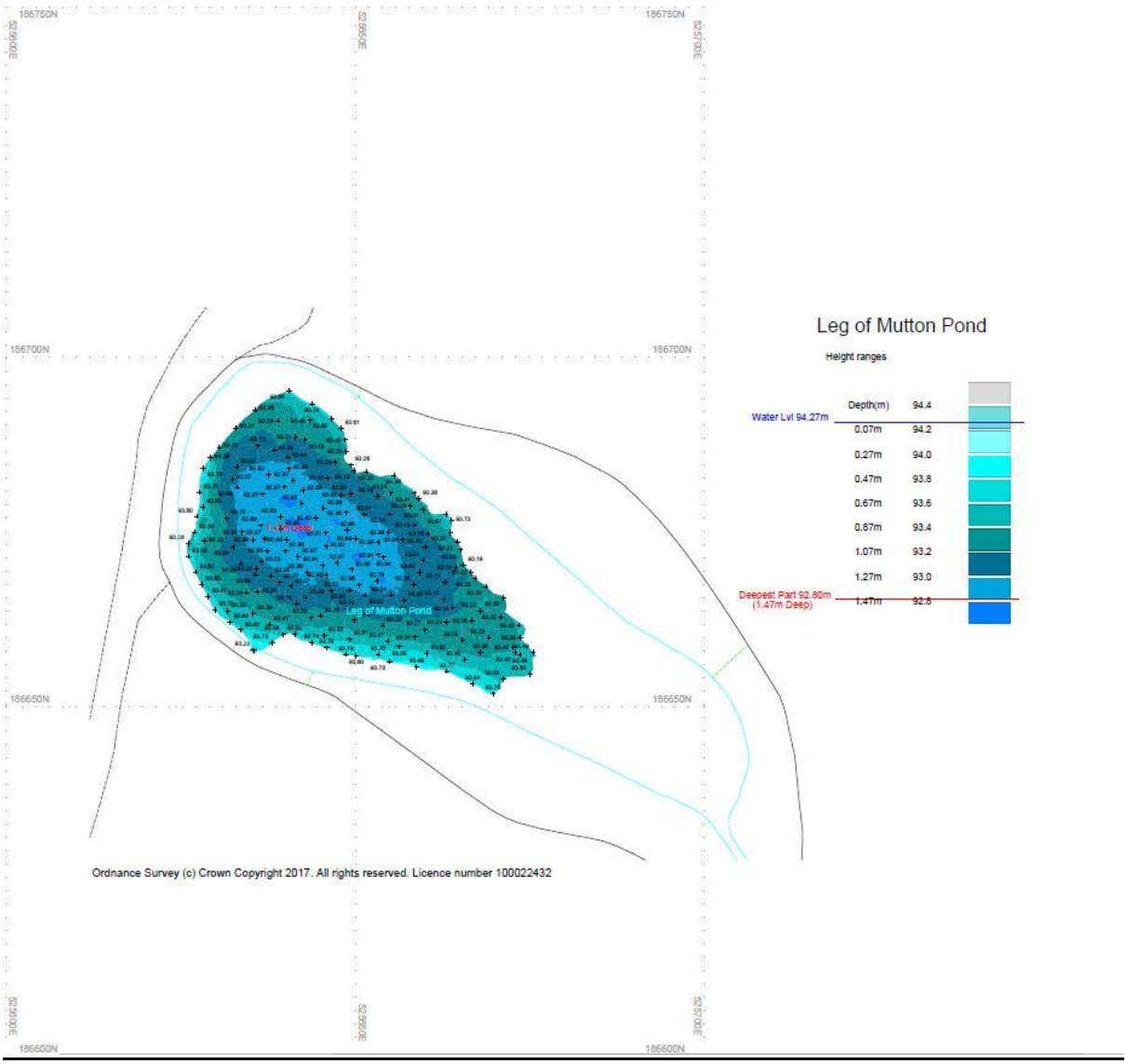


Figure 1: Leg of Mutton depth measurements 2019

31. With potentially warmer waters there may be a possible increase in non-native species and their ability to survive and breed. Carp for instance require a relatively warm temperature to successfully breed in and this occurs only locally in the UK. It is likely that the success of breeding can only increase, possibly having an impact of other fish species and pond ecology. Warmer waters can also decrease oxygen levels as warm waters can hold less oxygen.

32. Increasingly hot summers with associated increase in surface water temperatures and oxygen level impact and potential fish death. Increased risk of sudden heavy convention storm events in summer months and following high nutrient loading also causing collapse of oxygen levels.

33. Climate Change is already having a significant impact on summer temperatures and increased frequency of storms. With this will come increased risk of surface flooding and impact on community downstream.

34. However, there are also opportunities to mitigate climate change impacts and increase resilience through a variety of interventions and considered management. Increasing bankside vegetation including reedbed areas will improve sediment trapping and strengthen pond banks. Additional marginal and aquatic vegetation will also increase carbon capture and storage alongside increasing potential refuges for wildlife.

35. In addition, Open Spaces will be working with other City of London Departments on seeking funding for resilience measures specifically around Climate Change related flood defense but combining this with biodiversity net gain and ecological benefits.

3.6 Other water quality issues

36. The issues set out below are just some of the management considerations which can affect the water quality on a pond. Each pond often has unique issues which need to be considered but these give some idea of the complexities involved.

- Anglers bait, night fishing activity when toilets are closed.
- Bread etc. fed to ducks
- Runoff or discharge from private gardens which abut onto the edge of some ponds, e.g. tap water is high in phosphorus so even a hosepipe or sprinkler left running could raise nutrient levels in the pond, not to mention fertiliser use.
- Properties adjacent to the Heath or within the water catchment area can have an impact on water quality through a redirection or blocking of water flow. Basement drainage pumps or changes to guttering can have at least a localised impact.
- Thames Water requirement to regularly inspect and maintain sewers across the Heath to prevent blockages and subsequent contamination.
- Decomposing leaves from surrounding trees.
- Droppings from geese and other water birds.
- Disturbance of pond mud and re-release of nutrients locked in the sediment, e.g. by dogs, human swimmers, fish, terrapins, crayfish, low oxygen levels at pond bed.
- Positive effects of ponds being spring fed. Some springs thought to be present rising from the bed of ponds such as the Vale and Highgate Men's Bathing Pond.
- Negative effects of the large catchment area of the ponds bringing in particles such as dog mess and possible pollutants from external to the Heath.
- Non-native species such as crayfish causing damage to dam faces, alongside ecological damage and nuisance to anglers.

4. Sediment management options and holistic approach

37. One of the limiting factors involved in sediment management is the likely cost involved which may be prohibitive on certain ponds. This is alongside the disruption to Heath users and logistics involved with the movement and access for heavy machinery.

38. Ideally ponds sediment management should be considered alongside other pond enhancements or improvements which may be more cost effective as well as enhancing the ponds aesthetically and ecologically. This may include the following practices, some of which have already been successfully carried out.
    - Fish translocation or indeed removal (Biomanipulation) which may be desirable particularly on non-angling ponds. This has already been undertaken at the Swan pond which is a non-angling pond but had large numbers of carp which were believed to be having a detrimental effect on water quality as well as causing welfare issues for the fish themselves. A permit is likely required for even temporary storage of fish if ponds are being drained.
    - The creation of planting shelves or even islands which will reduce removal costs and provide refuges for birds and well as improving pond ecology. An example of which occurred on the Hampstead Mixed Bathing Pond with the creation of new wetland plant beds. Large islands could be created in deeper section of the pond which could accommodate large quantities of silt. These would however require a more extensive engineered option than simple posts and barrier and may also be a one-off opportunity as this will decrease the size of the pond area. However, this methodology could become a sustainable future activity for pond desilting. On the next desilting cycle, the dry/drier land could be removed and refilled with sediment. This should be a much easier and cost-effective method than removal wet silt from site.
    - The permanent reduction in pond area through use of sediment to create land. Whilst reducing the pond area, this could assist with climate strategies with the increase of area for carbon storage.
    - The re-use of sediment or spread of sediment on areas close to the pond. This method was used in 1998 at the Kenwood Ladies' Bathing Pond when sediment was spread across South Meadow and more recently at the Extension ponds. This requires careful consideration to ensure that existing flora and fauna is not harmed and can lead to a change in vegetation to the donor site. The re-use of sediment normally requires licensing and testing of the sediment for any harmful chemicals.
    - Allowing succession or even the speed up of succession through movement of sediment to different areas of the pond. This may be beneficial for example in the Bird Sanctuary where sedimentation is likely to increase the area of reedbed. The Stock pond in the future could become a swamp.
    - It is likely that a good deal of sediment volume may come from leaf litter. A reduction in tree cover or even leaf collection or barriers may be considered.
    - A reduction in sediment reaching the pond through an increase in silt traps and continued diversion of runoff. Repair of eroded edges would also reduce loading.
    - The use of Siltex or products which may assist in breaking down sediments may be considered as options where costs are prohibitive or disruption too great.

39. The options available will be dependent on the current and future use of the pond whether that be primarily for amenity, ecological or a combination of uses. A reduction of pond size or extensive creation of new planting areas would not be possible or desired on the three bathing ponds.

5. Pond uses and values

40. An important factor in any Ponds plan is the current and future use of the pond in terms of human recreational activities and wildlife use as well as a purely visual amenity. Outlined below are some of the main current pond uses and management issues.

5.1 Pond wildlife value

41. Hampstead Heath ponds as well as being great recreational resources and attractive landscape features also have considerable wildlife value.

5.1.1 Ponds Project surveys

42. Numerous surveys have been undertaken on the Heaths ponds in the last 20 years involving specialist contractors, volunteers and Hampstead Heath staff and it is not possible to go into detail of them all here. However, as part of the Hampstead Heath Ponds Project detailed surveys were carried out on the plant and invertebrate communities in 2013 as well as a water quality assessment of the ponds in 2014.

43. The ponds were monitored and records analysed using national pond guidelines to determine their conservation status. All the ponds showed some degree of organic pollution.

44. The majority of the ponds in the Highgate chain were found to have invertebrate communities of moderate conservation value when using the Community Conservation Index, although Highgate No.1 was considered to have fairly high conservation value. The majority of the Hampstead ponds also had invertebrate communities of moderate conservation value, although the Viaduct pond was recorded as being of high conservation value for the species found.

45. Whilst the ponds overall were not assessed as being national priority ponds, they support a variety of species, some of them nationally notable and certainly provide an important habitat for plants and animals alike. This survey provides a baseline to assess future pond improvements as well as improvements made as part of the Pond Project.

5.1.2 Dragonfly surveys

46. The number of species of dragonfly and damselfly recorded on Hampstead Heath in the last 5 years has reached 19 including a species new to the Heath recorded for the first time in 2018 which is now widespread. The Willow Emerald damselfly was first recorded by volunteer wildlife monitors who have been carrying out yearly monitoring for the last 3 years. Dragonflies spend much of their lifecycle in the Heaths ponds and 16 of these species are thought to be Heath breeding species.

5.1.3 Amphibian surveys

47. Amphibians have been recorded on the Hampstead Heath in most years since

2007 as well as many records from previous years. The ponds are thought to provide breeding areas for well over 1,000 adult frogs and toads as well as smooth newt in most of the ponds. A high proportion of the amphibian records are from the smaller Heath ponds, although larger ponds such as the Bird Sanctuary, Highgate No.1 and Mixed pond also provide important spawning habitats. Amphibians are very much associated with aquatic vegetation and are not usually found breeding in poorly vegetated ponds. Surveys of the Heath's population of Grass snakes are also undertaken yearly, and they are very much associated with the aquatic habitats, being primarily amphibian feeders.

5.1.4 Bird Surveys

48. For over 20 years the wetland birds have been monitored by a volunteer using national survey methodology on a monthly basis. 25 bird species are regularly recorded using the Heath ponds, some of which breed here but just as importantly others use the ponds to overwinter and feed.

49. On Hampstead Heath the ponds which have the more unusual or 'human shy' species of bird prefer ponds that have limited access to the banks (Highgate No.1 + Hampstead No.1). Species such as wigeon, shoveler and gadwall are only normally found on ponds which are large enough or where they can be far enough away from humans and dogs. Kingfishers are regular breeding birds on the Bird Sanctuary pond but have been observed attempting to nest at the Hampstead Mixed Bathing Pond also. As a Schedule 1 species in the Wildlife and Countryside Act (1981) disturbance of this bird at its nest site would be against the law and this would need to be considered with any plan or change in pond use.

5.1.5 Birds of Conservation Concern 4 (BoCC4)

50. Several the UK's leading bird conservation organisations worked together to review the status of birds in the UK, Channel Islands and Isle of Man. The bird species that breed or overwinter were assessed against a set of criteria and placed on either the Green, Amber or Red list – according to an increasing level of conservation concern.

51. Birds using the Heath ponds regularly in either the amber or red category are Herring gull, Mute swan, Gadwall, Mallard, Shoveler, Common gull, Common tern and Kingfisher. Other birds such as Pochard, Wigeon and Teal can also frequent the ponds, sometimes in reasonable numbers. Whilst the populations found on the Heath are not nationally important, in local and regional terms these species should be encouraged wherever possible.

5.2 Swimming and bathing pond issues

5.2.1 Statutory requirements

52. There are three ponds on the Heath where swimming is permitted and these are monitored by the Environment Agency on behalf of DEFRA (Government Department of the Environment, Fisheries & Rural Affairs) for compliance with the European Bathing Water Directive. These are the Kenwood Ladies' Bathing Pond and Highgate Men's Bathing Pond in the Highgate Valley and the Mixed Bathing

Pond in the Hampstead Valley. The Directive sets microbiological and other standards which bathing waters must consistently meet if they are to keep their designation as official bathing waters. There is unfortunately several days delay from the collection of water samples to the results being received and thus the risk of swimming taking place in potentially polluted waters. This is however the national bathing water testing procedure and thus difficult to influence or remedy.

5.2.2 Water quality

53. The three bathing ponds are a popular and much-valued amenity on the Heath, indeed in London as a whole. As any instances of poor water quality in these three ponds presents an immediate health risk to swimmers, making improvements to water quality at these ponds is a very high priority.

5.2.3 Oxygen levels management

54. Aeration equipment is in place on all the bathing ponds but is not currently functioning at the Hampstead Mixed Bathing Pond due to power supply issues. A Capital Project is being developed following the March 2020 Swimming Review to address a series of safety, access, security issues across the three bathing ponds and the Parliament Hill Fields Lido. The Kenwood Ladies' Bathing Pond also has mobile splash units in place for ice prevention and to reduce algal problems.

5.2.4 Catchment areas

55. The Kenwood Ladies' Bathing Pond as well as receiving water from the upstream Stock pond, is also connected to a wider water catchment area through a streamline leading and running outside of City of London Corporation managed land. This catchment stream passes through private land as well as a community allotment and so has the potential to adversely affect water quality at the Kenwood Ladies' Bathing Pond. Work has already been carried out as part of the Ponds Project to create pools upstream of the pond to act as a filter and sediment traps have previously been created at locations along the streamline.

5.2.5 Blue-green Algae

56. The Highgate Men's Bathing Pond has traditionally suffered from Blue-green (BG) algal blooms and scums which occurred yearly for many weeks of the year for the last 20 years or so. In 2018 and 2019 there has been a noticeable reduction of BG blooms with very few recorded in these years. It is believed that this may be as a result of sediment removal as part of the Ponds Project. The pond is currently used for both angling and swimming which may be considered a health and safety issue for the bathers.

5.2.6 Pollution issues

57. It is believed that the use of sun creams and oils may be having an impact on the water quality at the bathing ponds with the creation of a surface layer during the busy summer period which can impact oxygen levels through a reduction in diffusion. Bacteria may also be increased in the bathing waters during busy periods simply through 'bather shedding'.

5.2.7 Compliance issues

58. Swimming in non-designated bathing waters is also a major health and safety concern throughout the year but especially during very warm weather or a hot spring day when the pond temperature is much lower than the external temperature. With Climate Change related weather trends moving towards more frequent heat wave events there is an increasing demand on swimming facilities at Hampstead Heath. The summers of 2018 and 2019 saw unprecedented levels of visitors with a single purpose of swimming, and often swimming in non-lifeguarded non designated ponds in large numbers. This presents a major challenge to the Management team and the Lifeguards.

5.2.8 Water Safety

59. In the last 7 years Hampstead Heath has seen three separate drowning incidents, leading to tragic loss of life and impact on the associated families. A full review of the Hampstead Heath Swimming Facilities was completed in March 2020, taking account of the Health and Safety advice received following a fatality at the Highgate Men's Bathing Ponds in June 2019. The Health and Safety Executive confirmed that there were no material breaches of Health and Safety legislation, and provided advice in relation to Lifeguard breaks and alertness, maximum bather loading, minimum Lifeguards numbers and Lifeguard training. The Swimming Review sets out the improvements required to address the Health and Safety issues, visitor access, rapidly increasing demand and presents options to secure the long-term financial sustainability of the Bathing Ponds.

5.3 Angling provision and issues

5.3.1 Introduction

60. Five of the Heath ponds are currently designated as angling ponds. These are Vale of Health, Viaduct and Hampstead No2 in the Hampstead Valley, and the Model Boating Pond and Highgate Men's Bathing Pond in the Highgate Valley. Other ponds have been used for angling in the past such as recently the Hampstead Mixed Bathing Pond and the Leg of Mutton. Angling is also currently suspended on the north bank of the Highgate Men's Bathing Pond following an incident where a swimmer became entangled with a fishing hook that had become snared on the swimming line.

5.3.2 Fish surveys and stocks

61. The following is a brief summary of fish surveys undertaken on Hampstead Heath and is not the intention to cover the various surveys in detail as this would be a report in itself.

62. Fish surveys have been carried out every 10 years or so with the most recent surveys being in 2013. Previous 1992, 1995 and 2002 surveys by CB fisheries and a 2002 survey by the Environmental Advice Centre (EAC) indicate varying fish stocks with fluctuations in numbers and species composition changes from survey to survey. The 2002 surveys generally indicated that fish stock and recruitment of fish was low (some errors in the calculations are however

apparent), although the 1992 surveys found large fish stocks and some recommendations were made for the removal of some species such as bream.

63. Fish stocking has not officially been undertaken since the late 1990's when CB fisheries were employed to undertake surveys. Stocking of carp, both common and crucian, as well as rudd, bream, perch and tench have been undertaken during this time as well as the cropping (removal) of bream and pike. It is of some concern that species introduced into a number of the ponds in the mid 1990's were not subsequently recorded in the 2002 surveys. Whilst survey error could contribute to this as well as predation from cormorants and pike, any future introductions need careful consideration to ensure the wellbeing of introduced fish as well as stocks already residing in the ponds. It is considered that natural recruitment is the best way to ensure that the species present are those that are best suited to survive and breed in an individual pond, although stocking is not ruled out. Any future stocking should give full consideration of fish welfare and a need identified.

64. Introductions of fish stocks should be based on having accurate stock figures which from experience and previous surveys are difficult to gauge.

5.3.3 Fish survey accuracy

65. Whilst fish surveys can give a good indication of fish stock levels there are practical difficulties in obtaining accurate data. Underwater obstructions, deep water, aquatic plant growth, large pond sizes and differences in fish behaviors such as those species frequenting deeper waters can lead to survey discrepancies depending on the methods used. Methods typically used are netting (seine and fyke) as well as electrofishing. Some direct observation is also possible but can only give a guesstimate of the fish size or weight. Therefore, comparisons between years can sometimes be difficult to analyse.

66. Examples of these possible discrepancies which may not be from genuine stock changes include a comparison of the 2002 CB fisheries survey and the most recent 2013 surveys. Only 7 fish in total were recorded in the 2002 survey despite the introduction of several hundred Kg of fish some 10 years previously. Over 900 fish were recorded in the 2013 survey although the majority of these were of one species (perch). No carp were recorded in the 2013 survey despite them being regularly caught and observed in the pond.

67. The most recent 2013 survey recorded over 1500 fish from 4 species of fish in the Boating pond with the majority of these being Rudd and Perch. As part of the Ponds Project in 2015 a section of the Boating pond was drained and fish rescued and transferred back into the non-drained side of the pond. 7 species of fish were moved including the previously unrecorded species of carp (both ghost and mirror), tench, pike and eel as well as several hundred unidentified fish fry. Over 200 gudgeon were rescued from this small section of pond whilst less than 20 were recorded from the 2013 survey.

68. The anglers themselves alongside information from Heath staff are often excellent sources of information on the species present in the ponds and methods to formally record catches where possible would be welcome.

5.3.4 Fishing permits and angling association

69. Angling on Hampstead Heath is by permit only for which a small administration fee is charged. The anglers should also be in possession of an Environment Agency rod license. Over 300 permits have been issued in the 2020 season.

70. The Hampstead and Highgate Angling Society (HAHAS) has recently been formed to represent the views of Heath anglers and help protect angling on the Heath for the future. Discussions are ongoing between the Society and Heath management to promote good angling conduct, seek to improve the angling resource for its members and foster a good relationship with the City Corporation and other Heath users ensuring that angling continues to be a much loved recreational activity on Hampstead Heath.

5.3.5 Interaction between anglers and other users

71. There can be a conflict between anglers and other pond users with disturbance of fishing equipment by dogs and shared usage of much of the bank edges used by anglers.

72. A variety of fish species are also present in non-angling ponds and it is believed there is some movement of fish by the anglers themselves (pers com), although this would be against the law.

5.3.6 Petition on changing Fishing Closed season

73. The recently developed Hampstead and Highgate Angling Society (HHAS) are requesting a change to the current closed season which runs mid-March to mid-June to opening a month earlier in May. This should be considered with respect of the Hampstead Heath Management Strategy 2018-2028 and the relevant outcomes and priorities. The most relevant priorities being:

    - Priority 1: A mosaic of natural habitats is maintained and flourishes.
    - Priority 3: A balance is maintained between visitor activities and the conservation of natural, built and heritage values.
    - Priority 4: Improved physical health, mental health and emotional well-being. This includes the goal to increase outdoor participation.
    - Priority 5: Increasing social inclusion. Individuals or groups that may not normally participate in angling may be encouraged to participate.

74. The Environment Agency maintains a close season for coarse fishing on rivers, streams and important nature conservation sites where angling is not permitted between the 15th March and 15th June. Local Authorities and land managers can still maintain close seasons on lakes as required.

75. Close season is now a contentious issue amongst anglers and other groups, and many lakes, reservoirs and closed waterbodies don’t now operate one. It was set up to protect fish stocks when fish were largely killed after being caught.

76. Reducing the closed season has the potential to assist with the Management

Strategy priorities 4 and 5 but may conflict with priorities 1 and 3.

77. Some of the issues involved are covered below.

- Angling provision has recently been reduced with the Mixed pond now a non-angling pond. Angling from the north bank of the Men's pond is also currently suspended. The number of possible fishing points around the Model Boating pond has also been reduced with new emergent planting and the closure of the 'Island'.
- March to June was, and to some extent is, the main fish spawning season but this varies with species and location and is changing with warming conditions. Thus, it allows fish a period of where they can go about their business without disturbance. The Heath's close season thus still allows for this and gives a period of recovery. Carp in the Heath ponds show signs of a lot of wear and tear due to relatively low stocks and quite an old and frequently caught population.
- The close season allows for bird to nest without disturbance. Perhaps, more importantly this period also allows for the cleaning up of snags and old fishing tackle from ponds which can often entangle birds at this crucial period of their lives.
- The close season coincides with the main spawning period for amphibians and some trampling of vegetation does occur through angling activities as well as through general use and dog-swimming. Year-round angling may reduce this vegetation and affect spawning success both indirectly and directly through physical disturbance.
- Anglers can provide an early warning for environmental issues such as fish health or change in pond condition. However, regular monitoring is also undertaken by Heath staff and members of public are also very vigilant in raising concerns.
- Shortening the close season has the potential to increase participation in angling across the Heaths angling ponds. Although this does not mean that participation will increase and instead just bringing forward the initial rush to fish. However, this also may have the positive benefit of spreading the impact of angling over a longer period. How new participants will be encouraged by this longer open season is unclear.
- Logically, increasing the fishing season can have no positive ecological outcome and at best result in minimal environmental impact. Disturbance of fish will increase and potentially impact on survival rates. As mentioned above the Heath ponds are currently not stocked and rely on natural succession for the species that are best suited to survive and breed in an individual pond. That said some illegal stocking does occur. Koi Herpes Virus (KHV) has occurred in recent years and any increase in fishing can only increase the likelihood of this occurring.
- The likelihood of more discarded fishing tackle, snagged lines and possible harm to wildlife can only increase with an extended fishing season.
- Whilst a large part of bird breeding does occur prior to May, many birds will attempt a second brood and young vulnerable birds will be very active on the ponds at this time.
- Any increase in angling will increase the administration required in checking permits and enforcing bylaws.
- Increase in conflict between user groups (anglers, dog walkers and swimmers).

- Many users and visitors have strong opinions about angling and its potential harm to the fish themselves and other wildlife.

5.3.7. Options to consider

78. The options to consider are:

    A. Remove closed season.
    B. Reduce or alter closed season.
    C. Keep the closed season.
    D. Reduction in close season for one pond only, e.g. Model Boating pond. This earlier opening could allow for fishing lessons only, encouraging young participants or those currently not frequent anglers thus assisting with priorities 4 and 5. As a supervised or targeted event there would be a likely reduction in some of possible environmental issues.
    E. Float only angling or short line fishing which restrict the casting distance on the Highgate Men's Bathing Pond north bank.
    F. Encouraging anglers to belong to the society so that a wider group can be engaged with. This could be done automatically as part of the application for a fishing permit.

79. Section **8.4** and **8.5** below makes a series of recommendations in relation to angling on the Heath.

5.4 Dog swimming

5.4.1 Introduction

80. Dog swimming is a popular and increasing activity on Hampstead Heath and occurs wherever there is easy access to the ponds. There are many studies on the health benefits of dog ownership and the City Corporation welcomes responsible dog owners and their pets onto Hampstead Heath. A recent code of conduct has been developed for professional dog walkers and it is envisaged that this will provide guidance to dog walkers and owners in general. There are only a few current restricted areas on Hampstead Heath where dogs are not allowed (Children's play areas, Hill Garden & Pergola) and one area where dogs should be on leads (Golders Hill Park). Other than these areas dogs are only limited in their access by vegetation or fencing.

5.4.2 Dog swimming provision

81. Two floating limit lines on Highgate No.1 and one on the Vale of Health have been created to attempt to limit the extent that dogs can swim out. These were created over 10 years ago to reduce the possible conflict between dogs and wildfowl.

5.4.3 Dogs and waterfowl conflicts

82. There are yearly incidents involving dogs on ponds disturbing waterfowl, damaging nests and occasionally killing wildfowl. Recent incidences include in 2019 a cygnet killed by a dog on Hampstead No.1 pond and a nest at the Viaduct pond being destroyed by a dog swimming across to it. In February 2020 an

Egyptian goose chick was killed by an off-lead dog and another one chased off to be killed by a crow. This occurred in Golder's Hill Park an area that requires dog to be on a lead. In July 2020 a female swan was attacked and injured on Highgate No.1 pond by a dog as well as a number of near misses.

83. It should be noted that the majority of dog owners are very responsible and keep their dogs under proper control but due to the number of dogs present on site even the few that are not can cause serious issues.

5.4.4. Dogs, water quality and marginal erosion

84. Published literature also suggests that dogs can discourage nesting birds, increase turbidity and even possibly introduce chemicals from flea and parasite treatments which can be harmful to invertebrates. This increase in turbidity can easily be seen on aerial photographs (Figure 2) or visually when a dog or person enters the water. This can cause reduced light penetrating for plant growth and the increase sediment disturbance can release more nutrients into a water body. A good deal of erosion occurs in and around ponds directly attributable to dog activity. Entry points at Hampstead No.2 are heavily eroded as a result of the continued action of dog coming and going into the water. Open access points at the Model Boating pond had to be reconstructed due to erosion caused by dogs and an experiment to open the fencing around the Model Boating pond resulted in damage to emergent plants (Figure 3).

Figure 2: Highgate No.1 main dog swim May 2018- cloudy water to SE and smaller dog swim area to NW

85. Figure 3 (page 21) shows the effect of dog swimming on pond turbidity, although in certain circumstances this could be beneficial with the creation of open water. The image shows the lack of filamentous algae growth in the dog swim area and disturbance can reduce the extent of other 'non-desirable' plant growth such as extensive duckweed cover.

Figure 3: Boating pond plant damage and Hampstead No.2 dog erosion.

86. A balance should be achieved between accessibility to a water body and protecting its nature conservation value. A byelaw currently exists which can prohibit dogs from entering the water when a notice is in place.

5.5 Other pond uses

87. Other pond uses:
    - The ponds are enjoyed visually as a landscape feature.
    - The study or observing of wildlife.
    - Model Boating. Although not a widespread activity, this is still undertaken on occasion at the Model Boating pond.
    - The current activities undertaken on Heath ponds are not exhaustive and there are many other activities which can take place on waterbodies. Any future proposals for the use of the ponds will be considered in line with the current management strategy.

6. Solutions and management options to be reviewed to assist with water quality and improve biodiversity.

6.1 Short term options

88. The short term options to consider are:

    - Aeration systems have been installed on most of the larger waterbodies. Oxygen levels are monitored weekly during the summer season, when levels can be at their lowest. This allows for a modicum of control over oxygen levels and prevention of fish deaths. The aerators can also help increase oxygen levels at the lake-bed which can prevent nutrients from being released. They can also help with the dispersal of algal blooms and prevent ice formation in swimming ponds. These systems however require regular checks and maintenance as well consideration of the utility costs.
    - Encourage bathers to shower before entry into the water.
    - Removal of duckweed and other invasive aquatics by using oil booms. The booms have also been used to partly partition dog swimming areas.
    - Portable splash units are available to aerate ponds in an emergency.
    - Barley straw has been placed into the Kenwood Ladies' Bathing Pond to

reduce algal blooms through the natural decomposition of the straw.

- Limit dog access to areas on selected ponds used for dog swimming. Establish dog free ponds which are primarily for wildlife or even as angling only. This option is in line with suggestions made by members of the Heath and Hampstead Society, Heath Sub Committee.
- Designate certain areas as dog swimming zones by use of signage and floating barriers. The designated sites should be upgraded to reduce compaction and erosion at entry points.

6.2 Longer term solutions/management options

89. Options:

- Removal or relocation of pond sediment. A number of possible strategies have been considered in section? 'Sediment management options and holistic approach' and require more detailed planning and consultation.
- Further aquatic planting.
- Reduction of nutrient loads entering the ponds. Reduce the quantity of dog faeces entering the ponds through engagement/action encouraging collection.
- Engagement with the Planning Authorities and Heath neighbours to assist with reducing input into ponds.
- Reduction/further education on bird-feeding nutrient inputs as well as the behavioral changes this can induce in wildfowl.
- Fish biomanipulation, reducing the impact of bottom feeding fish, as well as juvenile fish which can impact on zooplankton levels (zooplankton are very good controllers of algae).
- Slowing down the speed of water entering the ponds. As well as reducing flood risk this may also help reduce the amount of suspended solids and dissolved nutrients entering a pond. This may be achieved through:

    - Construction of high infiltration path surfaces on the higher parts of the Heath. Many paths and up to a 10m strip on either side are very compacted and currently serve as high speed conduits of rain straight into streams and ponds.
    - Creation of "woody debris jams" in the upper tributaries of the stream system. These would act as little dam-like structures in the stream. They would not completely block the watercourse, merely slow down the flow of water such that it doesn't arrive all at once at the ponds, presenting a flood risk. They would also act as a silt trap. Some suspended solids would settle out and be trapped behind the woody debris jam.
    - Buffer planting of vegetation around areas where heavily used paths cross streams. These are currently a pinpoint source of pollution as they often are so denuded, compacted and eroded that in times of rain, much nutrient-enriched rainwater enters the streams in these places.
    - Sustainable Urban Drainage (SUDS) - Swales and buffer strips of longer grass on valley sides and pond edges.

7. Management options and issues for individual ponds

90. Each pond on Hampstead Heath is unique in its aspect, usage and nature conservation value and so a one size fit's all approach will not be possible. A

combination of the options suggested above will be required to achieve the desired outcomes.

91. Below are issues and options relating to specific ponds, some of the information used on sediment levels relate to older 2002/2004 reports although some management of these ponds has since taken place.

7.1 Hampstead No.1

92. Hampstead No.1 Pond:
    - The pond was found to have a maximum water depth of 3.5 metres. Significant accumulations of silt were found to be present within the pond mainly present in the central area with depths of up to 2.5 metres recorded. The silt visually appeared to contain a high proportion of organic matter content. The long-term management strategy should be to dredge this material from the pond. However, currently there is still sufficient retained water depth for the pond to retain its function as a landscaping feature within the pond. No Siltex (sediment reduction additive) is advised as this would raise hardness and encourage filamentous algae.
    - Filamentous algae blooms occur in this pond
    - Hampstead No.1 is still considered to be of good ecological value with large amounts of aquatic plants.
    - Due to the size of the pond it should be possible to create further emergent planting areas or even islands.
    - A pair of swans have been nesting on the pond for many years and there is often conflict between dogs and wildfowl. This pond could be considered as a dog free pond and further enhanced for biodiversity.
    - A large part of the pond perimeter adjoins private housing and consideration must be given to this with regards to any ecological enhancements.

7.2 Hampstead No.2

93. Hampstead No. 2 Pond:
    - There are significant volumes of sediment accumulated on the bed of Hampstead No.2 Pond with a large 40m by 70m accumulation of over 1m depth of sediment. There is still sufficient retained water depth for the pond to function as a recreational fishery, but these accumulations of silt are impacting upon water quality conditions.
    - Hampstead No.2 although having good ecological value is subject to fluctuating conditions with algal blooms (including BG) and duckweed cover and should be considered in the shorter term for sediment management.
    - There is potentially a good deal of scope to incorporate large amount of sediment into planting bays or even islands. This, however, should not be allowed to interfere with the ability of anglers to use the pond.
    - Dogs enter this pond from several locations and one entry point is heavily eroded. This entry point could be reduced in size through planting or landscaping and a floating boom erected to reduce the dog swimming area. Other entry points could be restricted and could be designated as angling only.
    - In the short term a trial of Phoslock could be undertaken which reduces nutrient levels in the pond.

- Extending the peninsular to disguise the outfall on the northern dam.

7.3 Hampstead Mixed Bathing Pond

94. Hampstead Mixed Bathing Pond:
    - The pond was desilted in 2016 and then again in 2018 to cover an area that was missed. The Hampstead Mixed Bathing Pond has a maximum depth of 2.9m.
    - A proportion of sediment was reused in 2018 to create new planting bays and there is limited scope to increase these without reducing the swimming area of the pond.
    - This pond should not need desilting for the foreseeable future.
    - Some work is required to reduce the access points for swimmers entering from non-designated areas which can be achieved through vegetation management.
    - The chestnut paling fence has been identified in the Cyclical Work Programme for replacement.
    - The Capital Project for the Bathing Ponds and Lido has identified a range of works at the Hampstead Mixed Bathing Pond including a review of the buildings and facilities layouts.

7.4 Viaduct

95. Viaduct Pond:
    - This pond was desilted in 2016 and has since seen the regrowth of extensive lily beds which had previously been lost. There is no current requirement to desilt this pond, although as the pond is shallow and well vegetated it will have a shorter turnaround time than the larger water bodies. The pond has a maximum depth of 1.8m.
    - Dogs enter this pond from across the southern bank and cause some localized erosion as well as occasionally swimming to areas not normally accessible. This pond is also used for angling and there can be conflict between the 2 activities.
    - This is a popular pond for dog swimming but there may be a possibility of restricting access to a smaller area to the SE which can be improved for entry. Consideration should also be given into making the pond a dog free pond due to the conservation value of its invertebrate population.
    - Ecological enhancements have recently taken place on the pond and due to its size larger scale planting schemes may not be possible.
    - Public access is currently restricted on this pond as it forms part of a larger ‘Middle Bird Sanctuary’.

7.5 Vale

96. Vale Pond
    - The Vale of Health Pond has accumulated significant deposits of silt. The deepest silt depths are present at the northern end of the pond where in places there is greater than 3m of accumulated sediment which accounts for more than half the depth of the lake. The current maximum depth is thought to be 3.3m. There is still sufficient water depth for Vale of Health Pond to

function as a recreational coarse fishery. However, the silts are likely to be impacting on water quality conditions and thereby the potential performance of the fishery. Dredging of the pond should be one of the key long-term management objectives for this waterbody.

- This pond has regular filamentous algae blooms caused by the high nutrient levels as well as good quantities of other aquatic vegetation.
- Due to the tree lined banks and private bank ownership there is limited scope to reuse sediment on this pond unless a larger scale central island could be created.
- Dogs access this pond largely from the SW corner near the spillway. The spillway vegetation becomes heavily eroded and requires regular replacement. A floating boom designates the area, and this could become the sole access point for dogs on the pond. This would allow anglers to fish freely from the main swims around the pond.

7.6 Highgate No.1

97. Highgate No. 1 Pond:
    - Highgate No.1 Pond is relatively shallow with the majority of the pond area being less than 2m in depth and the deepest point 2.2m. It appears that the original maximum water depth of the pond was in the region of 3 - 4m but this has been reduced by siltation.
    - This pond does require desilting, but the pond retains good ecological value with large amounts of aquatic and emergent vegetation as well as receiving some more irregular wildfowl such as wigeon, gadwall and pochard. Reed warblers also nest here.
    - There is scope on this pond to create more planting beds using sediment. Although natural succession is occurring, this process could be speeded up with the redistribution of sediment.
    - Many of the overwintering wildfowl on this pond only occur here due to the size of the pond and the distance they are away from the public and dogs. The northern bank of this pond adjoins private land and so is relatively undisturbed and the eastern bank is currently not accessible to the public.
    - This pond has two main dog swimming areas. One to the SE and the other centrally to the south. However, dogs do enter from other areas and it is suggested that dog access is restricted to the two main areas.
    - This is one of the most popular ponds for dog swimming and as such it is hoped that this can continue. However, as this pond currently has a breeding swan pair and the swans on this pond have been injured by dogs, dog access to this pond should be kept under review.
    - As a pond with good ecological value is it recommended that public disturbance on this pond is kept to a minimum.

7.7 Highgate Men’s Bathing Pond

98. Highgate Men’s Bathing Pond:
    - The Highgate Men’s Bathing Pond appears to contain no measurable depth of accumulated silt except for the areas around the northern inflows. This result accords with the dredging of the lake that was undertaken in the early 1990’s and again in 2015. The accumulation of silt deposits on this pond appears to be low. This pond has a maximum depth of 5.2m.

- The Highgate Men's Bathing Pond being the deepest is likely to have a large capacity to retain sediment and if siltation rates are low then may only removal at long intervals.
- This is an angling pond although angling is currently restricted to the south bank due to health and safety reasons. The angling society are requesting access to this bank for the use of float only fishing which would reduce the risk considerably.

7.8 Model Boating

99. The Model Boating Pond:
    - The Model Boating pond was redesigned in 2015 as part of the Ponds Project and was partially desilted to the southern side. Large accumulations of silt were discovered in the southern section of this pond and removed to the borrow pits on the Tumulus field. The pond has a current maximum depth of 3.7m.
    - The northern section of the pond is still believed to have large accumulations of silt but still a great deal of available water depth for angling and Boating. Large parts of the pond have already had improvements to the emergent vegetation. There may be scope to increase the width of these areas in the future or even the creation of a larger island area.
    - There is still considered to be sufficient water depth for the pond to serve as a fisheries and Boating lake.
    - The Boating pond 'island' has been designated as a sanctuary with no public access. A pair of swans was looking like using the 'island' as a nest site this year but an injury to male meant they had to be taken to the Swan sanctuary. A snipe (bird) was flushed from the new planting area on the 'island' in March 2020 showing the value keeping this area as a place for wildlife.
    - Dogs enter this pond from many of the open areas and have caused some erosion to the banksides as well as damage to emergent plants. Dogs also have been regularly observed swimming out to the island which will reduce its wildlife value.
    - The angling society have requested a change to the close season across the Heath ponds which has been discussed above. There is a possibility that this pond could be used as a trial for a reduction in the closed season by holding lessons for younger children or others wishing to try fishing for the first time.
    - Unauthorised swimming regularly occurs on this pond. As an angling pond and from previous desilting works, this pond is known to contain many underwater hazards.
    - Possible solutions to this include the additions of planting shelves along the east bank, improving the swimming swims here and re-routing the path to accommodate both pedestrians and anglers. This could reduce the unauthorized swimming, improve biodiversity and improve the area for angling. However as Model Boating does occur on this pond, any enhancements would take into consideration access for model boating, angling and the visual aspect of any planting.

7.9 Bird Sanctuary

100. Bird Sanctuary Pond:
    - The Bird Sanctuary pond is relatively shallow in depth with most water depths

less than 2m deep. This results from the significant accumulations of silt that are present. Max silt depth 1.7m. The pond has a maximum depth of 2.2m.

- The pond is completely enclosed in fencing and as such is one of the best ecological areas on the Heath, although this also encompasses the land areas. Kingfishers and reed warblers regularly nest here as well as being a feeding area for wintering birds such as water rail and species such as siskin feeding from the bankside trees.
- The Bird Sanctuary is still believed to have good ecological value and thus have a longer-term sediment management need.
- The western arm was desilted in 1988 but is gradually reverting to reed swamp again. An increase in the reedbed areas through sedimentation is in the short-term desirable.

101. Several new ponds and scrapes were created as part of the Ponds Project, with an expansion of reedbed area and a new wetland channel.

7.10 Kenwood Ladies' Bathing Pond

102. Kenwood Ladies' Bathing Pond:

- The Kenwood Ladies' Bathing Pond was desilted in 2015 but due to lowered water levels the edges and northern section were not touched. The northern section is heavily silted still. The pond has a maximum depth of 3.75m.
- There is very limited scope to reuse sediment on this pond although as the northern section is still heavily sedimented then this could become an expanded area of reedbed in the future.
- Although the west bank was traditionally an open landscape there is currently ongoing privacy concerns along this edge. Tree management may be required to allow for enough light for understorey planting to provide screening.
- Capital Project to re-fence around the rear gate.
- Leak on the dam isn't completely fixed.

7.11 Stock

103. Stock Pond:

- The Stock pond although dredged in 2015 still has a perimeter containing deep sediment and indeed parts of the eastern bank have reverted to land.
- A reedbed planted in 2004 has expanded a little and it is suggested this pond could be allowed to silt up further and managed as a wildlife pond.

7.12 Leg of Mutton

104. Leg of Mutton Pond:

- The Leg of Mutton pond has a maximum depth of 1.6m and large parts of the pond have reverted to dry and wet reed bed to the east. The rest of the pond appears to have low deposits of sediment which is consistent with most of the deposits occurring on the eastern inflow edge of the pond. The pond is generally shallow in depth and the depths of sediment are not excessive in the remaining pond area. Although they visually appear to have a high organic matter content that may affect the overlying water quality.
- The expanding reedbed area to the east is currently increasing the ecological value of the pond although the pond is now greatly reduced in size.

- It should be possible to carry out desilting works on this pond without a capital bid assuming the existing dry land areas are not reinstated as pond.
- The Leg of Mutton does not currently have any public access.

7.13 Water Garden

105. Water Garden:
    - Within the main body of the pond silt depths averaged around 50cms in depth and accounted for half the available depth of the pond. The silts are significant in relation to the remaining water depth within the pond and are likely to exert a major effect upon water quality. It is recommended that dredging of the pond is undertaken.
    - This pond currently has lower ecological value although a population of Crucian carp exists in the pond which are of some national conservation concern.
    - This pond is planned to be desilted in 2020.

7.14 Swan

106. Swan Pond:
    - Significant depths of silt have accumulated in Swan Pond. At their deepest, sediments are 80cm in depth and account for half of the available pond depth. At the inflow in the east of the pond, depths are shallower, and accumulation of sediment has resulted in the infill of this end of the pond.
    - The sediments visually appeared to have a high organic matter with partly degraded leaf litter. The reductions in water depth and accumulations of organic silt, cause lower oxygen levels to develop throughout the water column that can cause distress to the existing fish populations. Emergency aeration equipment was deployed yearly on this pond to prevent the deaths of the large fish population.
    - Due to the prevalent water quality conditions and the poor conditions for fish health over 100 ghost carp were removed in 2018. These were the only fish species present in the pond and the pond had very low ecological value. The clarity of the pond has since improved greatly, and spawning frogs and toads were seen for the first time in many years.

107. There is the potential to create a large extent of emergent vegetation around this pond using the existing sediment and reducing the removal costs. Whilst this would reduce the size of the pond, this would also greatly enhance the pond both visually and ecologically. This pond is planned to be desilted in 2020 and it is hoped that biodiversity enhancements can be achieved through this project.

7.15 Extension Ponds

108. The Heath Extension Ponds:
    - The majority of the Extension ponds are relatively small and sediment management may be undertaken locally. However, the bottom pond in the chain is larger and wider and management may be more difficult here as it is believed to have large quantities of silt.
    - The higher pond had an oil leak some 10-15 years ago and may not be suitable for land fill or local deposition.

7.16 Sandy Heath

109. Sandy Heath Ponds:
    - Most of the ponds here can be managed locally by the Conservation Team but this may not be possible on the larger Sandy Heath pond which has large accumulations of sediment and is reducing in size through succession. It may be possible for local deposition of sediments removed and should be possible through the cyclical budget.

8. Recommendations

110. The following is a series of recommendations based on the issues discussed above. Many are general recommendations which are already carried out as part of the Heath's Annual Work Programme (AWP), Compartment Management Plans (CMP) or the City Surveyors Department Cyclical Work Programme (CWP). Other recommendations are made regarding the recreational usage of the ponds in terms of angling and dog access as well as further research required to advise on sediment management and an initial priority for desilting.

111. A section covering each individual pond includes some pond specific detail, suggestions and selected maps to visualise some of the recommendations proposed. It should be stressed that the planting bays shown in the maps are examples to show the potential for sediment re-use as opposed to detailed plans.

8.1 General Recommendations

112. The table below sets out general recommendations.

General Recommendations		
No	**Recommendation**	**Link to the Management Framework**
8.1.1	Continue to make smaller wildlife ponds where practical and appropriate. The City Corporation are currently working in partnership with the Reddington and Frognal Residents Association (RedFrog) on the reinstatement of an historic pond known as 'Constables' pond.	AWP
8.1.2	Continue to link and engage with any national and local wildlife strategies that will assist with biodiversity. The City Corporation is currently engaging with Camden Council to assist with the development of a new biodiversity plan for the Borough.	AWP
8.1.3	Continue to engage with the Highgate Men's Pond Association to collaborate on initiatives which may improve or assist with recording biodiversity. Engage with the Hampstead Mixed Bathing Pond and Kenwood Ladies' Pond Associations for similar collaboration.	AWP
8.1.4	Continue to submit representations on planning applications which may affect Hampstead Heath and it's	AWP

	hydrology.	
8.1.5	Continue to engage with Thames Water to ensure sewers across the Heath are routinely inspected and regularly maintained.	AWP
8.1.6	Continue to engage with local resident groups and individuals to ensure external water inputs are not detrimental to the ponds ecology or water quality.	AWP
8.1.7	Seek opportunities to increase the extent of emergent and aquatic planting where this will be ecologically beneficial.	AWP
8.1.8	Partner with English Heritage and the Heath and Hampstead Society to assist and advise on biodiversity improvements to the Kenwood ponds. An initial meeting is scheduled for the Autumn 2020.	AWP
8.1.9	Current weekly monitoring of oxygen levels should continue throughout the summer season (May-August) or where this is not possible the aeration systems employed.	AWP
8.1.10	Daily checks of the pond outflows and safety systems.	AWP
8.1.11	Monitor crayfish populations and seek advice on removal methodology	AWP
8.1.12	Regular monitoring of algal blooms and advisory signs placed if the Blue-green algae blooms appear.	AWP
8.1.13	Continued ecological monitoring of wetland birds, amphibians and dragonflies.	AWP
8.1.14	A repeat of the 2013 Pond Project survey for water quality and aquatic invertebrates. This will assess any improvements or otherwise that have taken place since the Ponds Project. A suggested date of 2023 would allow for a 10-year review. A capital cost would be associated with this monitoring and the full suite of surveys undertaken in 2013 would not be required.	AWP
8.1.15	Some of the pond banks are under private ownership and it is recommended that future collaboration is sought for mutually beneficial pond enhancement schemes such as emergent planting.	AWP
8.1.16	Continued signage and advice regarding bird feeding activities, encouraging feeding of wildfowl pellets rather than bread.	AWP
8.1.17	Encourage bathers to shower before entering ponds through engagement and signage to reduce external inputs.	AWP
8.1.18	Welcome proposals for other uses of the Heath ponds which would align with the current Management Strategy.	AWP

8.2 Dog Access to the Ponds

113. The table below sets out the recommendations in relation to dog access to the Ponds.

Dog Access to the Ponds - Recommendations		
No	**Recommendation**	**Link to the Management Framework**
8.2.1	It is recommended that dog access is refined at each pond and restricted to designated swimming/access areas. Access areas will be defined by floating buoys and dogs only allowed to enter at these points. Signs or simple plaques will be required to define these locations on site. Having clearly defined areas will hopefully reduce conflicts over competing uses and give clarification of use. Suggested dog swim areas are in the accompanying maps on individual ponds.	AWP
8.2.2	It is recommended that Hampstead No.1 becomes a dog free pond and wildlife is prioritised.	AWP
8.2.3	Dog access areas will be improved through landscaping, reducing erosion and compaction in and around access points.	AWP

8.3 Bathymetric data and sediment removal

114. The table below sets out the recommendations for bathymetric data and sediment removal.

Bathymetric data and sediment removal - Recommendations		
No	**Recommendation**	**Link to the Management Framework**
8.3.1	Further bathymetric analysis is required on selected ponds to confirm the hard bed level of the ponds to confirm the silt volumes. A company has been approached to undertake these works.	CWP
8.3.2	Although detailed plans for silt removal are not yet included in this current plan, views on the sediment management options covered above are welcomed. These include the re-use of sediment on-site to create larger emergent planting areas or even islands or allowing natural succession on certain ponds to increase areas of reedbed. An example of the re-use of sediment is indicated in the accompanying maps for Hampstead No.1 and Highgate No.1.	CWP
8.3.3	Methods which would reduce sediment entering the ponds will be continued including the creation of sediment traps and log weirs upstream of ponds.	AWP

8.3.4	The Golders Hill Park chain of ponds are schedule to be desilted in the winter of 2020/2021. As suggested further consultation and research is required to finalise desilting plans on the major ponds, however an initial priority order is given in 2 table below.	CWP/Capital bid

Pond name	Desilting order	Notes
Swan	1	Scheduled for winter 2020/2021.
Water Garden	1	Scheduled for winter 2020/2021.
Lily	1	Scheduled for winter 2020/2021.
Sandy Heath main	2	Shallow pond. Could be done on current cyclical desilting budget.
Extension No.7	3	Shallow pond. Could be done on current cyclical desilting budget.
Hampstead No.2	4	Capital bid.
Model Boating	5	Capital bid.
Bird Sanctuary	6	Capital bid.
Highgate No.1	7	Capital bid.
Hampstead No.1	8	Capital bid.
Vale of Health	9	Capital bid.
Leg of Mutton	10	Might be possible to do on current cyclical desilting budget.
Viaduct	11	Might be possible to do on current cyclical desilting budget.
Stock	12	Might be possible to do on current cyclical desilting budget.
Kenwood Ladies' Bathing Pond	13	Might be possible to do on current cyclical desilting budget.
Hampstead Mixed Bathing Pond	14	Might be possible to do on current cyclical desilting budget.
Highgate Men's Bathing Pond	15	Capital bid.

Table 2: Approximate priority desilting order

115. It should be noted that this will may not be a cyclical order due to the size of the pond and thus the speed at which it infills.

8.4 Angling – Closed season

116. The table below sets out the recommendations for the Angling closed season.

Angling – Closed season		
No	**Recommendation**	**Link to the Management Framework**
8.4.1	This proposal is outlined above (section 5.3.6) and has been considered in line with priorities in the Hampstead Heath Management Strategy 2018-2028.	AWP

	It is recommended that the current closed season remains in place to assist with priorities 1 and 3 of the Management Strategy.	
8.4.2	However further proposals and discussions will be welcomed with the HAHAS in order to facilitate angling for school or other groups in the form of lessons which may assist with priorities 4 and 5 of the Management Strategy. This could be considered inside the current closed season if this could encourage new participants. As a supervised and targeted event on a selected pond this may reduce some of the environmental issues concerned.	CMP

8.5 Angling Provision Recommendations

117. The table below sets out the recommendations for the Angling provision.

Angling Provision Recommendations		
No	**Recommendation**	**Link to the Management Framework**
8.5.1	Continue to liaise with the HAHAS to promote good angling conduct and seek to improve the resource allocated towards anglers.	AWP
8.5.2	Encourage compliance with local angling regulations and night fishing is allowed by permit only.	AWP
8.5.3	It is recommended that float only angling is allowed on the Highgate Men's Bathing Pond north bank which should reduce the risks associated with a conflict of use, and that this is restricted to teaching sessions organised by the HAHAS and controlled via an annual license.	AWP
8.5.4	Consideration should be given to float only angling on the south bank also during the summer bathing season June-September when the bathing limit line is nearer the bank. The distance between the limit line on the north and south banks are similar in places and casting over or onto the line would be an obvious hazard for bathers.	AWP
8.5.5	Fish stocks surveys will be continued on a 10-yearly basis. However, it is recommended that on selected angling ponds a secondary survey is undertaken in the same year to assess the initial survey accuracy.	
8.5.6	It is recommended that discussions are undertaken with the HAHAS to encourage the recording of catches which will assist with building a better picture of fish stocks in the pond.	AWP
8.5.7	Fish stocking should only be undertaken with advice from a fisheries management expert and a need identified. Natural succession and breeding are the preferred methods for ensuring that the fish present are the ones best able to cope with the prevalent conditions in a pond.	

	The welfare of any introduced fish as well as the welfare of other wildlife in the water body would be the primary concern.	
8.5.8	It is recommended that funding achieved through the Hampstead Heath permit system should be used directly for angling improvements across Hampstead Heath. This may be in the form of improving fish swims or creation of fish refuges in the ponds to help with any natural predation occurring.	AWP
8.5.9	Encourage Heath permit holders to become members of the HAHAS so that a wider group can be engaged with.	AWP
8.5.10	The creation of fishing pegs specifically for angling. Dog access would not be permitted at these points and where shared usage exists; paths would be rerouted to allow sufficient space for angling. An example of this is at the Model Boating pond where angling improvements should be considered with the addition of an extra angling point, redirection or widening of the paths at these points and the addition of extra planting provision. An example of this provision is shown in the following section Model Boating pond (Appendix 1)	AWP
8.5.11	Continue to improve the opportunities for disabled people to fish on the Hampstead Heath Ponds through access and fishing swim improvements.	AWP

8.6 Management options and issues for individual ponds

118. The options for each pond are set out below.

8.7 Hampstead No. 1 Pond

119. The table below sets out recommendations for the Hampstead No.1 Pond.

Hampstead No 1 Pond		
No	**Recommendation**	**Link to the Management Framework**
8.7.1	It is recommended that this pond becomes a dog free pond and further enhanced for biodiversity.	AWP
8.7.2	The creation of further emergent planting areas or islands should be investigated inline with further investigation into the re-use of sediment. An example map is shown in Appendix 1	CWP
8.7.3	Liaise with private landowners adjoining the pond to seek collaboration for any future biodiversity enhancement schemes.	AWP

8.8 Hampstead No. 2 Pond

120. The table below sets out recommendations for the Hampstead No.2 Pond.

Hampstead No 2		
No	**Recommendation**	**Link to the Management Framework**
8.8.1	It is recommended that dog access on this pond is refined and restricted to a single designated swimming area to the north-west.	AWP
8.8.2	Investigate the potential for the re-use of sediment to create planting bays or islands. An example map is shown in Appendix 1	CWP
8.8.3	It is recommended that the main dog swim area to the North-west is enhanced and the entry point landscaped to reduce the erosion in the area.	AWP
8.8.4	Investigate the feasibility of extending the planting area around the outfall to disguise this area further.	AWP
8.8.5	Investigate the feasibility of the use of Phoslock on this pond to reduce the nutrient levels and therefore the reduction of Blue-green and filamentous algae blooms and other aquatic plants such as duckweed.	AWP

8.9 Hampstead Mixed Bathing Pond

121. The table below sets out recommendations for the Hampstead Mixed Bathing Pond.

Hampstead Mixed Bathing Pond		
No	**Recommendation**	**Link to the Management Framework**
8.9.1	Continue with the Capital Project for the bathing ponds and Lido to review the existing buildings and facilities as well as make access improvements	CWP
8.9.2	To make vegetation enhancements around the pond to reduce access for swimmers entering from non-designated areas of the pond.	AWP
8.9.3	Investigate the potential for the re-use of sediment to create planting bays or islands. An example map is shown in Appendix 1	CWP

8.10 Viaduct Pond

122. The table below sets out recommendations for the Viaduct Pond.

Viaduct Pond		
No	**Recommendation**	**Link to the Management Framework**
8.10.1	It is recommended that dog access on this pond is refined and restricted to a single designated swimming area to the south-east. Access at this point should be improved to reduce the erosion occurring in this area. An example map is shown in Appendix 1	AWP
8.10.2	Consideration should also be given into making the pond a dog free pond due to the conservation value of its invertebrate population	AWP
8.10.3	Continue to make biodiversity enhancements to the area surrounding the pond and maintain limited access to this area as part of a larger 'Middle Bird Sanctuary'	AWP

8.11 Vale of Health Pond

123. The table below sets out recommendations for the Vale of Health Pond.

Vale of Health Pond		
No	**Recommendation**	**Link to the Management Framework**
8.11.1	It is recommended that dog access on this pond is refined and restricted to the single designated swimming area to the south-east. Access at this point should be improved to reduce the erosion occurring in this area. An example map is shown in Appendix 1	AWP
8.11.2	Continue to liaise with private landowners and residents' groups adjoining the pond.	AWP
8.11.3	Review the potential for an additional fishing swim to the east of the pond.	AWP

8.12 Highgate No 1 Pond

124. The table below sets out recommendations for Highgate No.1 Pond.

Highgate No 1 Pond		
No	**Recommendation**	**Link to the Management Framework**
8.12.1	It is recommended that dog access on this pond is refined and restricted to the two main designated swimming area to the south-east and south. Access at these points should be improved to reduce the erosion occurring in this area.	AWP
8.12.2	Investigate the potential for the re-use of sediment to create planting bays or islands. An example map is shown in Appendix 1	CWP
8.12.3	Continue to review dog access to this pond as despite being one of the most popular ponds for dog swimming the pond currently has a breeding swan pair and the swans on this pond have previously been injured by dogs.	AWP
8.12.4	It is recommended that public disturbance on this pond be kept to a minimum with many of the overwintering wildfowl on this pond only occurring here due to the size of the pond and the distance they are away from the public and dogs. This can be achieved through vegetation management and keeping the current restricted access to the eastern dam face of the pond.	AWP
8.12.5	Continue to liaise with private landowners and residents' groups adjoining the pond in respect of any mutually beneficial biodiversity enhancements that could be made.	AWP

8.13 Highgate Men's Bathing Pond

125. The table below sets out recommendations for Highgate Men's Bathing Pond.

Highgate Men's Bathing Pond		
No	**Recommendation**	**Link to the Management Framework**
8.13.1	See recommendations 5.3 and 5.4 above for float only angling at the pond.	AWP
8.13.2	Continue with the Capital Project for the bathing ponds and Lido to review the existing buildings and facilities as well as make access improvements	CWP

8.14 Model Boating Pond

126. The table below sets out recommendations for

Model Boating Pond		
No	**Recommendation**	**Link to the Management Framework**
8.14.1	It is recommended to maintain the Boating pond 'island' as a sanctuary with no public access	AWP
8.14.2	It is recommended that dog access on this pond is refined and restricted to a single designated swimming area to the north-west. Access at this point should be improved to reduce the erosion occurring in this area. An example map is shown in Appendix 1	AWP
8.14.3	To investigate the feasibility of the addition of planting shelves along the east bank, improving the fishing swims here and re-routing the path to accommodate both pedestrians and anglers. This could reduce the unauthorised swimming, improve biodiversity and improve the area for angling. Taking into account access for model boating, angling and the visual aspect of any planting.	AWP

8.15 Bird Sanctuary

127. The table below sets out recommendations for

Bird Sanctuary		
No	**Recommendation**	**Link to the Management Framework**
8.15.1	It is recommended that this pond remains as a sanctuary area and remain one of the best ecological areas on the Heath, although this also encompasses the land areas.	CMP
8.15.2	The creation of pools and scrapes to the east and west should continue. These will act as a sediment trap and filter bed for the pond itself.	CMP
8.15.3	In the short term the further sedimentation and increase in reedbed areas to the west will be encouraged.	CMP

8.16 Kenwood Ladies' Bathing Pond

128. The table below sets out recommendations for the Kenwood Ladies' Bathing Pond.

Kenwood Ladies' Bathing Pond		
No	**Recommendation**	**Link to the Management Framework**
8.16.1	Continue to work with the Kenwood Ladies' Pond Association and lifeguards to address privacy issues along the western bank.	AWP
8.16.2	Continue with the Capital Project for the bathing ponds and Lido to review the existing buildings and facilities as well as make access improvements.	CWP
8.16.3	The creation of pools, scrapes and weirs to the north of the pond as well as along the incoming streamline should continue. These will act as a sediment trap and filter bed for the pond itself.	

8.17 Stock Pond

129. The table below sets out recommendations for Stock Pond.

Stock Pond		
No	**Recommendation**	**Link to the Management Framework**
8.17.1	To allow the reedbed to the north to expand further and manage the pond as a wildlife pond.	AWP

8.18 Leg of Mutton Pond

130. The table below sets out recommendations for Leg of Mutton Pond.

Leg of Mutton Pond		
No	**Recommendation**	**Link to the Management Framework**
8.18.1	To allow the expansion of the reedbed area to the east to further increase the ecological value of the pond.	AWP
8.18.2	It is recommended that the pond maintains its restricted public access	AWP

8.19 Water Garden

131. The table below sets out recommendations for the Water Garden Pond.

Water Garden		
No	**Recommendation**	**Link to the Management Framework**
8.19.1	It is recommended that this pond is desilted as scheduled in 2020/21	CWP
8.19.2	The population of Crucian carp present in the pond should be monitored and protected. Funding streams should be investigated which could provide opportunities for biodiversity improvements to the pond and its fish.	AWP

8.20 Swan

132. The table below sets out recommendations for the Swan Pond.

Swan Pond		
No	**Recommendation**	**Link to the Management Framework**
8.20.1	It is recommended that this pond is desilted as scheduled in 2020/21	CWP
8.20.2	It has been recommended that biodiversity enhancements in the form of emergent wetland vegetation be incorporated into the proposed desilting scheme.	CWP

8.21 Heath Extension Ponds

133. The table below sets out recommendations for the Heath Extension Ponds.

Heath Extension Ponds		
No	**Recommendation**	**Link to the Management Framework**
8.21.1	It is recommended that the lower of the pond chain (Extension No.7) is a priority for desilting for the next cyclical desilting budget.	CWP

8.22 Sandy Heath

134. The table below sets out recommendations for Sandy Heath Ponds.

Sandy Heath		
No	**Recommendation**	**Link to the Management Framework**
8.22.1	It is recommended that a reduction in silt and selected vegetation is made in order to keep the ponds as ecological ponds with good conservation value, particularly in terms of their amphibian populations. The ponds have for the last 2 years begun to dry out completely during the summer period.	AWP

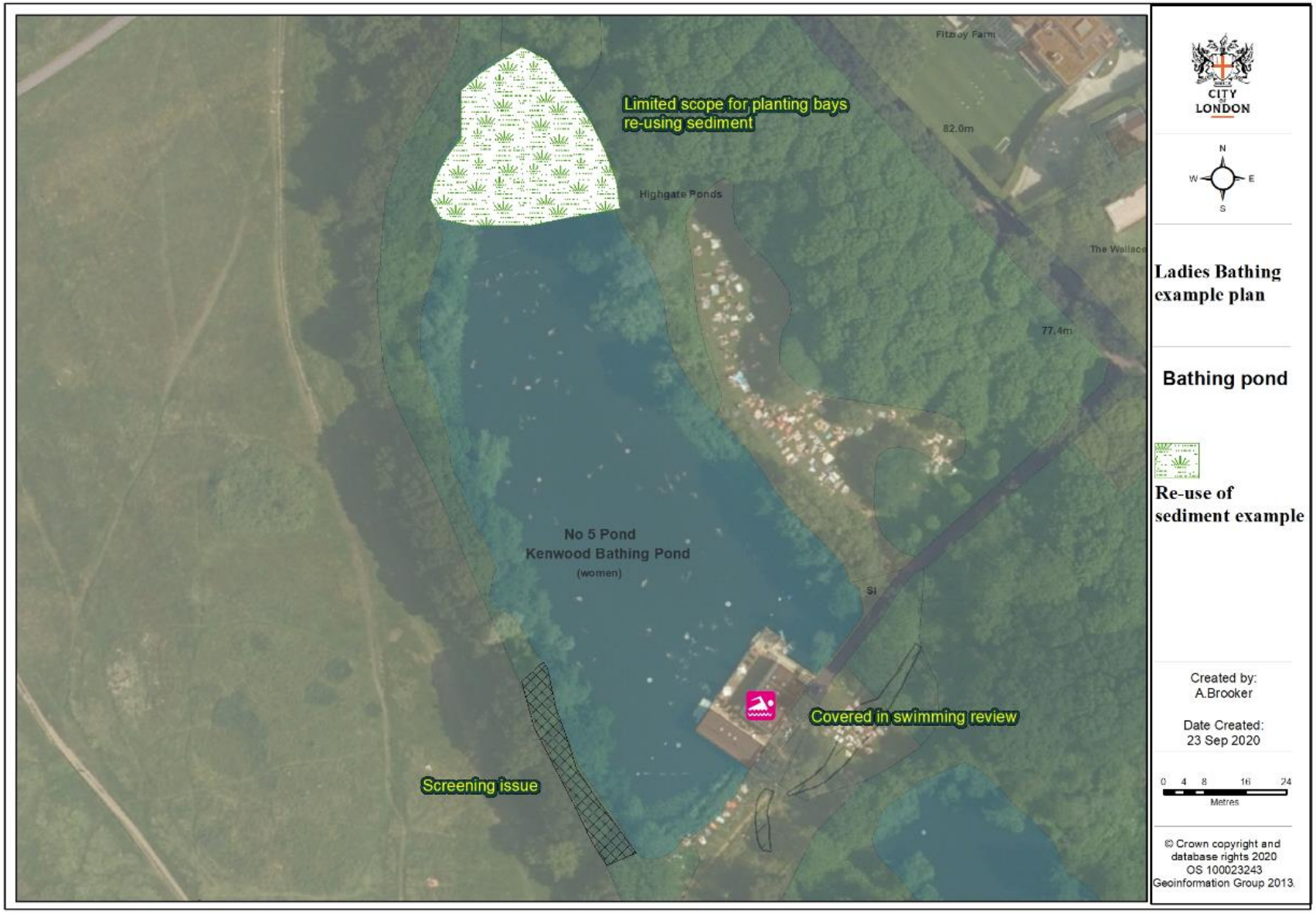
9. Appendices

Appendix 1: Individual ponds example plans (please see overleaf).


Hampstead Ponds
Wildlife island and wetland planting
re-using sediment example
No 1 Pond
Sluice
79.5m
72.1m
66.9m
South Hill Park Gardens
SOUTH HILL PARK
South Hill Mansions
CITY OF LONDON
N
W
E
S
Hampstead No.1
Example plan
Wildlife pond
No angling
No dogs
Re-use of
sediment example
Created by:
A.Brooker
Date Created:
23 Sep 2020
0 5 10 20 30
Metres
© Crown copyright and
database rights 2020
OS 100023243
Geoinformation Group 2013.


Hampstead Ponds
75.9m
Expansion of or creation of new wetland planting re-using sediment
Sluice
CITY OF LONDON
N
W
E
S
Hampstead No.2
Example plan
Angling swim
No angling
No dogs
Dog swim
Re-use of sediment example
Created by:
A.Brooker
Date Created:
23 Sep 2020
0 3.5 7 14 21
Metres
© Crown copyright and database rights 2020 OS 100023243 Geoinformation Group 2013.


Stones
Posts
Post
Highgate
Wetland planting re-using sediment example
West Hill
66.1m
Island re-using sediment example
No 1 Pond
Path (fmr)
Sluice
64.6m
CITY OF LONDON
N
W
E
S
Highgate No.1 example plan
Dog swims
No dogs
No angling
Re-use of sediment example
Created by:
A.Brooker
Date Created:
23 Sep 2020
0 4 8 16 24
Metres
© Crown copyright and database rights 2020 OS 100023243 Geoinformation Group 2013.


Limited scope for planting bays
re-using sediment
Fitzroy Farm
82.0m
Highgate Ponds
The Wallace
77.4m
No 5 Pond
Kenwood Bathing Pond
(women)
Si
Covered in swimming review
Screening issue
CITY
LONDON
N
W
E
S
Ladies Bathing
example plan
Bathing pond
Re-use of
sediment example
Created by:
A.Brooker
Date Created:
23 Sep 2020
0 4 8 16 24
Metres
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Geoinformation Group 2013


71.8m
Pipeline
70.4m
Diving Platform
No 2 Pond
Highgate Bathing Pond
(men)
ament Hill
66.1m
CITY OF LONDON
N
W
E
S
Mens Bathing example plan
Angling swims
No dogs
Float only angling options
Created by:
A.Brooker
Date Created:
23 Sep 2020
0 4.25 8.5 17 25.5
Metres
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Facilities improvements
Swimming Review report
Limited options for
expansion of wetland planting
Diving Platform
Number 3 Pond
CITY OF LONDON
Mixed pond
Example plan
Bathing pond
No angling
No dogs
Re-use of
sediment example
Created by:
A.Brooker
Date Created:
23 Sep 2020
0 4.25 8.5 17 25.5
Metres
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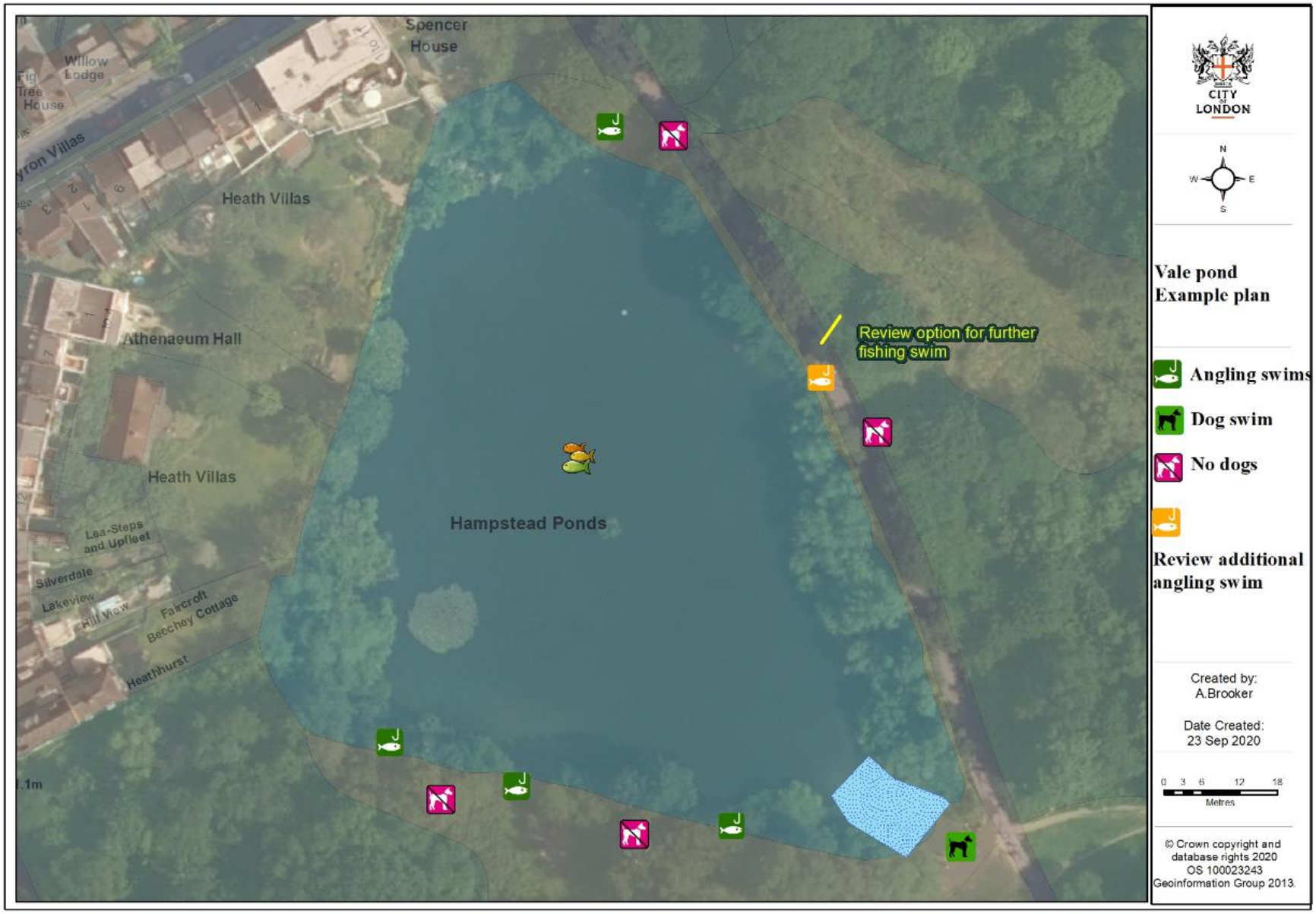
Geoinformation Group 2013


Parliament Hill
Highgate Ponds
No 3 Pond
Model Boating Lake
Diverted path
New planting
New angling point
Diverted path
Outfall
CITY OF LONDON
N
W
E
S
Model Boating Example plan
Angling swims
Dog swim
No dogs
Wildlife Island
Review additional angling swim
Created by: A.Brooker
Date Created: 23 Sep 2020
0 5 10 20 30
Metres
© Crown copyright and database rights 2020 OS 100023243 Geoinformation Group 2013.


Spencer House
Willow Lodge
Fig Tree House
Byron Villas
Heath Villas
Athenaeum Hall
Heath Villas
Lea-Steps and Upfleet
Silverdale
Lakeview
Hill View
Faircroft
Beechey Cottage
Heathhurst
Hampstead Ponds
Review option for further fishing swim
CITY OF LONDON
N
W
E
S
Vale pond
Example plan
Angling swims
Dog swim
No dogs
Review additional angling swim
Created by:
A.Brooker
Date Created:
23 Sep 2020
0 3 6 12 18
Metres
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Path (um)
98.6m
No access
Viaduct
Hampstead
Ponds
Path (um)
96.5m
Path (um)
Sluic
Path
CITY OF LONDON
N
W
E
S
Viaduct pond
Example plan
Angling swims
Dog swim
No dogs
Created by:
A.Brooker
Date Created:
23 Sep 2020
0 3 6 12 18
Metres
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Appendix 2: Hampstead Heath ponds, pools and scrapes

The below table shows the breadth of ponds to be found on Hampstead Heath, the sizes of which are largely subjective and the type not exhaustive of other uses.

Pond	**Size**	**Type**
Hampstead No.1	Large	Wildlife
Hampstead No.2	Large	Wildlife/Angling
Hampstead Mixed Bathing Pond	Large	Wildlife/Bathing
Catchpit	Small	Wildlife/functional
Viaduct	Large	Wildlife/Angling
Vale	Large	Wildlife/Angling
Highgate No.1	Large	Wildlife
Highgate Men's Bathing Pond	Large	Wildlife/Angling/Bathing
Boating	Large	Wildlife/Angling/Model boats
Bird Sanctuary	Large	Wildlife
Kenwood Ladies' Bathing Pond	Large	Wildlife/Bathing
Stock	Large	Wildlife
Extension 1	Medium	Wildlife
Extension 2	Medium	Wildlife
Extension 3	Small	Wildlife
Extension 4	Medium	Wildlife
Extension 5	Small	Wildlife
Extension 6	Medium	Wildlife
Extension 7	Medium	Wildlife
Small Extension	Small	Wildlife
Sandy Heath No.1	Small	Wildlife
Sandy Heath No.2	Medium	Wildlife
Sandy Heath No.3	Small	Wildlife
Sandy Heath No.4	Medium	Wildlife
Cohens Field No.1	Small	Wildlife
Cohens Field No.2	Small	Wildlife
Athlone Gardens	Small	Wildlife/Ornamental
Tumulus Field	Small	Wildlife
Orchard pond	Small	Wildlife
Old Orchard Garden	Small	Wildlife + Education
Secret Garden	Small	Wildlife + Education
Education Centre	Small	Wildlife + Education
West Heath bog	Small	Wildlife
Swan Pond	Large	Wildlife
Lily	Medium	Wildlife/Landscape

Water Garden	Medium	Wildlife/Landscape
Leg of Mutton	Large	Wildlife
Hill Garden	Small	Wildlife/Landscape
Whitestone Pond	Medium	Wildlife/Landscape
English Heritage		
Concert	Large	Wildlife/Landscape
Thousand Pound	Large	Wildlife/Landscape
Other pools/emphemeral ponds		
Bog pools	Small	Wildlife
Kenwood Ladies' Bathing Pond North Marsh pools x 2-3	Small	Wildlife
Upper Bird Sanctuary	Small	Wildlife

Table 3: Hampstead Heath ponds, pools and scrapes