ATKINS

CITY OF LONDON

Hampstead Heath Ponds Project

PLANNING, DESIGN AND ACCESS STATEMENT

July 2014

Notice

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Table of contents

Glossary of Terms

- **Abutment:** where the end of the dam joins the natural ground of the valley slopes.
- **Buried pipe:** Spillways can be constructed from pipes or box culverts buried in the dam (with openings at, or just above, the top water level). The existing overflow pipes that pass flows from one pond to the next are buried pipes, and constitute the existing spillways.
- **CoL:** City of London Corporation.
- **Culvert spillway:** formed by a concrete box culvert set within the dam so that the top of the dam crest can be reinstated.
- **Emergency draw down pipe:** also known as a 'scour pipe', this is the lower pipe in a reservoir that allows the controlled draining of a reservoir.
- **Emergency spillway:** where the overflow pipes need to be augmented with another overflow structure i.e. a spillway to deal with the amount of water that cannot flow through the overflows, these additional spillways are called "auxiliary" or "emergency" spillways. This spillway can be an open channel spillway, buried pipe or box culvert.
- **EIA:** Environmental Impact Assessment as defined by the Town and Country Planning (Environmental Impact Assessment) Regulations 2011.
- **ES:** Environmental Statement which reports on the findings of the EIA.
- **HHPP:** Hampstead Heath Ponds Project.
- **HGV:** Heavy Goods Vehicle.
- **Left side / right side:** in dam engineering terminology, 'left' is on the left when stood facing downstream (i.e. the direction of stream flow), and vice versa. 'Left' is usually the East side of ponds on the Hampstead and Highgate chains.
- **LDF:** Local Development Framework, London Borough of Camden's planning policies.
- **Nitrogen dioxide (NO2):** is a secondary pollutant produced by the oxidation of nitric oxide (NO). Just over a third of the UK NOx emissions are from road transport.
- **Open channel spillway:** A spillway cut into the crest of a dam, allowing flow over the crest and down the downstream face. Usually with a flat base, with either vertical or sloping sides. Can be lined or reinforced with a variety of materials, ranging in hardness from plain grass, to grass reinforced with a plastic mat or concrete blocks, up to a continuous concrete slab.
- **Outlet:** the downstream end of a pipe carrying water from a reservoir.
- **PM10:** Particulate matter in vehicle exhaust gases consists of carbon nuclei onto which a wide range of compounds are absorbed. These particles are generally very small (1-10 µm), and include those in the size range referred to as PM10. Diesel engines produce the majority of particulate emissions from the vehicle fleet.

- **PMF:** Probable Maximum Flood –Industry best practice dictates that where there is a significant risk to life dams must be able to safely pass a Probable Maximum Flood (PMF)..
- **PMP:** Project Management Plan (including Construction Management Plan and Site Waste Management Plan)
- **PPSG:** Ponds Project Stakeholder group.
- **Proposed Development:** Development which will be the subject of the planning application.
- **SCI:** Statement of Community Involvement
- **Scour valve:** the valve in the scour pipe that is opened when there is a need to drain the reservoir.
- **SMI:** Site of Metropolitan Importance for nature conservation, an ecological designation of local importance.
- **Spillway:** an overflow structure that is provided to allow excess water to flow out of a pond or reservoir without flowing over the dam crest.
- **SSSI:** Site of Special Scientific Interest, an ecological designation of national importance.

Definitions

For ease of reference, the following terminology has been used throughout this Planning, Design and Access Statement:

Term	Definition
The Proposed Development	As specified in The Application which is the subject of this Planning, Design and Access Statement
The Site	Land area of the Proposed Development
The Application	Proposed engineering works to the Hampstead and Highgate chains of ponds comprising dam raising at Model Boating Pond (2.5m) and Mixed Bathing Pond (1m), new walls along dam crest to increase the height of the dams at Men's Bathing Pond (1m) and Highgate No.1 Pond (1.25m), a 190mm kerb along part of the crest at Hampstead No.2 Pond, a new flood storage dam (5.6m) in the catchpit area, grass-lined spillways at most ponds, dam crest restoration, pond enlargement at Model Boating Pond, a replacement changing room building at Ladies' Bathing Pond and associated landscaping, habitat creation and de-silting.
The Applicant	The City of London Corporation

1. Introduction

1.1 The City of London Corporation (CoL) is seeking full planning permission for works to the ponds within the Hampstead and Highgate chains of ponds on Hampstead Heath. The purpose of the works is to make the dams safe from breach and to reduce the risk to life and property downstream to comply with the Reservoirs Act 1975, whilst also taking into account the emerging requirements of the Flood and Water Management Act 2010.

1.2 The Hampstead and Highgate chains of ponds are both located on Hampstead Heath in the London Borough of Camden as shown on Figure 1.1.

1.3 CoL is responsible for the management and protection of the Heath, and for making it available as open space. The Hampstead Heath Act 1871 requires the City to comply with the following obligations:

- Forever to keep the Heath open, unenclosed, un-built upon and by all lawful means to prevent, resist and abate all encroachment on the Heath and attempted encroachment and to protect the Heath and preserve it as an open space.
- At all times to preserve as far as may be the natural aspect of the Heath and to that end to protect the turf, gorse, heather, timber and other trees, scrubs and brushwood thereon.
- Not to sell, lease, grant or in any manner dispose of any part of the Heath.
- To drain, level and improve the Heath, as far only as may be from time to time requisite, with a view to its use for the purposes of health and unrestricted exercise and recreation.

Background to the Development

Purpose of the Project

1.4 Atkins was commissioned to develop options that virtually eliminate the risk of dam failure, while complying with the Hampstead Heath Act 1871 and the Reservoirs Act 1975, and taking into account the requirements of the Flood and Water Management Act 2010. To arrive at the best solution, while mitigating potential impacts, the options have been carefully considered in the context of the whole chain as a system, as well as identifying the best solution for each pond.

1.5 Atkins completed a fundamental review to assess the largest flood that the dams are required to accommodate – known as the Probable Maximum Flood (PMF) - and to check if the dams are likely to withstand this when passing the flows downstream. Less severe floods have also been used to assess the system response to ensure that the options for passing the PMF do not exacerbate the flows downstream during lesser floods. The review was carried out using industry standard methods, based on established guidance from the Department for Environment, Food and Rural Affairs (Defra) and the Institution of Civil Engineers (ICE). The Design Flood Assessment Report can be accessed through the City of London Website.

Level of Risk

1.6 Detailed studies show that both chains of pond dams could fail in an extreme storm, putting at risk, lives property and infrastructure in North London. The chances of a damaging storm occurring are low but the consequences if it does happen are severe. When sudden, extreme amounts of rain flow over an earth dam they can cut it away, releasing all of the water in one go, with a potential 'domino-effect' on other dams. Once the cutting away starts, it is virtually impossible to stop so the City has to take action to minimise the risk of it starting.

1.7 Damaging storms may be rare, but one happened in 1975 and Heath dams were damaged. Furthermore, in 2010 a brief storm resulted in the Stock Pond overtopping with earth scoured away from the top of the dam.

1.8 In the case of extreme floods and dam failure, the lower-lying areas of Hampstead and Highgate (South Hampstead and Gospel Oak) will be at risk of flooding from water running off the Heath.

1.9 Guidance from the Institution of Civil Engineers says that where a community is at risk, the risk of failure leading to a sudden release of a large volume of water should be "virtually eliminated."

Measuring Risk

1.10 Detailed hydrological analysis has shown that at present there is an unacceptably high risk of the dams overtopping. Some of the dams overtop during a 1 in 25 year event; this is a 4% probability that overtopping will occur in a single year. Because overtopping brings a risk of erosion and therefore dam failure, the City must ensure that storm water surges are passed safely, even in the worst possible storms. Industry standard best practice guidelines state that the City of London should ensure the dams can pass the flows associated with the PMF safely; e.g. without collapse.

1.11 Sometimes a 1:400,000 event is cited. This derives from industry standard methodology and in not a measure of likely overtopping and the threat of damage to the dams. It is a factor used in determining the worst storm event the dams must withstand. The dams are not in the middle of remote countryside; they sit above North London and the disruption to infrastructure and the threat to life that dam failure would bring is unacceptable.

1.12 The modelling undertaken showed that most of the dams will also be overtopped in much smaller return period floods, from as low as a 1:5 year return period events. This is because the capacities of the existing overflow pipes at each pond are too small, and the storage capacities of each pond, between the overflow level and the dam crest level, are not sufficient to deal with the floods without floodwater flowing over the dam crests onto the downstream faces.

1.13 The condition and level of the dam crests, the uneven downstream faces and the size of trees on most of the downstream slopes of the dams, mean that the volumes and speeds of flow overtopping the dams present a significant risk that overflowing flood water will erode the dam fill material. This erosion would cut down into the dams until they fail and release the water stored behind them. The dams, therefore, need to be made more resilient to being overtopped in flood events to avoid dam failure, or additional spillway capacity needs to be provided, or a combination of these actions.

1.14 The Proposed Development aims to resolve these problems to enable the dams to pass the PMF safely and provide more storage to address the lack of capacity issue. The Proposed Development, as described below, provides for additional storage in each chain of ponds at appropriate locations and minor works at the remainder of the ponds in the chain.

Implications of not addressing the risk

1.15 Because the risk has now been identified, the City cannot simply ignore it. The Heath's Supervising Engineer has requested that the work take place as soon as possible - or he will call for an inspection which could require works to be carried out on the three statutorily supervised reservoirs in a relatively tight, legally enforceable timescale, leading in all likelihood to a faster and cruder intervention. The Supervising Engineer is currently pleased with the progress being made but that progress and momentum need to be maintained within normal planning constraints. The Proposed Development has been developed over two years and balances the need to preserve the habitat and landscape with the necessary safety requirements.

1.16 If the City does not follow the guidance laid out in the Reservoir Act 1975, the Panel Engineer could call for a statutory inspection of the dams under Section 10 of the Act and time bound enforcement action by the Environment Agency could result. This would take schedule control of the project out of the City's hands which could increase the impact on the Heath and failure to take the required action would be in breach of an act that carries criminal liability.

Purpose of the QRA (Quantitative Risk Assessment)

1.17 A QRA was undertaken at the request of the Stakeholders. The QRA is not a justification for the works. The only justification needed is that the series of dams in both the Highgate and Hampstead chains of ponds exist above a large residential population and, if one or more of the dams was to fail under a severe storm, then lives and properties are at serious risk. The QRA is not a design or decision tool. It is best used as a screening tool for reservoirs where risk is not obvious - or to compare different schemes to help weigh the cost of schemes against the benefit.

Consultation

1.18 During the development of the scheme and preparation of the planning application extensive consultation has been undertaken to: develop design principles and inform options development process; explain the need for the proposals; gain an understanding of stakeholder support or opposition to different options; gather feedback from stakeholders and describe the Proposed Development. A range of methods was used to reach a wide range of stakeholders and ensure they had the opportunity to understand and engage in the project.

1.19 Throughout the project, the City has engaged with the Pond Project Stakeholder Group (PPSG), formed specifically to provide advice and views in connection with the project. Membership includes Heath users, local amenity groups and residents' associations. The PPSG have attended monthly meetings, workshops, guided walks and other ad hoc meetings. Their input has been invaluable in developing the proposals.

1.20 The City has published all the reports which have been produced throughout the project on their website, inviting comments from the public. Local newspapers have carried update stories on the project and the City has arranged guided walks with interested groups as requested. An information leaflet was sent to all of the homes and businesses in the postcodes surrounding the Heath and further leafleting has taken place on the Heath as a regular occurrence. A total of 79,000 postcards were sent to local residents and businesses, which contained a link to the CoL website. An eNewsletter has also been produced every two months and distributed to a mailing list of around 1,000 email addresses.

1.21 The information giving and public consultation exercise took place between 26 November 2013 and 17 February 2014 and reached out to as many visitors to the Heath and those living in the surround communities, as possible.

1.22 Full details of the consultation process undertaken as part of this project are available in the Statement of Community Involvement (SCI) which accompanies this planning application.

The Proposed Development

1.23 The Proposed Development is briefly described as: proposed engineering works to the Hampstead and Highgate chains of ponds comprising dam raising at Model Boating Pond (2.5m) and Mixed Bathing Pond (1m), new walls along dam crest to increase the height of the dams at Men's Bathing Pond (1m) and Highgate No.1 Pond (1.25m), a 190mm kerb along part of the crest at Hampstead No.2 Pond, a new flood storage dam (5.6m) in the catchpit area, grass-lined spillways at most ponds, dam crest restoration, pond enlargement at Model Boating Pond, a replacement changing room building at Ladies' Bathing Pond and associated landscaping, habitat creation and de-silting.

1.24 A full description of the development is contained within section 4 of this Planning Design and Access Statement and is detailed on the drawings submitted as part of this planning application, listed under paragraph 1.4 below.

1.25 The planning application comprises the following documents and drawings:

Planning Application Documents

- Planning Application Form and certificates of ownership;
- Planning, Design & Access Statement;
- Statement of Community Involvement;
- An Environmental Statement (ES), including assessments and mitigation recommendations:
  - Alternative Options;
  - Landscape and visual amenity (including photomontages and view assessment;
  - Aquatic and terrestrial ecology;
  - Historic environment;
  - Water environment (flood risk, drainage and water quality);
  - Community Impacts;
  - Traffic and transport (construction phase);
  - Air quality (construction phase);
  - Noise (construction phase); and
  - Cumulative assessment.
- Non Technical Summary to the ES;
- Ladies' Bathing Pond Replacement Changing Facility Design and Access Statement.
- Arboricultural Impact Assessment;
- Transport Statement;
- Flood Risk Assessment;
- Sustainability Statement; and
- Project Management Plan (including Construction Management Plan and Site Waste Management Plan).

Planning Application Drawings

- Site Plan (Location, Red Line) identifying the planning application area and extent of CoL's custodianship (Figure 1.1);
- Highgate and Hampstead Chains Overview Document
- Planning Drawings and Design documents (one per pond) which include:

- Environmental Masterplan – Existing
- Environmental Masterplan – Proposed
- Cross Sections
- Section Elevations
- Section details
- Sketches (for Model Boating and Mixed Bathing)

- Verified Views (photomontages).

Structure of Document

1.26 The remainder of this Planning Design and Access Statement comprises the following sections:

- Section 2 describes the Site and the surrounding area, providing a background to the determination of key environmental issues;
- Section 3 outlines the options development process which has fed into the choice of the Proposed Development;
- Section 4 gives a brief description of the nature and purpose of the Proposed Development;
- Section 5 outlines the planning policy framework identifying any designations pertaining to the Site and the wording of policies and guidance relating to key environmental issues;
- Section 6 provides an appraisal of the likely significant effects of the Proposed Development on the environment.
- Section 7 provides commentary on design and access considerations that have shaped the Proposed Development;
- Section 8 draws conclusions on the acceptability of the Proposed Development.

DO NOT SCALE

N

Hampstead Heath Extension

Kenwood House Nursery

KENWOOD

St Michael's Church

Golders Hill Park

Sandy Heath

West Heath

East Heath

HIGHGATE

St Anne's Church

Vale of Health

Parliament Hill Fields

Christ Church Hampstead

South Hill Park

HAMPSTEAD

A Stock Pond
B Kenwood Ladies' Bathing Pond
C Bird Sanctuary Pond
D Model Boating Pond
E Men's Bathing Pond
F Highgate No.1 Pond
G Vale of Health Pond
H Viaduct Pond
I Catchpit
J Mixed Bathing Pond
K Hampstead No.2 Pond
L Hampstead No.1 Pond
M Borrow Pit
N Borrow Pit
O Borrow Pit
P Borrow Pit

Planning Application Red Line Boundary

Land within City of London Corporation Ownership

Drawing Status: FOR INFORMATION

Suitability: -

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Client: City of London Corporation

Project Title: HAMPSTEAD HEATH PONDS PROJECT

Drawing Title: PLANNING APPLICATION BOUNDARY

Scale	Designed	Drawn	Checked	Authorised
1:10,000	JF	GA	JF	JF
Original Size	Date	Date	Date	Date
A3	15/05/14	15/05/14	15/05/14	15/05/14

Drawing Number: FIGURE 1.1

Revision: -

\\WSAtkins.com\Project\GBEMC\Water\Project\AK0098 Dams\5117039 Hampstead Heath Flood and WQ Management\70 - Working Folders\76 Plan\FIGURE 1.1 PLANNING APPLICATION BOUNDARY.dwg
Jun 26, 2014 - 10:12am

2. The Site and Surroundings

Site Location

2.1 Figure 1.1 identifies the location of the Site and shows the location of all of the ponds which included in the Proposed Development. The red line boundary encompasses the Proposed Development including construction works, construction compounds, borrow pits and access. Land within the blue line is all land under the custodianship of CoL.

2.2 Hampstead Heath is a large public open space, designated in the Camden Local Plan as Metropolitan Open Land and Open Space, covering approximately 300 hectares in the north of London. The Heath lies mostly within the London Borough of Camden with the adjoining Hampstead Heath Extension and Golders Hill Park within the London Borough of Barnet administrative boundary. The Proposed Development involves work on the Hampstead and Highgate pond chains, which lie wholly within the London Borough of Camden administrative area.

2.3 Hampstead Heath is divided in two by Spaniards Road (B519). The Site is located within the main body of the Heath to the east of Spaniards Road.

2.4 In addition to the ponds, Hampstead Heath broadly comprises a mix of wooded areas and grass parkland areas and is intersected by multiple formal and informal footpaths. Two areas of woodland situated in the northern half of the main body of the Heath, called the Hampstead Heath Woods (managed by English Heritage), are designated as a Site of Special Scientific Interest and cover an area of approximately 16.6 hectares.

2.5 The grade I Listed Kenwood House and Kenwood Estate are located to the north of the main body of the Heath and are currently managed by English Heritage. There are a number of structures and buildings associated with Kenwood House that are designated as grade II and II* Listed Buildings. In the centre of the Heath on the ridge separating the two chains of ponds is a Bell Barrow designated as a Scheduled Monument.

2.6 Hampstead Heath is surrounded by built development. To the south and west are the Hampstead suburbs of Gospel Oak and Childs Hill respectively. To the north and east are Highgate and Dartmouth Park respectively. The small hamlet of Vale of Health comprising approximately fifty residential dwelling is located within the East Heath in the south west corner and immediately west of the Vale of Health Pond.

2.7 Most of the built development backing onto the main body of the Heath comprises residential properties, but other notable potentially sensitive land uses include the Heath Life Education Centre and Lido located in the southeast corner of the Heath. To the north of the Lido are a number of formal sports facilities including an athletics track and field, and cricket pitches. The William Ellis secondary school is located adjacent to the cricket pitches. There are a number of additional schools located a short distance from the East Heath in the surrounding suburbs.

2.8 In terms of linkages and routes across the Heath, the Site is crossed by the Metropolitan Walk City Walk 1. There is also a horse riding route, a number of formal cycleways and an extensive path network across the Heath.

2.9 The ponds in the Highgate and Hampstead Chains are described in brief below.

The Highgate and Hampstead Chain of Ponds

Highgate Chain

2.10 The Highgate chain of ponds is the north easterly of the two pond chains and comprises eight ponds. The upper two ponds; Wood Pond and Thousand Pound pond, are located within the SSSI. Both are owned by English Heritage and located in Kenwood Park; these ponds are not located within the Site and no works are proposed here. The six lower ponds are described in more detail below.

Stock Pond (labelled 'A' on Figure 1.1)

2.11 Stock Pond is the uppermost pond in the Highgate chain that is part of the Proposed Development. The pond is completely surrounded by a belt of mature trees that screen the pond from the rest of the East Heath. Natural earth banks surround the pond and are vegetated with reeds growing at the margins. Stock Pond is separated from the Kenwood Ladies' Bathing Pond by an earth dam with a paved footpath and metal fence running along the crest. Metal railings surround the pond and preventing public access to the water's edge.

Kenwood Ladies' Bathing Pond (B)

2.12 Kenwood Ladies' Bathing Pond is designated for use by the public (ladies only) for bathing with changing facilities located in a single storey timber building at the southern edge of the pond. Metal railings surround the pond with two gated access points. The pond is well enclosed by trees and thick vegetation. An earth dam separates the Kenwood Ladies' Bathing Pond from the lower Bird Sanctuary Pond.

Bird Sanctuary Pond (C)

2.13 Bird Sanctuary Pond is a dog legged shaped pond which is well screened by mature trees and vegetation. This dam accommodates a footpath running along its crest separating it from Model Boating Pond. Bird Sanctuary Pond has soft and natural looking banks with marginal vegetation. Access to the pond is restricted by a 19th Century cast iron railing that surrounds the pond.

Model Boating Pond (D)

2.14 Model Boating Pond is the most open pond in the Highgate chain and has a man-made appearance with sheet piled banks and dirt path around the entire pond. There pond has generally fairly open surrounds with just a few mature trees present in close proximity to the pond, particularly adjacent to its southern edge. An earth dam with footpath on its crest separates Model Boating Pond from Highgate Men's Bathing Pond. There is an existing grass lined spillway is located in the south west of the pond flowing to Highgate Men's Bathing Pond.

Highgate Men's Bathing Pond (E)

2.15 Highgate Men's Bathing Pond has footpaths on all sides and closely abuts housing on its east side. The pond is designated for bathing use and has changing facilities on its north-east side in a single storey building with two piers. The pond is enclosed by mature trees and the pond banks are relatively natural in appearance, with the exception of the southern edge which has sheet piling on the upstream dam face. A fence runs along the crest of the dam and a grassed slope down to Highgate No.1 Pond has a hard standing footpath running along the bottom of the slope.

Highgate No.1 Pond (F)

2.16 Highgate No.1 Pond lies at the bottom of the Highgate chain and abuts closely to housing on its eastern perimeter (approximately 35 metres separation distance between pond and closest housing). The pond has footpaths on its north and west sides and is well screened by a thick belt of mature trees to the east and south and a thinner belt of less mature trees to the north and west. The pond banks are generally natural in appearance.

The Hampstead Chain

2.17 The ponds in the Hampstead chain were excavated in the 16th Century for water supply purposes. The Hampstead chain comprises 5 ponds with the upper two ponds being significantly separated from the lower three.

Vale of Health Pond (G)

2.18 The Vale of Health Pond lies at the head of the western branch of the Hampstead chain. The pond has a path to its eastern side and has a natural appearance being well vegetated with mature trees and having earth banks and marginal vegetation around the majority of the pond. Residential properties along the Vale of Health road are set above the pond with rear gardens running down the slope to the banks of the pond.

Viaduct Pond (H)

2.19 Viaduct Pond is characterised by a Grade II Listed viaduct which carries a footpath across the pond. The pond is set within woodland. The southern bank of the pond is hard engineered comprising steel sheet piling with the remaining banks made of earth with a more natural appearance.

Catchpit area (I)

2.20 Between Viaduct Pond and Mixed Bathing Pond is a small wooded valley which is very enclosed by mature and semi-mature trees and vegetation. The southern end of the valley contains a concrete silt trap structure designed to remove silt from water flowing downstream before it reaches Mixed Bathing Pond.

Mixed Bathing Pond (J)

2.21 Mixed Bathing Pond is enclosed by thick woodland to the north, east, and west but is open to the south where the narrow earth dam separates the pond from Hampstead No. 2 Pond. The pond has natural looking earth banks except the southern bank which is hard engineered with steel sheet piling. The pond is used for public bathing and has changing facilities on its north eastern bank.

Hampstead No. 2 Pond (K)

2.22 Hampstead No. 2 Pond is enclosed by trees apart from the south eastern corner where large Victorian town houses located on South Hill Park Gardens back on to the pond. The banks are mainly earth with a natural looking appearance and overhanging trees, except the southern bank which is hard engineered with steel sheet piling. There is an avenue of veteran plane trees across the dam which extends along the western bank of the Hampstead No.1 Pond.

Hampstead No. 1 Pond (L)

2.23 Hampstead No.1 Pond lies at the bottom end of the Hampstead chain in close proximity to housing on its eastern and southern perimeter, on the eastern bank the pond is bound by the rear gardens of residential properties. The earth banks of the pond are natural in appearance with overhanging trees and marginal vegetation.

Heath Designations

2.24 The Camden Local Plan Maps identify the entire Heath as Metropolitan Open Land (MOL) and Open Space; these designations cover both the Hampstead and Highgate chains of ponds.

2.25 The Local Plan Maps and a search of MAGIC interactive maps also identify the following constraints on Hampstead Heath:

- Hampstead Heath Woods SSSI in the north of the Heath, comprising North Wood and Ken Wood;
- Hampstead Heath is designated as a Site of Metropolitan Importance for nature conservation (SMI). SMIs are Sites of Nature Conservation Importance (SNCIs) which have been designated of metropolitan importance; this is the top tier including the best examples of London's habitats;
- Two areas of Ancient Woodland:
  - Bishops Wood Ancient and Semi-natural Woodland – in north west of Heath;
  - Ken Wood Ancient and Semi-natural Woodland – in north of Heath;
- Archaeological Priority Area in north-west part of Hampstead Heath;

- Scheduled Ancient Monument in centre of Hampstead Heath – Bell Barrow called Boadicea's grave;
- Hampstead Heath Public Open Space;
- Designated views into and across the Heath;
- Metropolitan walk going into Hampstead Heath;
- Conservation Areas surrounding the Heath to the east, south and west and Conservation Areas located within the Heath in the north-west section.
- Kenwood Grade II* Registered Parks and Garden in the north of the Heath;
- The Hill (Inverforth House) Grade II* Registered Parks and Garden in the north-west of the Heath in 'West Heath'); and
- 14 Listed Buildings on the Heath, including Viaduct Bridge on Viaduct Pond (Grade II Listed) and the Pergola (Grade II* Listed).

2.26 Section 5 details the relevant planning policy framework which guides development within, or adjacent to, these designations. Section 6 provides an assessment of how the Proposed Development has considered this policy framework.

3. Options Development

3.1 An overview of the process of engagement with stakeholders, Heath Staff, and the wider public, and how this has informed the options development, is shown in the flow chart in Figure 3.1 (Overview of Preferred Solution Development Process) below.

3.2 The process started with the problem definition stage, and then progressed through three iterations of option development with stakeholders, the Heath Staff, and the wider public, culminating in a 12 week non-statutory public consultation process between 26th November 2013 and 17th February 2014 (see SCI for further details).

3.3 While there was no clear preference between the various options consulted upon, there were a number of themes about design that emerged from the comments received, and these have been fed into the design process and have been taken forward as part of the detailed design.

Problem Definition

3.4 The problem definition can be summarised as follows:

- Industry standard best practice guidelines state that CoL should ensure the dams can pass the flows associated with the PMF safely. The modelling undertaken showed that most of the dams will be overtopped in small return period floods, from as low as a 1:5 year return period events. Any size flood event, whether 1 in 20, 1 in 1,000 or the Probable Maximum Flood, could theoretically happen tomorrow;
- The capacities of the existing overflow pipes at each pond are too small, and the storage capacities of each pond, between the overflow level and the dam crest level, are not sufficient to deal with the floods without floodwater flowing over the dam crests onto the downstream faces;
- In most cases, overtopping of the dams is not acceptable because of the speed of flow and duration of overtopping, and also because of the tree cover on the downstream slopes of the dams which could concentrate water flow paths and could lead to erosion of the dam. There is therefore an unacceptably high risk of a breach of the dams leading to an uncontrolled escape of the stored water in the ponds;

To make the ponds safe, spillways are required which would pass the excess floodwater safely round the dams. The design standard for these spillways is the Probable Maximum Flood, according to established industry best practice (Floods and Reservoir Safety, Institution of Civil Engineers, 1996).

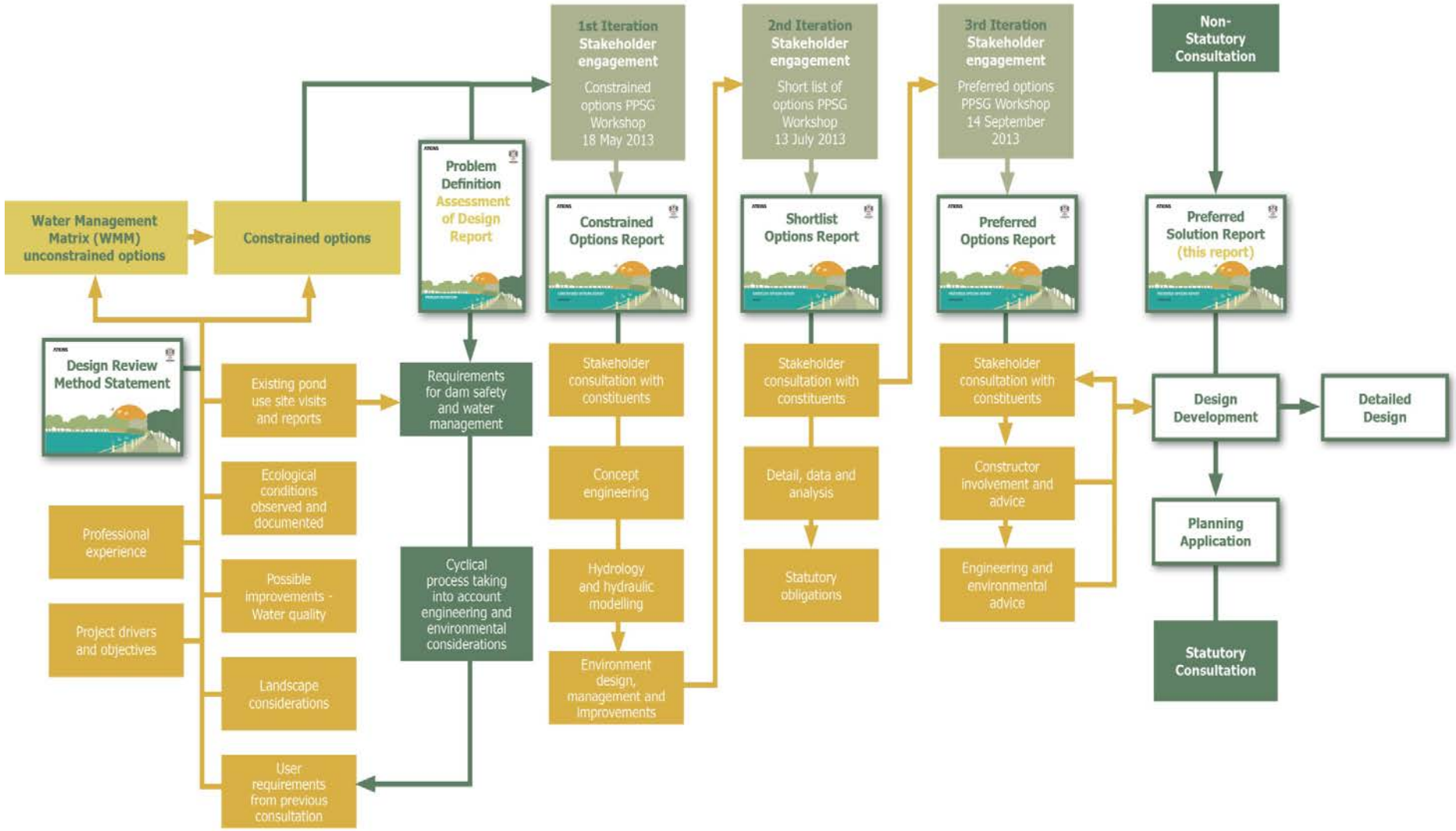

Figure 3.1 Overview of the option development process

3.5 Atkins has developed a preferred solution that virtually eliminates the risk of any dam breach caused by a flood within the Highgate and Hampstead chains of ponds, and the attendant risk to life and property downstream, in order to meet the City's existing obligations under the Reservoirs Act 1975, and expected additional obligations under amendments introduced by the Flood and Water Management Act 2010, whilst preserving the natural aspect and state of the Heath as far as possible, in accordance with the Hampstead Heath Act 1871.

Key Objectives

3.6 The preferred solutions meet the key objectives of the project identified in the options reports:

- To improve dam safety on all the dams in the chains;
- To maintain (or increase) the standard of protection downstream;
- To not increase the rate of flow discharged from the last dam in any flood event, compared to the flows expected in the existing scenario; and
- To preserve the Heath as a natural open space.

Design Principles and Design Philosophy - An Overview

3.7 The project design principles and design philosophy have informed the development of the preferred solution. The design principles and design philosophy summarised in the options reports have been retained and developed with feedback from engagement with stakeholders, Heath Staff, and the wider public, including the non-statutory public consultation, and having regard to the environmental considerations of each pond and the need to preserve the natural aspect and state of the Heath as far as possible, whilst ensuring that dam safety requirements are met.

3.8 These considerations include:

- Maintaining existing water levels and the distinctive character of the Heath and key views, and minimising the scale of intervention, and impact on visual amenity and the use of the Heath for all users – including swimmers, anglers, walkers and nature enthusiasts;
- Environmental management is an integral part of the project. In addition to improving water quality the project must ensure that, following construction work, reinstatement of the Heath's natural aspect takes place as soon as possible. The collaboration between technical specialists has already ensured that none of the options being considered preclude pond and terrestrial habitat reinstatement and restoration. The use of appropriate and natural materials and minimal intervention will be used to preserve the natural aspect and state of the Heath as far as possible.

Design Principles

3.9 Design principles that apply to the preferred solutions to enable integration of the dams with the Heath character include:

- Each chain of ponds is considered as a whole system, so that any significant increases in storage capacity are focused in the least sensitive locations, minimising the increases of dam height at more sensitive ponds, and reducing the impact of residual works required elsewhere;
- Each dam must be able to pass the design flood inflow safely, in accordance with Table 1 of 'Floods and Reservoir Safety' (ICE, 1996). For all dams, this is the Probable Maximum Flood (PMF) as they are all Category A dams where "a breach could endanger lives in a community downstream". A community is defined in 'Floods and Reservoir Safety' as 10 people or more;
- Tree loss is to be minimised to retain the character and natural aspect, of the Heath;
- Each preferred solution has been designed as a passive system to improve the resilience of the dams without reliance on any mechanical system (such as valves or pumps) or human intervention. The passive system of each preferred solution has been designed to pass excess flood water at each dam following these principles:
    - A spillway is required at most ponds that will pass as much as possible of the PMF, depending on whether overtopping is tolerable (see Table 1 of 'Floods and Reservoir Safety', ICE, 1996.)
    - Where overtopping of the dam crest is tolerable (which only applies to the dams at Mixed Bathing and Bird Sanctuary Ponds), and excess floodwater up to the PMF still needs to be passed over the dam crest, reinforcement works to the downstream face will be required to allow flow over part or all of the width of the dam crest.
    - Where the overtopping of the dam crest is not tolerable, which applies to the majority of the dams (due to the number of trees on the crests and downstream slopes), some works to raise or restore the dam crests and create natural open grass spillway channels are proposed, to pass the PMF in order to minimise risk of dam failure. There is therefore a trade off at each pond between the amount of dam crest raising, and the width and depth of the spillway required to pass the PMF safely.

3.10 The design is constrained by these principles, which have a basis in legal requirements and standard dam safety guidelines.

Design Philosophy

3.11 The design philosophy of the preferred solutions is strongly influenced by the requirement to comply with the Hampstead Heath Act 1871, the City's Vision for the Heath, and the Hampstead Heath Management Plan. The solutions have also been influenced by feedback from engagement with stakeholders, Heath Staff and the wider public from engagement with stakeholders and the wider public, including the non-statutory public consultation.

3.12 The design philosophy includes:

- More storage capacity, which has been added in the middle of each chain of ponds for the preferred solutions to reduce the rate of flow of floodwater to the downstream ponds. The amount of works required to increase the resilience of the dams to overtopping has therefore been reduced in scale;
- Reinforcing the whole dam crests (and removing all trees on the dams) would not be required in most cases. Similarly works would only be required to install spillways, therefore preserving the majority of the trees on the dams;
- The water level has been retained in each pond to protect the visual amenity and character of the Heath. Any new spillway has been set above the typical water level of the pond in question, so that it would be normally dry and allow the spillway surface to be covered in grass. The nature of the grass mix (either plain 'amenity' grass, or 'native wildflower' grass mix) will depend on the expected speeds of water flows down the spillway in each case;
- 'Naturalised' spillways have been proposed in the optimum locations around the ends of dams, to minimise tree loss and visual impact. In addition to grass seeding on spillways, other environmental mitigation measures identified to integrate the works, and to retain the distinctive character of the Heath and key views, include planting on the upstream face of the dams and marginal planting eg reedbeds on the pond perimeter;
- The preferred solution design development has been constrained and informed by the existing environmental considerations and an overriding aim identified for each pond to reflect the unique landscape character of the pond. These distinct characteristics have informed the landscape design strategy to include earthmodelling and planting to integrate and soften the appearance of the dams and has been used to develop a planting list and materials palette that considers the type and finish of materials e.g. the potential type, colour, design etc. of potential cladding.

3.13 The ponds and pond margins provide diversity in aquatic and terrestrial habitat. These habitats need protection and monitoring to minimise the risk of habitat loss/damage and the risk of harm/disturbance to animals including the spread of invasive species. Where any potential detriment to these habitats is identified this requires mitigation and reestablishment to achieve a balanced ecology around the ponds.

3.14 Environmental mitigation measures have been considered collectively across the chains and are proposed as an integrated part of the options, including consideration of the engineering works (i.e. the permanent works) and the temporary construction impacts on the ponds. All pond restoration will be integrated with the existing form and function of each individual pond, and the approach to improve water quality.

3.15 Four approaches have been proposed to restore the ponds, whilst retaining each of their individual traits (so not all these treatments have been proposed for all ponds):

- Softening the edges and banks in their current locations;
- Softening the edges and banks by creating new margin in the pond;
- Softening the edges and bank by excavating new margin set back from the pond;
- Restoring by adding new islands or internal margins.

3.16 The process for choosing the preferred solution which forms the basis for the Proposed Development is detailed in the Preferred Solution Report. All the options reports, including the Preferred Solution Report, can be viewed on the Ponds Project website:

https://www.cityoflondon.gov.uk/things-to-do/green-spaces/hampstead-heath/ponds-project/Pages/Reports.aspx

Feedback from Consultation Process

3.17 The feedback given by stakeholders throughout the options development process has been considered by CoL and the design team and, where feasible, it has been used to influence the design of the preferred solution for each pond chain. For example:

- Providing extra storage capacity by building a flood storage dam at the Catchpit area in order to minimise works at most sensitive ponds - This has become a key element of the options for the Hampstead chain of ponds, and has been modelled extensively. The flood storage dam would create around 12,000m³ of additional flood storage capacity, which significantly reduces the extent, scale, and impact of works to downstream ponds.
- Keeping the Kenwood Ladies' Bathing Pond changing rooms in the centre of the dam - This has been incorporated into the options design due to queries about the impact of moving the building to the east bank in terms of lifeguard visibility.
- Desilting ponds at the same time as the dam safety works – From an early stage it was decided that works to remove silt from the ponds could be carried out while there are construction plant on site to carry out the dam safety works. As well as achieving efficiencies and reducing the overall impact of two separate sets of works, this creates possibilities such as the potential for moving the silt into the borrowpits created to provide fill for raising dams. Certain ponds are prioritised for these desilting works, such as Viaduct Pond, Stock Pond, and Bathing Ponds.
- Retaining the group of trees on the west bank of Model Boating Pond and turning the area into a peninsula - This idea has been incorporated in the design in a two

stage process, firstly it was decided to have an island to ensure retention of the trees and subsequently it was decided that access should be provided to the island.

- Traffic management ideas - Suggestions such as avoiding movement between pond chains (in order to minimise the impact of construction traffic) have been incorporated into the Construction Environmental Management Plan.
- Modelling of options to reduce loss of plane trees at Hampstead No.2 Pond - At the constrained options workshop, there was a general consensus that the line of plane trees on and near the dam at Hampstead No.2 Pond was a key feature on the Hampstead chain of ponds. Consequently, the plane trees became a focal point for all options modelled on this chain, with the number of plane trees affected becoming a key criterion in options comparison. As a result of concerns raised over the Plane trees, efforts were concentrated on ensuring the minimum numbers of trees are required to be removed and that these trees are not part of the avenue visible from Mixed Bathing Pond. This has been possible due to the relocation of the proposed culvert and close liaison between stakeholders, CoL and Atkins' engineering and environmental teams.
- Borrowpit locations - Heath staff and stakeholders have provided suggestions for the location of borrowpits for fill to raise embankments these have formed the basis for ground investigations which have informed the final choice of locations in the Proposed Development. A key aim was to locate borrowpits as close to works which require their material thus reducing potential traffic movements within and around the Heath and to ensure the location minimised visual impact.
- Widening the proposed reinforced spillway at Mixed Bathing Pond to reduce the dam raising - The causeway at Mixed Bathing Pond is one of the few dams where this kind of approach is feasible, since the downstream slope is a uniform grassy slope and is mostly clear of trees. An increased spillway width, with a lower dam crest level was modelled and meant that a 1 metre raising was sufficient rather than 2m as originally proposed.

3.18 Feedback from the public consultation also fed into the detailed design of the Proposed Development. Key comments included:

- A preference for natural style landscaping of earth banks and natural features over walls where possible;
- Paths to have proper surfacing;
- Access and safety of children, families and disabled to be shown;
- Maintain the present visual rural / countryside landscape and amenity;
- Opportunities to create and enhance wildlife should be taken where possible; and
- Views should be maintained.

3.19 The options development process has been an extensive iterative process starting with high level potential solutions which were either discounted or taken forward and then through a detailed engagement process which has allowed stakeholders to directly influence the final detailed design of the Proposed Development, where appropriate.

Alternatives

3.20 The main alternatives to the Proposed Development include options considered at the initial feasibility stage and subsequent suggestions made by various stakeholders. Alternatives considered were:

- Do nothing;
- Remove the dams;
- Improvement works only at the three ponds designated at large raised reservoirs;
- Lower pond water levels;
- Raise pond water levels;
- Re-pile existing dam cores;
- Re-pile existing upstream dam face;
- Installation of new sustainable drainage on the Heath;
- Creation of additional flood storage area;
- Increase capacity of the Thames Water sewer network; and
- Managed option (including early warning system).

3.21 The alternatives are looked at in more detail in Chapter 4 of the ES.

3.22 Most of the options were discounted early on as they do not address the fundamental issue that the Proposed Development seeks to address, namely the Standard of Protection (SoP) of the dams.

4. Description of Development

4.1 This section provides brief description of the nature and purpose of the Proposed Development.

The Proposed Development

4.2 The purpose of the project is to virtually eliminate the risk of dam failure at any of the ponds in the Highgate and Hampstead chains of ponds that could result from severe flooding and the consequential risk of loss of life and damage to property, to comply with the requirements of the Reservoirs Act 1975 and the Flood and Water Management Act 2010.

4.3 In broad terms the key elements of the Proposed Development are as follows:

- Increase flood storage capacity by raising some of the dams and constructing a new dam in the Catchpit area;
- Reinforcement of dams where required;
- Construction of spillways to prevent any overtopping which would erode the dams;
- Mitigation of ecological and landscape impacts by softening pond edges and improving marginal habitat; and
- Improvement the water quality of the ponds.

4.4 The design of the Proposed Development considered each chain of as a whole system so that significant works have been located in the least sensitive locations, limiting tree loss around ponds and reducing works required in more sensitive locations.

4.5 The detailed description of the Proposed Development is provided in the following sections with a brief description of development provided below:

Proposed engineering works to the Hampstead and Highgate chains of ponds comprising dam raising at Model Boating Pond (2.5m) and Mixed Bathing Pond (1m), new walls along dam crest to increase the height of the dams at Men's Bathing Pond (1m) and Highgate No.1 Pond (1.25m), a 190mm kerb along part of the crest at Hampstead No.2 Pond, a new flood storage dam (5.6m) in the catchpit area, grass-lined spillways at most ponds, dam crest restoration, pond enlargement at Model Boating Pond, a replacement changing room building at Ladies' Bathing Pond and associated landscaping, habitat creation and de-silting.

The Highgate Chain of Ponds

4.6 With the exception of Bird Sanctuary Pond, all of the ponds in the Highgate chain are proposed to have new spillways to allow flood waters to flow to the next pond in the chain in a controlled way. The majority of the dam works would occur at the three lowermost ponds in the chain with crest restorations to the three uppermost dams in the chain. The water levels at all of the ponds in the Highgate chain would be retained.

Stock Pond (A)

4.7 A new open channel spillway measuring 21m wide at the base, 500mm deep and with 1:12 side slopes would be constructed at the south western corner of Stock Pond that would allow flood waters to flow to the Kenwood Ladies' Bathing Pond without overtopping the dam. The spillway would be set above the top water level and would be dry in normal conditions. The spillway would be lined with geotextile and overlaid with topsoil and grass. This would give the spillway a natural appearance and would enable the footpath access across the dam crest to be maintained.

4.8 Two new 900mm diameter overflow pipes set at the top water level would be constructed that would follow the same path as the spillway and would discharge into Kenwood Ladies' Bathing Pond.

4.9 Dam crest restoration would be undertaken to raise existing low points by up to 500mm above the current levels which would require approximately 17m^3 of fill material. Trees along the dam would be retained where possible. The construction and maintenance of the spillway would require the removal of eight trees defined as moderate quality and fifteen trees defined as low quality under BS 5837:2012.

4.10 In order to mitigate the loss of trees and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- Sediment to be dredged from pond bed to improve water quality;
- Creation of a new marginal shelf from dredged sediment planted with common reed and other marginal emergent species on the east bank;
- Removal and management of Japanese knotweed;
- New tree and shrub planting; and
- Replacement of the existing fence to control access to the pond.

Kenwood Ladies' Bathing Pond (B)

4.11 The existing changing rooms would be demolished and replaced with new facilities in the same location. A new floor slab would be raised above the existing so that the underside of the new slab would be 300mm above the new level of the dam crest. The replacement changing rooms would offer the same facilities and capacity as the existing facilities it would replace (see Kenwood Ladies' Bathing Pond Design and Access Statement for more details).

4.12 A new open channel spillway would be constructed at the western part of the dam which would allow flood waters to flow to Bird Sanctuary Pond without overtopping the dam. The spillway would be 870mm deep with side slopes of 1:3 and would have an upper width of 24.6m. The spillway would be lined with a concrete cellular mat, which can be covered with topsoil and grass seeded, except along the existing footpath which will have the same stone surface as it does now. After the spillway passes the bottom of the downstream slope of the dam, an area of topsoil will be lined with shallow reinforcement matting as floodwater runs down to Bird Sanctuary Pond.

4.13 The crest of the dam would be restored by raising the low points by up to 300mm which would require approximately 59m³ of fill material. Trees and vegetation on the downstream slope of the dam would be retained where possible. The construction and maintenance of the spillway would require the removal of three trees defined as moderate quality and fifteen trees defined as low quality under BS 5837:2012.

4.14 In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- Use of prefabricated above and below ground structures to minimise construction time and the time required for the closure of the bathing pond;
- Character of historic entrances and approaches including Meadow Gate to be retained;
- Woodland or scrub grassland to be planted along the western edge in the meadow to reinforce existing planting, provide further enclosure to the pond and improve habitat value;
- Sediment to be removed from pond bed to improve water quality;
- Realignment of existing stream with creation of excavated washlands and associated large woody debris check dams to control sediment input and improve water quality of discharge to pond; and
- Footpath reinstatement along the dam crest.

Bird Sanctuary Pond (C)

4.15 No spillway would be constructed at Bird Sanctuary Pond. The dam retaining Bird Sanctuary Pond would be re-graded (smoothed) on the downstream face and lined with a shallow turf reinforcement mat. The crest of the dam would be restored by raising the low points by up to 80mm.

4.16 The existing overflow pipe and concrete slab between Bird Sanctuary Pond and Model Boating Pond would be removed and replaced with a new overflow pipe at the western end of the dam to discharge to the widened area of Model Boating Pond.

4.17 No trees would require removal but there would be some scrub clearance on the downstream face of the dam. In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- Existing fence to be replaced to maintain existing access restrictions;
- Landward extension of existing reed bed at the south west of the pond through ground excavation;
- New channel excavated to form wet woodland and habitat for reed bed expansion, with selective tree removal and thinning on the western bank of the pond;
- Creation of a series of four online pools to improve wetland ecology and reduce sediment input from stream entering south west corner;

- New amphibian and reptile hibernacula around the pond margins;
- Existing kingfisher nesting site retained and protected; and
- Existing eastern bank retained as existing.

Model Boating Pond (D)

4.18 Model Boating Pond would be subject to the most extensive works in the Highgate chain of ponds. The existing dam would be raised by 2.5m. This would be achieved by constructing an earth embankment on top of the existing dam crest and over the existing sheet piles on the upstream face of the dam. This would extend the dam by between 21 – 28m into Model Boating Pond. Two trees would need to be removed to accommodate the new embankment. Raising the dam would require approximately 12,000m^3 of fill material.

4.19 A new open channel spillway would be constructed across the new embankment broadly following the path of the existing spillway. The new spillway would be 20m wide at the base and 1.1m deep relative to the raised dam crest, but will be above the existing ground level. After passing the downstream toe of the new embankment, the new spillway is formed by shallow turf reinforcement matting across the natural ground and down the downstream slope of the existing dam. A low training bund running down the downstream slope of the existing dam would guide the flow towards the natural ground to the west in order to minimise lining works.

4.20 The west bank of the pond would be excavated up to 65m inland from the existing pond edge to provide some of the required fill material for the dam raising and would include the removal of the existing sheet piles. This would create a new slope varying between 1:5 and 1:7 where the existing slope is 1:10. The existing sheet piles would be removed and the footpath around the pond would be reinstated further up the new slope. The existing trees on the west slope would be retained and material excavated around the trees to create an island connected to the Heath by a causeway. The shallow channel forming the new island would be planted with marginal wetland planting which would extend round to the north bank of the pond to soften the hard engineered edges. The existing sheet piling and pond banks on the north and east banks would be retained. The lower footpath at the water's edge will be re-routed to encircle the widened pond and connect with a new footpath on the raised dam crest. The upper footpath on the west bank will be re-routed to pass above the new spillway and the island.

4.21 Trees and vegetation would be retained where possible. The construction and maintenance of the spillway would require the removal of two trees defined as moderate quality and six trees defined as low quality under BS 5837:2012.

4.22 In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- Naturalise the appearance of the dam with new planting to reflect the open character of the pond including species rich grassland on the upstream dam face;
- Amenity use of the 'sunny bank' on east side extended to upstream dam face;

- Dam crest raising limited to upstream face of the dam to retain existing trees and minimise the impact to views across to Highgate Men's Bathing Pond;
- Creation of new margin along the new dam edge with high and low planting to screen the new embankment;
- Access extended along upstream dam face;
- Pond enlarged and naturalised along western bank with tress retained;
- New footpath on upstream face of the raised dam and along realigned west bank providing continuous access to pond edge;
- New tree and shrub planting; and
- Sediment to be dredged from pond bed at Southern end of pond.

Highgate Men's Bathing Pond (E)

4.23 A low earth bund measuring 750mm in height would be constructed west of the dam. A new wall measuring 1m high would be constructed along the line of the existing fence on the dam crest. The wall would be constructed from steel or plastic piles driven sufficiently deep to reduce the current leak in the dam. The sheet piling would be clad in a material to be agreed

4.24 A new open channel spillway 25m wide at the base would be formed by levelling and lining the gap between the earth bund and the new wall. The spillway would widen once it has passed the dam to 43m width at the base. The base of the spillway would mostly be at the existing ground level with some lowering of the natural ground at one end to form a 25m wide flat area. The spillway would be lined with a shallow turf reinforcement mat. A training wall would be constructed to train flows over the spillway. To minimise effects on a tree on the dam, this wall could be formed with H-section posts filled with timber sleepers, so that the posts miss the structural roots of the tree.

4.25 Trees and vegetation would be retained where possible. Construction and maintenance of the spillway would require the removal of fifteen trees defined as low quality under BS 5837:2012.

4.26 In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- Closure of the pond for bathing would only be required for the remedial works to the dam and silt removal. The pond could remain open for all other proposed works;
- Creation of a new margin along the existing sheet piling of the dam to provide fishing access and planting to soften the appearance of the sheet piles;
- Extension of the existing reed bed through ground excavation and piped culvert removal to trap sediment at the inflow from stream entering north west corner to be combined with the creation of two small check dams in stream to control sediment input; and

- New tree and shrub planting.

Highgate No. 1 Pond (F)

4.27 A new open channel spillway 64m wide at the base would be constructed by filling in the low spot between the west end of the dam and the hill to the west. The spillway would have a shallow lining of turf reinforcement mat which would be laid just below the topsoil. The footpath to the west of the pond would be raised by around 300mm with a gently sloping ramp. A return wall will form one side of the spillway following the existing fence down the slope. This wall will be formed with H-posts and timber sleepers to avoid tree loss on the other side of the fence line.

4.28 A new concrete wall would be constructed along the crest of the dam which would raise the effective dam height by 1.25m. The wall would be clad in a material to be agreed to soften the appearance.

4.29 Trees and vegetation would be retained where possible. The construction and maintenance of the spillway would require the removal of four trees defined as moderate quality and twelve trees defined as low quality under BS 5837:2012 and ensures the protection of the veteran Oak (tree number 0140).

4.30 In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- Extend the existing margin along the north west bank through localised bed level raising;
- New marginal shelf along dam face created from sediment removed, planted with marginal emergent species;
- New tree and shrub planting; and
- Retention of woodland screening along the north east bank.

The Hampstead Chain of Ponds

4.31 The existing water levels of all the ponds in the chain would be retained. The bulk of the works would occur at the Catchpit area where a new dam is to be provided. Overspill from the ponds would be controlled by a mixture of open channel spillways and box culverts. Detailed proposals for each pond are outlined below.

Vale of Health Pond (G)

4.32 A new open channel spillway measuring 5m wide at the base 100mm deep and with 1:12 side slopes would be constructed at the southern end of the dam. One tree would require removal. The spillway would be constructed from concrete or geotextile and lined with topsoil and grass to give a natural appearance and to maintain the footpath along the crest. A new 500mm diameter outlet pipe would be installed in the dam to augment the existing overflow pipe and would run parallel to the existing pipe.

4.33 The dam retaining Vale of Health Pond is uneven which creates weak points in the structure. Dam crest restoration by a maximum of 560mm would be undertaken along just over half of the dam. This would be achieved in two sections. The lower section would comprise 300mm of fill added to the crest and the top section would comprise a 260mm containment kerb. The kerb could be buried under topsoil or clad to suit stakeholder preferences. Trees along the dam would be retained.

4.34 Trees and vegetation would be retained where possible. The construction and maintenance of the spillway would require the removal of one tree defined as moderate quality under BS 5837:2012.

4.35 In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- New reed bed created in the south west corner in front of the existing inflow; and
- Marginal planting on the south east bank.

Viaduct Pond (H)

4.36 A new shallow open channel spillway measuring 4m wide at the base and 300mm deep with side slopes of 1:12 would be constructed at the south eastern corner of the pond. The spillway would be located at the east end of the dam. The slope of the spillway as it crosses the dam crest footpath would be 1:12 on the west side, to maintain access across the spillway base. The east slope of the spillway merges into the existing ground at a slope of around 1:3. Currently access to the east end of the dam from the viaduct footpath is down a set of steps which stop short of the dam crest. There is a possibility of continuing these steps down the valley sides and into the spillway to improve connectivity of access onto the dam from that side. The spillway would be constructed from concrete or geotextile and lined with topsoil and grass to give a natural appearance.

4.37 A new 500mm overflow pipe would be installed underneath the new spillway to augment the existing overflow pipe. Works to the existing overspill pipe would improve the inlet structure.

4.38 Dam crest restoration would be undertaken to raise low points by up to 190mm by infilling the low points and would require a nominal amount of fill material.

4.39 Trees and vegetation would be retained where possible. The construction and maintenance of the spillway would require the removal of five trees defined as low quality and one tree defined as ‘cannot realistically be retained as living trees’ under BS 5837:2012.

4.40 In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- Sediment to be removed from pond bed to improve water quality;
- Creation of new margin using dredged sediment with marginal planting along the east bank;

- New tree and shrub planting;
- Reinstate the existing timber clad sheet piling in front of the new spillway;
- Stabilisation of marginal wetland area in northern section of pond to facilitate reed bed development.

Catchpit area (I)

4.41 A new dam would be constructed in the Catchpit area at the lowest point of the valley, partially located over the existing concrete lined pond. The new dam would not retain any water under normal conditions. The dam would measure 5.6m in height which would require approximately 4,800m^3 of fill material. The dam slopes would be 1:3 on the upstream face, 1:4 on the downstream face and would be 40m wide at the widest part of the base. The crest of the dam would be approximately 100m long.

4.42 The dam would be of earth construction with a grass surface. Most of the crest would be one large spillway designed to be overtopped along the entire length. The dam is designed to provide a new flood storage area and the pond created by the new dam would only fill up with water in heavy rain events. Most of the time the pond would be 'dry' with an open meandering stream running along the valley floor supporting marshy habitats.

4.43 A 750mm wide pipe in the dam would allow the stream to flow unimpeded and would allow the slow release of captured flood water downstream to Mixed Bathing Pond. The upstream end of the pipe will have a small concrete inlet structure with a debris screen, allowing the raking out of debris from standing above the headwall. The downstream end of this pipe would connect into an open chamber which would be connected to the existing chamber that feeds into the existing pipe which discharges into Mixed Bathing Pond. In large floods, some floodwater will spill out from the open chamber and flow across the path. Two new silt collection ponds formed by two low stone check dams 1m deep would be constructed upstream of the main flood storage dam. Reedbeds will be planted on gravel beds on the upstream ends of the ponds and small (200mm diameter) pipes will pass low flows through the check dams to avoid stagnation in the small ponds.

4.44 Trees and vegetation would be retained where possible. The construction of the new dam would require the removal of twelve trees defined as moderate quality, 49 trees defined as low quality, and ten trees defined as 'cannot realistically be retained as living trees' under BS 5837:2012.

4.45 In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- Replacement of existing concrete lined sediment trap through the creation of two wetland pools with check dams and associated reed beds designed to control sediment input to Mixed bathing Pond and improve water quality.

Mixed Bathing Pond (J)

4.46 The crest of the dam would be raised by 1m by raising the upstream face by 0.5m and placing a 0.5m earth bund on top of the dam. The upstream slope would be 1:1 and the downstream slope would be 1:3 to match the existing downstream slope gradient. The road would be reinstated along the top of the new dam crest and would be 4m wide. The downstream slope of the dam would be reinforced with a turf reinforcement mat.

4.47 There would be no new spillway for Mixed Bathing Pond and the raised dam is to be designed to be overtopped along the whole length. The existing overflow pipe would be extended further into the pond.

4.48 Trees and vegetation would be retained where possible. The construction and maintenance of the proposed works would require the removal of seven trees defined as low quality under BS 5837:2012.

4.49 In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- Sediment to be removed from pond bed to improve water quality;
- Naturalise the appearance of the dam with new planting to include species rich grassland on the new upstream dam face;
- Creation of a new marginal shelf from dredged sediment planted with common reed and other marginal emergent species on upstream side of dam face;
- New amphibian and reptile hibernacula; and
- Removal of scrub at the northern end of the pond and creation of reed bed to provide treatment of inflow.

Hampstead No. 2 Pond (K)

4.50 The dam crest would be restored by installing a small kerb measuring 190mm in height along 70m of the dam crest.

4.51 Two new box culverts each measuring 2.1m wide and 900mm deep would be installed in the western end of the dam which would discharge spill water to Hampstead No.1 Pond via an open channel spillway. The opening of the culverts would be a drop-shaft inlet structure. This inlet would extend approximately 1.5m out from the existing sheet piles into the pond and would be 6m wide. The structure would be concrete, but could be clad to suit local preferences. A security screen would be fitted across the top to stop entry. The existing overflow pipe would be re-routed.

4.52 The culvert would require the removal of up to 2 plane trees which are not located on the avenue on top of the dam of Hampstead No.1 Pond.

4.53 In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- Semi-mature tree planting to replace the 2 no. plane trees removed during construction;

- Creation of wetland margins along west bank;
- Platform designed to screen drop inlet – to provide potential area for disabled fishing access; and
- New tree and shrub planting.

Hampstead No. 1 Pond (L)

4.54 Four new reinforced concrete box culvert measuring 2.1m wide would be installed through the upper dam crest at the eastern end of the dam with the invert 840mm below the dam crest level. Topsoil would be reinstated above the box culvert, and planting of native shrubs either side of the box culvert inlet could substantially screen the inlet from the view of the public footpath on the west side of the pond.

4.55 The culvert would discharge to an open channel spillway on the downstream face of the dam. The spillway would be lined with a turf reinforcement mat. A stilling basin may be required at the downstream toe of the dam which would be constructed from reinforced concrete and buried under a sacrificial layer of topsoil. The excess floodwater would spill out over the footpath and onto the road, however this would only happen in extreme flood events (larger than a 1:1000 year event) which would overtop the dam in the existing scenario.

4.56 Trees and vegetation would be retained where possible. The construction and maintenance of the culvert would require the removal of five trees defined as low quality and one tree defined as 'cannot realistically be retained as living trees' under BS 5837:2012.

4.57 In order to mitigate any vegetation loss and disturbance caused during construction, a package of environmental measures is proposed comprising the following:

- New planting to integrate the spillway including native shrubs and species rich grass on the downstream face of the dam;
- New tree and shrub planting; and
- Creation of a new marginal shelf from locally dredged sediment planted with common reed and other marginal emergent species along the dam face.

Construction of the Proposed Development

4.58 BAM Nuttall has been appointed as the Contractor for the Proposed Development and would be undertaking all construction works. The following sections outline the construction proposals, more details can be found in the Project Management Plan (PMP) (which incorporates the Construction Management Plan and the Site Waste Management Plan) submitted as part of this planning application.

4.59 A key guiding principle for the construction works is that the works for each chain of ponds are distinct from each other. This minimises impacts to users of the East Heath by ensuring that there would be minimal movement of construction plant, vehicles, or materials across the Heath between the two pond chains.

Borrow pits

4.60 Four borrow pits are required for the Proposed Development, Figure 1.1 shows the location of the proposed borrow pits labelled as M, N, O and P. The borrow pits are areas where the fill material required to raise the dams is obtained from. In order to minimise construction traffic movements across the heath, the borrow pits have been located as close to each pond chain as possible.

4.61 Approximately twice the amount of fill material would be extracted from the borrow pits as would be required for the dams. This accounts for material settlement and the discard of unsuitable material and topsoil and is a worst case and conservative estimate.

4.62 At the Highgate chain of ponds, fill would be obtained from the new channel excavated at the west bank of Model Boating Pond (O) and from borrow pit N at the top of the hill overlooking and to the west of the Model Boating Pond. The remaining fill material would be obtained from another borrow pit at the south east corner of Pryor's Field (P). At the Hampstead chain of ponds it is anticipated that most of the required fill material would be obtained from a borrow pit (M) at the sports ground (informal amenity grassland) north of the Catchpit area.

4.63 Apart from the West bank of the Model Boating Pond, which is to remain open water or a regraded upper slope, the borrow pits in other areas will be reinstated as close as possible to the original level and appearance. The borrow pits would be backfilled with the dewatered sediment removed from the ponds, and any won material from the borrow pits that is unsuitable for the dam works. The borrow pits would be re-grassed after the works have been completed.

Dam raising works

4.64 The dams would be raised using the won material from the borrow pits; the material would be compacted and graded to ensure the correct gradient for the dam slopes.

4.65 For the Model Boating Pond, a portable dam would be used in front of the existing dam. The space between the two dams would be de-watered to provide the necessary working area to construct the upstream dam on the exposed reservoir bed. Once the dams have been raised to the correct levels, any footpaths would be reinstated and the new dam faces re-grassed.

4.66 Highgate No.1 Pond would be raised by constructing a new concrete wall along the dam crest instead of raising the dam height using fill material.

4.67 The sheet piled wall on Highgate Men's Bathing Pond dam would be constructed using a 4 tone piling hammer.

4.68 Only small plant would be used on the dams to ensure the integrity of the dams is maintained.

Worksites and compounds

4.69 There would be a single works compound located at the site of the Kenwood House nursery at the northern extent of the Heath, adjacent to and south of Hampstead Lane. The works compound would be used to store stockpiled materials and plant, and would also be the location of the welfare facilities and the site office which would both be in portacabins. Larger plant would access the Site via the most suitable access to minimise the distance over the Heath which it would need to be transported.

4.70 A series of small worksites would be established at each of the ponds where the construction works would take place. Only plant and materials being used at the time would be located at the worksites and there would be no storage of any unused plant or materials at these worksites. The worksites would be optimised to minimise the construction footprint. The worksites and construction compound would be surrounded by solid hoardings to protect members of the public and ensure the Site the worksites and construction compound are secure.

Construction plant and traffic

4.71 All plant, and the remaining materials not to be found on the Heath, would be brought to site via the works compound at Kenwood House nursery. Plant and materials would then be transported to the worksites using a tractor and trailer similar in size to the plant already in use for maintenance of the Heath. Plant and materials would be transported to the worksites via designated access routes across the main body of the Heath which would make use of the existing hard standing paths and roads. A temporary access route within the Heath will be required to access Stock Pond and Ladies' Bathing Pond from the West to avoid use of Millfield Lane (on the east side of the Highgate chain ponds).

4.72 The Proposed Development is anticipated to generate:

- A maximum of 10 construction vehicles arriving at any one access per day;
- Less than 5 construction vehicles arriving at any one access on the majority of the days; and
- Workers travelling to work via a sustainable mode of travel.

4.73 On most normal working days there would be up to five construction vehicles travelling to and from the Site which would include the two twin-cab pickup trucks, and small vans and flat bed lorries to deliver materials and supplies. Across the whole programme there would likely be up to three days where a maximum of ten construction vehicles could travel to and from the Site. This would likely be at the beginning and end of the construction programme when the construction compound and worksites are being established and decommissioned.

4.74 In order to restrict and manage the HGV's arriving at the Site it has been agreed with London Borough of Camden that no deliveries will occur overnight and deliveries will occur between 10:00-15:30 in order to avoid the vehicular network and pedestrian and cyclist Heath peaks. It should be noted that the majority of deliveries can be scheduled within these time periods however London Borough Camden has accepted that some deliveries (such as during concrete pours where continuous supply is essential) may need to occur during the peak periods but these deliveries will be kept to a minimum.

4.75 There would be up to 30 construction staff working on the Site at any one time. Most construction staff would arrive to site via public transport, but two twin-cab pickup trucks would also be used to transport staff to site.

4.76 More detail on how the potential impacts from construction traffic have been addressed can be found in the Transport Statement.

De-silting

4.77 The ponds would be de-silted using suction pump dredgers. The pumps would be located on the banks of the pond and a large hose with a dredging head would extend from the pump into the pond. Consolidated silt would be agitated using a vibro-core which could then be suction dredged.

4.78 The pump would suck the silt from the pond bed up the suction hose to a discharge hose. The silt would have a high water content (up to 90%) and would be discharged into silt bags where the silt would settle. Dewatering would occur as the silt settles in the silt bags and water passes through the walls of the bag. A flocculent would be added to the discharged silt to speed up silt settlement. The dewatered water would be sufficiently clean due to the filtration of the silt bags and the added flocculent to be either discharged back to the ponds or to infiltrate the Heath depending on the worksite topography.

4.79 During silt removal, turbidity levels would be monitored and silt screens would be deployed if and when necessary.

Construction Programme and Work Hours

4.80 Construction works are due to start in Spring 2015 and would last for a period of 18 months, with all vegetation clearance and de-silting undertaken in the winter months. Construction activities would be phased to minimise impacts. A provisional construction programme is shown in Appendix 3.2 of Volume 3 of the ES. Normal working hours would be 0730hrs to 1800hrs Monday to Friday.

Environmental Management

4.81 The Site is located in a sensitive area with the construction of the Proposed Development having the potential to disturb the existing users of the Heath, nearby residents and other sensitive receptors. The Contractor has produced a Project Management Plan (PMP), this document incorporates the Construction Management Plan and Site Waste Management Plan and is submitted to support this planning application. This document details how mitigation measures would be implemented and who has responsibility for ensuring they are implemented satisfactorily. The Contractor has committed to implementing the following measures as a minimum to minimise environmental impacts:

- Worksite and compound hoardings to be covered with project information, decorative wraps and posters produced by school children from nearby schools;
- Developing and implementing a 'Good Neighbour Construction Charter';
- Works to the three bathing ponds would be programmed to minimise disruption to bathers. Each bathing pond will be closed during different periods, however there will be an overlap in closures, with all ponds closed during February and March 2016;
- Use of portable dams to avoid completely dewatering any of the ponds;
- Delivery of materials outside of peak traffic times;
- Using a 'just in time' approach to materials delivery to minimise stockpiling or material storage on site;
- Construction staff would wear similar style uniforms to the Heath staff;
- Use of hybrid / electric vehicles where possible;
- Construction personnel would travel around the Heath by foot or bicycle unless transporting materials;
- Access routes and worksites to be located away from the SSSI and other sensitive areas;
- All works in the vicinity of any trees would conform with the requirements of BS5837:2012, Trees in relation to design, demolition and construction;
- Adoption of 'landscape protection zones' for the most sensitive areas of the Heath that require protection;
- All refuelling would be undertaken at the Kenwood House nursery construction compound by trained operatives using drip trays and with spill kits on hand.

Benefits of the Proposed Development

4.82 The primary and most important benefit of the Proposed Development is that it will virtually eliminate the risk of dam failure in an extreme storm and therefore protect life and property downstream, this will also ensure compliance with the Reservoirs Act 1975, whilst also taking into account the emerging requirement so the Flood and Water Management Act 2010.

4.83 In addition to this there are other benefits, as listed below:

- Improvement to water quality due to removing silt from ponds and other water quality improvement works and consequential improvement to aquatic ecology within the ponds;
- Improvement in water quality also has health benefits for bathers using the three bathing ponds;
- Landscape works softening some existing pond edges making the ponds appear more natural;
- Enhancement to ecological habitat through marginal, shrub and tree planting;
- Small reduction in risk of surface water flooding downstream;
- Improvement to the changing facilities at Ladies' Bathing Pond as a result of the replacement building;
- Provision of disabled access to the Ladies' Changing Facility and disabled facilities within the building (e.g. disabled changing and toilet facilities); and
- Increased sustainability of the Ladies' changing facility due to the replacement building being constructed in a more sustainable way, for example low flush toilets, enhanced thermal insulation etc.

5. Planning Policy Context

5.1 This section outlines the local authority planning policy framework and the wording of policies and guidance relating to issues which are likely to warrant further consideration in the future planning application.

Introduction

5.2 The Planning and Compulsory Act 2004 (the 2004 Act) requires that planning applications should be determined in accordance with the development plan unless material circumstances indicate otherwise.

5.3 The 2004 Act changed the plan making system in England and Wales, replacing the previous system of Structure and Local Plans with Regional Spatial Strategies (RSS) and Local Development Frameworks (LDF).

5.4 Most planning authorities are in the process of adopting development plans under the new system and transitional arrangements are in place until the new style development plans are adopted. Since these changes to the plan making system were introduced, a change in Government in May 2010 has resulted in further significant changes occurring.

5.5 Most significantly, at the beginning of July 2010, the Government took steps to abolish the RSSs under S79(6) of the Local Democracy Economic Development and Construction Act 2009. The Localism Bill was introduced to Parliament on 13th December 2010, and was given Royal Assent on 15th November 2011. When it is fully enacted, the Localism Act will replace primary legislation which sets the basis for Regional Strategies and the RSS will no longer form part of the development plan. However, the Act will not abolish the Regional Spatial Strategy for London (the London Plan); as such this document remains a key part of the planning policy framework.

5.6 Local planning authorities are also required to have regard to other material considerations, so it is appropriate to consider first the national planning policy guidance with which all development plans must be in broad conformity.

The National Planning Policy Framework

5.7 The National Planning Policy Framework (NPPF) was published on 27th March 2012 and immediately replaced all existing Planning Policy Guidance Notes (PPGs), Planning Policy Statements (PPS), Circulars and Letters to Chief Planning Officers as the Government's single planning policy framework. It sets out the Government's planning policies for England and how these are expected to be applied.

5.8 The NPPF is now a material consideration in the determination of planning applications as part of the statutory development plan.

5.9 The key theme running through the NPPF is the 'Presumption in favour of Sustainable Development'. In terms of decision making the NPPF states (Paragraph 14) that development proposals that accord with the Development Plan should be approved without delay, where the Development Plan is up to date, or where the Development Plan is absent, silent or material considerations indicate otherwise. Paragraph 19 explains that planning should operate to encourage and not act as an impediment to sustainable growth.

5.10 Paragraph 17 outlines a set of core land-use planning principles that should underpin both plan-making and decision-taking. Relevant to the proposal are:

- Always seek to secure high quality design and a good standard of amenity for all existing and future occupants of land and buildings;
- Take account of the different roles and character of different areas, promoting the vitality of our main urban areas, protecting the Green Belts around them, recognising the intrinsic character and beauty of the countryside and supporting thriving rural communities within it;
- Support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change, and encourage the reuse of existing resources, including conversion of existing buildings, and encourage the use of renewable resources (for example, by the development of renewable energy);
- Contribute to conserving and enhancing the natural environment and reducing pollution. Allocations of land for development should prefer land of lesser environmental value, where consistent with other policies in this Framework;
- Conserve heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations.
- Section 7 of the NPPF talks about the requirement for good design. The Government attaches great importance to the design of the built environment. Good design is a key aspect of sustainable development, is indivisible from good planning, and should contribute positively to making places better for people. Under paragraph 58 of the NPPF it requires that planning decisions should aim to ensure developments:
    - Will function well and add to the overall quality of the area, not just for the short term but over the lifetime of the development;
    - Establish a strong sense of place, using streetscapes and buildings to create attractive and comfortable places to live, work and visit;
    - Respond to local character and history, and reflect the identity of local surroundings and materials, while not preventing or discouraging appropriate innovation;
    - Create safe and accessible environments where crime and disorder, and the fear of crime, do not undermine quality of life or community cohesion; and

- Are visually attractive as a result of good architecture and appropriate landscaping.

5.11 Section 8 of the NPPF is entitled 'Promoting Healthy Communities' and states that the planning system can play an important role in facilitating social integration and creating healthy, inclusive communities. Paragraph 69 states that planning policies and decisions should aim to achieve places that promote safe and accessible environments which encourage active and continual use of public areas.

5.12 Section 9 'Protecting green belt land' states that as with previous green belt policy inappropriate development is, by definition, harmful to the green belt and should not be approved except in very special circumstances. When considering any planning application, local planning authorities should ensure that substantial weight is given to any harm to the green belt. 'Very special circumstances' will not exist unless the potential harm to the green belt by reason of inappropriateness, and any other harm, is clearly outweighed by other considerations.

5.13 Section 9 confirms that new buildings are inappropriate in the green belt; however, exceptions include:

- Provision of appropriate facilities for outdoor sport, outdoor recreation and for cemeteries, as long as it preserves the openness of the green belt and does not conflict with the purposes of including land within it.
- The replacement of a building, provided the new building is in the same use and not materially larger than the one it replaces.

5.14 Certain forms of development, including engineering operations, are also not inappropriate in the green belt provided they preserve the openness of the green belt and do not conflict with the purposes of including land in the green belt.

5.15 Section 10 'Meeting the challenge of climate change, flooding and coastal change' requires under paragraph 100 that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere.

5.16 Section 11 'Conserving and enhancing the natural environment' requires the planning system to contribute to and enhance the natural and local environment by:

- Protecting and enhancing valued landscapes, geological conservation interests and soils;
- Recognising the wider benefits of ecosystem services;
- Minimising impacts on biodiversity and providing net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;

- Preventing both new and existing development from contributing to or being put at unacceptable risk from, or being adversely affected by unacceptable levels of soil, air, water or noise pollution or land instability; and
- Remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.

5.17 Paragraph 118 states that when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- If significant harm resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- Proposed Development on land within or outside a Site of Special Scientific Interest likely to have an adverse effect on a Site of Special Scientific Interest (either individually or in combination with other developments) should not normally be permitted. Where an adverse effect on the site's notified special interest where the benefits of the development, at this site, clearly outweigh both the impacts that it is likely to have on the features of the site that make it of special scientific interest and any broader impacts on the national network of Sites of Special Scientific Interest;
- Development proposals where the primary objective is to conserve or enhance biodiversity should be permitted;
- Opportunities to incorporate biodiversity in and around developments should be encouraged;
- Planning permission should be refused for development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, unless the need for, and benefits of, the development in that location clearly outweigh the loss; and
- The following wildlife sites should be given the same protection as European sites:
  - potential Special Protection Areas and possible Special Areas of Conservation;
  - listed or proposed Ramsar sites; and
  - sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.

5.18 Paragraph 123 deals with noise and aims to mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions. The paragraph also requires that areas of tranquillity which are prized for their recreational and amenity value for this reason are identified and protected.

5.19 Paragraph 125 states that by encouraging good design, planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscapes and nature conservation.

5.20 Section 12 of the NPPF deals with 'conserving and enhancing the historic environment' and requires that heritage assets are recognised as being an irreplaceable resource and should be conserved in a manner appropriate to their significance. Paragraph 128 states that in determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. Where a site on which development is proposed includes or has the potential to include heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.

5.21 Paragraph 131 states that in determining planning applications, local planning authorities should take account of:

- The desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
- The positive contribution that conservation of heritage assets can make to sustainable communities including their economic vitality; and
- The desirability of new development making a positive contribution to local character and distinctiveness.

The Statutory Development Plan

5.22 Hampstead Heath lies mostly within the London Borough of Camden with the adjoining Hampstead Heath Extension and Golders Hill Park within the London Borough of Barnet administrative boundary. The Proposed Development lies wholly within the London Borough of Camden administrative area.

5.23 The London Borough of Camden's Local Development Framework (LDF) was adopted in November 2010 and replaced Camden's Unitary Development Plan (UDP).

5.24 The development plan for the Proposed Development, therefore, comprises the:

- London Plan (July 2011);
- Camden Local Development Framework (LDF) (November 2010), a set of planning documents including:
  - Camden Core Strategy 2010 - 2025 (November 2010);
  - Camden Development Policies 2010 - 2025 (November 2010).

Regional Policy

The London Plan (2011)

5.25 The London Plan is the overall strategic plan for London, and it sets out a fully integrated economic, environmental, transport and social framework for the development of the capital to 2031. It forms part of the development plan for Greater London. London boroughs' local plans need to be in general conformity with the London Plan, and its policies guide decisions on planning applications by Councils and the Mayor.

5.26 The policies listed below are relevant to the determination of the application.

5.27 **Policy 2.18 'Green Infrastructure: The Network of Open Land and Green Spaces'** aims to protect, promote, expand and manage the extent and quality of, and access to, London's network of green infrastructure.

5.28 **Policy 5.12 'Flood Risk Management'** states that development proposals must comply with the flood risk assessment and management requirements set out in PPS25 over the lifetime of the development and have regard to measures proposed in Thames Estuary 2100 and Catchment Flood Management Plans.

5.29 **Policy 5.18 'Construction, Excavation and Demolition Waste'** requires that waste should be removed from construction sites and materials brought to site by water or rail transport wherever this is practicable.

5.30 **Policy 7.14 'Local Character'** at a strategic level requires that development should have regard to the form, function, and structure of an area, place or street and the scale, mass and orientation of surrounding buildings. It should improve an area's visual or physical connection with natural features. There should be a high quality design response that contributes to a positive relationship between the urban structure and natural landscape and should be informed by the surrounding historic environment.

5.31 **Policy 7.5 'Public Realm'** states that London's public spaces should be secure, accessible, inclusive, connected, easy to understand and maintain, relate to local context, and incorporate the highest quality design, landscaping, planting, street furniture and surfaces. The policy requires that infrastructure should be of the highest quality, have a clear purposes and opportunities for greening, such as through the planting of trees and other soft landscaping, should be maximised.

5.32 **Policy 7.6 'Architecture'** requires architecture to make a positive contribution to a coherent public realm, streetscape and wider cityscape. It should incorporate the highest quality materials and design appropriate to its context.

5.33 **Policy 7.8 'Heritage Assets and Archaeology'** requires that development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate. Development affecting heritage assets and their setting should be sympathetic to their form, scale, materials and architectural detail. The policy also requires that new development should make provision for the protection of archaeological resources.

5.34 **Policy 7.11 'London View Management Framework'** designates a list of strategic views, including Parliament Hill and Kenwood to central London. Development will be assessed for its impact on the designated view if it falls within the foreground, middle ground or background of that view.

5.35 **Policy 7.12 'Implementing the London View Management Framework'** requires that development in the foreground and middle ground of a designated view should not be overly intrusive, unsightly or prominent to the detriment of the view.

5.36 **Policy 7.14 'Improving Air Quality'** requires that sustainable design and construction is promoted to reduce emissions from the demolition and construction of buildings follows the best practice guidance contained in the GLA and London Councils' 'The Control of Dust and Emissions from Construction and Demolition'.

5.37 **Policy 7.15 'Reducing Noise and Enhancing Soundscapes'** seeks to minimise the existing and potential adverse impacts of noise on, from, within or in the vicinity of development proposals.

5.38 **Policy 7.17 'Metropolitan Open Land'** provides the strongest protection to London's Metropolitan Open Land (MOL) and inappropriate development should be refused, except in very special circumstances, giving the same level of protection as Green Belt. Essential ancillary facilities for appropriate uses will only be acceptable where they maintain the openness of the MOL. The guidance contained in the NPPF relating to Green Belts should be applied equally to MOL. The NPPF under paragraph 90 states that 'certain other forms of development are not inappropriate in Green Belt provided they preserve the openness of the Green Belt and do not conflict with the purposes of including land in the Green Belt', engineering operations are included in the list development that is not inappropriate.

5.39 **Policy 7.19 'Biodiversity and Access to Nature'** requires that development proposals should make a contribution to the protection, enhancement, creation and management of biodiversity; assist in achieving targets in BAPs and not adversely effect the integrity of European sites. Protection is given to sites of nature conservation importance and this will apply to all areas of ancient woodland. Strong protection is given to Sites of Metropolitan Importance for Nature Conservation (SMIs); these sites are jointly identified by the Mayor and the Boroughs as being of strategic nature conservation importance. The policy goes on to say that when considering proposals that would affect a site of recognised nature conservation interest, the proposal should avoid adverse impacts to the biodiversity interest and if impact is unavoidable minimise impact and seek mitigation.

5.40 **Policy 7.21 'Trees and Woodlands'** states that existing trees of value should be retained and any lost as the result of development should be replaced and wherever appropriate the planting of additional trees should be included in new developments.

Local Policy

Camden Local Development Framework (November 2010)

5.41 The Camden Local Development Framework (LDF), which replaced the Camden Unitary Development Framework (UDP) in November 2010, is a collection of planning documents that in conjunction with national planning policy and the London Plan sets out the strategy for managing growth and development in the borough.

5.42 The Core Strategy is the principal document in the LDF and provides vision, objectives and spatial policies to guide development in the borough up to 2025.

5.43 The Development Policies contributes towards delivering the Core Strategy by setting out detailed planning policies that the Council will use for determining planning applications.

5.44 The key policies of relevance in the Core Strategy and Development Policies are detailed below.

Camden Core Strategy (November 2010)

5.45 **Policy CS1 'Distribution of growth'** states that the Council will focus Camden's growth in the most suitable locations, and manage it to make sure that they deliver its opportunities and benefits and achieve sustainable development, while continuing to preserve and enhance the features that make Camden such an attractive place to live, work and visit.

5.46 **Policy CS4 'Areas of more limited change'** confirms that parts of the borough outside of the growth areas and other highly accessible areas set out in policy CS1 will experience more limited development and change, although some development is expected to take place in most parts of Camden over the timescale of the Core Strategy. The Council will ensure that development in the areas of more limited change respects the character of its surroundings, conserves heritage and other important features and provides environmental improvements and other local benefits where appropriate.

5.47 **Policy CS5 'Managing the impact of growth and development'** states that the Council will manage the impact of growth and development in Camden, ensuring that development meets the full range of objectives of the Core Strategy and other LDF documents, with particular reference given to:

a) providing uses that meet the needs of Camden's population and contribute to the borough's London-wide role;

b) providing the infrastructure and facilities needed to support Camden's population and those who work in and visit the borough;

c) providing sustainable buildings and spaces of the highest quality; and

d) protecting and enhancing our environment and heritage and the amenity and quality of life of local communities. The Council will protect the amenity of Camden's residents and those working in and visiting the borough by:

e) making sure that the impact of developments on their occupiers and neighbours is fully considered;

f) seeking to ensure development contributes towards strong and successful communities by balancing the needs of development with the needs and characteristics of local areas and communities; and

g) requiring mitigation measures where necessary.

5.48 **Policy CS8 Promoting a successful and inclusive Camden economy'** states that the Council will secure a strong economy in Camden and seeks to ensure that no-one is excluded from its success. Section d of this policy seeks to support local enterprise development, employment and training schemes for Camden residents.

5.49 **Policy CS10 'Supporting community facilities and services'** provides support for the retention and enhancement of existing community, leisure and cultural facilities.

5.50 **Policy CS11 'Promoting sustainable and efficient travel'** Requires the promotion of the delivery of transport infrastructure and the availability of sustainable transport choices in order to support Camden's growth, reduce the environmental impact of travel, and relieve pressure on the borough's transport network. The policy also states that the Council will seek to reduce freight movement by road; encourage the movement of goods by canal, rail and bicycle; and minimise the impact of freight movement on local amenity, traffic and the environment.

5.51 **Policy CS13 'Tackling climate change through promoting higher environmental standards'** requires that all development takes measures to minimise the effects of, and adapt to, climate change and encourage all development to meet the highest feasible environmental standards that are financially viable during construction. In terms of water and surface water flooding, the policy requires the protection of reservoirs and requires development to avoid harm to the water environment, water quality or drainage and to prevent or mitigate local surface water and down-stream flooding.

5.52 **Policy CS14 'Promoting high quality places and conserving our heritage'** requires development of the highest standard of design that respects local context and character; preserves and enhances Camden's heritage assets and their settings; and promotes high quality landscaping and works to public spaces.

5.53 In terms of views from Kenwood and Parliament Hill, these views will be protected in accordance with London-wide policy and will resist proposals that would harm them. The Council will also seek to protect locally important views that contribute to the interest and character of the borough, these may include views of and from large public parks and open spaces such as Hampstead Heath and Kenwood Estate, views into and from Conservation Areas and views of listed and landmark buildings, monuments and statues. Development should be compatible with such views in terms of setting, scale and massing and development that is considered to cause harm would be resisted.

5.54 **Policy CS15 'Protecting and improving our parks and open spaces and encouraging biodiversity'** states that Camden will protect and improve Camden's parks and open spaces. The policy also states that the Council will protect and improve sites of nature conservation and biodiversity identified in the Camden and London Biodiversity Plans by protecting green area with nature conservation value; seeking to improve opportunities to experience nature, providing new or enhanced habitat, identifying habitat corridors and securing biodiversity improvements along gaps in corridors and protecting trees and promoting the provision of new trees and vegetation. In terms of Hampstead Heath, the Council will preserve the historic, open space and nature conservation of the Heath by working with the City of London, English Heritage and Natural England to manage and improve the Heath and its surroundings; protect the MOL, open space and nature conservation designations of the site; protect views from the Heath, across the heath and its surrounding area; and improve biodiversity.

5.55 The policy seeks to protect and improve Camden's parks and open spaces, including Metropolitan Open Land. In addition, nature conservation considerations are material and the policy requires the improving of the biodiversity of, and habitats in, Hampstead Heath as part of proposals.

5.56 Policy CS15 details that the Council will preserve and enhance the historic open space and nature conservation importance of Hampstead Heath and its surrounding area by:

- Working with the City of London, English Heritage and Natural England to manage and improve the Heath and its surrounding areas;
- Protecting the Metropolitan Open Land, public and private open space and the nature conservation designations of sites;
- Seeking to extend public open space where possible and appropriate;
- Taking into account the impact on the Heath when considering relevant planning applications;
- Protecting views from Hampstead Heath and views across the Heath and its surrounding area;
- Improving the biodiversity of, and habitats in, Hampstead Heath and it surrounding area, where opportunities arise.

5.57 The policy also states, under paragraph 15.6 of the supporting text, that 'extensions and alterations to existing buildings on open space should be proportionate to the size, including the volume of the original building....we shall take into account the cumulative impact of developments where appropriate'

5.58 Paragraph 15.7 addresses Metropolitan Open Land and states that *'[MOL] is open space of London-wide significance which provides a break in the built up area and receives the same presumption against development as green belt land. There are four main areas of Metropolitan Open Land in Camden, which are of great importance to the borough and its character – Hampstead Heath and adjoining areas;...*'.

5.59 The commentary in paragraphs 15.23 – 15.25 is also of relevance, in particular the use of surrounding conservation area statements to assist in preserving and enhancing the Heath.

5.60 **Policy CS16 'Improving Camden's health and well being'** in relation to the planning application states that the impact of poor air quality on health is recognised and the Council will implement Camden's Air Quality Action Plan which aims to reduce air pollution levels.

5.61 **Policy CS19 'Delivering and monitoring the core strategy'** confirms that to deliver the vision, objectives and policies of the Core Strategy, the Council will use planning obligations and other suitable mechanisms to secure any necessary and related infrastructure, facilities and services to meet needs generated by the development and to mitigate impact of the development.

Camden Development Policies (November 2010)

5.62 The Camden Development Policies relevant to the determination of the planning application are as follows:

5.63 **Policy DP15 'Community and leisure uses'** seeks to protect existing leisure facilities by resisting their loss.

5.64 **Policy DP16** '**The transport implications of development'** aims to ensure that development is properly integrated into the transport network. For the Proposed Development the key potential impact would be during construction. The Council requires a Transport Assessment where the transport implications of a proposal are significant to ensure that the proposal will not cause harm to the transport network or to highway safety.

5.65 **Policy DP17 'Walking, cycling and public transport'** states that development should make suitable provision for pedestrians, cyclists and public transport.

5.66 **Policy DP20 'Movement of goods and materials'** aims to minimise the movement of goods and materials by road and expects development that would generate significant movement of goods or materials during construction or in operation to consider more sustainable alternatives such as rail or canal. To minimise the impact of movement of goods and materials by road the Council will expect that the need for the movement of vehicles over 7.5 tonnes in predominantly residential areas is avoided, goods vehicles are accommodated on site, disruption is minimised for local communities through effective management through the optimisation of collection and delivery times and the use of low emission vehicles for deliveries.

5.67 Where appropriate, the Council will ensure that applicants provide Construction Management Plans to demonstrate how a development will minimise impact from the movement of goods and materials during the construction process. Construction Management Plans should deal with the hours of site activity; pick-up and delivery times for materials and equipment; limits on construction vehicle size; trip numbers and routes; the safety of road users during construction; and any temporary use of the highway for siting of construction plant. They should also deal with any temporary disruption or severance of highway links needed during the development process, as well as any other relevant measures needed to manage the construction phase. The Camden Planning Guidance supplementary document sets out further details regarding the Council's requirements for Construction Management Plans. Policy DP26 provides information regarding the Council's approach to managing the impact of the construction process on local amenity.

5.68 **Policy DP22 'Promoting sustainable design and construction'** requires development to incorporate sustainable design and construction measures.

5.69 **Policy DP23 'Water'** requires developments to reduce the risk of flooding. All sites over one hectare are required by national planning policy contained within the NPPF to produce a site specific Flood Risk Assessment, in Camden these assessments should focus on the management of surface water run-off and should address the amount of impermeable surfaces resulting from development and the potential for increased flood risk both on site and elsewhere within the catchment.

5.70 **Policy DP24 'Securing high quality design'** requires all developments to be of the highest standard of design and will expect developments to consider the character, setting, context and the form and scale of neighbouring buildings; the quality of materials; existing natural features such as topography and trees; the provision of appropriate hard and soft landscaping including boundary treatments; the provision of appropriate amenity space and accessibility; its contribution to public realm, impact on views and vistas; and the wider historic environment, buildings, spaces and features of local historic value.

5.71 The text under the policy states that development should give careful consideration to the characteristics of the site and features of local distinctiveness and the wider context and applications should provide an assessment of local context and character and set out how the development has been informed and responds to it. Development should respond to the natural assets of a site and its surroundings.

5.72 **Policy DP25 'Conserving Camden's heritage'** states that the Council will seek to protect heritage assets and will protect remains of archaeological importance by ensuring acceptable measures are taken to preserve them and their setting. The text under the policy confirms that Hampstead Heath is an archaeological priority area and that Camden only has one Scheduled Ancient Monument, Boadicea's Grave located within Hampstead Heath.

5.73 **Policy DP26 'Managing the impact of development on occupiers and neighbours'** states that the Council will protect the quality of life of occupiers and neighbours considering factors such as noise, vibration and dust. The text under the policy confirms that artificial lighting (including construction lighting) can also harm the quality of life of local residents and can adversely impact biodiversity.

5.74 In terms of dust due to construction, the Council expects developers and their contractors to follow the London Councils' Best Practice Guidance 'The Control of Dust and Emissions from Construction and Demolition' and expect developers to sign up to the Considerate Constructors Scheme. Details of how these will be implemented should be provided in a Construction Management Plan (CMP). CMP's may be required for developments that could cause significant disturbance due to their location or the anticipated length of the construction period.

5.75 **Policy DP27 'Basements and lightwells'** This policy also covers other underground development and confirms that such development will require an assessment of the scheme's impact on drainage, flooding, groundwater conditions and structural stability, where appropriate. The Council will only permit underground development that does not cause harm to the built and natural environment and local amenity, and does not result in flooding or ground instability. Developments must demonstrate that drainage, runoff or other damage to the water environment is avoided. The Council will consider impact on amenity of neighbours, loss of open space and trees, landscaping, setting, character of the area and archaeological remains.

5.76 **Policy DP28 'Noise and Vibration'** states that the Council will seek to ensure that noise and vibration is controlled and managed. The Council will seek to minimise the impact on local amenity from the demolition and construction phases of development. Where these phases are likely to cause harm, conditions and planning obligations may be used to minimise the impact.

5.77 **Policy DP29 'Improving access'** states that the Council will promote fair access and remove barriers that prevent people from accessing facilities and opportunities. To this end they will (*inter alia*):

- Expect all buildings and places to meet the highest practicable standards of access and inclusion; and
- Require buildings and spaces that the public may use to be designed to be as accessible as possible.

5.78 **Policy DP32 'Air Quality and Camden's Clear Zone'** states that the Council will require air quality assessments where development could potentially cause significant harm to air quality. Mitigation measures will be expected in developments that are located in areas of poor air quality.

Camden Supplementary Planning Document 'Sites of Nature Conservation Importance in Camden', September 2006

5.79 Under the policies and procedures set out in the Local Plan and the Mayor's Biodiversity Strategy, boroughs are expected to designate Sites of Nature Conservation Importance (SNCIs). Sites of Metropolitan Importance (SMI) are sites which contain the best examples of London's habitats, sites which contain potentially rare species, rare assemblages or species or important populations of species, or sites which are of particular importance.

5.80 Hampstead Heath is designated an SMI within the SPD and is noted for its mix of semi-natural and formal habitats, ancient woodlands, small wet flush (bog), acid grassland, heathland restoration, ponds and watercourses.

Camden Planning Guidance (CPG) 3 'Sustainability', September 2013

5.81 This Supplementary Planning Guidance (SPD) supports policies CS13 of the Core Strategy and Development Policy DP22. The SPD covers, inter alia, sustainable use of materials, flooding, biodiversity and energy efficiency of new buildings.

5.82 Key messages include:

- All new development should be designed to minimise carbon dioxide emissions;
- Encourage implementation of the waste hierarchy which priorities the reduction, re-use and recycling of materials;
- Materials should be sourced responsibly;
- All development is required to prevent or mitigate against flooding;
- Biodiversity considerations should be incorporated into development and if relevant mitigation should be included and details of positive measures for enhancing biodiversity should be detailed.

Camden Planning Guidance (CPG) 1 'Design', September 2013

5.83 This Supplementary Planning Guidance (SPD) covers a range of topics such as landscape design and trees and design excellence, it should be read in conjunction and within the context of Camden's LDF.

5.84 The SPD confirms that Camden's trees and green spaces are integral to its character and requires landscape design to be fully integrated into the design of schemes from the outset.

6. Development Appraisal

Introduction

6.1 The following section examines the Proposed Development in the context of the Development Plan, national policy guidance and other material considerations.

6.2 The planning, environmental, design and access considerations relevant to this application include:

- Metropolitan Open Land;
- Landscape, Visual and Trees;
- Ecology – Terrestrial and Aquatic;
- Flood Risk and Water Quality;
- Traffic and Transport;
- Noise;
- Air Quality;
- Historic Environment;
- Community; and
- Sustainability.

6.3 An assessment of the predicted effects of the Proposed Development is presented in the ES, Arboricultural Impact Assessment, Flood Risk Assessment and Sustainability Statement submitted as part of this planning application. These documents detail the scope of the assessments, relevant legislation, baseline conditions, mitigation proposed and provide an assessment of the impacts. It is not intended to repeat this information, only to discuss the potential impacts of the Proposed Development to determine whether the Proposed Development complies with planning policy.

Metropolitan Open Land

6.4 The development site is located within Metropolitan Open Land (MOL). The London Plan confirms that MOL should be given the strongest protection and that inappropriate development should be refused, except in very special circumstances, giving it the same protection as Green Belt land. The NPPF confirms that certain forms of development, including engineering operations, are not inappropriate development in the Green Belt provided that they preserve the openness of the Green Belt and do not conflict with the purposes of including land within the Green Belt. The Proposed Development aims to avoid the most sensitive locations and has been designed to appear as part of the existing landscape and as unobtrusive as possible. It is not considered that the proposals would affect the openness of the Green Belt.

6.5 The Proposed Development would not conflict with the purposes of including land in the Green Belt, these purposes are:

- to check unrestricted sprawl of large built up areas;
- to prevent neighbouring towns from merging into one another;
- to assist in safeguarding the countryside from encroachment;
- to preserve the setting and special character of historic towns; and
- to assist in urban regeneration, by encouraging the recycling of derelict and other urban land.

6.6 With regard to the replacement changing facility at Kenwood Ladies' Bathing Pond, the NPPF under Section 9 confirms that new buildings are inappropriate in the Green Belt; however exceptions include the replacement of a building provided that the new building is in the same use and is not materially larger than the one it replaces. There is also an exception for appropriate facilities for outdoor sport and recreation. The proposed replacement changing room facility has been sited on the footprint of the existing facility to be demolished and has been designed to ensure that it would not be materially larger than the existing changing room facility. Table 6.1 below shows a comparison between the existing and proposed changing room facility.

Table 6.1 Comparison between existing and proposed Ladies' Changing Facility

	Existing Ladies' Changing Facility (including portacabin)	**Proposed Ladies' Changing Facility**	**Percentage change**
Floor area	90 m^2	120 m^2	+ 33% Increase
Height	3.7 m	3.2 m	- 13% Reduction in height

6.7 The above analysis demonstrates that the proposed replacement changing facility would result in a moderate increase in floor area of 33%. This increase is required to ensure that the building complies with current Building Regulations and disabled access requirements (as further detailed in the Ladies' Bathing Pond Design and Access Statement. In terms of height the existing building has a butterfly wing roof formation which at its highest point has a height of 3.7 metres. The proposed building would have a flat roof to a maximum height of 3.2 metres, this represents a 13% reduction in height compared to the existing roof.

6.8 The proposed replacement facility would be sited on the same footprint as the existing building, it would result in removal of an unattractive portacabin used for Lifeguard changing and it would result in a moderate increase in floor area and a reduction in height. The proposed new building would provide an improved and accessible facility which would not be materially larger than the one it replaces.

Environmental and Community Considerations

Landscape, Visual and Trees

6.9 The planning guidance of general relevance for landscape and visual is found within the NPPF which lists within its core principles that high quality design should be sought, taking into account different roles and the character of different areas. Section 7 of the NPPF deals in more detail with the requirement for good design and section 11 deals with conserving and enhancing the natural environment and requires the protection of valued landscapes.

6.10 At London level the London Plan refers to panoramic views of London as referred to in the London View Management Framework, which identifies panoramic views of London from Parliament Hill and Kenwood. At local level the following policies from the Camden Local Plan are relevant: CS14 'Promoting high quality spaces and conserving our heritage', CS15 'Protecting and improving our parks and open spaces and encouraging biodiversity' and DP24 'securing high quality design'.

6.11 The core design principles were created to minimise the required works at the most sensitive and visible parts of the two pond chains. Vegetation clearance has been minimised and with few exceptions the mature and veteran trees which contribute to the landscape have been retained. Good construction practices including keeping a tidy site, minimising the construction footprint and fencing off all worksite areas with solid hoarding would be implemented throughout construction. During operation new planting would help the Proposed Development to blend into Hampstead Heath.

6.12 With mitigation integrated into the design of the Proposed Development, there would be no significant effects to landscape character. There would be some significant adverse visual impacts during construction but these would be temporary, lasting for the duration of the construction works. These are predominantly for Heath users at close range to the construction activity. During operation there would be four significant visual effects at the opening year, predominantly at the Model Boating Pond, reducing to one after year 15. For this receptor (view from the existing path/cycleway along the Model Boating Pond embankment), the effect is due to a new raised embankment at close range.

Ecology – Terrestrial and Aquatic

6.13 The planning guidance of general relevance for ecology is found within the NPPF which lists within its core principles that development should contribute to conserving and enhancing the natural environment. At regional level the London Plan policy 7.19 relates to biodiversity and requires that development proposals make a contribution to the protection, enhancement, creation and management of biodiversity. At local level Camden's policy CS15 encourages biodiversity.

6.14 The impacts of the Proposed Development on ecology principally relate to the loss of habitat and disturbance of species during construction. This would be concentrated at the ponds themselves, the dams, and the areas where the new spillways would be constructed. The design of the Proposed Development has taken account of the most sensitive ecological areas and sought to avoid them. The construction programme has also been designed to avoid activities that could harm wildlife at critical times of year; this includes measures such as ensuring vegetation clearance occurs outside of the bird nesting season. Impacts to legally protected species such as bats would be undertaken in close consultation with Natural England and the necessary licences obtained.

6.15 Once construction is complete the reinstated and new habitat would benefit wildlife on Hampstead Heath. There would also be long term significant beneficial effects for habitats at Model Boating Pond and Bird Sanctuary Pond due to improved water quality and new marginal planting.

Flood Risk and Water Quality

6.16 At London level the London Plan policies 5.12 'Flood Risk Management' and 5.13 'Sustainable Drainage' and the Greater London Authority Draft Sustainable Design and Construction (2013) are relevant. At local level Camden's CP13 'Climate Change' and DP23 'Water' are relevant.

6.17 The ES reports that no significant effects on the water environment are identified for the construction phase. This includes no significant effects on the risk of flooding to Hampstead Heath or to downstream urban areas from surface water, pond overtopping or dam failure. In terms of pond water quality, there would be deterioration during construction whilst silt is being removed and while works to pond edges and dams occur. This will be mitigated through the use of the Environment Agency standard construction control measures for works near water bodies. Silt would be removed through suction pumping rather than mechanical dredging which would result in higher turbidity and lower water quality.

6.18 Once the Proposed Development is operational there would be a number of significant beneficial effects to the water environment including: a major beneficial effect for downstream urban areas due to a reduced risk of dam failure; a moderate beneficial effect to the water quality of all ponds; and a major beneficial effect to the water quality for the ponds where de-silting would occur.

Traffic and Transport

6.19 In terms of planning policy, at national level the NPPF requires that developments that create a significant amount of movements should be supported by a Transport Statement or Transport Assessment (TA). At local level the Camden Core Strategy 2010 contains a number of transport related policies, all detailed in the Traffic and Transport chapter of the ES, key to the determination of this application for planning permission is policy DP16 'Transport Implications of Development' which requires developments to be assessed and appropriate mitigation incorporated for example using TA's and Travel Plans; and policy DP20 'Movement of Goods and Materials' which requires sustainable modes of travel to be considered for the movement of goods and vehicles.

6.20 The Traffic and Transport ES chapter and Transport Statement submitted to support this application for planning permission only considers the effects during construction as there would be no traffic and transport impacts during operation. During construction there would be a slight increase in traffic volumes on the surrounding road network due to construction traffic but this would be barely noticeable. There would be no significant effects to road users, pedestrians, cyclists, or public transport users. Mitigation measures are not required as there would be no significant effects, however the following would be implemented to ensure good practice:

- The PMP (incorporating CMP) outlines traffic measures to be undertaken on and off Site.
- Any larger or non standard highway vehicles used by the contractor will need to be assessed on a vehicle by vehicle basis to ensure they can safely enter the Site with a risk assessment undertaken for any traffic management required.

Noise

6.21 In terms of planning policy, at national level the NPPF under paragraph 123 deals with noise and aims to mitigate and reduce to a minimum noise impacts from new development. The London Plan at policy 7.15 aims to minimise existing and potential adverse impacts from noise in relation to development proposals. Camden policy DP28 seeks to ensure that noise and vibration is controlled and managed.

6.22 The noise assessment only relates to the construction period as there would be no noise impacts during operation of the Proposed Development. During the construction phase, the predicted outdoor noise level from construction works would not exceed levels above which the World Health Organisation advises significant adverse effects would occur on health and quality of life would occur.

6.23 However, a potentially significant effect has been indicated at five receptors in close proximity to the worksites adjacent to Highgate No 1 and Hampstead No 1 Ponds. Due to the limited number of receptors, the anticipated duration over which the threshold values are exceeded and the nature of the proposed works, it is considered that any effects could be minimised through the use of noise control measures outlined in the ES, and documented within the PMP (incorporating CMP). As a consequence, the adherence to the PMP and the use of best practical means will reduce the magnitude of construction noise such that no residual significant effect is anticipated at noise sensitive receptors adjacent to the construction works.

Air Quality

6.24 The planning guidance of general relevance for air quality is found within the NPPF which states that: "Planning policies should sustain compliance with and contribute towards EU limit values or national objectives for pollutants, taking into account the presence of Air Quality Management Areas and the cumulative impacts on air quality from individual sites in local areas. Planning decisions should ensure that any new development in Air Quality Management Areas is consistent with the local air quality action plan." At the local level, policy DP26 of the Camden Local Plan states that the Council will protect the quality of life of occupiers and neighbours by only granting permission for development that does not cause harm to amenity. The factors we will consider include: [inter alia] odour, fumes and dust".

6.25 The air quality assessment, as reported in the ES, only assesses effects during construction as there will be no emissions to air or dust generating activities during the operation of the proposed development.

6.26 During construction and particularly excavation and earthworks activities, there is a risk that dust could be generated in long periods of dry and windy weather. This would most likely occur when handling topsoil. Most of the earthworks would be the handling of clay which is required to be kept damp to be suitable for construction and would not likely generate significant quantities of dust. To mitigate the potential impact a range of good practice construction measures recommended by the Institute of Air Quality Management would be implemented. With mitigation measures implemented there would be no significant effects to air quality.

Historic Environment

6.27 At the national level the NPPF requires the conservation of heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations and recognizes that heritage assets are a irreplaceable resource. At regional level the London Plan contains policy 7.8 relating to heritage assets and archaeology. At local level Camden's LDF contains policy CS14 which aims to promote high quality places and conserve heritage and policy DP25 deals with conserving Camden's heritage by maintaining the character of conservation areas, preserving or enhancing Listed Buildings and protect archaeology and other heritage assets.

6.28 During construction direct impacts on above ground heritage assets include works to the ponds, particularly the re-shaping of model boating pond and the removal of old water management features (old sheet piling, over flow pipes etc). Indirect impacts include the change of setting to heritage assets due to the appearance of the Proposed Development. Mitigation built into the Proposed Development would include the recording of any historic water management features associated with the ponds in line with English Heritage Guidelines and the minimisation of the visual impact of proposed structures through design, such as the cladding of new sheet piling in timber.

6.29 In terms of below ground heritage assets, results from the desk study, LiDAR data, trial pits, boreholes and window samples from the ponds showed no evidence of archaeological remains under the Site other than palaeoenvironmental remains (pollen and other natural indicators of past environments). To mitigate any potential impact an archaeological watching brief would be implemented for major earthworks such as the excavation of the borrow pits.

6.30 The Proposed Development has been carefully designed to ensure that the landscaping, materials and finishes are in keeping with the character of the Heath and its historic setting. Therefore there would be no adverse impacts in terms of above ground heritage assets and their setting in the operational phase. In terms of below ground heritage assets any impacts on below ground assets would have occurred during the construction phase and archaeological remains would have either been removed or preserved before the operation phase commences, therefore there would be no further impacts resulting from the operational phase.

Community

6.31 In terms of relevant planning policy, Hampstead Heath is designated as Open Space and Metropolitan Open Land (MoL) under policy CS15 of the Camden Core Strategy (2010) and as set out in the London Borough of Camden Open Space, Sport and Recreation Study Update (August 2005). The MoL designation and policy CS15 (together with London Plan and NPPF policy relating to MoL) means that there is a presumption against inappropriate development of the MoL. An assessment specific to the impact of the Proposed Development on the MoL is made above.

6.32 The community assessment within the ES assesses the likely impact on residential properties (and the effects to their occupants) and the community and recreation facilities (and the effects on their users) at the Heath as a result of the Proposed Development. During construction a number of the community facilities on Hampstead Heath would be closed, for example the bathing ponds. However, this would typically be for a matter of months (with only 2 months of the entire construction programme when all ponds are closed which are programmed for the winter months when typically the least use occurs). All facilities would only be closed for a short temporary period and would re-open after construction. There would also be individual impacts to residential receptors, such as noise during construction and visual impacts, but these would not combine to impact on residential amenity.

6.33 During operation there would be the permanent loss of land at Millfield Cottage, an area of approximately 25 metres by 2 metres is required permanently for the new wall at Highgate No.1 Pond. This adverse impact would affect the owner of Millfield Cottage and would be temporary and short term. The loss of land is very small scale and is not assessed as comprising a significant effect. During operation a significant beneficial effect is also identified at Mixed Bathing Pond as a result of improvements to swimming facilities.

Sustainability

6.34 At national level the NPPF's key theme is the presumption in favour of sustainable development and its core principle's support the transition to a low carbon future in a changing climate. At local level Policy CS13 requires all developments to take measures to minimise the effects of and adapt to climate change and encourages all developments to meet the highest feasible environmental standards. Camden development policy DP22 requires development to incorporate sustainable design and construction measures.

6.35 The Sustainability Statement confirms that sustainability has been incorporated into the Proposed Development, where feasible, through the various design stages. For example the earth required to build up the dams would be sourced from borrow pits on site, thus reducing HGV movements to and from the Site and their associated noise, air pollution and traffic impacts. The borrow pits would be backfilled with silt from the dredging of the ponds; this eliminates the HGV movements that would have been required to take the silt off site.

6.36 Sustainability has also been considered in the material choice for the construction of the works. In terms of the replacement building at Ladies' Bathing Pond, this building would be more thermally efficient than the one it replaces, thus reducing energy used in heating. It also has larger windows reducing energy requirements for internal lighting. Internally the use of low energy light bulbs and low flush toilets would reduce the energy requirements for the building and water consumption.

6.37 In terms of loss of vegetation, the Proposed Development has been designed to minimise the removal of vegetation and trees as far as possible and to ensure the best trees are retained; additional habitats would be created by adding marginal planting and pond habitats would be enhanced through improvements to water quality.

6.38 In addition to the sustainability designed into the Proposed Development, the contractor would minimise air, water and soil emissions and minimise the production of waste during construction, all to be managed through the PMP (which includes the CMP).

Summary

Metropolitan Open Land

6.39 The proposed engineering operations and replacement changing facility at Kenwood Ladies' Bathing Pond have been assessed in terms of their acceptability in their MOL location which is provided with the same protection as Green Belt land. The above assessment concludes that the Proposed Development would not have an adverse impact on the openness of the Green Belt, or conflict with the purposes of including land within the Green Belt and the changing room facility is not materially larger than the one it replaces, as such the Proposed Development is acceptable in this regard.

Environmental and Community Considerations

6.40 Temporary Significant Effects

- Thirty three visual receptors would experience significant adverse effects during construction ranging from moderate adverse to major adverse.
- Five visual receptors would experience significant adverse effects at the opening year of the Proposed Development.
- Significant adverse effects would occur to users of each of the swimming ponds which would be closed for two months during construction.
- Part of the rear garden of Millfield Cottage would be required for the construction of Highgate No.1 Pond dam which would be an adverse effect.
- Five receptors in close proximity to the worksites adjacent to Highgate No.1 and Pond, Hampstead No.1 Pond would experience temporary adverse significant noise effects during the noisiest construction activities.

6.41 Permanent Significant Effects

- One visual receptor would experience significant adverse effects at year 15 after of the Proposed Development's operation.
- Long term moderate beneficial effect for Model Boating Pond and Bird Sanctuary Pond habitats due to improved water quality and marginal planting.
- Moderate beneficial effect to the Standard of Protection (SoP) for downstream urban areas due to the following a reduced risk of overtopping of Highgate No.1 Pond;
- Major beneficial effect for downstream urban areas due to a reduced risk of dam failure;
- Moderate beneficial effect to the water quality of all ponds;
- Major beneficial effect to the water quality for the ponds where de-silting would occur.
- A part of the rear garden of Millfield Cottage, smaller than required during construction would be permanently required for the dam wall at Highgate No.1 Pond.

6.42 This section has demonstrated that there would be few permanent significant adverse impacts but a number of significant beneficial impacts notably from the reduced risk of dam failure and improved water quality.

6.43 The City is determined that the temporary works will have the least amount of impact on the Heath and the communities around it as possible. To ensure this the contractor was appointed at an early stage to ensure they were involved in the design. In addition to providing practical advice on the most efficient and economical way of undertaking the works, the advice of the contractor has been essential to reduce traffic impacts on roads locally and Heath-wide and to reduce other possible construction related impacts.

6.44 It is considered, therefore, that the Proposed Development is in line with the Development Plan and policies of the NPPF.

7. Design and Access Statement

7.1 The requirements for Design and Access Statements (DAS) is set out in Article 8 of the Town and Country Planning (Development Management Procedure) (England) (Amendment) Order 2013. Under Article 4 (C) it states that article 8 (which requires Design and Access Statements) does not apply for an application for planning permission for engineering operations. As the proposal is for engineering operations a DAS is not a validation requirement. The Proposed Development does include the proposed replacement of the changing facility at Ladies' Bathing Pond, however as this is not located within a designated area a DAS would not be required for this element of the Proposed Development either. Although a DAS is not statutory validation requirement for the Proposed Development, LBC has confirmed that they would still welcome the submission of a DAS for the Proposed Development. This section of the PDAS therefore provides a brief DAS for the engineering works which form the Proposed Development. A separate DAS has been produced for the replacement changing facility at Ladies' Bathing Pond (please see Ladies' Bathing Pond Design and Access Statement) which is submitted as part of this application, it is therefore not intended to repeat the details on the Ladies' Bathing Pond changing facility here.

7.2 This DAS has been produced in line with Planning Practice Guidance (6th March 2014) which states that DAS's should explain the design principles and concepts that have been applied to the proposed development and demonstrate the steps taken to appraise the context of the proposed development and how the design of the development takes into account that context. The Guidance requires DAS's to explain how relevant Local Plan policies have been taken into account and should detail consultation undertaken and how this has informed the proposed development.

7.3 The key objectives, design principle and design philosophy have been included in section 3 of this report and it is not intended to repeat them in this DAS. These have been used as a basis to inform the development of the design of the Proposed Development. Section 5 of this document details the planning policy context for the Proposed Development and section 6 of the document provides an appraisal against these policies.

7.4 The Commission for Architecture and the Built Environment (CABE) has published a best practice document, 'Design and Access Statements: how to write, read and use them' (2006). This section of the statement has been written in line with the best practice guidance provided and sets out a clear justification for the proposals. In line with CABE guidance this section of the statement examines proposals under the following set of headings:

- Use;
- Amount;
- Layout;
- Scale;
- Landscaping;

- Appearance; and
- Access.

Use

7.5 The Proposed Development involves engineering works to make the dams on the Hampstead and Highgate chains of ponds safe from breach and to reduce risk to life and property downstream. The existing use of the Site is a public open space and this would not be altered as a result of the Proposed Development. Some of the land would be not useable during the construction phase; however this has been programmed to ensure minimal disruption to users of the Heath, as detailed in the SMP and Community Impact section of the ES submitted to support this planning application. In addition the construction phase is temporary and after construction the Heath would once again be fully useable as a public open space.

Amount

7.6 In terms of the amount of engineering works required for the Proposed Development, these are directly a function of the need for the development in terms of safety and compliance with the Reservoirs Act 1975 and the Flood and Water Management Act 2010. The works have been carefully designed to ensure they have as minimal impact as possible. The Design Principle and Design Philosophy for the development was decided early and in consultation with stakeholder groups, as detailed in section 3 of this PDAS, these principles included the consideration of each pond chain as a whole system with any increase in storage capacity focused in the least sensitive locations to limit tree loss around ponds and to reduce residual works elsewhere. This philosophy has ensured that the larger scale engineering works are at the least sensitive locations in the two chains and meaning that works required elsewhere are reduced.

7.7 The proposals are appraised in Section 6 of this document which concludes that the amount of development would not have any adverse impacts in planning policy terms and as such would be acceptable.

Layout

7.8 The layout of the engineering works is a direct function of the need for the works and the design philosophy as discussed above. The works have been laid out according to need but also according to the detailed work undertaken through the options development process (as detailed in section 3 of this PDAS) which through lengthy engagement with stakeholders and the environmental specialists (as described in the SCI submitted to support this application for planning permission) has ensured that the layout proposed has been designed to be as sensitive as possible to the existing environment of the Heath.

Scale

7.9 The scale of the Proposed Development is directly related to the need for the Proposed Development in terms of safety and compliance with the Reservoirs Act 1975 and the Flood and Water Management Act 2010. The scale is also directly related to the design philosophy (fully described in section 3 of this PDAS) which has meant that more major works are located at the least sensitive locations, thus meaning the sale of works in these locations is larger but this allows for smaller scale works at more sensitive locations.

Landscaping

7.10 Due to the sensitive location of the Site on Hampstead Heath, landscape has been key to the design of an acceptable development proposal. A Strategic Landscape Architect was employed by CoL early in the design process to act as champion of the landscape and act as a voice for the Ponds Project Stakeholder Group. In addition the Atkins design team has its own landscape team who have led the design process together with the dam engineers, to ensure that the Proposed Development fulfilled the requirements in terms of dam safety but also had minimal impact on the landscape of the Heath.

7.11 The Landscape and Visual Impact chapter of the ES details the context, methodology for assessment and predicted effects of the Proposed Development. In addition the planning drawings show how landscaping has been integrated into the final design and the verified views show the before and after views from different locations around the Heath. The documents and drawings submitted to support this application for planning permission demonstrate the high level of dedication in ensuring that the Proposed Development is integrated into the landscape. Improvements to the existing landscape have also been secured by, for example, replacing steel piling with softer more natural looking edges and marginal planting.

7.12 The proposals are appraised in Section 6 of this document which concludes that in terms of landscape and visual impacts the Proposed Development would not have any adverse impacts in planning policy terms.

Appearance

7.13 The appearance of the Proposed Development has been a key issue along with the dam safety requirements in the design. As discussed above a balance has been achieved by focusing the more major works at areas which are least sensitive thus allowing for lesser works at more sensitive locations. In general the appearance of the Proposed Development has been designed to be as natural as possible. In terms of the detailed design of the Proposed Development, a materials palette has been created and is submitted within the Outline Specification document.

Access

7.14 During construction, site access by construction vehicles and deliveries and the access around the Site for construction has been detailed in the SMP. This has been seen as being very important to the acceptability of the proposals during construction and as such has been designed to have as little impact as possible. The full details are provided in the Project Management Plan (PMP) (which includes the Construction Management Plan and Site Waste Management Plan) with a summary in section 4 of this PDAS. In terms of user access to the Heath during construction, this has also been detailed in the PMP and has been designed and programmed to ensure that users have maximum access to the Heath and its ponds during the construction period, this is discussed further in the community impacts section of the ES and section 6 of this PDAS.

7.15 During operation, access around the Heath will not have diminished from the current level and will have improved slightly due to resurfacing of paths and additional paths (e.g. on the dam at Model Boating Pond).

7.16 Replacement of the Ladies' Changing Facility will result in provision of disabled access to this building and disabled facilities within the building (e.g. disabled changing and toilet facilities).

8. Summary and Conclusion

8.1 Planning permission for works to the Hampstead and Highgate chains of ponds on Hampstead Heath is sought to virtually eliminate the risk of dam failure at any of the ponds in the two chains.

8.2 Section 54A of the Town and Country Planning Act 1990, requires that all planning applications should be determined in line with the policies and proposals of the Development Plan unless other material considerations determine otherwise. The emphasis of the plan-led system continues to provide the policy context for the consideration of planning applications for the development or use of land under Section 38(6) of the Planning and Compulsory Purchase Act 2004.

Need for the development

8.3 Atkins was commissioned to develop options that virtually eliminate the risk of dam failure, while complying with the Hampstead Heath Act 1871 and the Reservoirs Act 1975, and taking into account the requirements of the Flood and Water Management Act 2010. To arrive at the best solution, while mitigating potential impacts, the options have been carefully considered in the context of the whole chain as a system, as well as identifying the best solution for each pond.

8.4 Detailed studies show that both chains of pond dams could fail in an extreme storm, putting at risk, lives property and infrastructure in North London (South Hampstead and Gospel Oak). The chances of a damaging storm occurring are low but the consequences if it does happen are severe. When sudden, extreme amounts of rain flow over an earth dam they can cut it away, releasing all of the water in one go, with a potential 'domino-effect' on other dams. Once the cutting away starts, it is virtually impossible to stop so the City has to take action to minimise the risk of it starting.

8.5 Damaging storms may be rare, but one happened in 1975 and Heath dams were damaged. Furthermore, in 2010 a brief storm resulted in the Stock Pond overtopping with earth scoured away from the top of the dam.

8.6 If the City does not follow the guidance laid out in the Reservoir Act 1975, the Panel Engineer could call for a statutory inspection of the dams under Section 10 of the Act and time bound enforcement action by the Environment Agency could result.

Option development

8.7 During the development of the scheme and preparation of the planning application extensive consultation has been undertaken to: develop design principles and inform options development process; explain the need for the proposals; gain an understanding of stakeholder support or opposition to different options; gather feedback from stakeholders and describe the Proposed Development.

8.8 A range of methods was used to reach a wide range of stakeholders and ensure they had the opportunity to understand and engage in the project. Throughout the project, the City has engaged with the Pond Project Stakeholder Group (PPSG), formed specifically to provide advice and views in connection with the project.

8.9 A preferred option for each of the chains of ponds emerged as solutions which satisfy the strict legal liabilities and closely follow the design principles established in conjunction with the PPSG and which minimise the impact on the Heath.

8.10 The Proposed Development aims to enable the dams to pass the PMF safely and provide more storage to address the lack of capacity issue. It provides for additional storage in each chain of ponds at appropriate locations and minor works at the remainder of the ponds in the chain.

Impacts of the development

8.11 There will be some disruption during the construction works themselves lasting about 18 months but, when completed, the ponds will return to being an integral part of the landscape with new views and paths, new marginal planting and other wildlife habitats and cleaner water and a new accessible changing facility at Ladies' Bathing Pond. There will be some permanent changes to the landscape and some minor land take at a residential property, these are fully assessed in the ES.

8.12 The primary and most important benefit of the Proposed Development is that it will virtually eliminate the risk of dam failure in an extreme storm and therefore protect life and property downstream, this will also ensure compliance with the Reservoirs Act 1975, whilst also taking into account the emerging requirement so the Flood and Water Management Act 2010.

Conclusion

8.13 It has been demonstrated that the proposals are in conformity with relevant national, regional and local planning policy and no material considerations have been identified which indicate that a decision on the application should be other than in accordance with the Development Plan. Therefore, the Council is respectfully requested to support this full planning application for the reasons outlined.

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