

Arboricultural Impact Assessment

Hampstead Heath Swimming Ponds Project

David Humphries - Trees Management Officer – 30th April 2022

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1. Introduction

- **1.1. Terms of Reference**

The Trees Management Officer (David Humphries) has been instructed by Edwin Birch (City Surveyors) to undertake and provide a survey of trees in proximity to proposed site improvement works in support of a planning application for the construction of improvements to the ponds within Hampstead Heath.

- **1.2. The Application Site**

The Hampstead and Highgate chains of ponds are both located on Hampstead Heath in the London Borough of Camden.

- **1.3. Proposed Works**

The proposed building works can be summarised as follows.

1. **Men's Pond** - construction of new building with accessible facilities to west of existing jetty and creating clearing for new lawn for sunbathing, to east of existing changing area.
2. **Ladies Pond** - modification of existing changing facilities, replacement of existing rear entrance gate and fence.
3. **Mixed Pond** – construction of new platform and ramp, new ticket booth and 2 new sheds.

- **1.4. Scope of Works**

This report presents Arboricultural information captured between April 2022. The surveys were conducted by the inhouse team of professional and experienced Arboriculturists. The team comprised the following technical specialists:

David Humphries – Trees Management Officer, Alasdair Nicoll – Tree Team Leader

2. Methodology

- **2.1. General**

This Arboricultural Impact Assessment has been undertaken in accordance with BS5837:2012 Trees in relation

to design, demolition and construction – Recommendations. The standard gives recommendations and guidance on the relationship between trees and design, demolition, and construction process, setting out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.

- **2.2. Spatial Scope**

The spatial scope of the tree survey was informed using the preliminary design proposals for the associated ponds produced by Zoë Polya-Vitry - Architect RIBA. This spatial scope increased in places as the design developed to ensure all trees within close proximity of any proposed construction operations were considered and recorded. The term 'close proximity' relates to the distance judged by the Arboriculturists, based on the size of the tree, where a tree is considered to be at risk of harm from the proposals if they were to commence. The reference to harm includes direct tree root or crown damage or indirect damage from construction plant undertaking the engineering works.

- **2.3. Data Gathering**

Data was collected by qualified and experienced Arboriculturists in accordance with BS 5837:2012, as outlined in Appendix A of this report. The purpose of the tree categorisation method applied by the Arboriculturist, being to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained if development is to occur. For a tree to qualify under any given category, it should fall within the scope of that category's definition as defined in figure A2 in Appendix A (category's U, A, B, C) and, for trees in categories A to C, it should qualify under one or more of the three subcategories (1, 2, 3). Subcategories 1, 2 and 3 are intended to reflect arboricultural and landscape qualities, and cultural values, respectively. Trees were recorded as individual specimens. The trees were assessed in line with the Visual Tree Assessment (VTA) method as developed by Mattheck and Breloer (1994). This method is based on the axiom of uniform stress, whereby a tree will grow in response to environmental stimuli to produce a structure that bears forces evenly across its surface. As such an internal defect, such as decay, would initiate a noticeable change in the stem's shape to accommodate the physical change.

- **2.4. Survey**

The locations of the trees were plotted by the Arboricultural team, they recorded individual trees with stem diameters greater than 100mm or the outlines of groups showing overall extent of canopy where individual trees in a cohesive group were less than 150mm diameter at 1.5m above ground level.

- **2.5. Limitations to Survey**

Trees were identified and inspected from ground level only and were not climbed. No invasive examination techniques (such as increment boring, or internal decay detection) were carried out and as such no assessment of the internal condition of the wood of these trees can be given. The tree survey undertaken is not intended to be a tree risk management survey targeting safety related issues. BS 5837: 2012 does not include arguments for or against development, or for the removal or retention of trees. Where development is to occur, the standard provides guidance on how to decide which trees are appropriate for retention. It is to be noted that whilst the extent of the tree survey has been influenced by the engineering options, the Arboricultural information captured is based on observations by professional Arboriculturists of the trees in their current form/condition independent of any proposed construction. Trees are living organisms subject to changes outside man's control, the information captured for the trees relates to that particular moment in time and could be subject to change from factors such as harsh or unexpected weather events which result in tree crowns or other key structurally elements being damaged.

3. Existing Site Conditions

- **3.1. Existing Land Use**

Hampstead Heath is large public amenity green space covering approximately 320 hectares of land in the north London. The heath can be separated into the East and the West Heaths with Spaniards Road (B519) acting as the dividing line. The ponds project is focused on the Hampstead and Highgate chain of ponds within the East Heath. The ponds being considered within the planning application are as follows within the Highgate and Hampstead chains:

Highgate chain:

- Ladies Bathing Pond.
- Men's Bathing Pond.

Hampstead Chain:

- Mixed Bathing Pond.

Hampstead Heath broadly comprises a mix of wooded areas and grass parkland intersperse by multiple formal and informal footpaths. Access throughout the heath is relatively unhindered, meaning people have ready access to the bases of the trees on site. This access imposes differing levels of liability to the CoL which imparts varying levels of duty of care to carry out inspections for tree risk management. With access relatively unhindered the sensitivity of the surrounding target areas can be considered as high meaning any proposals will have to be carefully considered when informing on tree removal or retention. Hampstead Heath is bound entirely by built development with the majority being residential properties or school facilities surrounding the East Heath.

- **3.2. Existing Tree Stock**

The trees on the heath are growing as part of larger formal and informal groups and as individual specimen trees. The Heath supports a wide range of tree species with prevalence towards deciduous trees including English oak, Beech, Ash, London Plane, Willows species and Poplar species. The Heath is estimated to support a total tree population in excess of 20,000 trees. The majority of which form part of secondary woodland stands that have successfully self-established. This fact does not lessen the landscape or arboricultural value of the self-sown tree stock; however, it can often result in structural forms that are not conducive to the locality the trees are growing within, e.g., tall drawn slender trees adjacent to footpaths or other formal access routes. Similarly, the successive establishment of hedgerow tree species such as Blackthorn can lead to habitats becoming smothered and to the detriment of important wildlife or indeed more significant tree stock. The CoL recognises the importance of their tree stock with comprehensive management programmes in place to manage them. The trees around the ponds vary in species, age, and form. The larger climax tree species such as London Plane and English Oaks provide distinct landscape features serving to soften views of the built infrastructure beyond the confines of the site and making them more visible to views in and around the heath. In some cases the trees even form part of key historic views that serve to increase their landscape amenity value. The smaller tree stock comprises mainly hedgerow tree species, i.e. tree species that form integral elements of hedgerows that provide lower level screening value to views into and around the ponds. The heath is known to support a number of special trees which are those that can be classified as ancient, veteran, notable, and champion or heritage trees. Veteran trees are those with habitat features such as wounds or decay. The trees listed above are also old for their species and can predominantly be classed within the ancient tree category, i.e. a tree that has passed beyond maturity and is old, or aged, in comparison with other trees of the same species.

- **3.3. Site Topography**

The East Heath falls steeply away from Spaniards Road in a south easterly direction. The East Heath also sustains two shallow valleys that run in the same direction with each valley containing a

chain of ponds. The Highgate chain is within the north valley, whilst the Hampstead chain is in the southern.

- **3.4. Soil Assessment**
Soil Assessment No soil assessment was carried out on site by the Arboriculturist although baseline information can be found within the ES document.
- **3.5. Statutory Protection**
Hampstead Heath is designation as Metropolitan Open Land (MOL)

4. Summary of Tree Condition

- **4.1. Number of Trees Recorded**
The survey captured 14 no. individual trees in close proximity to proposed works
- **4.2. General Condition Details**
The survey sheets in Appendix B provide more detail on all the trees surveyed on site. In general the trees on site were showing signs of fair to good vitality with average bud formation and coverage for the tree species and locality. The trees varied in age structure with half being semi mature and half being mature, with one further tree classed as young.

The trees have been categorised using BS5837:2012. It is to be noted that this criteria is subjective in places and so the Arboriculturists are also relying on their experience to determine suitable BS Categories. In general BS Category A trees are high quality trees with an estimated 40+ years useful remaining life expectancy. These trees are often dominant trees specimens that offer high landscape amenity value or are of significant arboricultural or cultural value. In general BS Category B trees are those of moderate quality with an estimated 20+ year's useful remaining life expectancy. The trees are often downgraded due to remedial defects such as storm damage, over extended limbs, asymmetrical crowns or limited past management intervention. In general BS Category C trees are of low quality due to their young age or due to poor condition with an estimated 10+ year's useful remaining life expectancy. Whilst by definition such trees are of low quality as defined by their BS Category ratings they still can still offer landscape amenity value as part of larger groups. In general BS Category U trees are trees with serious structural defects or trees in poor physiological condition that reduces their remaining useful life expectancies below 10 years.

5. Arboricultural Impacts

- **5.1. General**
This survey takes into account the tree stock deemed likely to be affected by the proposed scheme and identifies their condition and suitability for retention. The drawings illustrate the extents of the survey area, the root protection area (RPA) for each tree or trees and the proposals.

The British Standard relies heavily on the creation of a protected zone referred to as the RPA around each tree. This is the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority. This area should be protected from disturbance "in order to avoid unacceptable damage to the tree as a result of severance or asphyxiation of the root system." The recommended minimum area (m²) for each tree to avoid potentially harmful disturbance has been calculated for all of the trees on site and entered into the tree schedule and is illustrated on the tree survey drawings.

The RPA(s) for each tree or group of trees is illustrated as a circle centred on the base of the stem. This circular area does not take into account pre-existing site conditions or other factors that can influence or modify the shape and disposition of tree roots. Accordingly, the Arboriculturist can make modifications or judgements on the likely extents of RPAs, where through professional judgement it is deemed likely that the root zones have been restricted in a certain direction because of limiting factors such as topography, drainage, or the presence of existing built infrastructure. This detail is relevant in relation to the third party trees on the northern boundary of the site. It is the judgement of the Arboriculturist that the RPAs of trees 008 & G3 will not extend as far as they are illustrated on the TPPs given the existing site conditions including topography and the close spacing between the trees.
- **5.2. Scheme details**
The proposals are covered in detail within the ES and the General Arrangement drawings. It must be noted that at present the construction methodologies are still in the process of being developed. As such the location of any specific mitigation measures to facilitate the proposals, including the location of protective barriers, ground protection and facilitation pruning, will be defined within an Arboricultural Method Statement (AMS) and there locations illustrated on updated Tree Protection Plans, where required.

- **5.3. Arboricultural Impacts**

The tables below outline the impacts of the proposals on the tree stock on site and where mitigation measures are likely to be required to facilitate the works.

Table 5.3 – Tree Stock and Works

Highgate Chain – Men’s Pond

Tree No	Species	Cat	Removal due to		Mitigation required for		Details of how proposed build layout affects trees and mitigation.
			Cons	Cond	Canopy	RPA	
4885	Apple	B3	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact
4886	Hawthorn	B3	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact
4888	Hawthorn	B3	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact
4908	Sycamore	B3	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact
4909	Sycamore	B3	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact

Highgate Chain – Ladies Pond

Tree No	Species	Cat	Removal due to		Mitigation required for		Details of how proposed build layout affects trees and mitigation.
			Cons	Cond	Canopy	RPA	
4333	Oak	B1	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact
4342	Oak	B1	N/A	N/A	N/A	X	Adjacent works (new fence posts) limited to existing disturbed ground. No excavations of surrounding soft surfaces within the tree’s RPA. Tree to be retained. Requirements for tree protective barriers to be defined within AMS.
4341	Ash	C2	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact
4340	Hawthorn	B3	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact

Hampstead Chain – Mixed Pond

Tree No	Species	Cat	Removal due to		Mitigation required for		Details of how proposed build layout affects trees and mitigation.
			Cons	Cond	Canopy	RPA	
4903	Swamp cypress	A2	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact
4904	Holm oak	A2	N/A	N/A	N/A	X	Adjacent works (male changing room new shed and cubicles) limited to existing undisturbed ground. No excavations of surrounding hard surfaces within the tree's RPA. Tree to be retained. Requirements for tree protective barriers to be defined within AMS.
4905	Hawthorn	U	N/A	N/A	N/A	X	Adjacent works (new ticket shelter) limited to existing disturbed ground. No excavations of surrounding soft surfaces within the tree's RPA. Tree to be retained. Requirements for tree protective barriers to be defined within AMS.
4906	Norway maple	B3	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact
4907	Cherry	B3	N/A	N/A	N/A	N/A	Tree constraints outside of works footprint. No impact

Key:

Tree number – Tree referenced in the tree survey.

Species – Common name for species.

Cat – BS5837:2012 Category rating.

Removal due to - Cons – Construction, Cond – Condition. An X or n/a (not applicable) dependant on appropriate action or impact

Mitigation required for - Canopy or for RPA (Root Protection Area). An X or n/a indicates appropriate actions as a result of the impacts on the tree(s).

The impacts of the proposals have been quantified as accurately as possible given the information available at this time. The proposed scheme will require the removal of trees through direct impact by trees being located within the proposed footprint of the works and through indirect impact where the tree roots will be severed to such an extent that the tree's should be removed given concerns over the tree's remaining stability and health. Trees will tolerate a degree of root zone infringement depending on the works proposed and if they require any excavations, similarly, other factors to consider are species tolerance and the remaining un-surfaced RPA that can be retained. The BS5837 makes reference to 20% as a general rule in determining the amount of RPA infringement that could be achievable.

5.4. Preliminary Management Recommendations

No preliminary management recommendations have been made within the tree survey schedules.

5.5. Preliminary Mitigation Measures

Reference has been made within the impacts tables to the use of protective barriers where trees are being retained. The location of these barriers are still to be determined as the construction methods for the proposals are still to be confirmed through consultation.

Barriers will be required to create construction exclusion zones (CEZ's) in order to protect the RPA's of trees affected by any proposed works. The CEZ's will be defined as all the areas behind the fencing or any existing boundary fencing. Site operations not permitted in the CEZ without consultation with an Arboriculturist include storage of plant, equipment or materials,

vehicular or plant access, washing down of vehicles or machinery, handling, discharge or spillage of any substances, including cement washings, actions likely to cause localised water-logging, no mechanical digging, scraping or excavation shall be permitted in the CEZ and no earthworks or

changes in the finished ground levels other than those agreed by an Arboriculturist. The location and requirements for protective barriers will be defined within an AMS and updated set of TPPs. Any protective barriers will need to be installed prior to any construction works commencing. The barriers are to be erected to exclude construction activity in the RPAs of retained trees and are to conform to figure 3b of BS5837:2012 (page 21), a Hera type fencing. The requirements for facilitation pruning, i.e. the selective removal of branches to enable plant access, will be defined within the works schedule of an AMS. Trees requiring facilitation pruning will be discussed with the Contractor and limited where possible as deemed appropriate by the Arboriculturist. Further mitigation measures that will be required include temporary ground protection matting, 'no dig' construction for new footpath access routes and hand excavations to limit the impact on underlying tree roots. The locations of any mitigation measures will be captured within an AMS and on updated TPPs.

6. Arboricultural Method Statement

- **6.1. Heads of Terms**

A site-specific Arboricultural Method Statement (AMS) shall be produced once consultation has been completed with the Contractor and other stakeholders. An AMS document is primarily a planning condition requirement, as often outline planning applications lack sufficient construction detail to facilitate the preparation of an AMS. The AMS will address some or all of the following:

- Locations of tree protective barriers.
- Removal of existing structures and hard surfacing within tree RPAs.
- Installation of temporary ground protection measures.
- Excavations within RPAs.
- Installation of new hard surfacing – materials, design constraints and implications for levels.
- Tree works schedule; • A schedule of specific events requiring input or arboricultural supervision

Appendix A. Key & BS5837:2012 Survey Table

Tree No: Sequential reference number given to the tree or group of trees as shown on the tree survey drawings.

Species: This is the common name given to the tree.

Height (Ht): tree height from the base of the tree to its highest stem, measured in metres (m). Measurements are taken to the nearest half metre.

Stem diameter (mm): measured in accordance with figure A1 below. Measurements rounded to the nearest 10mm.

Branch spread (m): measurement of crown spread to the four cardinal points, if the crown is balanced a single measurement is given. Crown spread plotted on the tree survey drawings. Measurements are taken to the nearest half metre. 1 st significant branch and direction of growth (m): measurement of the height of the first significant branch above ground level, given in metres and direction of growth e.g. 2.4-N

Canopy height (m): height of the canopy above ground level. Measurements are taken to the nearest half metre.

Life stage: The following abbreviations are used: Y = Young trees 4/5 life expectancy Estimated remaining contribution, in years:

Figure A2 – Cascade chart for tree quality assessment from BS5837:2012

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention (see Note)			
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none">Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)Trees that are dead or are showing signs of significant, immediate, and irreversible overall declineTrees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality <p><i>NOTE: Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.</i></p>		
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values, including conservation
Trees to be considered for retention			
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

Appendix B. Tree Survey Schedules

Highgate Chain – Men's Pond

TREE No	SPECIES	Ht (m)	Stem Diameter (mm)	Crown Spread (m)	Life Stage Y SM M OM	General observations	Est'd Remaining Contribution (years) <10/10+/20+/40+	Category Grading A B C U 1/2/3	Root Protection Area Radius (m)
4885	Apple	4	130	4	M	Fair condition, stem cankers	10+	B3	1.56
4886	Hawthorn	4	160	3	SM	Poor condition, Impaired tree	<10	B3	1.92
4888	Hawthorn	4	210	3	SM	Poor condition, Impaired tree	<10	B3	2.52
4908	Sycamore	8	500	8	SM	Fair condition, self-set tree	20+	B3	6.0
4909	Sycamore	8	520	9	SM	Fair condition, self-set tree	20+	B3	6.24

Highgate Chain – Ladies Pond

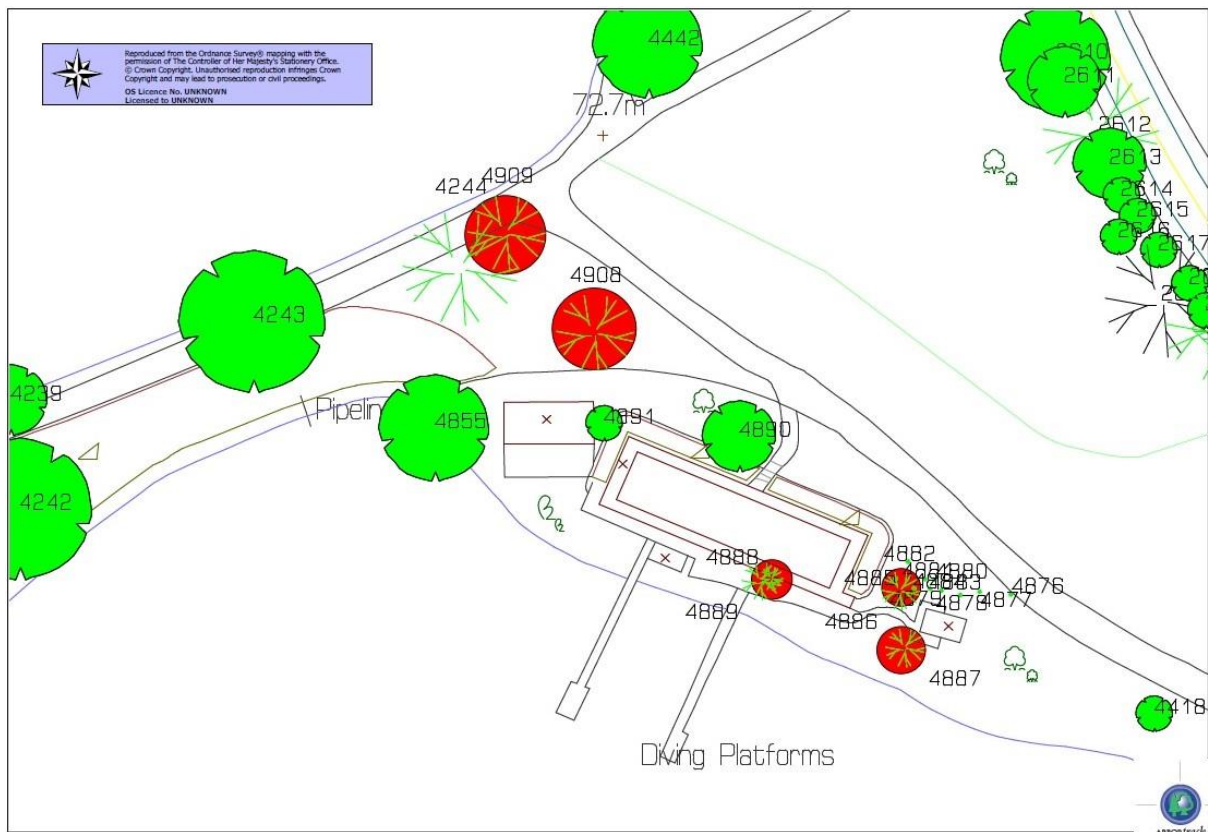
TREE No	SPECIES	Ht (m)	Stem Diameter (mm)	Crown Spread (m)	Life Stage Y SM M OM	General observations	Est'd Remaining Contribution (years) <10/10+/20+/40+	Category Grading A B C U 1/2/3	Root Protection Area Radius (m)
4333	Oak	15	555	12	M	Fair condition, stem wound	40+	B1	6.66
4342	Oak	11	590	12	M	Good condition	40+	B1	7.08
4341	Ash	6	285	4	Y	Fair condition, self-set tree	<10	C2	3.24
4340	Hawthorn	4	210	2	SM	Poor condition, Impaired tree	10+	B3	2.52

Hampstead Chain – Mixed Pond

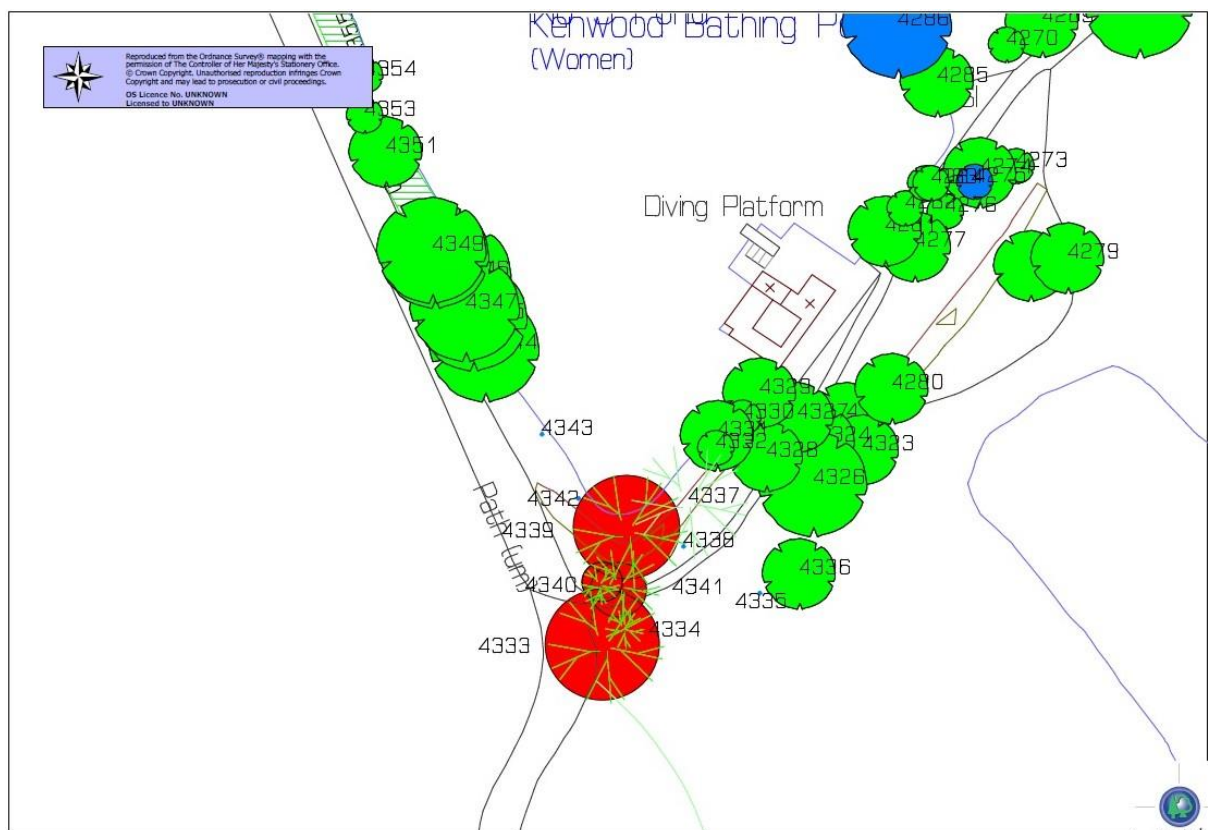
TREE No	SPECIES	Ht (m)	Stem Diameter (mm)	Crown Spread (m)	Life Stage Y SM M OM	General observations	Est'd Remaining Contribution (years) <10/10+/20+/40+	Category Grading A B C U 1/2/3	Root Protection Area Radius (m)
4903	Swamp cypress	15	760	10	M	Good condition, historical reduced	40+	A2	9.12
4904	Holm oak	18	780	15	M	Good condition	40+	A2	9.36
4905	Hawthorn	4	190	5	M	Fair condition, Leaning tree	<10	U	2.28
4906	Norway maple	8	390	6	SM	Fair condition, self-set tree	20+	B3	4.68
4907	Cherry	10	400	7	SM	Fair condition, ivy on stem/canopy	20+	B3	4.8

Appendix C. Root Protection Areas

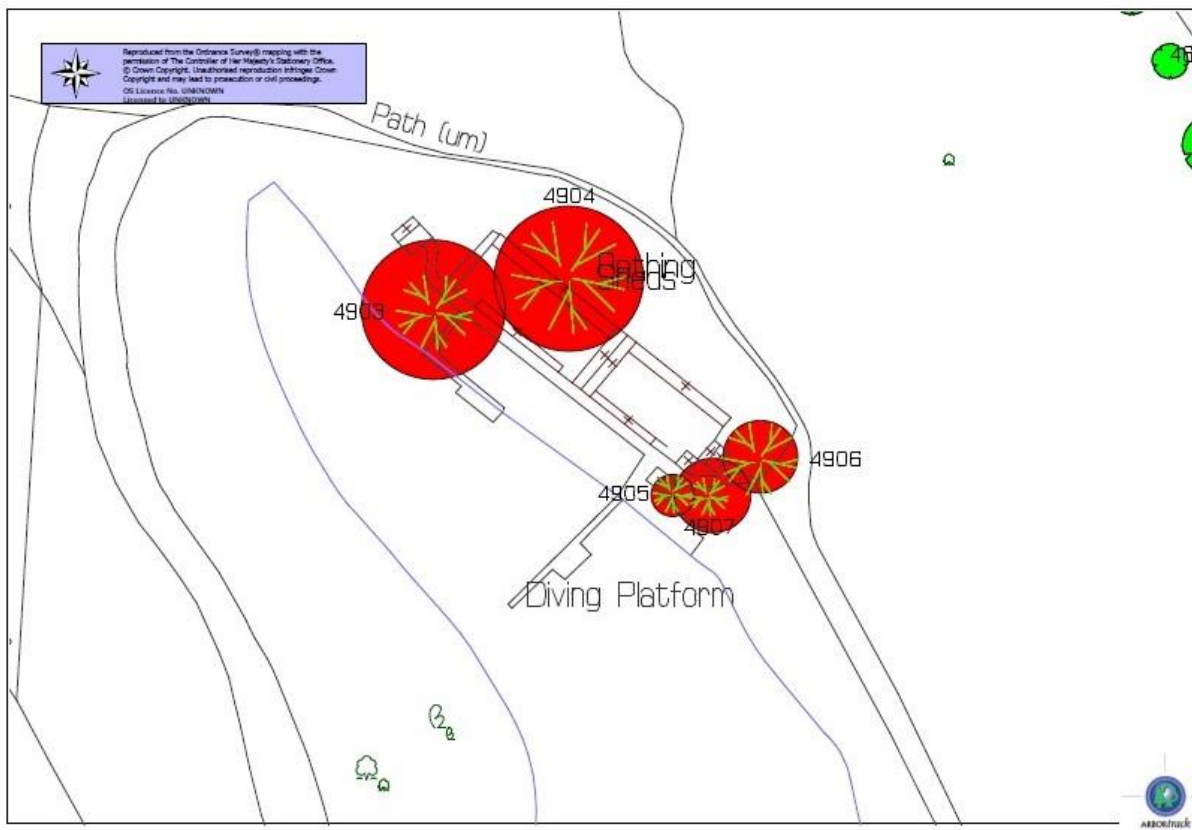
Men's Pond Root Protection Areas



Ladies Pond Root Protection Areas



Mixed Pond Root Protection Areas



Appendix D. Glossary of Terms

Term - Description

Access Facilitation Pruning One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.

Amenity Value The environmental and landscape benefits of trees as opposed to their commercial value for timber

Arboricultural Method Statement Methodology for the implementation of any aspect of development that is within the root protection area or has the potential to result in loss of or damage to a tree to be retained.

Arboriculture The study and care of trees and other woody vegetation

Arboriculturist A person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.

Competent person A person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached. Construction Site-based operations with the potential to affect existing trees.

Construction Exclusion Zone The area based on the root protection area from which access is prohibited for the duration of a project. within the crown or on the stems of trees.

Ivy Growth Ivy growth may ascend into the tree's crown, increasing wind resistance, concealing potential defects, and reducing the tree's photosynthetic capacity. Ivy growth is often acceptable in woodland areas as a conservation benefit.

Root Protection Area The layout design tool indicating the minimum area around a 5117039/HHPP - Arboricultural Impact Assessment Page 180 of 183 Term Description (RPA) tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.

Service Any above or below ground structure or apparatus required for utility provision.

Stem The principal above-ground structural component(s) of a tree that supports its branches.

Structure A manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.

Structural Defect Internal or external points of weakness, which reduce the stability of the tree.

Tree Constraints Plan Abbreviated to TCP. Plans showing specific tree constraints including Root Protection Areas and Crown spread.

Tree Protection Plan Abbreviated to TPP. Scaled drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.

Veteran Tree A tree that, by recognised criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned. These characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem.

Visual Tree Assessment A non-invasive method of examining the health and structural condition of trees. Developed by Claus Mattheck and David Breloer 1994 Wound Any injury, which induces a compartmentalisation response.

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