



ARGENTA

T R E E S U R V E Y S

ARBORICULTURAL IMPACT ASSESSMENT

Site at:
Fairways
Pine Grove
London
N20 8LB

Job ref	Report Version	Author	Checked	Date
ATS0631	V1	IL	IL	March 2024





Ian Lorman

Relevant Qualifications

Professional Diploma in Arboriculture (Royal Forestry Society)

National Diploma in Arboriculture

National Certificate in Horticulture (Arboriculture Module)

Professional Membership

I have been a Fellow Member of the Arboricultural Association since 2013

Membership number FE1030



Arboricultural
ASSOCIATION

Fellow Member

Experience

My career started in 1991 from craft level in arboriculture, to student, and then working in closely related industries to working as an Arboricultural / Trees Officer in five different local authorities. I have been practicing arboricultural consultancy for several years.





CONTENTS

Chapter		Page
1	Limitations	1
2	Brief	3
3	Executive Summary	4
4	Tree Survey Methodology	5
5	Results of Tree Survey	10
6	General Description of Site and Surroundings	11
7	Description of the Proposed Development	14
8	Legal Constraints	15
9	Arboricultural Impact Assessment	17
10	Conclusion	20
11	Normative References	21

Additional documents attached

Image – Example of ‘airspade’ excavation & radial mulching around trees

Tree survey schedule (11th January 2024)

Tree constraints & mitigation plan (1:100 @ A2)





1 Limitations

1.1 The content of this report is valid for one year from the date shown on the title page.

1.2 Trees

1.2.1 The tree survey has been undertaken from ground level using non-invasive methods. The presence of Ivy, epicormic shoots or other climbing plants on tree trunks and branches obscures any defects that might be present that could otherwise be identified. In the presence of climbing plants etc assumptions are made based upon the general health and appearance of trees, which may differ fundamentally if Ivy etc were not present. For example, a tree that has the overall appearance of good health and vigour may have a serious structural defect hidden by climbing plants.

1.3 Tree Law

1.3.1 Details of Tree Preservation Orders and Conservation Areas have been obtained from the client, and the website of Barnet Council.

1.4 Wildlife

1.4.1 Before carrying out tree works, it is necessary to observe laws in respect of protected species and habitats. Various habitats and species of animal in the UK are protected by the following pieces of legislation:

Wildlife and Countryside Act 1981(as amended)

Natural Environment and Rural Communities Act 2006 (NERC Act)

Conservation of Habitats and Species Regulations 2010 (as amended)

Protection of Badgers Act 1992

The Hedgerows Regulations 1997

Countryside and Rights of Way Act 2000

All tree work operations must comply with The Wildlife and Countryside Act 1981 as amended by the Countryside and Rights of Way Act 2000, which provide statutory protection to birds, bats, and other species, all of which could inhabit trees. Where works may constitute an offence, advice will be required from a suitably qualified person before works are able to proceed. For example, it may be necessary to



programme tree work outside of the bird nesting period, typically March through to August inclusive.

1.5 Non-disclosure Notice

1.5.1 The content and layout of this report are owned by the author. This report may not be copied or used without the author's agreement for any purpose other than the purpose indicated in this report.

1.6 Third Party Disclaimer

1.6.1 The report was prepared by the author at the instruction of and for the use by, the client. The author provides this advice without prejudice and bases his opinions on knowledge, experience, qualifications, and published research and cannot be held responsible for the consequences of a difference of opinion held by third parties, for example the Local Planning Authority or Planning Inspector. The author does not accept liability for any loss or damage arising from reliance on the content of this report.

1.7 Status

1.7.1 This is not a design or method statement or a tree safety report. This report has been prepared to consider the impact upon trees of levels alterations within a garden.



2 Brief

- 2.1 This report was requested by the client in December 2023. The site visit and tree survey were conducted on 11th January 2024.
- 2.2 I am instructed to provide a report to accompany a planning application to Barnet Council in accordance with British Standard BS5837:2012 'Trees in relation to design, demolition, and construction – Recommendations' as to the impact of a project upon trees and how any impact can be mitigated. The advice herein takes the form of an arboricultural impact assessment report with a tree survey schedule, and a tree constraints & mitigation plan.



3 Executive Summary

- 3.1 No trees are to be removed.
- 3.2 Soil amelioration and improving the growing environment for tree roots can largely overcome any potential harm.



4 Tree Survey Methodology

- 4.1 The trees have been assessed in accordance with British Standard BS 5837: 2012 'Trees in relation to design, demolition, and construction – Recommendations'.
- 4.2 The British Standard divides trees into one of four categories (based on the cascade chart for tree quality assessment – Table 1 in the Standard). These are classed as U, A, B or C (Section 4.5 of BS5837). This gives an indication as to the tree's quality. For a tree to qualify under any given category it should fall within the scope of that category's definition (see below). Categories A, B and C cover trees that might be a material consideration in the development process, each with three further sub-categories (1, 2 or 3) which are intended to reflect arboricultural, landscape and cultural (including conservation) values. Category U trees are those which would be lost in the short term for reasons usually connected with their physiological or structural condition. In assigning trees to the A, B or C categories, the presence of any serious disease or tree-related hazards are taken into account. If the disease is considered fatal and / or irremediable, or likely to require sanitation for the protection of other trees it may be categorised as U, even if they are otherwise of considerable value.
- 4.3 Category 'U'. (Dark Red): Trees for removal are those trees in such a condition that any existing value would be lost within 10 years and which should in the current context be removed for reasons of sound arboricultural management. Trees within this category are:
- i. 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;
 - ii. Trees that are dead or are showing signs of significant, immediate or irreversible overall decline;



iii. Trees infected with pathogens of significance to the health and or/safety of other trees nearby trees or very low-quality trees suppressing adjacent trees of better quality.

4.4 Category 'A'. (Green): are trees whose retention is most desirable and are of high quality and value. These trees are considered to be in such a condition as to be able to make a lasting contribution (at least 40 years) and may comprise:

- i. Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue);
- ii. Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features,
- iii. Trees, groups or woodlands of significant conservation, historical, commemorative or other value (eg. veteran trees or wood-pasture trees).

4.5 Category 'B'. (Blue): are trees whose retention is considered desirable and are of moderate quality. These trees are considered to be in such a condition as to make a significant contribution (at least 20 years) and may comprise:

- i. Trees that might be included in category A, but because of their numbers or slightly impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage), are downgraded in favour of the best individuals;
- ii. Trees present in numbers such that they form distinct landscape features and attract a higher collective rating than they would as individuals or trees occurring as collectives but situated so as to make little visual contribution to the wider locality;
- iii. Trees with material conservation or other cultural value.



- 4.6 Category 'C'. (Grey): are trees that could be retained and are considered to be of low-quality. They have a life expectancy of at least 10 years or are young trees with a stem diameter below 150mm and may comprise:
- i. Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories;
 - ii. 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 screening benefits;
 - iii. Trees with no material conservation or other cultural value.
- 4.7 Crown spreads have been measured in metres and taken for the four cardinal points where necessary and where access permits. The measurements are always considered in the following sequence: north, east, south and west, and therefore appear as such within the tree survey schedule. Where access is not available dimensions are estimated.
- 4.8 In the assessment particular consideration has been given to the following when considering the appropriate BS Category and Sub-Category allocation:
- i. the health, vigour and condition of each tree;
 - ii. the presence of any structural defects in each tree and its remaining contribution in years (i.e. future life expectancy);
 - iii. the size and form of each tree and its suitability within the context of a proposed development for the land use;
 - iv. the location of each tree relative to existing site features, e.g. its value as a screen or as a skyline feature.
- 4.9 Age class is assessed according to the age class categories referred to in BS 5837.

Young trees

Early-mature, trees less than 1/2 life expectancy.

Mature trees up to 2/3 life expectancy.



Over-mature, declining or moribund trees of low vigour.

Veteran trees

4.10 The physiological condition of the tree, or group of trees, has been referred to as one of the following:

Good: A sound tree, trees needing little, if any, attention.

Moderate: A tree, trees, with minor but rectifiable defects or in the early stages of stress, from which it may recover.

Poor: A tree, trees, with major structural and physiological defects or stressed such that it would be very expensive and inappropriate to retain.

Dead: A tree or trees, no longer alive. However, this could also apply to those trees that are dying and will be unlikely to recover, or are / have become dangerous.

4.11 Major defects or diseases and relevant observations have also been recorded under Structural Condition within the Tree Schedule. The assessment for structural condition has included inspection of the following defects:

The presence of fungal fruiting bodies around the base of the tree or on the stem, as they could possibly indicate the presence of possible internal decay.

Soil cracks and any heaving of the soil around the base indicating possible root plate movement.

Any abrupt bends in branches and limbs resulting from past pruning, as it may be an indication of internal weakness and decay.

Tight or weak 'V' shaped forks and co-dominant stems

Hazard beam formations and other such biomechanical related defects (as described by Claus Mattheck, Body Language of Trees HMSO Research for Amenity Trees No. 4 1994).

Cavities as a result of limb losses or past pruning.

Broken branches



Storm damage

Canker formations

Loose bark

Damage to roots

Basal, stem or branch / limb cavities

Die-back in the crown

Abnormal foliage size and colour

Any changes to the timing of normal leaf flush and leaf fall patterns

Other pathological diseases affecting any part of the tree



5 Results of Tree Survey

- 5.1 Two trees were recorded. Trees are listed in the tree survey schedule with given sequential numbers 1 and 2. Both trees are located within the rear garden of the application site. Tree locations are shown on the tree constraints & mitigation plan.
- 5.2 The trees within the application site make a minor contribution to the special character of Totteridge Conservation Area. Their contribution is limited due to their rear garden location.



6 General Description of Site and Surroundings

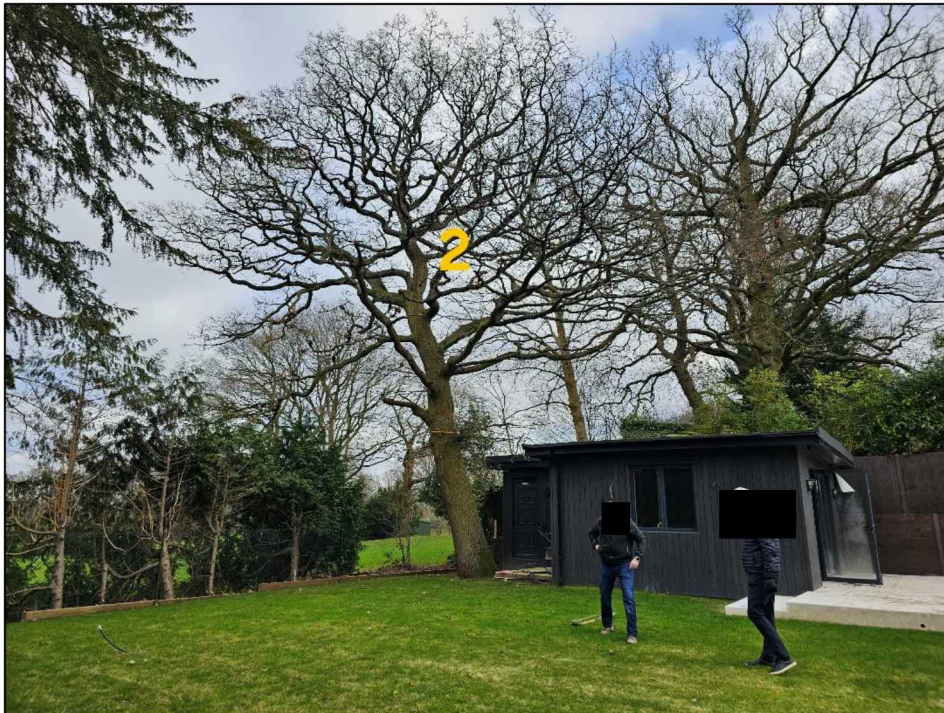
- 6.1 The application site comprises a detached house with garden and parking to the front, and lawned garden to the rear, with trees, shrubs, swimming pool and outbuilding.
- 6.2 Trees on site are restricted to a mature Yew, and a mature Oak in the rear garden. Other trees are present within adjacent gardens either side, and within the golf course to the rear.

Below: Tree 1 (Yew)

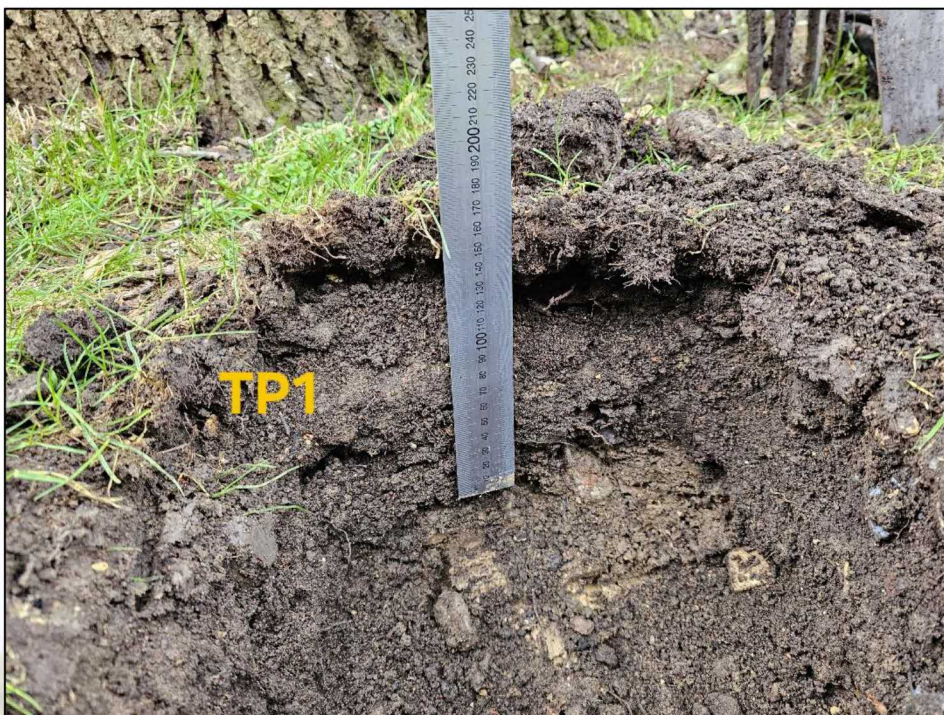




- Below: Tree 2 (Oak)



- Below: Trial Pit 1 (adjacent to Oak tree) – 100mm + turf layer





Below: Trial Pit 2 (adjacent to Yew tree) – 300mm + turf layer





7 Description of the Proposed Development

- 7.1 The excavation, alteration and raising of ground levels in the rear garden (part retrospective).



8 Legal Constraints

8.1 Tree Preservation Orders

8.1.1 The two trees captured in the tree survey are covered by TPO.

8.2 Conservation Area

8.2.1 The site is located within Totteridge Conservation Area.

8.3 ALL THE TREES ARE LEGALLY PROTECTED, even those not covered by TPO. Conservation Area status affords legal protection to ALL live trees that exceed 75 millimetres trunk diameter (measured at 1.3 metres above ground level). Conservation Area status is ostensibly the same as that afforded to trees covered by Tree Preservation Order (TPO) and the same offences and penalties apply.

8.4 Penalties for offences relating to TPO trees include, but are not exclusive to, lopping, topping, damaging, or destroying trees which can be unintentionally caused by such simple means as damaging the soil structure around the trees during demolition, site preparation or construction.

8.5 The effect of a Tree Preservation Order is that a formal application will normally need to be submitted to the local planning authority (LPA) (subject to exceptions) for tree works. Such an application may be refused, approved, or approved subject to conditions. There is a right of appeal against refusals, conditions, or non-determination. In all cases, unauthorised work or wilful damage or destruction etc is a criminal offence, on summary conviction leading to fines of up to £20,000 per tree and on indictment, to an unlimited fine and / or imprisonment. All trees are a 'material consideration' in the town planning context and extra weight is normally given to those the subject of the above statutory protection. Where TPOs are applied, it is imperative that the LPA is consulted with respect to any activities that affect trees whether directly or indirectly. In addition, before removing any trees a check should be made with the Local Planning Authority to ascertain if extant planning conditions affect trees on the site, as some LPAs enforce historic planning conditions relating to trees.



- 8.6 The granting of full planning permission (not outline) allows works to be undertaken to protected trees (TPO & Conservation Area) as far as is necessary to implement that permission. For example, if the approved plan shows the footprint of a new building where a protected tree is located, you may remove that tree for the purpose of implementing the extant planning permission (but for no other reason) without the need to make a separate tree work application to the Local Planning Authority.



9 Arboricultural Impact Assessment

9.1 Trees to be removed to implement the development

9.1.1 No trees would be removed to implement the development.

9.2 Consideration of the existing trees

9.2.1 For the purpose of levelling the garden topography, the soil level adjacent to the trees has been raised to a greater or lesser degree varying with the specific location. The added material is good quality topsoil. A trial pit excavated adjacent to the Yew tree (tree 1) has revealed the newly added soil to be 30 centimetres deep, and the soil has been built up against the twin trunks of the tree. The trial pit excavated adjacent to the Oak tree (tree 2) has revealed a much shallower addition of 10 centimetres plus the turf. In this case, the soil level has not been raised against the tree's trunk.

9.2.2 Raising the soil level around trees is harmful for a number of reasons, the most important of them are listed below:

- i. The tree's surface roots are buried deeper, so that they have impeded access to rainwater and oxygen for respiration (those roots are used to glean resources at the soil surface). This will ultimately result in a tree suffering from symptoms of drought stress, which will lead to a decline in the tree's health, making it more susceptible to pests and diseases. This may ultimately lead to strain, and mortality. The severity of symptoms would be directly related to the depth increase of additional soil, and the tree's health, vigour, and tree species tolerance.
- ii. Raising soil level around a tree's trunk will greatly impede respiration, and will lead to bark death, decay, and dysfunction of vascular tissue (xylem and phloem), further compounding the symptoms of the burying of the tree's roots.

9.3 Mitigation of raised soil levels around the trees

9.3.1 The removal of the added soil is not a suitable solution for the preservation of the tree's health. This would require the use of heavy digging machinery within the tree's root protection areas (RPA), using hydraulic shovels to remove the added soil, with the inevitable risk of digging into the original soil profile / surface roots, and the inevitable soil compaction that comes with the use of such equipment.



9.3.2 If the preservation of the tree's health is to be the focus of the project, two factors must be addressed.

- i. Removal of soil around the trunks of the Yew tree (tree 1)
- ii. Restoration and enhancement of the soil environment to encourage new roots to develop into the higher soil profile (both trees)

9.3.3 These matters can be addressed by the creation of a lower area of ground around the Yew tree, and by a network of radial mulching by airspade around both trees. There are specialist contractors who undertake radial mulching.

9.3.4 The lower area around the Yew would involve restoring the original ground level around the trunks for a radius of 1.5 metres, and sloping upwards after that up to the current level.

9.3.5 The radial trenching would involve using an airspade (high pressure air jet) to excavate trenches outward from the tree trunks, like the spokes of a wheel. The arising soil would be mixed with at least 50% peat-free compost and then the trenches backfilled with the ameliorated soil. The backfilled trenches provide enriched channels that facilitate rapid fine root development from nearby coarse roots. This mimics forest conditions, as tree roots often grow along the low bulk-density tunnels, rich in organic matter left by the decay of old coarse roots.

9.3.6 The tree constraints & mitigation plan shows the design of the mitigation scheme to enable the retention of the new soil levels, whilst preserving the health of the trees.

9.4 Evaluation of tree constraints

i. Legal

Prior to commencement it is essential to make a fresh check of tree protection status with Barnet Council in case additional constraints have been imposed (for example, planning conditions).

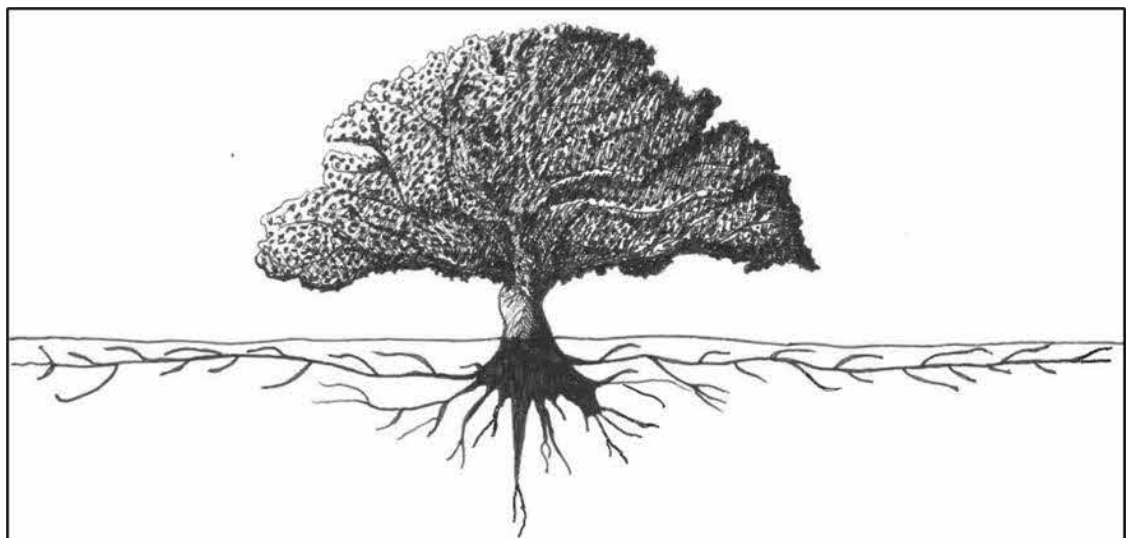
ii. Below ground constraints – Root Protection Areas

The root systems of trees present a critical constraint which is often overlooked or ignored because it cannot be seen beneath the soil surface. The most valuable part of the root systems for maintaining health and structural



anchorage of trees is mostly located in the upper 600 millimetres of the soil profile. The British Standard uses a formula to calculate these nominal areas on the ground which are referred to as the 'root protection area' (RPA). The RPA is determined by multiplying a factor by the stem diameter depending on the form of the tree (see section 4.6 and Figure C.1 of the Standard). The calculated figure provides a measurement of the radius from the centre of a tree trunk to form a nominal circle; all the ground within this radius is the RPA. This is often quoted in metres squared. RPAs may not be 'offset' to one side unless there is arboricultural justification to do so. The plans in this report show the RPA as an orange polygon.

Below: Diagram showing typical root morphology of a mature tree growing in homogenous ground conditions



9.4.1 Works within Root Protection Areas (RPA) – Summary

Restoration of the original soil level around the twin trunks of the Yew tree.

Radial mulching by airspade to both trees.

9.4.2 Tree pruning

None.



10 Conclusion

- 10.1 It is feasible to largely retain the newly raised soil levels without a tangible impact to trees, provided that the recommendations are followed in accordance with this report.



11 Normative References

11.1 The following documents are indispensable in the application of the recommendations in this report:

British Standard BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.

British Standard BS3998:2010 'Tree Work - Recommendations'

Managing Trees During Construction - International Society of Arboriculture (second edition) 2016

Site layout planning for daylight and sunlight: a guide to good practice (BR209) – Building Research Establishment

Applied Tree Biology – Andrew D. Hiron & Peter A. Thomas. 2018 John Wiley & Sons Ltd



Below: Example of airspade excavation and radial mulching around a tree

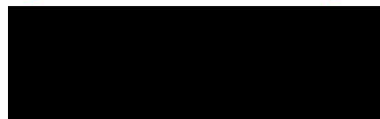




ARGENTA

T R E E S U R V E Y S

www.argentatreesurveys.co.uk



Copyright Argenta Tree Surveys Limited

Company no: 10697882

VAT no. 335731700

Registered Company address

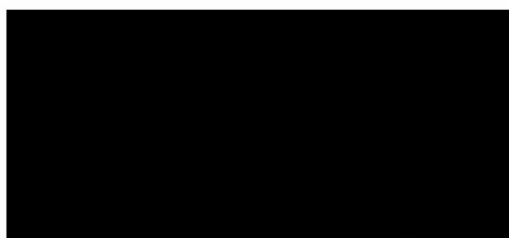
11 East Road

Isleham

Ely

Cambridgeshire

CB7 5SN




Ian Lorman
Director

March 2024



LEGEND TO TREE SURVEY FORM

Tree number/Tag	Numbered tag fixed to tree or given number on plan where no tag has been used. Given number for groups (G), hedges (H) or shrubs (S). Individual trees will have no tag if located on adjoining land or inaccessible Note: Tags are only used occasionally, to draw attention to a particular tree or trees when they might otherwise be difficult to locate on the ground without a number physically attached to them
Species	Tree species - Common name or botanical name if no common name is in common use
Tree height	Height in metres where measurement is possible using a laser clinometer. Estimated where tree is inaccessible or where it is not possible to see the top and bottom of the tree simultaneously to take a measurement
Stem Dia(s)	Trunk diameter measured at 1.5 metres above ground level (on the side of the tree where the ground is highest). Where there are multiple stems, measurements are made for each stem
RPA radius	Root Protection Area radius in metres (linear) measured from centre of tree trunk. Formulae apply to multiple stemmed trees with up to 5 stems and trees with more than 5 stems. NOTE: For single stemmed trees the RPA is 12 x trunk diameter up to a maximum of 15 metres. For 'veteran' trees the RPA can be greater than 15 metres
RPA m²	Root Protection Area in square metres. Formulae apply to multiple stemmed trees with up to 5 stems and trees with more than 5 stems. NOTE: For single stemmed trees the RPA is 12 x trunk diameter up to a maximum of 707 metres ² . For 'veteran' trees the RPA can be greater than 707 metres ²
Crown spread	Spread of tree crown (branches) in metres at each cardinal point (NESW) measured from tree trunk using a laser rangefinder. Estimated where inaccessible
1st large branch height above ground	The height in metres on the tree of the lowest major branch and its direction (where relevant)
Canopy height above ground	Headroom - The height above ground in metres of the lowest part of the tree crown / branch ends (where relevant)
Life stage	The estimated stage of life of the tree in relation to its species. e.g. A Silver Birch may be considered 'mature' at 40 years, but Oak may be considered to be in early maturity at the same chronological age.
Observations; structural / physiological condition and any preliminary recommendations	The condition of the tree in relation to the presence of any notable structural defects or ill-health and any recommendations that may be relevant to good arboricultural management or in relation to a proposed development Note: Sometimes defects in trees such as cavities and splits can be viewed as beneficial because of their ecological value, especially on 'veteran' trees
Estimated remaining contribution	An estimated range of the minimum number of years a tree may make a positive contribution before it falls into decline (senescence). This is recorded as <10 years, 10+ years, 20+ years or 40+ years
Category & Sub-category	A qualitative grading. See Table 1 (page 9) of BS5837:2012

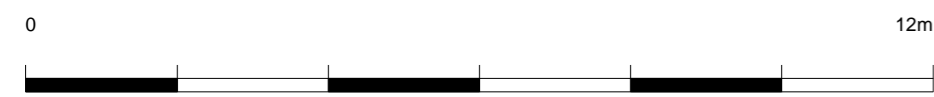
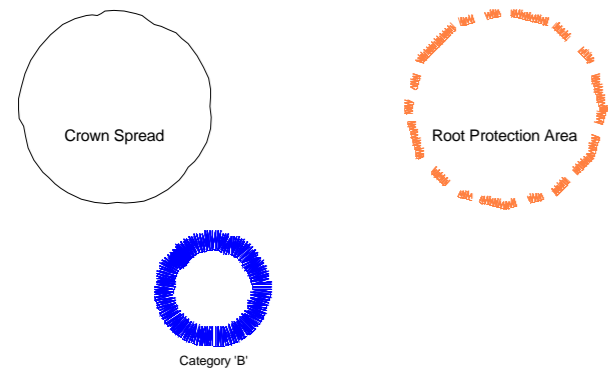
Site name: Fairways, Pine Grove, London N20 8LB Surveyor: Ian Lorman			Date of survey: 11 th January 2024 Conditions: Clear / dry / still								
Tree number/Tag	Species	Tree height	Stem Dia (s)	RPA Radius	Crown spread	1st large branch height above ground	Canopy height above ground	Life stage	Observations; structural / physiological condition and any preliminary recommendations	Estimated remaining contribution	Category & Sub category
				RPA m2							
1	Common Yew	10	400 300	6.00 113	N 5 E 5 S 5 W 5		2	Mature	Twin stems from ground level Physiological condition - Good No action	40+	B1
2	Common Oak	17	850	10.20 327	N 10 E 10 S 10 W 10		5	Mature	Minor dead wood Physiological condition - Good No action	40+	B1

British Standard BS5837:2012

Fairways, Pine Grove, London N20 8LB
Tree constraints & mitigation

SCALE : 1 : 100 @ A2 DATE : 14/03/2024
 MAP FILENAME :

THIS DRAWING MUST BE READ IN COLOUR



- General area of ground level raised within RPAs of trees
- 89.30** Existing spot levels
- 87.59** Original spot levels
- Airspade excavated radial trenches 300mm wide x 500mm deep. Arising soil to be collected and mixed with organic peat-free compost and return into the trenches as back-fill
- Hand excavate 1.5m radius around Yew tree down to original ground level to clear built-up soil from the trunks and root buttresses
- Trial Pit 1 = 100mm of new soil over original ground level + turf
- Trial Pit 2 = 300mm of new soil over original ground level + turf

