



Project: 20_5837_11_29
Site: 5 Barrens Close, Woking, GU22 7JZ
Client: Afsha Ahmed



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Report no: 20_5837_11_29

Date: 9th December 2020

FAO: Afsha Ahmed





Summary:

The tree survey for 5 Barrens Close contains the details of one tree group and three individual trees, all located on the periphery of the usable site.

Our brief has been to obtain details of the tree population on site with a view to assessing any arboricultural constraints.

We understand that the site is to be redeveloped with alterations to the existing build footprint.

It is recommended to dismantle and fell tree T1, regardless of any new developments as the tree has limited long-term prospects due to location and is causing structural damage to the existing build footprint.

Any new developments should be designed to avoid the crown and Root Protection Area of the retained trees.

Report Author.

Matthew Harmsworth attended Merrist Wood College in Guildford, Surrey in the late 1990's studying horticulture and arboriculture as well as a National Diploma in Countryside Recreation before gaining employment as a Countryside Ranger with Surrey County Council (later Surrey Wildlife Trust).

After a number of years Matthew started an Arboricultural Contracting business serving residential and commercial clients across the SE of England and also gained his aerial NPTC certificates.

Following the sale of this business in 2009 Matthew moved to North Wales as a junior self-employed consultant for Fairley Arboriculture and studied at Myerscough online to study an FDSc in Arboriculture and become a technician member of the Arboricultural Association.

ROAVR Environmental was formed in 2010 and since then has carried out arboricultural consultancy Nationwide with directly employed consultants. Matthew has written well in excess of 600 BS 5837 2012 tree reports.





Table of Contents

Summary:

1. Scope
2. Site Conditions & Site Surroundings
3. Drawings
4. The Tree Population

Preliminary Management Recommendations - Regardless of the proposals.

Future Management Recommendations - Regardless of the proposals.

5. Trees & Construction - General Issues
6. Tree Constraints - Information
7. Structures within the RPA of trees - Information
8. Limitations

Appendix 1: BS 5837: 2012 – Guidance Notes

Appendix 2: Survey Methodology

Appendix 3: Site Location

Appendix 4: Arboricultural Data Tables



Arboricultural implications assessment to BS 5837 2012 of trees at: 5 Barrens Close, Woking, GU22 7JZ.

1 Scope

- 1.1 We have recently been instructed to undertake an appraisal cover at 5 Barrens Close, Woking, GU22 7JZ.
- 1.2 The data was collected to the British Standard BS5837 'Trees in Relation to Design, Demolition and Construction - Recommendations' 2012.
- 1.3 The survey has been commissioned to offer guidance on the arboricultural constraints with a view to the future development of the site.
- 1.4 The trees were inspected on the 04/12/20 following the guidance in the British Standard by Connor Harmsworth. The crowns and stems were inspected from the ground using the 'Visual Tree Assessment (VTA)' method; non invasive techniques were used at this stage. Although a sounding hammer was used to determine the presence of any decay.
- 1.5 The site was assessed and data was collected on one tree group and three individual trees. Trees were grouped or designated woodlands as per the allowance in the British Standard when the area in question was uniform in terms of species, age or geography.

Photographic Plates.



Photographic plate showing tree T1, a mature Silver Birch.



Photographic plate showing the roots of tree T1 encroaching upon the residential property.



Photographic plate showing tree T1, located adjacent to the residential dwelling house.



Photographic plate showing the roots of tree T1 damaging the footpath.



Photographic plate showing the base of tree T1.



Photographic plate showing tree T3 and tree group G4, located on the site's boundary.



Photographic plate showing the mature tree stocks in relation to the survey site.



2. Site Conditions & Site Surroundings

- 2.1 The site is situated in Woking in the Woking Borough Council control area. The site is located on the south-east side of the town and has a sub-urban feel.
- 2.2 The site is home to a detached residential dwelling house with associated hard and soft landscape.
- 2.3 The wider locality is predominantly residential. The site is accessed via a private driveway, off from the adjacent public highway.
- 2.4 A desktop assessment has highlighted that site is not within a Conservation Area. However, the site is within a TPO protected area.
- 2.5 All desktop assessment data was cross checked and validated on the 27/11/2020 using the web portal provided by the local planning authority and cross checked with the DEFRA MAGIC database.

<https://maps.woking.gov.uk/portal/apps/webappviewer/index.html?id=af38209981d546b3b7e42df3d2f3e0f1>



Image plate showing the desktop analysis results of the surveyed plot, Conservation Areas and TPO's.



<https://magic.defra.gov.uk/MagicMap.aspx?chosenLayers=sacPIndex,sacIndex,bacKdropDIndex,backdropIndex,europelIndex,vmlBWIndex,25kBWIndex,50kBWIndex,250kBWIndex,miniscaleBWIndex,baseIndex&box=501162:157876:501491:158047&useDefaultbackgroundMapping=false>

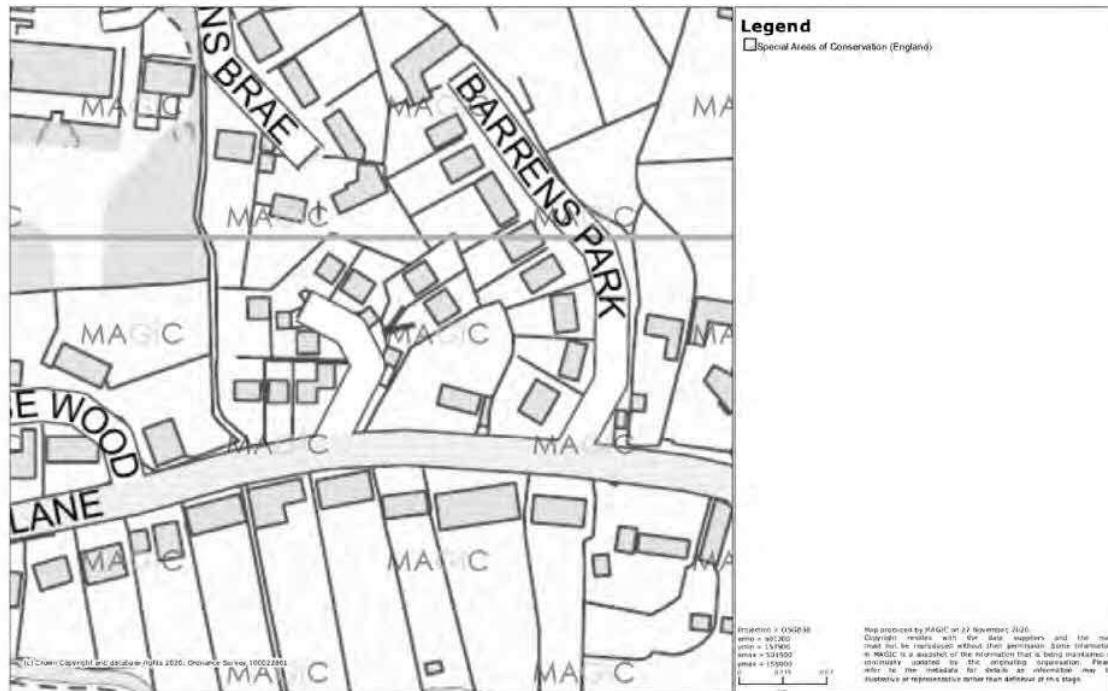


Image plate showing the desktop analysis results of the surveyed plot from DEFRA MAGIC.

- 2.6 Works to protected trees require consent from the local plan
In the case of TPO's an application must be made. In the case of conservation areas a notification must be made. TPO applications take up to eight weeks, conservation area notifications take six weeks.
- 2.7 Certain exemptions apply; for example the removal of deadwood. In the case of dangerous trees 5-days written notice should be given to the local authority (in the cases of immediate danger the work should proceed, but the local authority contacted as soon as possible afterwards) with the works evidenced by photographs and video where possible.
- 2.8 It should be noted that planning consent overrides protected trees, where the works or removal are necessary for development to proceed and have been highlighted in the tree survey documents.
- 2.9 Bats. Under current legislation it is an offense to 'intentionally or recklessly disturb a bat' or 'damage, destroy or block access to the resting place of any bat'. For further details consultation must be made with the Statutory Nature Conservancy Organisation. Where relevant any current ecological surveys for the site will take precedence in this matter.



- 2.10 Birds. It is an offense to kill, injure or take any wild bird; or take or destroy the nest of any wild bird while it is in use or being built. Therefore work likely to disturb nesting birds must be avoided from late March to August.



3. Drawings

- 3.1 Appended to this report is the *Tree Constraints Plan* drawing.
- 3.2 The tree constraints plan has been produced using an OS supplied .dwg (AutoCAD) base plan as no topographical survey was available. Tree positions and data have been applied using our survey handset as an onsite exercise with the constraints plan being produced as a PDF through Auto CAD.
- 3.3 An autoCAD .dwg file of the tree constraints is available on request for project stakeholders to utilise.
- 3.4 The *Tree Constraints Plan* shows the existing layout. For each tree the stem location is indicated and scaled according to its diameter, the canopy is indicated according to measurements taken along the four cardinal points of the compass. Root protection areas (RPAs) are indicated which are calculated according to the guidelines within BS 5837 (2012).
- 3.5 Where appropriate, the shapes of the RPAs have been amended to reflect actual site conditions or where trees have been heavily pruned. The 'original' RPAs are indicated as a dashed line whereas the amended RPAs are indicated as a solid line. Any variation to this approach will be highlighted on the appropriate plans.
- 3.6 The *Tree Assessment Plan* indicates the tree constraints with the proposals overlaid. Where applicable, this plan shows where works are proposed in Root Protection Areas and which trees are to be pruned or removed. This plan accompanies the Impact Assessment which is to be found in Section 8.
- 3.7 The *Tree Protection Plan (if applicable)* shows the protection measures that are to be installed during the construction phase.



4. The Tree Population

4.1 BS5837: 2012 Tree Categorisation:

BS5837: 2012 sets out the methodology for surveying trees on potential development sites in order to identify them within a prioritised system of retention categories, as summarised below and given in full within the BS5837: 2012 Cascade Chart for Tree Retention.

A Category Trees of high quality and value in such a condition as to be able to make a substantial contribution for a minimum of 40 years.

B Category Trees of moderate quality and value in such a condition as to make a significant contribution for a minimum of 20 years.

C Category Trees of low quality and value currently in adequate condition to remain until new planting could be established and expected to remain for a minimum of 10 years, or young trees with a stem diameter less than 150mm measured at 1.5 meters above ground level.

U Category 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 or forestry management.

4.2 Additionally, BS5837: 2012 provides subcategories 1-3 within the category system outlined above which indicate the area(s) in which a tree or group retention value lies. An explanation of these values is given within the BS5837: 2012 Cascade Chart for Tree Retention.

- 1 - Retention values that are mainly arboricultural
- 2 - Retention values that are mainly landscape.
- 3 - Retention values that are mainly cultural, including conservation.

4.3 In line with BS5837: 2012, A and B category trees should be considered as a constraint on site and provide a substantial contribution to the site. As a result, A and B category trees should be retained and incorporated into the scheme where possible.

4.4 Generally C and U category trees are considered to be of low quality or are young specimens that can be readily replaced and therefore should not be a constraint in terms of future development.

4.5 However, it is generally considered desirable to retain trees wherever reasonably possible to ensure continuity of tree cover and to provide a mature landscape to the development.



- 4.6 The survey contains details of a number of trees. The common species, age, condition and the BS5837:2012 retention category for each individual tree and group of trees are provided in detail in the Tree Schedule (data tables). The full data collection methodology is appended behind the data tables.
- 4.7 The location of each individual tree and their associated constraints are illustrated on the appended Tree Constraints Plan.

Preliminary Management Recommendations - Regardless of the proposals.

- 4.8 Tree T1 is a mature Silver Birch located on the site's northern boundary, approximately 2.5m from the residential dwelling house. The tree is growing within a hard surface area of concrete and paving. Subsequently, the roots are lifting the footpath. The tree has poor shape and form. Mechanical damage was observed. The branches are encroaching upon the adjacent building. It is recommended to dismantle and fell the tree.
- 4.9 Tree T2 is a mature Beech located offsite, on a lowered bank, south of the site. The tree is growing within a hard surface area of concrete. Mechanical damage was observed. The branches hang low over the footpath and are encroaching upon the adjacent building. Ultimately, the tree was deemed to be in an acceptable condition, therefore no remedial works are required.
- 4.10 Tree T3 is a mature Leyland Cypress located on the site's southern boundary. The tree is part of a linear group. There have been ground level changes within the trees Root Protection Area and the tree is growing within a hard surface area of concrete. The branches hang low over the footpath and are encroaching upon the adjacent building.
- 4.11 Tree group G4 consists of two mature Scots Pine located on the site's southern boundary. The trees are part of a linear group. There have been ground level changes within the trees RPA and the trees are growing within a hard surface area of concrete. Mechanical damage was observed. The trees are of forest growth form. The branches hang low over the footpath.

Future Management Recommendations - Regardless of the proposals.

- 4.12 Tree group G4 and trees T2 and T3 should be inspected annually.
- 4.13 The trees should be inspected sooner if there is a noticeable decline in condition, or following extreme weather events.



5. Trees & Construction - General Issues

- 5.1 This report has been prepared to inform the design layout of potential development and should be submitted with a planning application.
- 5.2 Due to the changing nature of trees and other site circumstances this report and recommendations are limited to a one year period. Similarly, this report could be invalidated if any alterations are made to the site that could change the conditions as seen at the time of inspection.
- 5.3 Under certain circumstances, roots can affect foundations, drains and other underground services. These issues have not been addressed by this report. Trees are dynamic structures that can never be guaranteed 100% safe; even those in good condition can suffer occasional damage under only average weather conditions. A lack of recommended work does not imply that a tree will never suffer damage.
- 5.4 Typically, about 80% of roots will be found in the upper 500mm of soil and often extending well beyond the canopy spread. The threat to the trees by development comes from:
- (a) root severance or fracture
 - (b) compaction of the soil, preventing gaseous exchange and moisture percolation
 - (c) possible change to moisture gradients due to surface water run-off or interception
 - (d) physical damage to low branches and trunk.
 - (e) damage from chemical run-off from construction activities

The consequences for the tree of such damage are:

- (i) instability, if severe enough
- (ii) entry points for pathogenic fungi at wounds / fractures
- (iii) loss of vitality due to reduced oxygen, mineral and moisture take-up; all leading to
- (iv) root death, and
- (iv) a general decline or possible death of the tree.



6. Tree Constraints - Information

- 6.1 Constraints imposed by trees during development, both a ground need to be considered within the site layout design. Protection is afforded to the tree by defining a Root Protection Area (RPA) within which no development activity should take place. The size of the RPA is defined in the British Standard and relates to trunk diameter. The RPA is normally the minimum position for placement of tree protective fencing. The data tables hold a column figure as an offset in meters from the stem that the root protection area extends to.
- 6.2 Nominally the RPA is represented by a circle around the tree. The area of the RPA may however, subject to the consideration of the arboricultural consultant, and be altered to a polygon in order to reflect the site conditions and requirements. For example, existing hard surfaces and foundations are likely to restrict or limit root growth while good quality soil may promote and extend root growth.
- 6.3 Root Protection Areas primarily relate to below ground constraints (root protection). Other constraints that must be considered include:
- The current as well as ultimate height and spread of a tree
 - Large trees close to a building, particularly a dwelling, can cause apprehension to owners/occupiers that result in pressure for tree removal or inappropriate pruning. Buildings should be sited allowing for the species height, spread and overall habit
 - Species characteristics; i.e. density of foliage, fruit-fall, susceptibility to honeydew drip, or branch drop. Trees are shedding organisms. The leaves of some species may cause problems with blocking of gullies and gutters. Fruit may cause slippery patches and honeydew drop can affect surfaces (particularly cars).
If conflicts may arise, detailed design may address such issues, such as non-slip paths, use of car-ports, provision of leaf guards or grilles etc.
 - The potential impact on direct and diffuse light of a particular location of land; shading of buildings by trees can be a problem, especially where rooms require natural light, in addition open spaces such as gardens and sitting areas should be designed to meet requirements for direct sunlight (for at least part of the day)
 - Infrastructure requirements in relation to trees e.g. easements for underground or above ground apparatus and visibility splays
 - Space for the provision of new planting or landscaping
 - The proposed end use of space within Root Protection Areas
 - The requirement to protect overhanging canopies of trees that overhang or extend beyond Root Protection Areas



7. Structures within the RPA of trees - Information

- 7.1 In the development layout design structures should be placed over RPA's as far as practicable. In some exceptional instances there may be an overriding justification for construction within the RPA. In such cases technical solutions may be available to minimise to an acceptable level of disturbance to the tree or trees. Where such technical solutions may be relied upon full details will need to be included within a method statement. Advice must be sought from a suitably qualified arboriculturalist to develop a solution.
- 7.2 In some cases it may be unavoidable to place permanent hard surfacing within an RPA (for example the placement of an access driveway or parking area). In such cases the following should apply:
- No excavation of the soil should take place, other than scraping of the turf/vegetation layer
 - Any design must avoid compaction, allowing an even distribution of weight
 - New hard surfacing should not exceed 20% of any existing unsurfaced ground within the RPA
- If the proposed surface is likely to require de-icing salt then run-off should be directed away from the RPA
- Permeable hard surfacing can result in soil moisture saturation for long periods (resulting in root death). Where there is a risk of water-logging a design should incorporate land drainage
- 7.3 Appropriate sub-base options for new hard surfacing include three-dimensional cellular confinement systems (cell-web). Piles, pads or elevated beams can support bridges over RPA's. In all cases full specifications and methodology must be included within a supporting method statement.



8. Limitations

- 8.1 ROAVR Environmental has prepared this Report for the above named Client/Agent in accordance with our terms of business, under which our services were performed. No other warranty, expressed or implied, is made as to the professional advice included in this Report or any other services provided by us.
- 8.2 This Report may not be relied upon by any other party without the prior and express written agreement of ROAVR Environmental. The assessments made assume that the land use will continue for their current purpose without significant change. ROAVR Environmental has not independently verified information obtained from third parties.
- 8.3 This report, video walkthrough, data tables and raw data remain the copyright of ROAVR until such time as any monies owed are settled in full and the report may be withdrawn at any time.

Should you require any further information, please do not hesitate to contact us at any time.

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Consultant Arborist

Matt Harmsworth



Prepared by: Matthew Harmsworth.
Checked by: Jill Taylor



Appendix 1: BS 5837: 2012 – Guidance Notes

This Standard prescribes the principles to be applied to achieve a satisfactory juxtaposition of trees and structures. It sets out to assist those concerned with trees in relation to design, demolition and construction to form balanced judgements.

It acknowledges the positive contribution trees may offer to a site, as well as the negative aspects of retaining inappropriate trees. It addresses the negative impacts that construction activity may have upon trees and offers mitigation strategies to minimise these impacts.

The Standard suggests a three stage approach to ensure best practice is followed when developing close to trees:

A1.1 Stage 1: Survey Details and Notes

A ground level visual survey was undertaken. No climbed inspections or specialist decay detection were undertaken. Only trees with a stem diameter over 75mm, which lie within the site boundary or relatively close to it, were included.

Where applicable, trees with significant defects have been highlighted and appropriate remedial works have been recommended. However, this report should not be seen as a substitute for a full Safety Survey or Management Plan which are specifically designed to minimise risk and liability associated with responsibility for trees.

Wherever practicable dimensions were obtained using diameter tapes, logger's tapes, distometers and clinometers. Where obstacles prevent accurate measurement, dimensions are estimated. Trees on privately owned third parties are surveyed from the best available vantage point and observations relating to the condition of these trees should be treated accordingly. All height measurements should be regarded as approximate.



Appendix 2: Survey Methodology

Ground level visual surveys are carried out using the Visual Tree Assessment technique described by Mattheck and Broeler (1994) and endorsed by the Arboricultural Association (LANTRA Professional Tree Inspection course, 2007).

Structural condition is assessed by inspecting the stem and scaffold branches from all angles looking for weak branch junctions or symptoms of decay. Particular attention is paid to the stem-base. Cavities are explored using a metal probe in order to assess the extent of any decay. If this is not possible further inspection is recommended in the form of a climbed inspection or using specialist decay detection equipment.

The physiological condition is assessed by inspecting the stem, branches and foliage for symptoms of disease. The overall vigour of the tree is also taken into account.

Where significant defects are observed, recommendations are made according to a scale of priority in order to reduce the likelihood of structural failure. The position of the tree and its potential targets are taken into account.

Measurements are obtained using a diameter tape, clinometer, distometer and loggers tape.

Where this is not practical measurements are estimated.

Some trees are surveyed as groups, though this is usually avoided close to areas likely to be developed.

Appendix 3: Site Location

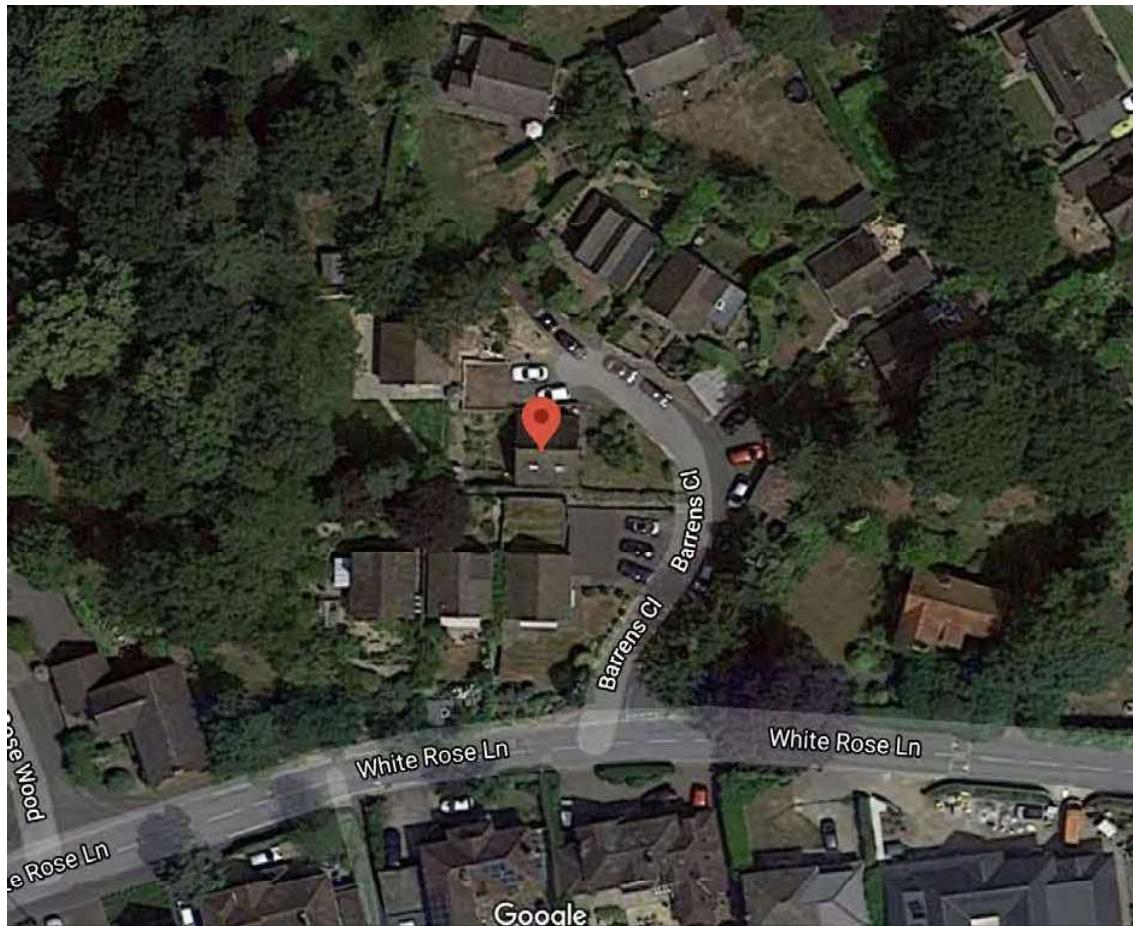


Image plate showing satellite mapping of the surveyed plot and surrounding area.



Appendix 4: Arboricultural Data Tables

Tree Number	Species	Age Class	DBH	Height (crown height)	N	E	S	W	Condition	Life Expectancy	Physical Description	Comments	Managment Recommendations	RPA offset from stem.	Category Rating
T1	<i>Betula pendula</i> (Silver Birch)	M	415	10(3)	6	6	6	6	Fair	<10	Poor shape & form. Tree located within hard surface area. Mechanical Damage. Branches encroaching upon building.	Located 2.5m from the house. The roots are lifting the path.	Dismantle and fell	4.98	U
T2	<i>Fagus sylvatica</i> (Beech)	M	600	11(4)	4.5	4.5	4.5	4.5	Fair	20+	Tree located within hard surface area. Mechanical Damage. Low branches over road/footpath. Branches encroaching upon building.	Located on a lowered bank in an offsite garden.	No remedial works required.	7.2	B1
T3	X <i>Cupressocyparis leylandii</i> (Leyland Cypress)	M	350	11(1)	3	3	3	3	Fair	20+	Tree located within hard surface area. Part of linear group. Low branches over road/footpath. Branches encroaching upon building; ground level altered within RPA	Limited long term prospects due to ground level changes	Monitor annually	4.2	C1
G4	<i>Pinus sylvestris</i> (Scots Pine)	M	300	12(5)	2	2	2	2	Fair	20+	Tree located within hard surface area. Part of linear group. Mechanical Damage. Low branches over road/footpath.	Two individual trees. Located on site boundary; forest growth form; ground level changes within RPA	Monitor annually	3.6	B2

Arboricultural Data Tables Terms

Tree Number	Reference number (T1, T2 etc for trees / G1, G2 etc for tree groups / H1, H2 etc for hedgerows)
Species	Common name
Height	Height of tree to the nearest metre
DBH	Diameter of stem (mm) at breast height (1.5 metres above ground)
RPA radius (m)	The radial measurement of the Root Protection Area in metres indicating the minimum distance from the centre of the trees stem to the recommended position of the protective (Heras) fencing.
RPA (m2)	The Root Protection Area, measured in square metres. This measurement is directly proportional to and calculated from the trees DBH measurement as specified in section 4.6 of BS 5837 (2012) Trees in relation to design, demolition and construction –Recommendations.
Crown Spread	The maximum spread of the trees canopy measured from the stem in four directions (North, East, South, West)
Age class	<p>The estimated age class of the tree (relative to species)</p> <ul style="list-style-type: none"> ○ Y - Young ○ SM - Semi-mature ○ EM - Early-mature ○ M - Mature ○ LM - Late-mature
Comments	A brief description of the tree which refers to tree form, condition, health and significant defects. Comments regarding environmental conditions affecting the tree (e.g. ground conditions) will also be included where relevant.
Preliminary management recommendations	Recommendations (made with respect to the development proposals if available) for removal, retention and/or remedial arboricultural works.
Estimated remaining years	Estimated safe, usable life expectancy
Category grade	<p>Tree categorisation based on section 4.5 of BS 5837 (2012) Trees in relation to design, demolition and construction –Recommendations. Four categories are used (A, B, C, U) with categories A, B & C being assigned one of three separate sub categories (1, 2 or 3):</p> <p>A– Trees of high quality with an estimated remaining life expectancy of at least 40 years. B– Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. C– Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm</p> <p>Subcategories: 1: Mainly arboricultural & aesthetic qualities 2: Mainly landscape qualities 3: Mainly cultural values, including conservation</p> <p>U– Trees 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</p>

Tree Constraints Plan
showing existing layout with
tree categories and root
protection zones.

BS5837:2012 Tree Categories

- Category A:** Histogram of p-values with a threshold line at 0.05. The x-axis is labeled 'p-value' and the y-axis is labeled 'Frequency'. The threshold line is at 0.05.

Category B: Histogram of p-values with a threshold line at 0.05. The x-axis is labeled 'p-value' and the y-axis is labeled 'Frequency'. The threshold line is at 0.05. A shaded area represents the expected number of false discoveries.

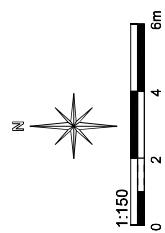
Category C: Histogram of p-values with a threshold line at 0.05. The x-axis is labeled 'p-value' and the y-axis is labeled 'Frequency'. The threshold line is at 0.05. A shaded area represents the expected number of false discoveries.



Category D: Histogram of p-values with a threshold line at 0.05. The x-axis is labeled 'p-value' and the y-axis is labeled 'Frequency'. The threshold line is at 0.05. A shaded area represents the expected number of false discoveries.

Category E: Histogram of p-values with a threshold line at 0.05. The x-axis is labeled 'p-value' and the y-axis is labeled 'Frequency'. The threshold line is at 0.05. A shaded area represents the expected number of false discoveries.

Category F: Histogram of p-values with a threshold line at 0.05. The x-axis is labeled 'p-value' and the y-axis is labeled 'Frequency'. The threshold line is at 0.05. A shaded area represents the expected number of false discoveries.

Tree/Group/Hedge numbering: 1-4.



 ROAVER ENVIRONMENTAL ROAVER Environmental Finglatch Farmhouse, Clonsilla, P42 5EN.		Client	Aisha Ahmed	
		Project	5 Barrens Close, Woking, GU22 7JZ.	
Drawing Title: Tree Constraints Plan		Date: 15/06/23 Drawn: Dec 2020	Scale: 1:500 Date: 2020	CS MH CH
Drawing Number: 20_5687_11_29		Date: 15/06/23	Rev: 1	

