



ROAVR | GROUP

Project: 23_5837_09_16
Site: 34 Allum Lane, Elstree, Borehamwood, WD6 3NP
Client: Vector Capital PLC



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Document Title:	Tree Survey & Arboricultural Impact Assessment
Document Author:	Peter Haine FDS Arb, MArborA
Project Title:	34 Allum Lane, Elstree, Borehamwood, WD6 3NP

Revision History.

Date:	Version number:	Summary of changes:
19/09/2023	1.0	First Draft
11/11/2023	1.1	First Issue
20/11/2023	1.2	Revision to first issue with updated plans

Distribution.

Approved by:	Signature	Date:	Version:
Matt Harmsworth	MWH	20/11/2023	1.2
Darren Andrews	DA	20/11/2023	1.2
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Re-Survey Date.

Survey Type:	Lifecycle:	Re-survey Date:
BS5837: 2012	Planning Only	n/a

FAO: Vector Capital Plc

Summary:

This is a BS5837 compliant arboricultural assessment report providing detailed and sufficient information for the Local Planning Authority to be able to consider the effect of the proposed development on local character and amenity from a tree perspective.

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

This report was commissioned in relation to the proposed development at 34 Allum Lane, Elstree, Borehamwood, WD6 3NP.

The report details all trees over 75mm at 1.5m above ground level that are relevant to the siting of the proposed development. The position of the trees on the site is illustrated on the tree constraints plan and information about the tree stock and its current condition is given within the arboricultural data tables.

It will assist the planning process by discussing the impact that the proposals will have on the existing tree stock.

An Arboricultural Impact Assessment is included at Section 4 which details the constraints placed on the proposed development from the rooting area of the trees below ground and above ground by virtue of their size and position.

Report Author.

ROAVR (ROAVR Group) was formed in 2010 and since then has carried out arboricultural consultancy Nationwide with directly employed consultants. Our consultants are all individual members of the Arboricultural Association and the report author is listed in the document control sheet.

Validation Statement for the Local Planning Authority.

This report includes the following for LPA validation purposes:

- A **tree survey and tree constraints plan** showing the existing trees, their category rating and above and below ground constraints shown on an OS extract OR a topographical survey
- An **arboricultural impact assessment** which describes how the development will affect local character from a tree perspective
- An **arboricultural method statement** describing tree protection measures and implementation strategy
- An **appendices** highlighting tree related information including the **arboricultural data tables**

Customer Action Points.

- Reporting complete - send to your Local Planning Authority
- On planning award contact us with your decision notice

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Tree Survey & Arboricultural Impact Assessment to BS 5837 2012 of trees at:

34 Allum Lane, Elstree, Borehamwood, WD6 3NP.

1 Scope

- 1.1 We have recently been instructed to undertake an appraisal of mature tree cover at 34 Allum Lane, Elstree, Borehamwood, WD6 3NP.
- 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 19/09/2023 following the guidance in the British Standard by the author. 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 all woody vegetation falling within the scope of the British Standard. 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 south west corner of plot and T1 (left) (ROAVR, 2023)



Photographic plate showing existing building, and Group G1 (ROAVR, 2023)



Photographic plate showing mature tree cover along southern site boundary, T12 London Plane (left) and T18 (Leyland Cypress (right) (ROAVR, 2023)



Photographic plate showing existing site entrance and surrounding tree cover. T20 Maple (left) T24-T26 Leyland Cypress (centre background) (ROAVR, 2023)



Photographic plate showing low quality hedgerow H27 (ROAVR, 2023)



Photographic plate showing group G28 and T29 Atlantic Cedar (centre left) (ROAVR, 2023)



Photographic plate showing T33 Leyland Cypress (centre) (ROAVR, 2023)



Photographic plate showing rear of existing barn and T35 Birch (centre right) and T36 Maple (right) (ROAVR, 2023)

2. Site Conditions & Site Surroundings

- 2.1 The site is situated in Elstree in the Hertsmere Council control area. The site is located on the north side of the town and has a suburban feel.
- 2.2 The site is home to a detached house and barn/outbuildings with associated hard and soft landscape.
- 2.3 The wider locality is predominantly suburban. The site is accessed via a private driveway.
- 2.4 A desktop assessment has highlighted that site is not within a Conservation Area and that there are no TPO protected trees on or adjacent to the plot.
- 2.5 All desktop assessment data was cross checked and validated on the 11/11/2023 using the web portal provided by the local planning authority.

<https://hertsmere.maps.arcgis.com/apps/webappviewer/index.html?id=1dd7fed040864600a94c60528870ea1d>

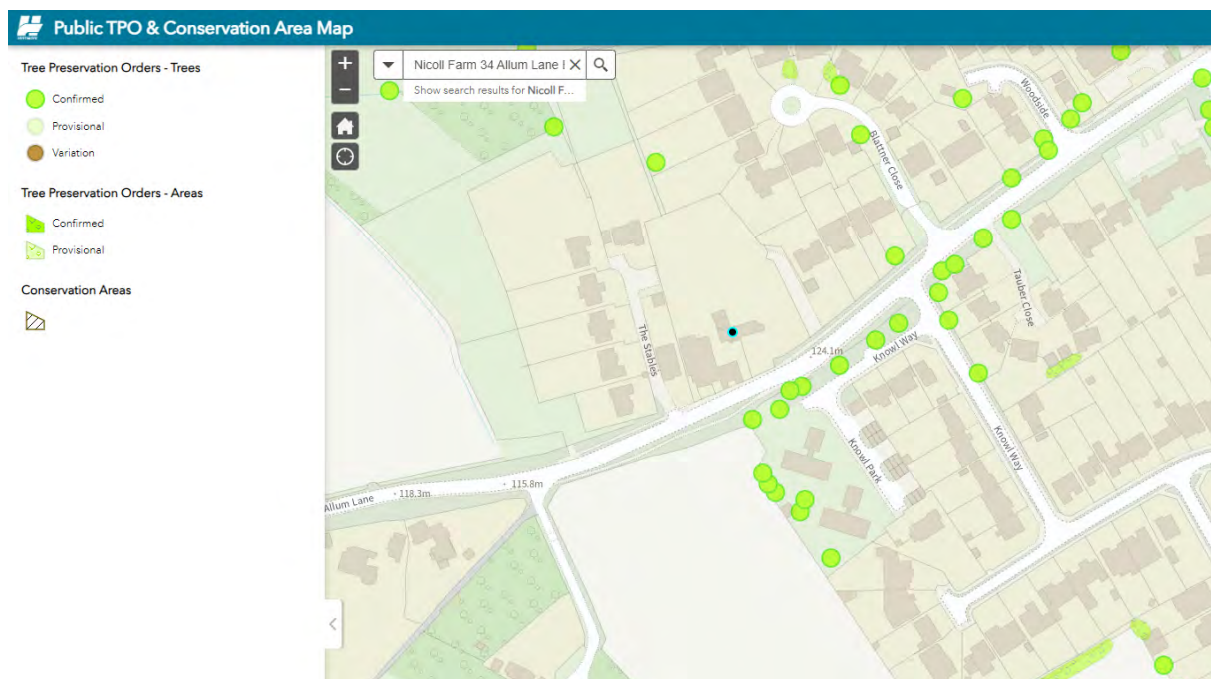


Image plate showing the desktop analysis results of the surveyed plot. (Hertsmere Borough Council, 2023)

- 2.6 Works to protected trees require consent from the local planning authority. 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. You should also check to ensure the works are exempt from the requirements of a felling licence.

<https://www.legislation.gov.uk/uksi/2012/605/regulation/14/made>

- 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 offence 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. Trees provide numerous 'potential roosting features' for a wide range of bat species. It is therefore crucial that any trees proposed for removal are checked by an appropriately competent person before any felling or ivy stripping works commence.

<https://www.bats.org.uk/advice/bats-and-the-law>

- 2.10 Birds. It is an offence to kill, injure or take any wild bird; or take, damage 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. All birds, their nest and eggs are protected by law.

<https://www.rspb.org.uk/birds-and-wildlife/advice/wildlife-and-the-law/wildlife-and-countryside-act/>

3. Drawings

- 3.1 Appended to this report is a tree constraints plan, tree assessment plan, and a tree protection plan.
- 3.2 The tree constraints plan has been produced using a supplied topographical survey. 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 solid line whereas the amended RPAs are indicated as a dashed line. Any variation to this approach will be highlighted on the appropriate plans.
- 3.6 The *Tree Assessment Plan / Arboricultural Impact Assessment* 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 4.
- 3.7 The *Tree Protection Plan (if applicable)* shows the protection measures that are to be installed during the construction phase. This plan accompanies the Method Statement which is appended to this tree survey and AIA.

4. Arboricultural Impact Assessment - Site Specific

Tree Quality Statement.

The tree cover at 34 Allum Lane includes some significant mature trees with good amenity value, the trees along the southern boundary in particular also provide good screening from the road. Also within the site are a number of lower quality trees, tree groups and hedgerows with little amenity value.

4.1 Description of The Proposed Development

The drawings listed in the table below were used by ROAVR to produce the Arboricultural drawings referenced in this report. If your plans change (either before or after planning submission), then the tree drawings will require updating. This report cannot be submitted in support of a scheme that varies from the drawing reference number shown in box one below as the Impact Assessment (Section 4) will not be valid.

Drawing Name / No.	Date Issued To ROAVR	ROAVR Drawings Issue Date:
P-112 Proposed: Site Plan with Landscaping	03/11/2023	11/11/2023
P-110 Proposed: Site Plan with Roof Plans	03/11/2023	11/11/2023
P-FD-100 Proposed Foundation Concept Design Dwelling 1	03/11/2023	11/11/2023
P-FD-101 Proposed Foundation Concept Design Dwelling 4	13/11/2023	20/11/2023
P-112 Proposed: Site Plan with Landscaping	13/11/2023	20/11/2023

4.1.1. It is proposed to renovate the existing dwelling, and construct five new dwellings along with shared access, parking, and hard and soft landscape.

4.1.2. The table below summarises the potential impact on trees due to various activities.

Trees Potentially Affected:

Tree or Tree Group	Impacts
Trees T1 & T2	No direct impacts, can be retained and protected
Tree T3	Existing and proposed hard landscape within Root Protection Area
Tree T4	Requires removal due to poor condition
Tree T5	Existing and proposed hard landscape within Root Protection Area
Tree T6	No direct impacts, can be retained and protected
Groups G7 & G8	Low quality groups to be removed to facilitate renovation works and landscape works
Trees T9-T11	No direct impacts, can be retained and protected
Tree T12	Proposed Dwelling 1 will be located partially within Root Protection Area. A specialist foundation design is proposed to minimise impacts to tree roots. New permeable paving and steps will also be located within the Root Protection Area.
Trees T13-T17	No direct impacts, can be retained and protected
Tree T18	Proposed Dwelling 1 will be located partially within Root Protection Area. A specialist foundation design is proposed to minimise impacts to tree roots. New permeable paving and steps will also be located within the Root Protection Area.
Tree T19	Proposed access road will encroach into Root Protection Area, it is proposed to use a no dig method and a cellweb system
Trees T20 & T21	Require removal to facilitate new site access
Trees T22 & T23	Existing access road within Root Protection Areas, this can be upgraded using a cellweb system
Trees T24-T26	Existing access road with Root Protection Areas. Proposed access road will encroach into Root Protection Area, it is proposed to use a no dig method and a cellweb system
Hedgerow H27	Poor quality section of hedge at southern end to be removed to facilitate construction of Dwelling 2, remaining section of hedge to be retained and protected.
Group G28 & Tree T29	No direct impacts, can be retained and protected
Hedgerow H30	No direct impacts, can be retained and protected
Trees T31 & T32	No direct impacts, can be retained and protected
Tree T33	Dwelling 4 will encroach into Root Protection Area. A specialist foundation design is proposed to minimise impacts to tree roots. A decking area will also encroach into the Root Protection Area.
Trees T34 & T35	No direct impacts, can be retained and protected

Tree T36	Minor Root Protection Area encroachment from hard landscape, not considered significant
Trees T37 & T38	No direct impacts, can be retained and protected

4.1.3. The appended AMS specifies the measures proposed to minimise all possible potential risks of damage to the retained trees.

4.2. Tree Removal.

4.2.1. All trees to be removed are indicated on the Tree Removal Plan and are listed below:

Tree	Cause For Removal
T4	Poor quality tree located in constrained area close to building requiring renovation works
G7	Poor quality group located in constrained area close to building requiring renovation works, and in area proposed for new landscaping
G8	Poor quality group located in constrained area close to building requiring renovation works, and in area proposed for new landscaping
T20	To facilitate new site access
T21	To facilitate new site access
H27 (part)	Remove low quality section to facilitate Dwelling 2

4.2.2. Details specific to each tree can also be found in the Tree Data Schedule.

4.3. Mitigation Planting.

4.3.1. The trees removed are generally of lower quality, and were assigned U or C category during the survey process. Their removal will require some high quality new planting to mitigate their loss. Extensive new tree planting and soft landscape proposals are contained in the landscape plan including specimen trees. These proposals will provide good mitigation for the trees removed.

4.4. Impact on Tree Canopies.

4.4.1. No pruning works are required to facilitate the proposed new dwellings.

4.4.2. Minor formative pruning works are required to T3 & T5 to facilitate the renovation works to the barn in the southwest corner of the plot. These works are specified in the appended Arboricultural Method Statement.

4.5. Impact on Tree Roots.

4.5.1. The proposals have been set out to minimise the impacts on the roots of retained trees, however Dwelling 1 and Dwelling 4 will sit partially within the Root Protection Areas of retained trees. Specially engineered foundations are proposed to minimise the impacts on the roots of trees. The foundation design is shown in the drawings Proposed Foundation Concept Design Dwelling 1, and Proposed Foundation Concept Design Dwelling 4.

4.5.2. The design proposed for Dwelling 1 comprises 220 mm diameter sleeved piles at 1.6-2.0 metre centres, with a 250 mm thick concrete raft set 100 mm above natural ground level, leaving a void. Leaky pipes will redirect rain water under the building. The building will occupy 82.2 m² of the total amended RPA of T18 of 452 m², or 18% of the total RPA, and also a small area of the amended RPA of T12. This design will have minimal impact on the tree's roots during construction and post development.

4.5.3. The design proposed for Dwelling 4 comprises 300 mm diameter augered piles, with a ring beam set above natural ground level leaving a void below. The piles will be set at the periphery of the tree's RPA, the building will occupy 4.5 m² of the 113 m² total, or 4% of the total RPA. Redirection of rainwater is not considered necessary for this area of encroachment.

A deck area is also proposed partially within the RPA of T33. This will be set on mini screw piles as shown in the drawing P-FD-101. A method statement for the installation of the screw piles is included in the appended arboricultural method statement.

4.6. New Surfaces.

4.6.1. New hard surfaces are proposed within the Root Protection Areas of T19 & T24-T26, to widen the existing site access, and T38, to provide a parking space. This can be completed with minimal impacts to the trees' roots provided a no dig method is used, and a cellweb layer with a minimum depth of 150mm is incorporated into the subbase. The final surface must be permeable.

4.6.2. New permeable pedestrian surfacing is proposed within the Root Protection Area of T12 & T18. This can be completed with minimal impacts to the tree's roots provided a no dig method is used, and a cellweb layer with a minimum depth of 75mm is incorporated into the subbase. The final surface must be permeable.

4.6.3. New steps are also proposed within the Root Protection Area of T12 & T18. This can be completed with minimal impacts to the tree's roots if a system such as timber sleepers pinned into the ground is used rather than masonry with strip foundations.

4.6.4 The proposed hard landscape will encroach slightly into the Root Protection Area of T36, this is a very minor encroachment and is considered to be tolerable.

4.7. Underground Services.

4.7.1. No details of new underground services are available for assessment at this stage, however new services should be planned to be installed outside any Root Protection Areas wherever possible. If new services are required within a Root Protection Area this must be done so in a manner detailed in a specific Method Statement and approved by the local authority.

4.8 Changes in Ground Levels.

4.8.1 Ground levels are largely to remain as existing. Areas where above ground foundations and no dig surfacing are to be installed will require careful planning to ensure they are constructed without excavation into the soil within trees' Root Protection Areas.

4.9 Soil Compaction.

4.9.1 The majority of tree roots lie within the upper soil horizons. This is because the availability of oxygen decreases with depth and roots need to breathe to stay alive. In addition, nutrients are more readily available in the form of organic matter close to the soil surface.

4.9.2. Healthy soils contain about 25% air space between solid particles. Increased loading of the soils caused by construction activity causes air to be squeezed out as the soil becomes compacted preventing roots from breathing. Even an increase in pedestrian activity may cause some soil compaction.

4.9.3 It is important therefore that ground compaction and soil disturbance over Root Protection Areas should be avoided during the construction phase. This may be done by installing protective fencing and ground protection measures as recommended within a tree protection plan.

4.10 Demolition Activities.

4.10.1 The tree protection measures specified within a TPP should be installed prior to the commencement of all demolition activities (including soil stripping) to prevent any detrimental impact on tree health. Where this is not practicable, demolition of structures within Construction Exclusion Zones shall be undertaken very early on in the demolition phase and the protective barriers installed immediately thereafter.

4.11. Hazardous Materials.

4.11.1 All hazardous materials (including cement and petrochemical products) will need to be controlled according to COSHH regulations in order to ensure there is no detrimental impact on tree health. Provision shall need to be made to ensure that cement and cement run-off are contained outside of all Root Protection Areas.

4.12. Cabins and Site Facilities.

4.12.1. Consideration should be given to the location of any site welfare facilities in terms of potential impact on trees. Where it is proposed to install cabins or site facilities in Root Protection Areas, the appointed arborist should be consulted and approval obtained from the local authority.

4.13. Boundary Treatments.

4.13.1. No changes are proposed to the existing boundary features that might impact on trees.

4.14. Impact of Retained Trees on the Development.

4.14.1. Adequate space has been allowed between all retained trees and the proposed development works. Consequently the proposals shall not result in increased pressure to remove or prune any of the retained trees.

4.15. Summary.

4.15.1. The site is to be redeveloped with the renovation of an existing dwelling and outbuildings, and the construction of four new dwellings, and associated hard and soft landscaping.

The proposals have been set out with the tree constraints being carefully considered during the design process, and have sought to minimise the impacts on trees. A small number of lower quality trees, tree groups, and hedgerow will require removal to facilitate the proposals. High quality new tree planting is proposed to mitigate the loss of these trees.

Two trees will require minor pruning work, this is specified in the appended Arboricultural Method Statement.

Two of the new dwellings will lie partially within the Root Protection Areas of retained trees, specially engineered foundations have been designed to minimise the impacts on these trees' roots.

New hard surfaces and other hard landscaping will be located within trees Root Protection Areas, the use of no dig methods and cellweb will minimise these impacts.

Retained trees will require temporary protective measures to be installed during the construction works, details of which are contained in the appended Arboricultural Method Statement.

Appendix: 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:

Stage 1: Survey Details and Notes

A ground level visual survey was undertaken. No climbing 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 of 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.

Stage 2: Arboricultural Impact Assessment

After the initial survey and the production of the Tree Constraints Plan, arborists and designers are encouraged to work together to establish a design proposal with minimal impact on the high quality trees. An assessment should be made of all possible impacts including the impact that the trees may have upon the proposal.

The arborist may recommend mitigation strategies to minimise these impacts and help achieve a more harmonious juxtaposition between buildings and trees and will offer advice in relation to the best chances of success at planning.

Stage 3: Arboricultural Method Statement

This type of report specifies the measures necessary to protect trees against damage from construction activity. The Method Statement should be written in a manner that it may be conditioned and enforced by the local authority upon granting of planning permission. Many trees get damaged on development sites due to the AMS being overly complicated or unreadable from the perspective of practical implementation.

The site manager must be familiar with all aspects of the Method Statement and should ensure that all persons working on the site are aware of those aspects which are relevant to their work. This includes service installation engineers and operators of plant machinery.

Appendix: 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 climbing 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.

Document Title:	Arboricultural Method Statement
Document Author:	Peter Haine
Customer Name:	Vector Capital PLC
Project Title:	34 Allum Lane, Elstree, Borehamwood, WD6 3NP

Revision History.

Date:	Version number:	Summary of changes:
11/11/2023	1.0	First Draft
20/11/2023	1.1	Final Issue

Distribution.

Approved by:	Signature	Date:	Version:
Matt Harmsworth	MWH	20/11/2023	1.1
Vector Capital PLC	VC	20/11/2023	1.1
			Peer reviewed Internally.

THIS DOCUMENT IS AN ARBORICULTURAL METHOD STATEMENT AND IS SUPPORTED BY A TREE PROTECTION PLAN. IT IS A WORKING DOCUMENT & MUST BE BRIEFED ON SITE TO THE SITE MANAGER BEFORE ANY WORKS COMMENCE. OFTEN AN AMS IS CONDITIONED ON PLANNING CONSENT AND BECOMES A LEGALLY BINDING DOCUMENT.

1. Method Statement [Introduction and Overview]
 - Restrictions on Activities – Specific Zones
 - Restrictions on Activities – Throughout the Site
2. Site Inspection
 - Example ACoW sheet.
3. Tree Works Schedule
 - Tree Works Specification
4. Tree Protection Barriers Detailed Specification
 - Tree Protection Fencing
 - Plywood Boxes. [If Shown On TPP]
5. Ground Protection Measures Detailed Specification
6. New Surfaces Detailed Specification
 - Resurfacing an Existing Hard Surface
7. Limitations
 - Appendix 1 – Site Location
 - Appendix 2 – Arboricultural Data Tables
 - Appendix 3 – Arboricultural Plans

1. Method Statement [Introduction and Overview]

1.1. Definition of Terms

Some terms used within the Arboricultural Method Statement have very specific meanings. These are defined below:

Root Protection Area (RPA). This is a theoretical area of ground around a tree where the roots are likely to proliferate. Ground disturbance in this area should be minimised in order to avoid significant impact on tree health. RPAs are indicated on all plans accompanying this report as a red or pink line.

Construction Exclusion Zone (CEZ). These zones are created to protect roots and canopies from inadvertent damage by construction activity. They are usually fenced off by protective barriers throughout the entire construction phase. No works are permitted in these zones other than minor landscaping works which do not require a change in ground level. Where practicable the entire Root Protection Area and the area beneath the tree canopy shall be treated as a Construction Exclusion Zone. These zones are shown on the Tree Protection Plan.

Restricted Activity Zone (RAZ). It is not always possible to create a Construction Exclusion Zone over the entire RPA. This is because access may be required or some works may be proposed within the RPA. In such circumstances a Restricted Activity Zone is created where limitations are placed on construction activity. Ground protection measures may be specified or the Restricted Activity Zone may be fenced off throughout part of the construction phase. See the legend on the Tree Protection Plan to identify these zones.

1.2. Tree Protection Barriers - Overview

The Tree Protection Plan indicates the location of all proposed tree protection barriers.

The barriers shall be installed prior to the commencement of any localised construction activity including soil stripping and delivery of materials. A detailed specification of the barriers can be found in sections below.

The tree protection plan also indicates where ground protection measures shall be installed / maintained as specified in sections 1.7 onwards (Restricted Activity Zones).

1.3. Planning Status

Tree protection measures specified within this report should be agreed with the local authority so that they may be conditioned upon planning consent.

The site manager must be familiar with all aspects of this Method Statement and should liaise with the author of this report for clarification, or regarding any unforeseen issues where trees may be impacted upon.

A copy of this Method Statement shall be available on-site at all times. All personnel working on the site shall be made aware of any sections appertaining to their work. This includes short term contractors and persons responsible for deliveries and installation of services.

1.4. Overview of Protection Measures

Below is a summary of the proposed protection measures:

Tree no.	Protection Measures	Timeline
T1-T3	Retain and protect with HERAS fencing and ground protection boarding	Pre-start
T5	Retain and protect with HERAS fencing and ground protection boarding	Pre-start
T9-T11	Retain and protect with HERAS fencing	Pre-start
T12	Retain and protect with HERAS fencing and ground protection boarding	Pre-start
T13-T17	Retain and protect with HERAS fencing	Pre-start
T18&T19, T22 - T26	Retain and protect with HERAS fencing and ground protection boarding	Pre-start
H27	Remove section as shown on Tree Protection Plan, then retain and protect with HERAS fencing	Pre-start
G28	Retain and protect with HERAS fencing	Pre-start
T29	Retain and protect with HERAS fencing	Pre-start
H30	Retain and protect with HERAS fencing	Pre-start
T31	Retain and protect with HERAS fencing and ground protection boarding	Pre-start
T32	Retain and protect with HERAS fencing	Pre-start
T33	Retain and protect with HERAS fencing and ground protection boarding	Pre-start
T34-T37	Retain and protect with HERAS fencing	Pre-start
T38	Retain and protect with HERAS fencing and ground protection boarding	Pre-start

The above measures are described in more detail throughout the remainder of this section.

1.5. Timing of Operations

Activity within the site shall be phased according to the following chronology:

<i>Order Activity</i>	<i>Phase</i>	Phase Name	Works required
1st Phase		Pre-construction phase	Undertake a pre-start meeting with the builder, client and ACoW
2nd Phase		Protection phase	Install HERAS tree protection fencing and signage as highlighted on the TPP
3rd Phase		Ground Protection	Install any specified ground protection boarding as highlighted on the TPP
4th Phase		Construction phase	Construction works commence with regular ACoW visits
5th Phase		Post Construction Phase	Remove tree protection measures and carryout any remedial works such as alleviation and radial mulching

Restrictions on Activities – Specific Zones

1.6. Construction Exclusion Zones

Within Construction Exclusion Zones (shaded purple on the Tree Protection Plan) the following restrictions shall apply:

Tree Protection Barriers shall be erected and maintained throughout the entire project as indicated on the Tree Protection Plan and specified in Section 4 - Tree Protection Barriers.

No construction activity whatsoever shall occur.

No vehicles or plant machinery shall be driven or parked.

No tree works, other than those specified in this report shall be undertaken.

No alterations of ground levels or conditions.

No chemicals or cement washings permitted.

No excavation whatsoever shall occur.

No temporary structures.

No spoil shall be stored.

No fires shall be permitted.

All hazardous materials (including non-essential cement products) shall be forbidden.

Where hard surfaces are to be removed, this shall be done using hand tools or mechanical excavators operating from outside the Construction Exclusion Zone and marshalled by the appointed arborist.

Any structures shall be removed manually and without mechanical excavation.

1.7. Restricted Activity Zone A

Within these zones (shaded yellow on the Tree Protection Plan) tree roots are likely to be present. Access will be required to facilitate construction and some resurfacing works may be required. The following restrictions shall apply:

Any resurfacing shall be done strictly in accordance with the Guidelines in APN12 New Surfaces.

Removal of existing structures such as walls, steps and hard surfaces shall be undertaken using hand tools or a mechanical excavator operating from outside the Restricted Activity Zone and carefully marshalled by an appointed arborist.

A suitable load spreading surface shall be installed and/or maintained as specified in Section 5 – Ground Protection Measures. This shall remain in place throughout the entire construction phase.

No excavation shall occur in this zone without consulting the appointed arborist and obtaining approval from the local authority.

Storage of materials shall be limited to that which is required for the task in hand. Heavy materials that require storage for more than two days shall be stored outside the Restricted Zone.

No spoil shall be stored.

No fires shall be permitted.

All hazardous materials (including non-essential cement products) shall be forbidden.

1.8. Restricted Activity Zones - Installation of Piled Foundations & Screw Piles

Within this zone (indicated on the Tree Protection Plan) it is proposed to install piled foundations to dwelling 1 and dwelling 4.

The specific method adopted will vary between contractors. However, the following restrictions will apply and must be adhered to:

No excavation or ground disturbance shall occur beyond the footprint of the dwellings.

No large plant machinery shall operate beneath the canopy of retained trees.

Where a small excavator/piling rig is used, it shall operate from outside the RPA of retained trees, or from suitable ground protection boarding or specialist piling mat.

The excavator/piling rig shall be marshalled to ensure no contact is made with the canopy of retained trees.

The specific method to be adopted will be set out in full in the contractors method statement for installation of screw piles, however, the following methods and restrictions will apply and must be adhered to:

Using a long metal bar such as a fencing bar or pin, drive a hole by hand into the proposed screw pile locations, rotating the bar to slightly enlarge the hole as it goes down in stages, to a depth of at least 500mm. The purpose of this is to ensure that there are no significant tree roots in that location. If roots above 25mm in diameter are discovered, then the screw pile pilot hole must be relocated to the nearest possible position that is free of roots.

The piles will be set out according to the scheme in the image plate below. The system used permits enough flexibility to permit pile positions to be changed to avoid roots discovered using the probe.

The appointed arborist shall be invited to oversee the initial stages of any pile installation.

Restrictions on Activities – Throughout the Site

1.9. Canopy Protection

In order to protect tree canopies the following restrictions shall apply throughout the site:

No machinery shall pass beneath the crowns of trees without being carefully marshalled in order to ensure that no branches are damaged.

If materials require installation or delivery beneath tree canopies, this shall be done without the use of overhead cranes.

If materials are to be installed or delivered close to tree canopies (but not beneath them) and a crane is required, they shall be carefully marshalled in order to ensure that branches are not accidentally damaged.

1.10. Site Hoarding

If site hoarding shall be installed over the Root Protection Area of any tree, the following restrictions shall apply:

Ground levels shall be maintained as existing.

Post holes shall not exceed 300mm x 300mm.

No post hole shall be excavated within 1.5m of any tree stem.

Post holes shall be excavated using hand tools or by a post-hole auger attached to plant machinery sited outside the Root Protection Area(s).

Roots in excess of 25mm shall be retained wherever possible.

Roots in excess of 10mm shall be pruned with sharp secateurs.

Pruning shall be minimal and only undertaken where absolutely necessary to facilitate the site hoarding. It shall be undertaken by a reputable tree surgeon working to BS 3998 (2010).

Cement products shall be mixed away from Root Protection Areas (see Section - 1.19 Hazardous Materials).

Site hoarding may be installed in place of the specified tree protection measures subject to the approval of the local authority with regard to its location and specification.

1.11. Fencing.

Where fence posts are to be installed within Root Protection Areas, the following restrictions shall apply:

All post holes shall be excavated by hand and kept as narrow as possible (maximum diameter 300mm).

Exploratory post holes shall be dug before committing to post / panel positions. If any roots in excess of 25mm are encountered they are to remain intact and the post hole shall be relocated slightly. The fencing system must permit such flexibility (i.e. where fixed panel widths are used, all post holes must be excavated before committing to the final location).

Any roots in excess of 10mm which are severed shall be neatly pruned back with secateurs. This will encourage healing and reduce the likelihood of infection.

Hedges may be planted within Root Protection Areas using hand tools to minimise excavation.

1.12. Demolition and Initial Ground Works

No demolition, removal of surfaces, or soil stripping shall commence until the protective fencing and ground protection measures are installed to the satisfaction of the local authority.

1.13. Underground Services

No underground services (including soak-aways) shall be located in any part of the Construction Exclusion Zones or Restricted Activity Zones unless done so in a manner detailed in a specific Method Statement and approved by the local authority.

1.14. Lighting, Bollards, CCTV and associated Cables

If any of the above are to be installed close to tree canopies or within Root Protection Areas of retained trees, installation methods shall be detailed in a specific Method Statement and approved by the local authority. Consideration should be given to the following:

Pruning of branches to enable sufficient clearance for light and views. Branches should be removed to the branch collar as per British Standard 3998 (2010).

Post holes must be excavated by hand or using an appropriate sized auger. No other form of mechanical excavation may be used.

Wherever possible, cables should be routed in a direction directly away from the tree stem rather than tangentially across the rooting zone. The location of all such cables shall be determined after consultation with the appointed arborist and approval by the local authority.

1.15. Use of Heavy Plant

All machinery operatives are to be made aware of any Construction Exclusion Zones and Restricted Activity Zones that apply to this site (see the Tree Protection Plan and Section 5.6 onwards).

All machinery operatives are to respect these zones and ensure that no damage occurs to trees due to the careless use of machinery.

Mechanical excavators should have tracks rather than wheels to help spread their load. They should be carefully marshalled when working close to tree canopies.

1.16. Scaffolding

If scaffolding is required in areas containing ground protection measures, the protective boards shall need to remain in-situ and be strengthened and stabilised to bear the weight of scaffold poles.

Prior to the installation of any scaffolding within 0.5m of any tree branches, the appointed arborist shall be consulted to specify any pruning works that may be required.

1.17. Siting of Cabins and Storage of Materials

Cabins and heavy building materials may be located or stored anywhere outside of Construction Exclusion Zones and Restricted Activity Zones.

Any proposal to install cabins or materials within these zones shall be agreed in writing with the local authority prior to installation.

It may be acceptable to locate site cabins such that they act as a tree protection barrier and replace the specified protective fencing. Where this is being considered, written approval must be sought from the local authority.

1.18. Pedestrian Paving

If it is proposed to install new pedestrian surfaces over Root Protection Areas, excavation shall be limited to the removal of existing turf/vegetation plus an additional 50mm. Excavation shall be undertaken using hand tools only. Porous materials are preferred but not essential if the new surface covers less than 10% of the Root Protection Area. Paving with a thickness of 50mm bedded on mortar, or sand, bearing directly onto the ground, with a finished surface level with existing ground levels will be acceptable. No retaining kerbs shall be used.

1.19. Hazardous Materials

Any mixing of cement based materials shall take place outside the Construction Exclusion Zones and Restricted Activity Zones. Where cement is to be mixed on sturdy plastic sheeting e.g 1200 gauge DPM considerable distances from trees and water run-off cannot enter Root Protection Areas.

All other chemicals hazardous to tree health, including petrol and diesel, shall be stored in suitable containers as specified by current COSHH Regulations, and kept away from Root Protection Areas.

1.20. Removal of Tree Protection Barriers

This will be done after all major construction work is complete. Vehicular access will not be permitted within the Construction Exclusion Zones.

The local authority tree officer shall be made aware that the fencing is to be removed.

2. Site Inspection

2.1. Inspection Schedule

In order to ensure that the trees are adequately protected it shall be necessary to periodically monitor the works. This will be done by the local authority tree officer or an appointed arborist (Arboricultural Clerk of Works) who will provide the tree officer with a copy of inspection details.

<i>Order Activity</i>	<i>Phase</i>	Phase Name	Works required
1st Phase		Pre-construction phase	Pre-start ACoW visit with all interested stakeholders
2nd Phase		Protection phase	ACoW visit to sign off tree protection measures
3rd Phase		Ground Protection	ACoW visit to sign off tree protection measures
4th Phase		Construction phase	ACoW visit to supervise any piling works, and monthly ACoW visits to check protective measures.
5th Phase		Post Construction Phase	ACoW visit to supervise removal of protection measures and final site sign off.

Example ACoW sheet.



Woodland Solutions (Northern) Ltd t/a ROAVR Group
The Green House
Beechwood Business Park North
Inverness
IV2 3BL
www.roavr-group.co.uk
T: 01463 667302

SITE SUPERVISION FORM - ARBORICULTURAL
CLERK OF WORKS

DATE	
CLIENT	
TELEPHONE NUMBER	
E-MAIL	

TERMS AND CONDITIONS FOR THE PROVISION OF ARBORICULTURAL CONSULTANCY

Site:	
Inspected by:	
Site Manager:	
Date of Inspection:	

Tree Protection Fencing.

Comments/Actions:

Ground Protection.

Comments/Actions:

Additional Comments.

Remarks:

I am aware of the tree protection requirements for this site and understand no retained trees must be damaged.

Signed:	Dated:
Name:	Company:

3. Tree Works Schedule

Tree Works Specification

3.1.1. The following table specifies the tree works which will be required prior to the commencement of construction activity:

<i>Tree no.</i>	Works Required	Phase Timing
T3	Crown lift to northern section of canopy only to clear roof by 1.5 metres	Pre-start
T4	Fell to facilitate project	Pre-start
T5	Crown lift to northern section of canopy only to clear roof by 1.5 metres	Pre-start
G7	Fell to facilitate project	Pre-start
G8	Fell to facilitate project	Pre-start
T20	Fell to facilitate project	Pre-start
T21	Fell to facilitate project	Pre-start
H27 (part)	Fell to facilitate project	Pre-start

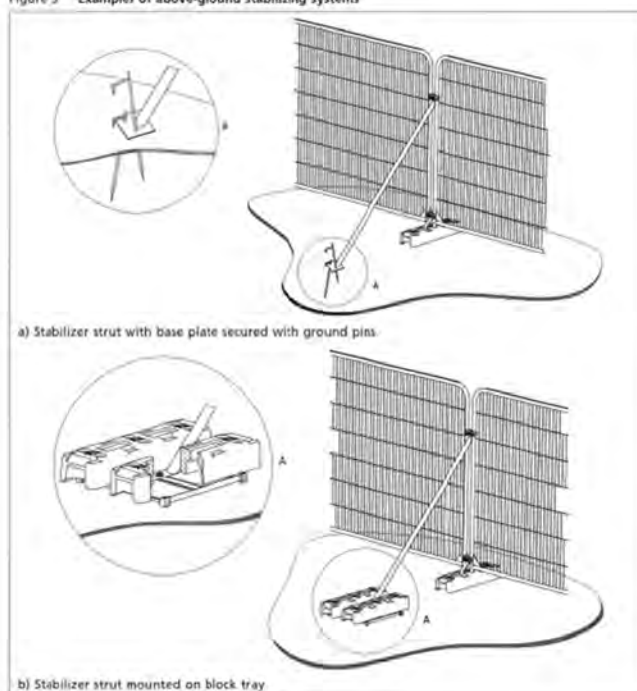
4. Tree Protection Barriers Detailed Specification

Tree Protection Fencing

The purpose of tree protection barriers is to keep construction activity away from Restricted Activity Zones or Construction Exclusion Zones. They should be appropriate to the nature and proximity of activity within the site. The barriers should be erected prior to the commencement of all activity including demolition, soil stripping and delivery of materials and demolition (except where existing structures require demolition to enable the barriers to be installed).

Barrier systems are specified below and should be installed according to the legend on the Tree Protection Plan.

Figure 3 Examples of above-ground stabilizing systems



Suitable weather-proof notices should be displayed to identify tree protection zones. They should state the purpose of the fencing and that it should not be moved, or traversed, other than by authorised personnel.



Example signage.

Plywood Boxes. [If Shown On TPP]

The CEZ or Construction Exclusion Zone offers protection to the stems of most of the trees on development sites.

However often there is an existing hard surface in place OR placing HERAS panels is complicated due to the trees location.

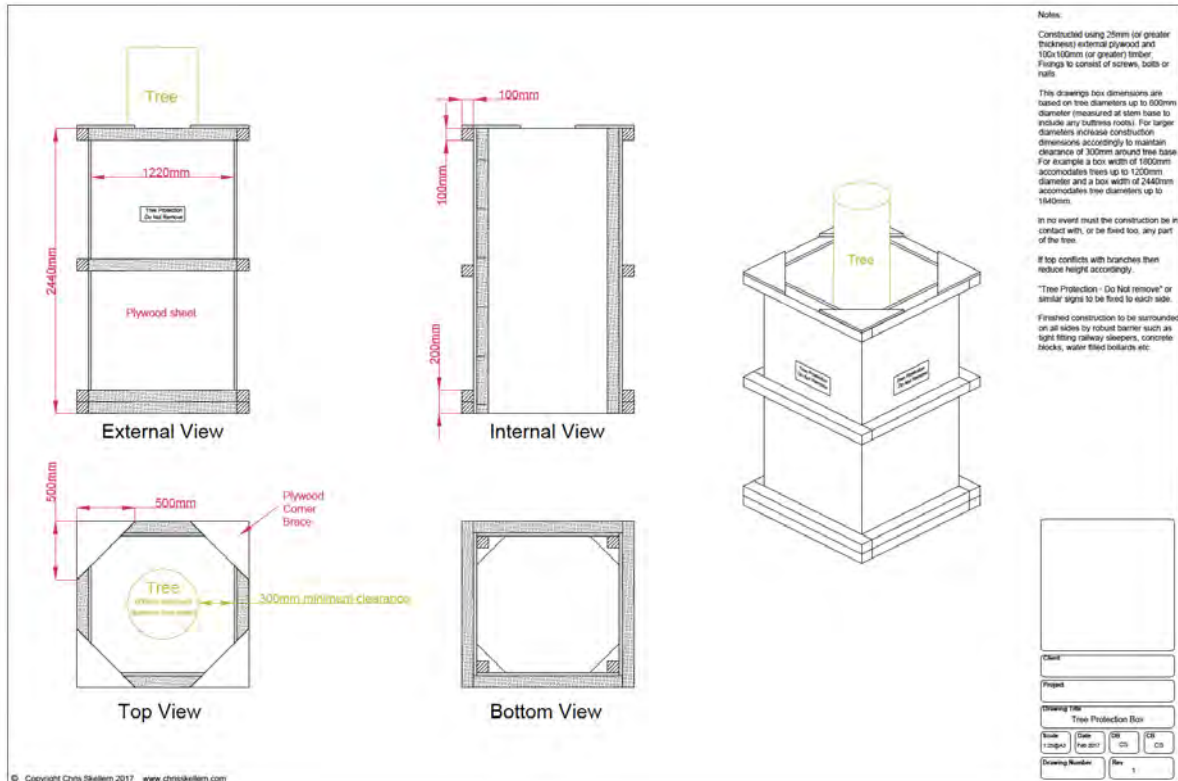
Trees closest to the development project or areas where contractors may access / park / deliver materials may require additional protection in the form of a timber box to be constructed around the tree's stem to prevent the risk of accidental damage caused by collision or abrasion.

Protective boxes should be constructed from sheets of 20mm marine plywood on suitable bearers of pressure treated softwood.

The box must not in any way be secured to the tree it is designed to protect. Tyres or polystyrene boarding can be placed between the tree's stem and the ply box to provide additional impact protection.

The sheets of ply should be closely 'buted' to avoid gaps that could be exploited and the box must be installed pre-start and not removed until all construction works are completed and the site is cleared. Access and egress is often the time that retained trees are struck and damaged.

Used correctly this form of protection is extremely effective.



5. Ground Protection Measures Detailed Specification

Where indicated on the Tree Protection Plan (Restricted Activity Zones), the soil may contain tree roots, and ground protection measures should be implemented. Where Root Protection Areas are outside of the Construction Exclusion Zone, the soil may be subject to compaction due to general construction activity (including pedestrian activity and use of plant machinery).

In order to minimise compaction, it is proposed to ensure that a suitable load-spreading surface is in place at all times.

Any existing hard surfacing may be retained and reinforced (where Construction activity is applicable and adequate), otherwise suitable new ground protection fencing measures shall be installed. The ground protection shall need to be able to adequately spread the load of construction traffic. Where existing hard surfacing is to be retained, it shall not be necessary to install additional ground protection measures. However, the hard surfacing must be firm enough to spread the load of any traffic passing overhead.

Where only pedestrian traffic will occur, the ground protection measures may be as simple as timber boards, or scaffold planks installed directly onto a geotextile fabric on the ground. The ground should first be made even by raking, or by adding a few centimetres of sand or woodchip. Alternatively the boards may be supported by a scaffold framework. The scaffold may be founded on poles driven into the ground and/or onto blocks (to raise the scaffold) with additional couplings to make the framework secure.

Where only light vehicles are to operate (e.g. barrows, trolleys or occasional cars), thick wooden boards or scaffold planks should also suffice, though at least 150mm of compressible woodchip will need to be installed first to help spread the load. Sturdier systems are specified below:

Where cars will regularly park or heavier vehicles/plant machinery will occasionally operate, sturdier ground protection measures will be required such as metal road plates, or purpose built synthetic road mats over a compression resistant layer such as 150mm of woodchip or 100mm of a 3D cellular confinement system in-filled with 7–40mm angular gravel (e.g. Cellweb™).

A temporary concrete slab may also be considered as a suitable load spreading platform. Where a pile driver needs to operate, a concrete slab may be the preferred option.

Where existing structures need to be removed, this shall be done with temporary ground protection measures in place to enable this to be achieved without compacting soils.

The ground protection measures shall be installed and approved before commencement of demolition and construction activity and before the arrival of plant machinery or materials. They shall remain in place until all heavy construction activity is complete or until they are due to be replaced with a new hard surface.

6. New Surfaces Detailed Specification

Resurfacing an Existing Hard Surface

If it becomes necessary to replace an existing hard surface over Root Protection Areas the following restrictions shall apply:

The existing hard surfacing shall remain in place throughout the entire construction project or until it is due to be replaced with a new surface. If the hard surfacing is removed for any reason it shall immediately be replaced by ground protection measures as specified until a permanent hard surface is installed. No vehicle shall pass over this zone unless a permanent hard surface or ground protection is in place.

No excavation in excess of the existing sub-base shall occur. The existing sub-base may be retained undisturbed and incorporated into the new structure.

Hand operated tools shall be used to lift existing surfaces. Mechanical excavators may be used so long as they operate from outside Root Protection Areas and are carefully marshalled by the appointed arborist or local authority tree officer.

Any exposed roots in excess of 25mm are to be retained. Before the new surface is installed, 25mm of soil (or river sand) and a geotextile membrane shall be laid over the root. Until such times, the root shall be adequately protected from pedestrian damage using timber and sand.

Any new sub-base shall not contain fine particles. Coarse sand or larger particles shall be acceptable. 7-14mm gravel is ideal.

A 3 dimensional cellular confinement system may be incorporated into the sub-base and is encouraged. However, this is not considered compulsory since the resurfacing operation shall not cause a deterioration of rooting conditions beneath the existing hard surface.

No salt or lime based products are to be incorporated within the sub-base.

Where the existing surface is porous, it shall be replaced with a new surface which is equally as porous. Where the existing surface is impermeable (e.g. concrete or asphalt), replacement with a porous surface is encouraged but not compulsory.

Installation of a New Hard Surface Incorporating a Cellweb Layer

Stage 1 - Ground Preparation.

Remove surface vegetation or treat with suitable herbicide to level – under the supervision of the project Arborist.

Fill any hollows in the exposed ground with no fines 4/20mm clean angular stone.

Place TRP4000 geotextile over the area to be protected ensuring a minimum overlap of 300mm.

Allow adequate drainage as a separation layer between soft subgrade and GEOWEB® infill material

Mark out the area to be protected with edging detail.

Stage 2 – Installation of Geoweb

Roll out TRP4000 geotextile to cover the area to be protected

Insert x 4 equally spaced steel pins along the width of the first panel

Expand Geoweb sections over the area to be protected and use temporary stakes or weights to hold sections open to prevent movement during infilling

Pin along the length of the panel and along each side to achieve this

If full panels are not being used, then ensure the cells have been expanded to their full dimension.

The Geoweb panels can be cut to shape if required with a heavy-duty Stanley Knife

Connect adjacent sections using ATRA® Keys or zip ties. Position the sections so the slots are aligned, insert the key, and turn 90 degrees locking the panels together. ATRA® Keys provide a long-term connection that is safer, quicker, and stronger than staples or cable ties.

Stage 3 - Filling the Geoweb.

Using 4/ 20mm or 40/20mm clean angular stone to Bs EN 13242 and 12620 (depending on cell depth being used)

For permeability, infill the fully connected Geoweb system with a well graded, angular stone such as a 4/20mm or 40/20mm clean angular stone.

Allow 30mm overfill for any settlement of the stone into the cells during installation

If the area is to be trafficked immediately, slightly increase the amount of surcharge overfill to a max 50mm over the Geoweb with 4/20mm or 40/20mm clean angular stone

Consolidate the fill material with conventional plant or non-vibratory plant when required. Fill should be maintained above the Geoweb system by a minimum of 10mm at all times or a permanent wearing course of blocks, porous asphalt or gravel installed.

Appendix: Further Information

Building Near Trees – General

National Joint Utilities Group publication # 10 (1995), Guidelines for the Planning, Installation and Maintenance of Utility Services in Proximity to Trees. Downloadable at www.njug.demon.co.uk/pdf/NJUG%20Publication10.pdf

NHBC Standards Chapter 4.2., Trees and Buildings.

Horticulture LINK project 212. (University of Cambridge, 2004), Controlling Water Use of Trees to Alleviate Subsidence Risk. Tree Planting and aftercare see www.trees.org.uk/leaflets.php# for downloadable leaflets on selecting a garden tree, planting, aftercare and veteran tree management.

British Standards BS 5837: 2012. Trees in Relation to Design, Demolition and Construction – Recommendations. Bs 3998: 2010.

Recommendations for Tree Work. BS 3936: 1992. Nursery Stock. Part 1: Specification for Trees and Shrubs. BS 3936: 1992. Nursery Stock. Part 10:

Specification for Ground Cover Plants. BS 4043: 1989. Transplanting Root-balled Trees. BS 8004: 1986. Foundations. BS 8103: 1995.

Structural design of Low-Rise Buildings. BS 8206: 1992. Lighting for Buildings.

BS 8545:2014. Trees: From nursery to independence in the landscape – Recommendations

BS 3882: 2007. Topsoil. BS 4428: 1989. General Landscaping Operations (excluding hard surfaces). Permission to do Works to Protected Trees / Tree Law Forestry Commission (Edinburgh, 2003), Tree Felling – Getting Permission. Country Services Division - Forestry Commission. Downloadable at [www.forestry.gov.uk/website/pdf.nsf/pdf/wgsfell.pdf/\\$FILE/wgsfell.pdf](http://www.forestry.gov.uk/website/pdf.nsf/pdf/wgsfell.pdf/$FILE/wgsfell.pdf)

Transport and the Regions (Department of the Environment, 2000), Tree Preservation Orders, A Guide to the Law and Good Practice. Downloadable at www.communities.gov.uk/publications/planningandbuilding/tposguide

C. Mynors, The Law of Trees, Forests and Hedgerows (Sweet and Maxwell, London, 2002)

Communities and Local Government website with numerous downloadable documents, from:

<http://www.communities.gov.uk/planningandbuilding/planning/treeshighhedges/Lighting Levels>

P.J. Littlefair, B.R.E. 209: Site layout planning for daylight and sunlight A guide to good practice. B.R.E. Bookshop, London.

British Standards Institution. Code of practice for daylighting. British Standard BS 8206: Part 2 (1992).

Chartered Institution of Building Services Engineers. Applications manual: Window Design (London, 1987).

NBA Tectonics. A study of passive solar housing estate layout. ETSU Report S-1126. Harwell, Energy Technology Support Unit (1988).

I.P. Duncan; D. Hawkes, Passive solar design in non-domestic buildings. ETSU Report S-1110. Harwell, Energy Technology. P. J. Littlefair, Measuring Daylight, BRE Information Paper 23/93 f3.50. (Advises on measuring daylight under the real sky or an artificial sky, allowing for the changing nature of sky light).

High Hedges Communities and Local Government website with numerous downloadable documents, from:

<http://www.communities.gov.uk/planningandbuilding/planning/treeshighhedges/Tree Specific>

Websites

www.trees.org.uk Arboricultural Association www.rfs.co.uk Royal Forestry Society of England, Wales and N. Ireland

www.treehelp.info The Tree Advice Trust

www.woodland-trust.org.uk The Woodland Trust www.treecouncil.org.uk The Tree Council

www.go-roavr.co.uk - portal for booking tree surveys UK wide.

7. Limitations

- 7.1 ROAVR has prepared this Report for the sole use of 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.
- 7.2 This Report may not be relied upon by any other party without the prior and express written agreement of ROAVR. The assessments made assume that the land use will continue for their current purpose without significant change. ROAVR has not independently verified information obtained from third parties.
- 7.3 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.
- 7.4 This report, site visit, plans and conclusions are proportional to the proposals and in some cases a simple plan based impact assessment may be all that is required.
- 7.5 Important - to ensure fair allocation of resources, we allow you ten working days to review the report and issue any feedback, beyond that changes are chargeable.

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

Mr. Peter Haine FDSc Arb
Consultant Arborist



ROAVR | GROUP

Prepared by: Peter Haine
Checked by: Matt Harmsworth

Appendix 1 – Site Location



Google, 2023

Appendix 2 – Arboricultural Data Tables

Tree Number	Species	Age Class	DBH	Height (crown height)	N	E	S	W	Condition	Life Expectancy	Physical Description	Comments	Management Recommendations	RPA offset from stem.	Category Rating
T1	<i>Fraxinus excelsior</i> (Ash)	M	300,300,150	7(2)	3	6	4	3	Fair	10+	Small multitemmed Ash in constrained location	None	None	5.4	C1
T2	<i>Acer platanoides</i> (Norway Maple)	EM	250	6(2)	3	2	4	5	Fair	20+	Small Maple in constrained location	None	None	3	B1
T3	<i>Acer pseudoplatanus</i> (Sycamore)	EM	350	7(3)	5	4	1	3	Fair	10+	Small Maple in constrained location		None	4.2	C1
T4	<i>Fraxinus excelsior</i> (Ash)	EM	250,200,200	8(2)	3	3	2	3	Poor	<10	Small Ash in constrained location	Ash dieback, significant part of canopy dead.	None	4.52	U
T5	<i>Fraxinus excelsior</i> (Ash)	EM	150	6(2)	2	3	1	3	Fair	10+	Small Ash in narrow space next to building	None	None	1.8	C1
T6	<i>Fraxinus excelsior</i> (Ash)	SM	150	6(2)	1.5	1.5	1.5	1.5	Fair	10+	Small Ash in narrow space next to building	Constrained rooting area	None	1.8	C1
G7	<i>Fraxinus excelsior</i> (Ash), <i>Acer pseudoplatanus</i> (Sycamore), <i>Crataegus monogyna</i> (Hawthorn)	Y	75	5(2)	1	1	1	1	Fair	10+	Group of young self set trees in area of bramble and scrub.	None	None	0.9	C1
G8	<i>Acer pseudoplatanus</i> (Sycamore), <i>Fraxinus excelsior</i> (Ash), <i>Sambucus nigra</i> (Elder)	Y	75	5(0)	1	1	1	1	Fair	10+	Group of young self set trees in area of bramble and scrub.	None	None	0.9	C1
T9	<i>Laburnum anagyroides</i> (Laburnum)	EM	90,75,72,75,75	5(1)	1.5	1	2	2	Fair	10+	Small garden ornamental	None	None	2.09	C1
T10	<i>Taxus baccata</i> (Yew)	M	650	7(1)	5	4	4	5	Fair	40+	Significant mature tree	Rooting area offset to north due to road	None	7.8	A1
T11	<i>Taxus baccata</i> (Yew)	M	550	8(1.5)	5	4	4	5	Fair	40+	Significant mature tree	Rooting area offset to north due to road	None	6.6	A1
T12	<i>Platanus X hispanica</i> (London Plane)	M	1200	22(2)	6	7	5	7	Good	40+	Very significant mature tree, principle tree on site.	Ivy on tree. Unable to inspect stem due to Ivy. Rooting area offset to north due to road	None	14.4	A1
T13	<i>Acer platanoides</i> (Norway Maple)	SM	200	7(2)	1	3.5	5	3	Fair	10+	Small Maple.	Rooting area offset to north due to road	None	2.4	C1
T14	<i>Acer platanoides</i> (Norway Maple)	SM	150,100,100,75	7(2)	4	2	2.5	2.5	Fair	10+	Small Maple.	None	None	2.63	C1
T15	<i>Acer platanoides</i> (Norway Maple)	SM	200	8(1)	3	2	1	2.5	Fair	10+	Small Maple.	None	None	2.4	C1
T16	<i>Acer platanoides</i> (Norway Maple)	SM	150	8(3)	1	3	2	1	Fair	10+	Small Maple.	None	None	1.8	C1
T17	<i>Acer platanoides</i> (Norway Maple)	SM	75,100	7(3)	0	3.5	3	1	Fair	10+	Small Maple.	None	None	1.5	C1
T18	<i>X Cupressocyparis leylandii</i> (Leyland Cypress)	M	1000	17(2)	4	4	4	4	Fair	20+	Large mature Leyland Cypress.	Rooting area offset to north due to road. Damage to stem within crown.	None	12	B1
T19	<i>Prunus laurocerasus</i> (Cherry Laurel)	M	200,150,150,100,100,75	5(0)	4	5	4	3	Good	20+	Large Laurel with shrub like form	None	None	4	C1
T20	<i>Acer platanoides</i> (Norway Maple)	EM	250	7(3)	0	5	2	0	Fair	10+	Small Maple.	Leaning East.	None	3	C1

Tree Number	Species	Age Class	DBH	Height (crown height)	N	E	S	W	Condition	Life Expectancy	Physical Description	Comments	Management Recommendations	RPA offset from stem.	Category Rating
T21	<i>Acer pseudoplatanus</i> (Sycamore)	EM	275	8(6)	3	2	3	3.5	Fair	10+	Small Maple.	None	None	3.3	C1
T22	<i>Acer pseudoplatanus</i> (Sycamore)	EM	250	7(3)	0	1.5	2	1.5	Fair	10+	Small Maple.	None	None	3	C1
T23	<i>Taxus baccata</i> (Yew)	M	200,200,150	8(3)	3	3	3	1.5	Good	40+	Small but mature Yew	None	None	3.84	A1
T24	<i>X Cupressocyparis leylandii</i> (Leyland Cypress)	M	650	17(1.5)	2	4	4	2.5	Fair	20+	One of three mature Leyland Cypress growing in close proximity to each other	None	None	7.8	B1
T25	<i>X Cupressocyparis leylandii</i> (Leyland Cypress)	M	750	17(2)	5	4	1	1.5	Fair	20+	One of three mature Leyland Cypress growing in close proximity to each other	None	None	9	B1
T26	<i>X Cupressocyparis leylandii</i> (Leyland Cypress)	M	400	17(1.5)	2	0	1	2.5	Fair	20+	One of three mature Leyland Cypress growing in close proximity to each other	None	None	4.8	B1
H27	<i>X Cupressocyparis leylandii</i> (Leyland Cypress)	M	400	5(0)	2	2	2	2	Fair	10+	Mature Cypress hedge, poor pruning to previously lapsed upper part of hedge. Dead wood and dieback in hedge.	None	None	4.8	C3
G28	<i>Prunus domestica</i> (Damson), <i>Taxus baccata</i> (Yew), <i>Corylus avellana</i> (Hazel), <i>Prunus lusitanica</i> (Portugal Laurel)	M	300	6(0)	2	2	2	2	Fair	10+	Linear feature of trees and shrubs running along rear boundary.	Inaccessible due to vegetation.	None	3.6	C3
T29	<i>Cedrus libani atlantica</i> 'Glauca' (Atlantic Cedar)	M	450	9(5)	4	4	4	4	Fair	10+	Small but mature Cedar	Major deadwood in crown. Crown sparse.	None	5.4	C1
H30	<i>Chamaecyparis lawsoniana</i> (Lawson Cypress)	M	100	7(2)	2	2	2	2	Poor	<10	Lapsed hedgerow	Multiple dead stems	Remove dead stems	1.2	U
T31	<i>Acer pseudoplatanus</i> (Sycamore)	M	350	8(3)	3	0	3	4	Fair	10+	Small but mature Maple	Leaning West.	None	4.2	C1
T32	<i>Chamaecyparis lawsoniana</i> (Lawson Cypress)	M	125	6(1)	1.5	1.5	1.5	1.5	Fair	10+	Small mature Cypress tree, probably part of H30 historically.	Damage to stems in crown	None	1.5	C1
T33	<i>X Cupressocyparis leylandii</i> (Leyland Cypress)	M	500	12(1.5)	3	3	3.5	3.5	Fair	10+	Mature Cypress tree	Damage to stems in crown	None	6	C1
T34	<i>Ilex aquifolium</i> (Holly)	SM	100	5(1)	1	1	1	1	Fair	10+	Small garden ornamental	Ivy on tree. Unable to inspect stem due to Ivy.	None	1.2	C1
T35	<i>Betula pendula</i> (Silver Birch)	M	265	8(3)	1.5	1	2	1.5	Fair	10+	Mature Silver Birch	Low vitality. Declining. Major deadwood in crown.	None	3.18	C1
T36	<i>Acer platanoides</i> (Norway Maple)	M	390	8(2)	4	4.5	5	4	Fair	20+	Good quality mature Maple	Dieback in crown.	None	4.68	B1
T37	<i>Chamaecyparis lawsoniana</i> (Lawson Cypress)	M	200	5(1)	1.5	1	1.5	1.5	Fair	10+	Off site garden ornamental.	Boundary wall limits root spread	None	2.4	C1
T38	<i>Chamaecyparis lawsoniana</i> (Lawson Cypress)	EM	200	9(2)	2	2	2	2	Fair	10+	Small Cypress located in narrow strip between building and boundary	Constrained rooting area	None	2.4	C1

Arboricultural Data Tables Terms.

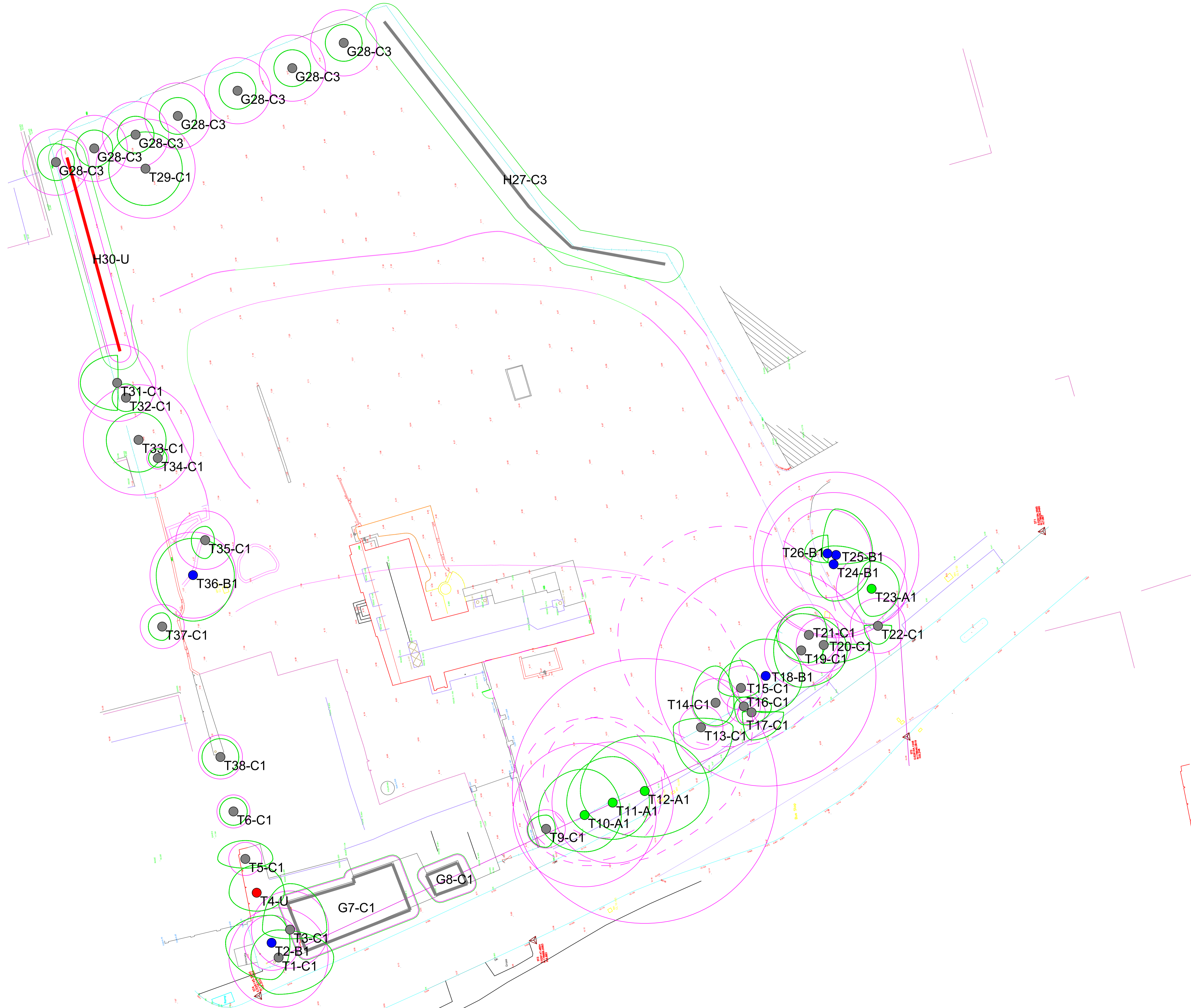
Tree ID	Reference no. T1, T2 etc. for trees; H for hedgerows; G for Groups and W for woodlands.
Tag Number	If the tree has been tagged with an 'arbo' tag then the physical tag number is listed in this column.
TPO Number	If the tree is subject to a TPO and it is known to us this will be recorded here.
In Conservation Area	Y/N - If the tree is located within a Conservation Area we may confirm that here.
Tree Type	Beech, Oak etc.
Common Name	Common Beech, Evergreen Oak etc.
Latin Name	Fagus sylvatica; Quercus robur - Latin names.
Maturity	The estimated age class of the tree (relative to species) o Y - Young o SM - Semi-mature o EM - Early-mature o M - Mature o OM - Over-mature or V - Veteran
Potential for Bat Habitat	Y/N - if the tree has cracks, cavities or suitable bat habitat it may require further ecological surveys and form a constraint on development.
Measurements Estimated (Y/N)	Y/N - if the tree is off site, covered with ivy, or some other restriction the British Standard allows for measurements to be estimated.
Height	Height of the tree in metres.
Height & Direction of 1st Significant Branch	Recorded to consider access.
Number of Stems	Number of clear stems.
Diameter at Breast Height	Diameter of stem (mm) at breast height (1.5 metres above ground).
Crown Spread	The maximum spread of the tree's canopy measured from the stem in four directions (North, East, South, West).
Canopy Height	The height between ground level and the lowest part of the canopy when considering access.
Crown / stem / Basal Condition	Good, Fair, Poor condition comments.
Category	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): 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
Life Expectancy	Estimated safe, usable life expectancy.

Sub-Category	Subcategories: 1: Mainly arboricultural & aesthetic qualities 2: Mainly landscape qualities 3: Mainly cultural values, including conservation 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
Physical Condition	Good, Fair, Poor condition considering the tree structure, form and vitality.
Management Recommendations	Recommendations (regardless of the development proposals if available) for removal, retention and/or remedial arboricultural works.
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.

Arboricultural data tables are essentially an asset register of the trees and tree cover on and adjacent to a development site. The information included within the tables is used to produce a tree constraints plan (TCP) which shows in 2D the constraints and opportunities on a particular site.

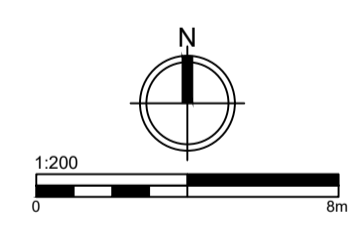
Appendix 3 – Arboricultural Plans

General Notes
 Do not scale off drawing - refer to the tree data schedule for accurate crown spread measurements.
 Depictions of tree canopies are based on measurements taken to four cardinal compass points.
 No liability of any kind is accepted for any omissions or inaccuracies in respect of this plan.
 The original of this drawing was produced in colour; a monochrome copy should not be relied upon.
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Key

- Trees
Showing Canopy extents, category colour and tag number (with category).
- Category A**
Trees of high quality with an estimated remaining life expectancy of at least 40 years.
- Category B**
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
- 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.
- Category U**
Trees in such a condition that they can not realistically be retained as living trees in the context of the current land use for longer than 10 years.
- BS 5837:2012 Root Protection Area**
- BS 5837:2012 Root Protection Area modified to reflect site conditions**



Drawing Title
Tree Constraints Plan

Client
Vector Capital PLC

Site/Project
**34 Allum Lane, Elstree,
 Borehamwood, WD6 3NP**

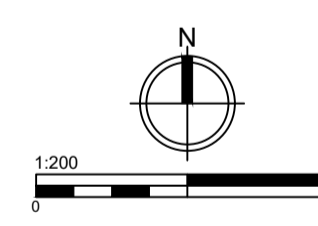
Scale/Sheet 1:200 @ A1	Date 01/10/2023		
Drawing No 23_5837_09_16	Rev 1	Drawn By PH	Chkd By MH

ROAVR Group, Marr House
 Beechwood Business Park, Inverness, IV2 3BW
 www.roavr-group.co.uk
 support@roavr-group.co.uk
 01463 667302

General Notes
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 The original of this drawing was produced in colour; a monochrome copy should not be relied upon.
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Key

- Trees Showing Canopy extents, category colour and tag number (with category).
- Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years.
- Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
- 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.
- Category U Trees in such a condition that they can not realistically be retained as living trees in the context of the current land use for longer than 10 years.
- BS 5837:2012 Root Protection Area
- BS 5837:2012 Root Protection Area modified to reflect site conditions



Drawing Title
Tree Assessment Plan

Client
Vector Capital PLC

Site/Project
**34 Allum Lane, Elstree,
 Borehamwood, WD6 3NP**

Scale/Sheet 1:200 @ A1	Date 20/11/2023		
Drawing No 23_5837_09_16	Rev 2	Drawn By PH	Chkd By MH

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Key

- Trees Showing Canopy extents, category colour and tag number (with category).
- Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years.
- Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
- 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.
- Category U Trees in such a condition that they can not realistically be retained as living trees in the context of the current land use for longer than 10 years.
- BS 5837:2012 Root Protection Area
- BS 5837:2012 Root Protection Area modified to reflect site conditions
- Tree Protective Fencing
- Construction Exclusion Zone
- Ground Protection/ Restricted Activity Zone
- Trees for Removal

N
 1:200
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Drawing Title
Tree Protection Plan

Client
Vector Capital PLC

Site/Project
34 Allum Lane, Elstree, Borehamwood, WD6 3NP

Scale/Sheet
 1:200 @ A1

Date
 20/11/2023

Drawing No
 23_5837_09_16

Rev
 1

Drawn By
 PH

Chkd By
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