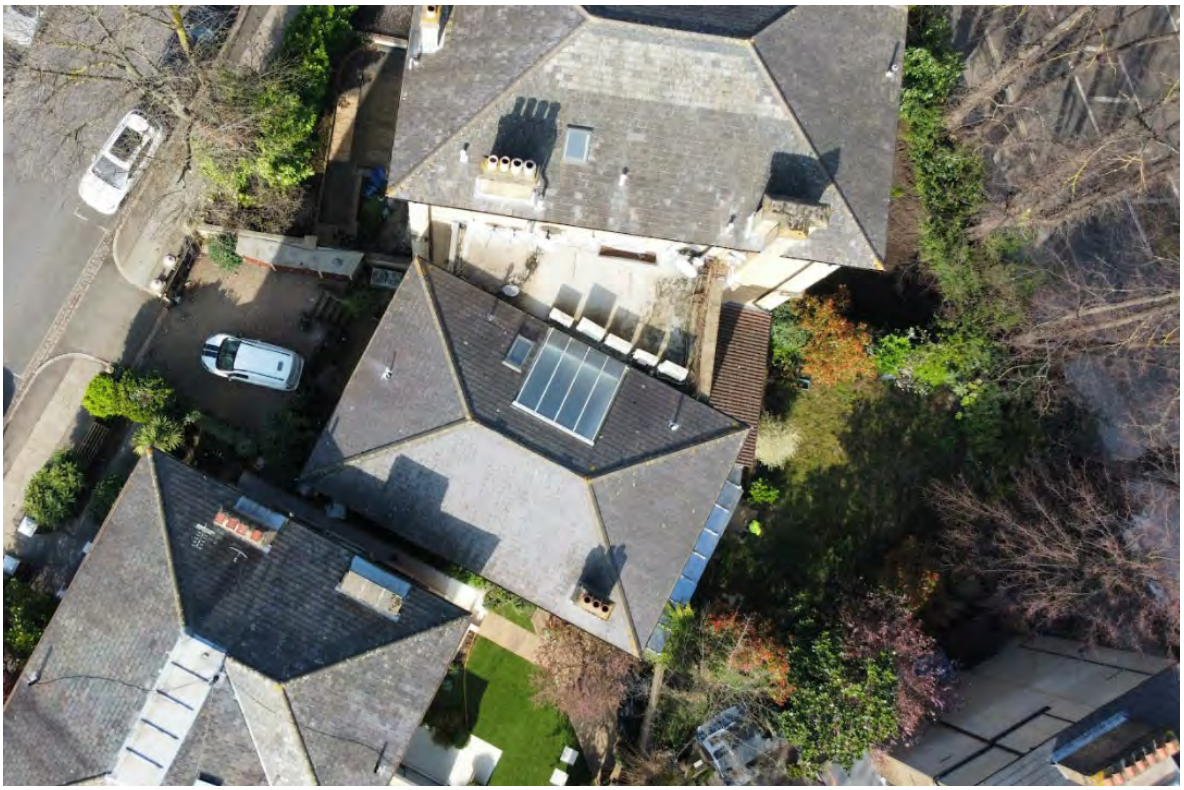
Project: 22_5837_03_37
Site: St John's Studio, Harley Road, London, NW3 3BY
Client: Vishal Jain



Document Title:	Tree Survey, Arboricultural Impact Assessment and Arboricultural Method Statement.
Document Author:	Alexander N Barnes - BSc Hons Arb, MArborA
Project Title:	St John's Studio, Harley Road, London, NW3 3BY

Revision History.

Date:	Version number:	Summary of changes:
31/03/2022	1.0	First Draft
31/03/2022	1.0	First Issue
18/10/2022	2.0	Second issue - Changes to sections 4.5 and 4.6.

Distribution.

Approved by:	Signature	Date:	Version:
Matt Harmsworth	MWH	31/03/2022	1.0
Vishal Jain	VJ	31/03/2022	1.0
Matt Harmsworth	MWH	18/10/2022	2.0
Vishal Jain	VJ	18/10/2022	2.0
			Peer reviewed Internally.

Re-Survey Date.

Survey Type:	Lifecycle:	Re-survey Date:
BS5837: 2012	Planning Only	N/A

FAO: Vishal Jain

eMail: vishal2004@gmail.com

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 St John's Studio, Harley Road, London, NW3 3BYl.

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 Environmental (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**

Table of contents:

Tree Survey & Arboricultural Impact Assessment to BS 5837 2012 of trees at: St John's Studio, Harley Road, London, NW3 3BY.

1 Scope

1.1 We have recently been instructed to undertake an appraisal of mature tree cover at St John's Studio, Harley Road, London, NW3 3BY .

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 22/03/2022 following the guidance in the British Standard by ROAVR. 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.St John's Studio, Harley Road, London, NW3 3BY

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 T1 and T2.

Photographic plate showing T6 and T7.

Photographic plate showing basal damage on T8.

Photographic plate showing basal damage on T6.

Photographic plate showing T3, T4, T5.

2. Site Conditions & Site Surroundings

2.1 The site is situated in London in the Camden Council control area. The site is located on the north side of the town and has an urban feel.

2.2 The site is home to a residential dwelling with associated hard and soft landscape.

2.3 The wider locality is predominantly residential housing. The site is accessed via a private drive off the adjacent public access road.

2.4 A desktop assessment has highlighted that site is within a Conservation Area but has failed to highlight whether there are any TPO protected trees on or adjacent to the plot

2.5 All desktop assessment data was cross checked and validated on the 31/03/2022 using the web portal provided by the local planning authority.

https://ssa.camden.gov.uk/connect/analyst/mobile/#/main?mapcfg=CamdenConservation&lang=en-gb

Image plate showing the desktop analysis results of the surveyed plot.

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.

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.

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.

3. Drawings

3.1 Appended to this report is a tree constraints plan, tree assessment plan and tree protection plan.

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 / 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 to be found in Section 5.

4. Arboricultural Impact Assessment - Site Specific

Tree Quality Statement.

The tree cover at St Johns studio consists of four onsite and six off site trees. The four onsite trees add only a small amount of amenity value to the site and surrounding area due to their poor condition. The off site trees surrounding the plot add good amenity and ecological value to the site and contribute well to the surrounding urban forest.

4.1 Description of The Proposed Development

4.1.1. The proposal retains and extends the existing house with extensions to the rear, front and roof as well as associated improvements to the fabric of the building to improve thermal performance. Some re-landscaping works are proposed to the front and rear gardens including changing existing non permeable paving to permeable paving in the existing driveway and entrance plus additional planting.

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

Trees Potentially Affected:

Tree or Tree Group	Impacts
T1	Proposed new driveway encroaches into the radial root protection area. See 4.5.1.
T10	Eastern corner of the proposed development slightly encroaches into the radial root protection area. See 4.5.2.

4.1.3. Section 5 specifies the measures proposed to minimise all possible potential risks of damage to the retained trees.

4.2. Tree Removal.

4.2.1. No trees to be removed to facilitate the proposed development.

4.3. Mitigation Planting.

4.3.1. No trees are to be removed to facilitate the proposed development therefore no mitigative planting is necessary.

4.4. Impact on Tree Canopies.

4.4.1. No pruning works are required to facilitate the proposed development.

4.5. Impact on Tree Roots.

4.5.1. The proposed new driveway encroaches into the radial root protection area of T1. It is proposed to remove the existing driveway to make way for the new driveway to be constructed using a no-dig method, incorporating a cellweb layer to ensure that there is no encroachment below ground level, avoid ground compaction and allow water to still flow through to the root systems and ensure that loads placed upon the ground are laterally dissipated rather than transferred to the soil and roots below. Cell web depth should be a minimum of 100mm to be able to withstand light vehicular traffic.

4.5.2 Eastern corner of the proposed development slightly encroaches into the radial root protection area of T10. This encroachment into the tree's root protection area is considered tolerable. However, it is proposed to utilise the existing foundations so as to not disturb any of the trees rooting area.

4.6. New Surfaces.

4.6.1. New hard surfaces are proposed within Root Protection Areas trees. See 4.5.1 and 4.5.2.

4.7. Underground Services.

4.7.1. No underground services are to be installed through any Root Protection Areas.

4.8 Changes in Ground Levels.

4.8.1 No changes in ground levels to be made by the proposed development.

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 the tree protection plan.

4.10 Demolition Activities.

4.10.1 The tree protection measures specified within the 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 proposal shall not result in increased pressure to remove or prune any of the retained trees.

4.15. Summary.

4.15.1. The proposal retains and extends the existing house with extensions to the rear, front and roof as well as associated improvements to the fabric of the building to improve thermal performance. Some re-landscaping works are proposed to the front and rear gardens including changing existing non permeable paving to permeable paving in the existing driveway and entrance plus additional planting. The trees retained within the site add little to no amenity value but are worth retaining for the overall ecological benefit of the site. The off site trees add good amenity and ecological value to the site and surrounding area and contribute well to the surrounding urban forest.

The radial root protection area of T10 is located just inside the proposed extension of the built footprint. It is proposed to make a conventional mass concrete footing in harmony with the retained mass strip footings of the main part of the existing building so no impact on tree roots are to be made in this area.

Document Title:	Arboricultural Method Statement
Document Author:	Alexander N Barnes - BSC Hons Arb, MArborA
Project Manager:	Matt Harmsworth
Project Title:	St John's Studio, Harley Road, London, NW3 3BY

Revision History.

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31/03/2022	1.0	First Draft
31/03/2022	1.0	First Issue
18/10/2022	2.0	Final issue

Distribution.

Approved by:	Signature	Date:	Version:
Matt Harmsworth	MWH	31/03/2022	1.0
Vishal Jain	VJ	31/03/2022	1.0
Matt Harmsworth	MWH	18/10/2022	2.0
Vishal Jain	VJ	18/10/2022	2.0
			Peer reviewed Internally.

5. Method Statement

Section A: Introduction and Overview

5.1. Definition of Terms

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

5.1.2. 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 line.

5.1.3. Construction Exclusion Zone (CEZ). These zones are created to protect roots and canopies form inadvertent damage by construction activity – see Section 9.6. -Construction Exclusion Zones. 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 hatched purple on the Tree Protection Plan.

5.1.4. 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.

5.2. Tree Protection Barriers - Overview

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

5.2.2. 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..

5.2.3. The tree protection plan also indicates where ground protection measures shall be installed / maintained as specified in sections 9.7 onwards (Restricted Activity Zones).

5.3. Planning Status

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

5.3.2. 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.

5.3.3. 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.

5.4. Overview of Protection Measures

5.4.1. Below is a list of potential arboricultural impacts and a summary of the proposed protection measures:

Tree no.	Protection Measures	Timeline
T3, T4, T5, T6, T7, T8, T9	Retain and protect with braced HERAS fencing.	Pre-start
T1, T10	Retain and protect with ground protection measures.	Pre-start

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

5.5. Timing of Operations

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

Order Phase Activity	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

Section B: Restrictions on Activities – Specific Zones

5.6. Construction Exclusion Zones

5.6.1. 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 8 - 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.

5.6.2. 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.

5.6.3. Any structures shall be removed manually and without mechanical excavation.

5.7. Restricted Activity Zone

5.7.1. Within these zones (indicated on the Tree Protection Plan) trees 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 9 – 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.

Section C: Restrictions on Activities – Throughout the Site

5.8. Canopy Protection

5.8.1. 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.

5.9. Site Hoarding

5.9.1. 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 - Hazardous Materials).

5.9.2. 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.

5.10. Fencing.

5.10.1. 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.

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

5.11. Demolition and Initial Ground Works

5.11.1. 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.

5.12. Underground Services

5.12.1. 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.

5.13. Lighting, Bollards, CCTV and associated Cables

5.13.1. 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.

5.14. Use of Heavy Plant

5.14.1. 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).

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

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

5.15. Scaffolding

5.15.1. 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.

5.15.2. 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.

5.16. Siting of Cabins and Storage of Materials

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

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

5.16.3. 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.

5.17. Pedestrian Paving

5.17.1. 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.

5.18. Hazardous Materials

5.18.1. 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.

5.18.2. 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.

5.19. Removal of Tree Protection Barriers

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

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

6. Site Inspection

6.1. Inspection Schedule

6.1.1. 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 who will provide the tree officer with a copy of inspection details.

Order Phase Activity	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	Construction works commence with regular ACoW visits
5th Phase	Post Construction Phase	ACoW visit to supervise removal of protection measures and final site sign off.

ROAVR ENVIRONMENTAL

ROAVR Group
Ground Floor Office
Suite The Harbour Office
Longman Drive
INVERNESS, IV1 1SU
Tel: (01463) 223753
E-mail: environmental@roavr.co.uk

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:	T

Example ACoW sheet.

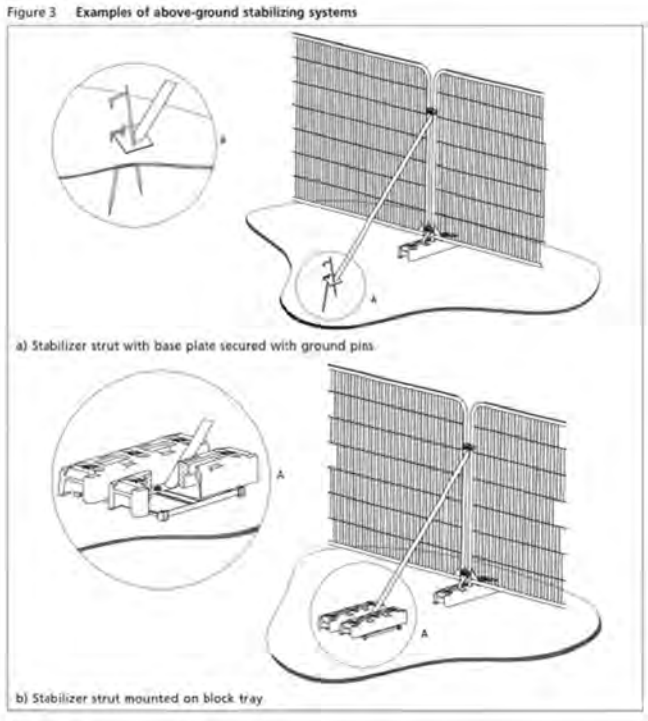
7. Tree Works Schedule

7.1. No tree works are required to facilitate the proposed development.

8. Tree Protection Barriers Detailed Specification

8.1.1. 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.



8.1.2. 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.

9. Ground Protection Measures Detailed Specification

9.1.1. Where indicated on the Tree Protection Plan (Restricted Activity Zone A), 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.

9.1.2. 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.

9.1.3. 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.

9.1.4. 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 150m of compressible woodchip will need to be installed first to help spread the load. Sturdier systems are specified below:

9.1.5. 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™).

9.1.6. 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.

9.1.7. 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.

9.1.8. 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.

10. New Surfaces Detailed Specification

10.1. Resurfacing an Existing Hard Surface

10.1.1. If it is 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 in Section 9 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 driveway.

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

10.1.2. 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.

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.

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.

11. Limitations

11.1 ROAVR Environmental 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.

11.2 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.

11.3 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.

Mr Alexander Barnes BSC Hons Arb, MArborA
Consultant arborist

Alexander Barnes

Prepared by: Alexander Barnes
Checked by: Peter Haine 18/10/2022

Appendix 1 – Site Location

Appendix 2 – Arboricultural Data Tables

Appendix 3 – Arboricultural Plans

Tree ID	Tag Number	TPO No	In Conservation Area	Tree Type	Common Name	Latin Name	Maturity	Likely Bat Habitat	Measurements Estimated	Height (m)	Height and direction of first significant branch (m)	Number of Stems	Diameter at Breast Height	Spread - N (m)	Spread - E (m)	Spread - S (m)	Spread - W (m)	Canopy Height (m)	Crown Condition	Stem Condition	Basal Condition	Category	Life Expectancy	Subcategories	Phys Condition	Management Recommendation 1	Management Action 1	Comment
T1	/	/	Yes	Ash	Common Ash	Fraxinus excelsior	Mature	N/A	Yes	14	S-4	1	550	5	5	5	5	6	Good	Good	Fair	B	20 to 40 yrs	1 Arboricultural Values;2 Landscape Values	Good	/	/	Mechanical damage, off site, within hard surface area, been pollarded in the past.
T2	/	/	Yes	Lime	Common Lime	Tilia europaea	Mature	N/A	Yes	16	N-2	1	710	4	4	4	4	3	Good	Good	Fair	B	20 to 40 yrs	1 Arboricultural Values;2 Landscape Values	Good	/	/	Stem divides above 1.5 metres, off site, branches encroaching building.
T3	/	/	Yes	Lime	Common Lime	Tilia europaea	Mature	N/A	Yes	14	NE-2	1	500	3	3	3	3	5	Good	Good	Fair	B	20 to 40 yrs	1 Arboricultural Values;2 Landscape Values	Good	/	/	Stem divides above 1.5 metres, off site, branches encroaching building.
T4	/	/	Yes	Lime	Common Lime	Tilia europaea	Mature	N/A	Yes	15	NE-3	1	550	4	3	4	3	5	Good	Good	Fair	B	20 to 40 yrs	1 Arboricultural Values;2 Landscape Values	Good	/	/	Stem divides above 1.5 metres, off site.
T5	/	/	Yes	Lime	Common Lime	Tilia europaea	Mature	N/A	No	15	N-2	1	610	4	4	4	4	3	Good	Good	Fair	B	20 to 40 yrs	1 Arboricultural Values;2 Landscape Values	Good	/	/	Stem divides above 1.5 metres, off site.
T6	/	/	Yes	Lime	Common Lime	Tilia europaea	Mature	N/A	No	16	S-2	1	630	5	5	5	3	3	Good	Fair	Fair	C	10 to 20 yrs	1 Arboricultural Values;2 Landscape Values	Fair	/	/	Stem divides above 1.5 metres, major bark wounding at base, mechanical damage, crown mass east.
T7	/	/	Yes	Lime	Common Lime	Tilia europaea	Mature	N/A	No	11	S-2	1	450	2	3	3	3	2	Good	Fair	Fair	C	10 to 20 yrs	1 Arboricultural Values;2 Landscape Values	Fair	/	/	Stem divides above 1.5 metres, major bark wounding (370 mm high) mechanical damage, crown mass south,
T8	/	/	Yes	Prunus	Plum	Prunus Domestica	Young	N/A	No	4	E-2	1	125	2	2	2	2	3	Good	Fair	Fair	C	10 to 20 yrs	2 Landscape Values	Fair	/	/	/
T9	/	/	Yes	Prunus	Cherry Laurel	Prunus lauroceraus	Young	N/A	No	5	W-1	1	140	2	2	2	2	1	Good	Fair	Fair	C	10 to 20 yrs	2 Landscape Values	Fair	/	/	/
T10	/	/	Yes	Lime	Common Lime	Tilia europaea	Mature	N/A	Yes	8	W-3	1	580	2	2	2	2	6	Good	Good	Fair	B	20 to 40 yrs	1 Arboricultural Values;2 Landscape Values	Good	/	/	Stem divides above 1.5 metres, off site, pollarded.

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	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 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	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 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

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Tree Constraints Plan

Vishal Jain	St Johns Studio

SCALE : 1 : 200 @ A4	DATE : 18/10/2022	N
MAP FILENAME : 22_5837_03_37_TCP_v2	Version: v2 / Checked by: MH	

The Greenhouse, Beechwood Business Park (North), Inverness, IV2 3BL
Support@roavr-group.co.uk - www.roavr-environmental.co.uk
Tel: 01463 667302

Crown Spread
Root Protection Area
Category 'A'
Category 'B'
Category 'C'
Category 'U'

0 20m

T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
HARLEY ROAD

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Tree Assessment Plan

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SCALE : 1 : 200 @ A4	DATE : 18/10/2022	N
MAP FILENAME : 22_5837_03_37_TAP_v2	Version: v2	Checked by: MH

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Tel: 01463 667302

Crown Spread
Root Protection Area
Category 'A'
Category 'B'
Category 'C'
Category 'U'

T1
T2
T3
T4
T5
T6
T7
T8
T9
T10

HARLEY ROAD

proposed build footprint

ROAVR ENVIRONMENTAL

Tree Protection Plan

Vishal Jain	**St Johns Studio**

SCALE : 1 : 200 @ A4	DATE : 18/10/2022	N
MAP FILENAME : 22_5837_03_37_TPP_v2	Version: v2	Checked by: MH

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Tel: 01463 667302

Crown Spread
Root Protection Area
Category 'A'
Category 'B'
Category 'C'
Category 'U'

Order Phase Activity	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

Tree no.	Protection Measures	Timeline
T3, T4, T5, T6, T7, T8, T9	Retain and protect with braced HERAS fencing.	Pre-start
T1, T10	Retain and protect with ground protection measures.	Pre-start

proposed build footprint
Construction Exclusion Zone
Restricted Activity Zone
Braced HERAS Fencing

T1
T2
T3
T4
T5
T6
T7
T8
T9
T10
HARLEY ROAD