Project: 21_5837_09_44
Site: 71 Hands Road, Heanor, DE75 7HB
Client: Catherine Shipham



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Document Title:	Tree Survey & Arboricultural Impact Assessment
Document Author:	Matthew Harmsworth FDsc arb, dip rs, tech.arbor.a
Project Title:	71 Hands Road, Heanor, DE75 7HB

Revision History.

Date:	Version number:	Summary of changes:
18/10/2021	1.0	First Draft
18/10/2021	1.0	First Issue
6/12/2021	2.0	Second Issue - updated with foundation design proposals.

Distribution.

Approved by:	Signature	Date:	Version:
Matt Harmsworth	MH	6/12/2021	2.0
Catherine Shipham	CS	6/12/2021	2.0

Re-Survey Date.

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

Report no: 21_5837_09_44

Date: 6th December 2021

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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 71 Hands Road, Heanor, DE75 7HB.

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 8 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.

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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**

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Tree Survey & Arboricultural Impact Assessment to BS 5837 2012 of trees at: 71 Hands Road, Heanor, DE75 7HB

1 Scope

1.1 We have recently been instructed to undertake an appraisal of mature tree cover at 71 Hands Road, Heanor, DE75 7HB.

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 in October 2021 following the guidance in the British Standard by Connor Harmsworth. The crowns and stems were inspected from the ground using the 'Visual Tree Assessment (VTA)' method; non-invasive techniques were used at this stage. Although a sounding hammer was used to determine the presence of any decay.

1.5 The site was assessed and data was collected on 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.

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Photographic Plates.



Photographic plate showing rear garden tree cover - note forest growth form and mechanical damage to stems, most likely construction damage.

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Photographic plate showing tree T1 (left of frame) and trees T7-T10 right of frame.

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Photographic plate showing T1 and also offsite tree cover. Note hard surfacing within RPA.

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Photographic plate showing rear garden tree cover - note forest growth form and mechanical damage to stems, most likely construction damage.

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2. Site Conditions & Site Surroundings

2.1 The site is situated in Heanor in the Amber Valley Borough Council control area. The site is located within a new build development.

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

2.3 The wider locality is predominantly residential The site is accessed via a cul-de-sac that joins Hands Road to the south of the footprint.

2.4 A desktop assessment has failed to highlight if the site is within a Conservation Area or if there are any TPO protected trees on or adjacent to the plot. A request has been sent to the LPA for clarification.

2.5 All desktop assessment data was cross checked and validated on the 18/10/2021 using the web portal provided by the local planning authority.

https://www.ambervalley.gov.uk/planning/development-management/tree-preservation-orders/

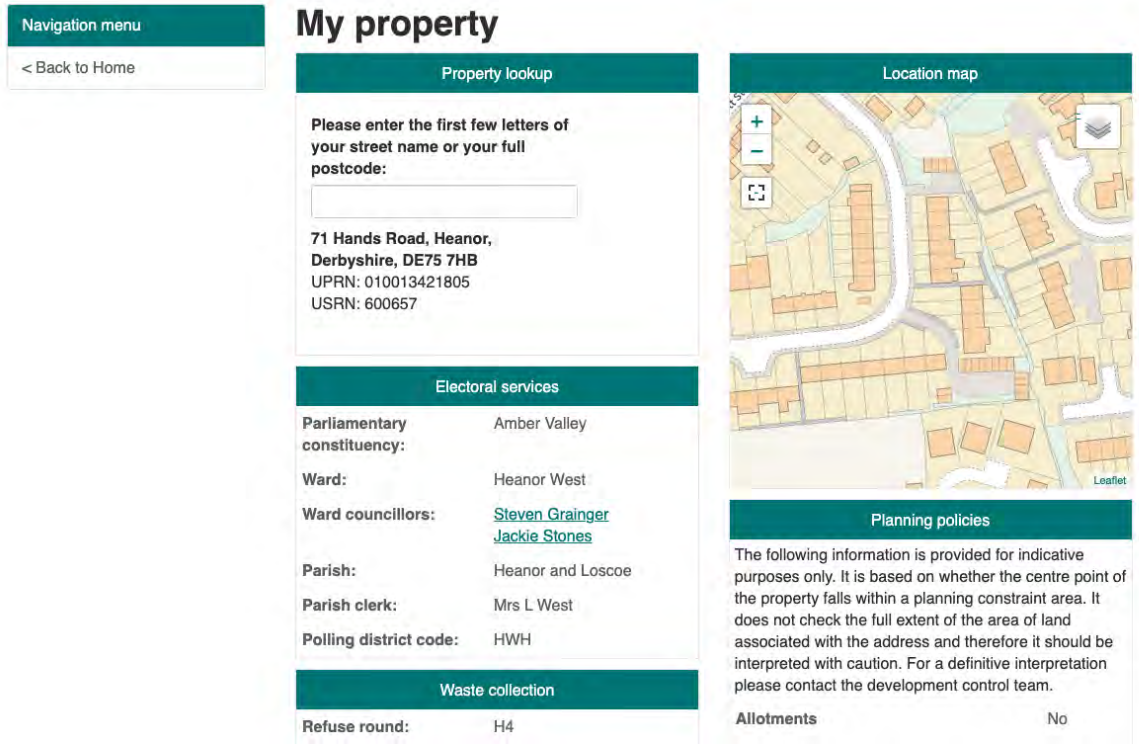

Image plate showing the desktop analysis results of the surveyed plot.

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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.

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3. Drawings

3.1 Appended to this report is a tree constraints plan and a tree assessment 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* indicates the tree constraints with the proposals overlaid. Where applicable, this plan shows where works are proposed in Root Protection Areas and which trees are to be pruned or removed. This plan accompanies the Impact Assessment which is to be found in Section 8.

3.7 The *Tree Protection Plan (if applicable)* shows the protection measures that are to be installed during the construction phase. This plan accompanies the Method Statement which is to be found in Section 9.

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4. The Tree Population

4.1 BS5837: 2012 Tree Categorisation:

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

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

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

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

U Category Trees in such a condition that any existing value would be lost within 10 years and which should, in the current context, be removed for reasons of sound arboricultural or forestry management.

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

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

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

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

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

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4.6 The survey contains details of a number of trees. The comments including species, age, condition and the BS5837:2012 retention category for each individual tree and group of trees are provided in detail in the Tree Schedule (data tables). The full data collection methodology is appended behind the data tables.

4.7 The location of each individual tree and their associated constraints are illustrated on the appended Tree Constraints Plan.

Preliminary Management Recommendations - Regardless of the proposals.

4.8 The properties within this cul-de-sac appear to have been completed around 2015. Looking at trees on and adjacent to the site it is my opinion that a number of the trees were damaged during the construction phase.

Future Management Recommendations - Regardless of the proposals.

4.9 It is my opinion that a number of trees have suffered construction damage as evidenced by their forest growth form (indicating the removal of peers), damage to the stems (from felling adjacent trees or digger 'rash), and through the lack of basal flares (indicating the ground level has been raised). As such I would suggest all the trees on and adjacent to the site have a reduced useful life expectancy and should be monitored closely.

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5. Trees & Construction - General Issues

5.1 This report has been prepared to inform the design layout of potential development and should be submitted with a planning application.

5.2 Due to the changing nature of trees and other site circumstances this report and recommendations are limited to a one year period. Similarly, this report could be invalidated if any alterations are made to the site that could change the conditions as seen at the time of inspection.

5.3 Under certain circumstances, roots can affect foundations, drains and other underground services. These issues have not been addressed by this report. Trees are dynamic structures that can never be guaranteed 100% safe; even those in good condition can suffer occasional damage under only average weather conditions. A lack of recommended work does not imply that a tree will never suffer damage.

5.4 Typically, about 80% of roots will be found in the upper 500mm of soil and often extending well beyond the canopy spread. The threat to the trees by development comes from:

A. root severance or fracture
B. compaction of the soil, preventing gaseous exchange and moisture percolation
C. possible change to moisture gradients due to surface water run-off or interception
D. physical damage to low branches and trunk.
E. damage from chemical run-off from construction activities

The consequences for the tree of such damage are:

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

5.5 Within a short distance of the stem, the roots of trees are highly branched, so as to form a network of small-diameter woody roots, which can extend radially for a distance much greater than the height of the tree, except where impeded by unfavourable conditions.

5.6 All parts of this system bear a mass of fine, non-woody absorptive roots, typically concentrated within the uppermost 600mm of the soil. The root system tends to develop sufficient volume and area to provide physical stability.

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5.7 The uptake of water and mineral nutrients by the root system takes place via the fine non-woody roots and associated beneficial fungi. Their survival and functioning, which are essential for the health of the tree as a whole, depend on the maintenance of favourable soil conditions. All parts of the root system, but especially the fine roots, are vulnerable to damage.

5.8 BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations' gives information on determining a root protection area (RPA). This is the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.

5.9 The default position should be that structures (section 3.10 of BS5837) are located outside the RPAs of trees to be retained. However, If structures (including hard surfacing) are proposed within the root protection area of a retained tree it will require an overriding justification (5.3.1 of BS5837). The project arboriculturist needs to demonstrate that the trees can remain viable, the area lost to encroachment can be compensated for elsewhere contiguous with the RPA and mitigation measures to improve the soil environment of the tree can be implemented.

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6. Tree Constraints - Information

6.1 Constraints imposed by trees during development, both above and below ground need to be considered within the site layout design. Protection is afforded to the tree by defining a Root Protection Area (RPA) within which no development activity should take place. The size of the RPA is defined in the British Standard and relates to trunk diameter. The RPA is normally the minimum position for placement of tree protective fencing. The data tables hold a column figure as an offset in meters from the stem that the root protection area extends to.

6.2 Nominally the RPA is represented by a circle around the tree. The area of the RPA may however, subject to the consideration of the arboricultural consultant, and be altered to a polygon in order to reflect the site conditions and requirements. For example, existing hard surfaces and foundations are likely to restrict or limit root growth while good quality soil may promote and extend root growth.

6.3 Root Protection Areas primarily relate to below ground constraints (root protection). Other constraints that must be considered include:

- The current as well as ultimate height and spread of a tree
- Large trees close to a building, particularly a dwelling, can cause apprehension to owners/occupiers that result in pressure for tree removal or inappropriate pruning.
- Buildings should be sited allowing for the species height, spread and overall habit
- Species characteristics; i.e. density of foliage, fruit-fall, susceptibility to honeydew drip, or branch drop. Trees are shedding organisms. The leaves of some species may cause problems with blocking of gullies and gutters. Fruit may cause slippery patches and honeydew drop can affect surfaces (particularly cars). If conflicts may arise, detailed design may address such issues, such as non-slip paths, use of car-ports, provision of leaf guards or grilles etc.
- The potential impact on direct and diffuse light of a particular location of land; shading of buildings by trees can be a problem, especially where rooms require natural light, in addition open spaces such as gardens and sitting areas should be designed to meet requirements for direct sunlight (for at least part of the day)
- Infrastructure requirements in relation to trees e.g. easements for underground or above ground apparatus and visibility splays
- Space for the provision of new planting or landscaping
- The proposed end use of space within Root Protection Areas
- The requirement to protect overhanging canopies of trees that overhang or extend beyond Root Protection Areas

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7. Structures within the RPA of trees - Information

7.1 In the development layout design structures should be positioned outside of RPAs as far as practicable(5.9). In some exceptional instances there may be an overriding justification for construction within the RPA. In such cases technical solutions may be available to minimise to an acceptable level of disturbance to the tree or trees. Where such technical solutions may be relied upon full details will need to be included within a method statement. Advice must be sought from a suitably qualified arboriculturalist to develop a solution.

7.2 In some cases it may be unavoidable to place permanent hard surfacing within an RPA (for example the placement of an access driveway or parking area). In such cases the following should apply:

- No excavation of the soil should take place, other than scraping of the turf/ vegetation layer
- Any design must avoid compaction, allowing an even distribution of weight
- New hard surfacing should not exceed 20% of any existing unsurfaced ground within the RPA
  If the proposed surface is is likely to require de-icing salt then run-off should be directed away from the RPA
- Permeable hard surfacing can result in soil moisture saturation for long periods (resulting in root death). Where there is a risk of water-logging a design should incorporate land drainage

7.3 Appropriate sub-base options for new hard surfacing include three-dimensional cellular confinement systems (cell-web). Piles, pads or elevated beams can support bridges over RPAs. In all cases full specifications and methodology must be included within a supporting method statement.

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8. Arboricultural Impact Assessment - Site Specific

Tree Quality Statement.

The tree cover at the site is limited to a number of remnant individuals of the previous land use. They provide limited amenity and landscape value and most show evidence of construction damage.

8.1 Description of The Proposed Development

8.1.1. It is proposed to construct a new single garage adjacent to the existing built footprint. The area has been extensively disturved through the construction of the existing building and there is a block paved surface present.

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

Trees Potentially Affected:

Tree or Tree Group	Impacts
Tree T1	Is in direct conflict with the garage proposal. Special above ground foundations are required to respect and protect the RPA
Trees T2-T6	Located offsite, predominantly a feature of conifer hedging, unaffected by the proposals but may require access for side pruning in the future.
Trees T7-T13	Unaffected by the project.

8.1.6. Section 9 specifies the measures proposed to minimise all possible potential risks of damage to the retained trees.

8.2. Tree Removal.

8.2.1. No tree removals are proposed

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

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8.4. Impact on Tree Canopies.

8.4.1. Offsite trees will sit close to the proposed garage, however they are not of particularly high quality being mainly leyland cypress. These trees can be side pruned and maintained as a hedge or I suspect may require removal in the future due to the inappropriate planting between a fence and the offsite sheds.

8.5. Impact on Tree Roots.

8.5.1. It is likely that rootmass from T1 sits in the area proposed for the garage footprint. This could only be confirmed through lifting the block paviors and investigating with an air spade. A precautionary approach has been adopted on our advice utilising an above ground construction.

8.6. New Surfaces.

8.6.1. No new hard surfaces are proposed within the Root Protection Areas of any trees.

8.7. Underground Services.

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

8.8 Changes in Ground Levels.

8.8.1 No ground level changes are proposed that would affect the retained trees.

8.9 Soil Compaction.

8.9.1 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.

8.9.2. 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.

8.9.3 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.

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8.10 Demolition Activities.

8.10.1 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.

8.11. Hazardous Materials.

8.11.1 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.

8.12. Cabins and Site Facilities.

8.12.1. 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.

8.13. Boundary Treatments.

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

8.14. Impact of Retained Trees on the Development.

8.14.1. 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.

8.15. Summary.

8.15.1. The project involves the construction of a single storey garage adjacent to the existing footprint. The arboricultural impacts are limited to the change of use from the existing drive to a garage. With careful supervision a net improvement can be gained in the soil mediu below the proposed which may have a beneficial effect to T1.

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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 on privately owned third parties are surveyed from the best available vantage point and observations relating to the condition of these trees should be treated accordingly. All height measurements should be regarded as approximate.

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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.

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Document Title:	Arboricultural Method Statement

Revision History.

Date:	Version number:	Summary of changes:
19/10/2021	1.0	First Draft
6/12/2021	2.0	Second Issue - move to tree retention of T1.

9. Method Statement

Section A: Introduction and Overview

9.1. Definition of Terms

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

9.1.2. 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 pink line.

9.1.3. Construction Exclusion Zone (CEZ). These zones are created to protect roots and canopies from 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.

9.1.4. 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.

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9.2. Tree Protection Barriers - Overview

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

9.2.2. 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..

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

9.3. Planning Status

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

9.3.2. 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.

9.3.3. 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.

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9.4. Overview of Protection Measures

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

Tree no.	**Protection Measures**	**Timeline**
T7-T10	Retain and protect with HERAS fencing	Pre-start
All other trees	Separated from the development area and unaffected	N/A
T1	Ground protection boarding and special construction measures	Pre-start and construction phase

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

9.5. Timing of Operations

9.5.1. 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

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Section B: Restrictions on Activities – Specific Zones

9.6. Construction Exclusion Zones

9.6.1. 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 -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.

9.6.2. 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.

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

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9.7. Restricted Activity Zone A

9.7.1. Within these zones (indicated 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 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

9.9. Canopy Protection

9.9.1. 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.

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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.

9.10. Site Hoarding

9.10.1. 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).

9.10.2. 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.

9.11. Fencing.

9.11.1. 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

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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.

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

9.12. Demolition and Initial Ground Works

9.12.1. 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.

9.13. Underground Services

9.13.1. 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.

9.14. Lighting, Bollards, CCTV and associated Cables

9.14.1. 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.

9.15. Use of Heavy Plant

9.15.1. 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).

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

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

9.16. Scaffolding

9.16.1. 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.

9.16.2. 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.

9.17. Siting of Cabins and Storage of Materials

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

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

9.17.3. 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.

9.18. Pedestrian Paving

9.18.1. 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.

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9.19. Hazardous Materials

9.19.1. 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.

9.19.2. 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.

9.20. Removal of Tree Protection Barriers

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

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

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10. Site Inspection

10.1. Inspection Schedule

10.1.1. 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	ACoW visit to supervise any works within the RPA.
5th Phase	Post Construction Phase	ACoW visit to supervise removal of protection measures and final site sign off.

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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.

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11. Tree Works Schedule

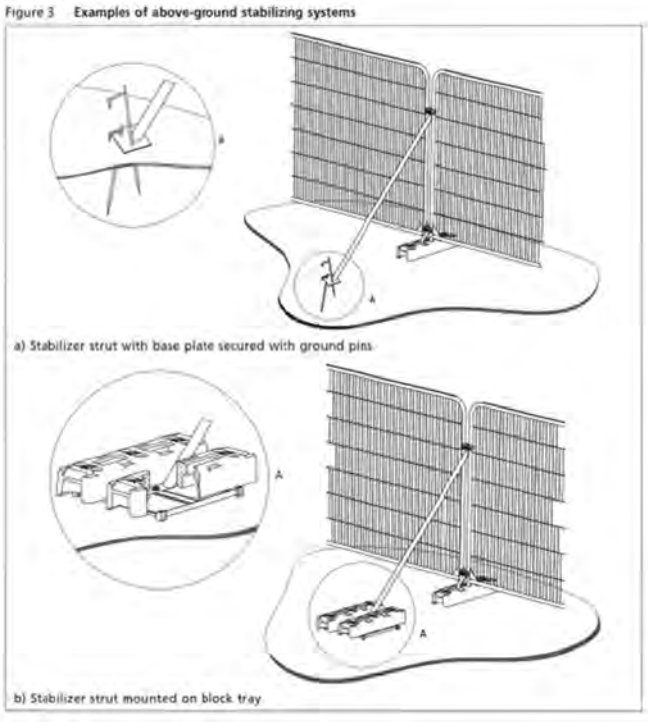
11.1. Tree Works Specification

No tree works are required to facilitate the project.

12. Tree Protection Barriers Detailed Specification

12.1.1. 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.



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12.1.2. 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.

13. Ground Protection Measures Detailed Specification

13.1.1. 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.

13.1.2. 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.

13.1.3. 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

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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.

13.1.4. 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:

13.1.5. 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™).

13.1.6. 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.

13.1.7. 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.

13.1.8. 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.

14. New Surfaces Detailed Specification

14.1. Resurfacing an Existing Hard Surface

14.1.1. 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.

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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.

14.1.2. 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:

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A1.1 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 climbed inspection or using specialist decay detection equipment.

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

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

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

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Where this is not practical measurements are estimated.

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

Appendix: 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

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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

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www.roavr-environemntal.co.uk - UK wide consultancy

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

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

Mr. M Harmsworth tech.arbor.a, DipRS
Consultant Arborist

Matt Harmsworth

Prepared by: Matt Harmsworth
Checked by: Peter Haine

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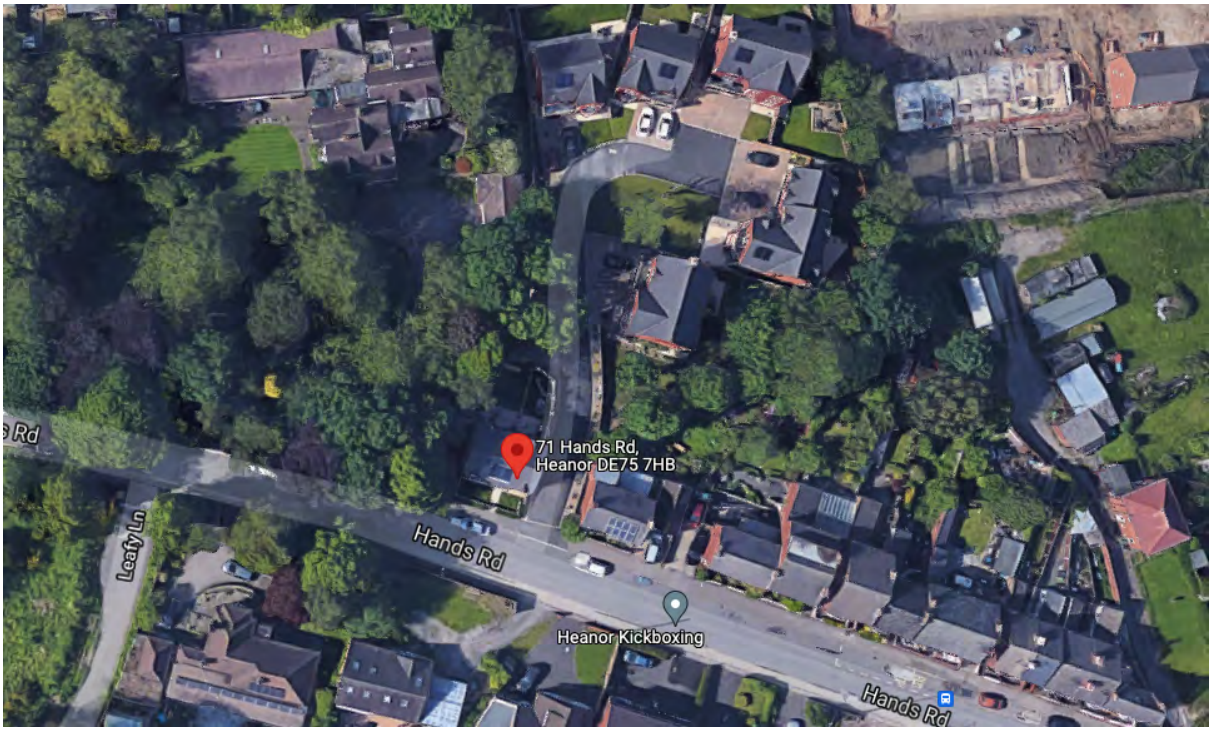
Appendix 1 – Site Location





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Appendix 2 – Arboricultural Data Tables

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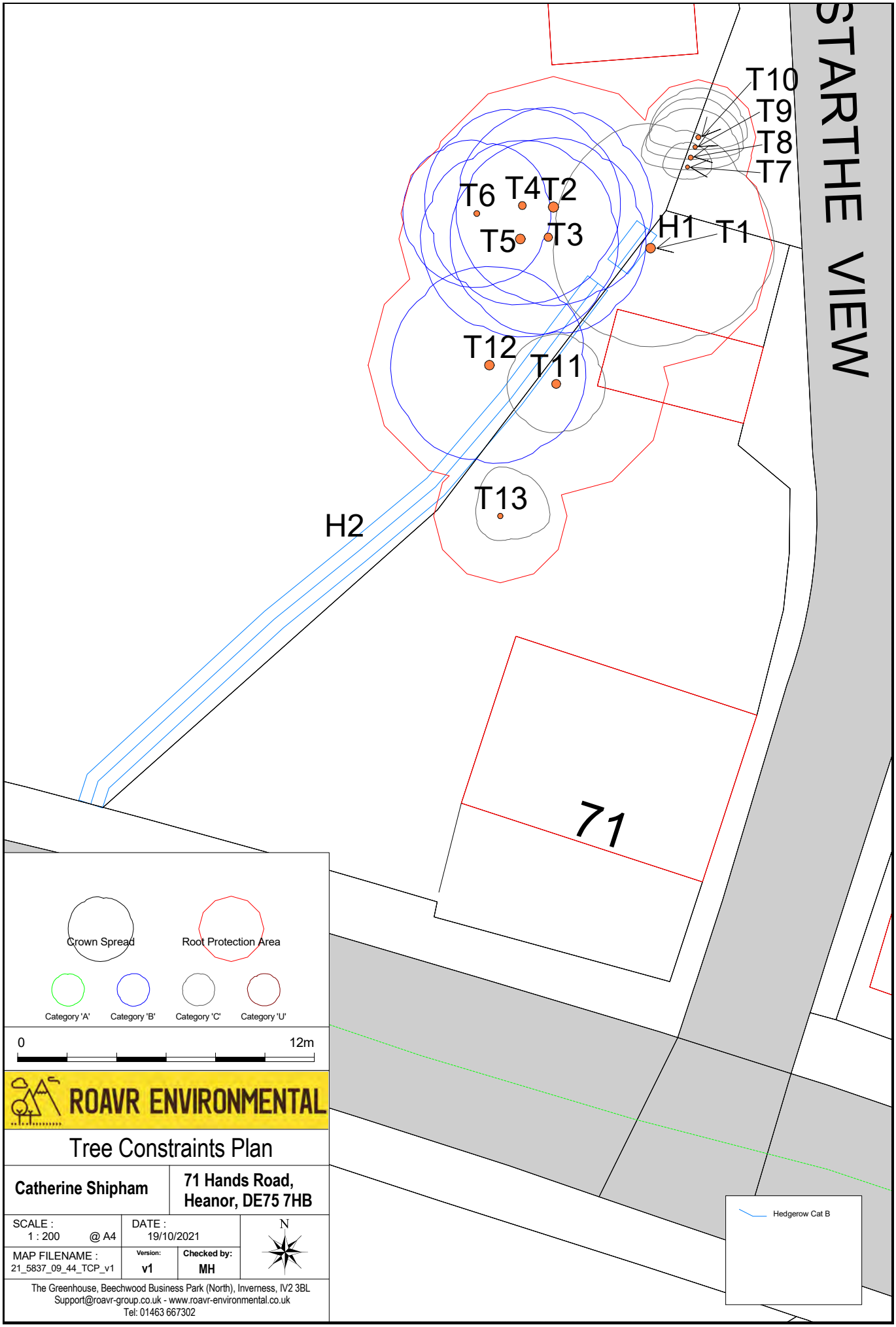
Tree ID	Tree Type	Common Name	Latin Name	Maturity	Measurements Estimated	Height (m)	Height and direction of first significant branch (m)	Number of Stems	Diameter at Breast Height	Stem 2 (mm)	Spread - N (m)	Spread - E (m)	Spread - S (m)	Spread - W (m)	Canopy Height (m)	Crown Condition	Stem Condition	Basal Condition	Category	Life Expectancy	Subcategories	Phys Condition	Comment
T1	Maple	Sycamore	Acer pseudoplatanus	Mature	No	10.6	N-3	1	402	-	5	5	4	4	3	Fair	Fair	Fair	C	10 to 20 yrs	2 Landscape Values;1 Arboricultural Values	Fair	Mechanical damage, starting to lean north, within hard surface area; hard standing all around base; possible construction damage; down graded accordingly.
T2	Maple	Sycamore	Acer pseudoplatanus	Mature	Yes	10	N-3	1	430	-	4	4	4	4	3	Good	Good	Fair	B	20 to 40 yrs	2 Landscape Values;1 Arboricultural Values	Good	Mechanical damage, off site, building site.
T3	Maple	Sycamore	Acer pseudoplatanus	Mature	Yes	10	N-3	1	350	-	4	4	4	4	3	Good	Good	Fair	B	20 to 40 yrs	2 Landscape Values;1 Arboricultural Values	Good	Mechanical damage, off site, building site.
T4	Maple	Sycamore	Acer pseudoplatanus	Mature	Yes	10	N-3	1	330	-	4	4	4	4	3	Good	Good	Fair	B	20 to 40 yrs	2 Landscape Values;1 Arboricultural Values	Good	Mechanical damage, off site, building site.
T5	Maple	Sycamore	Acer pseudoplatanus	Mature	Yes	10	N-3	1	400	-	4	4	4	4	3	Good	Good	Fair	B	20 to 40 yrs	2 Landscape Values;1 Arboricultural Values	Good	Mechanical damage, off site, building site, stem divides above 1.5 meters.
T6	Birch	Silver Birch	Betula pendula	Mature	Yes	9	S-1	2	250	280	3	3	3	3	4	Fair	Good	Fair	B	20 to 40 yrs	2 Landscape Values;1 Arboricultural Values	Fair	Thin crown, stem divides at base, unable to inspect due to off site.
T7	Leyland Cypress	Leyland Cypress	X Cupressocyparis leylandii	Semi-mature	No	5	E-2	1	155	-	1	1	0.5	1	1.5	Fair	Fair	Fair	C	10 to 20 yrs	2 Landscape Values	Fair	4 conifer trees acting as a screen, mechanical damage.
T8	Leyland Cypress	Leyland Cypress	X Cupressocyparis leylandii	Semi-mature	No	6	E-2	1	200	-	2	2	0.5	2	1.5	Fair	Fair	Fair	C	10 to 20 yrs	2 Landscape Values	Fair	4 conifer trees acting as a screen, mechanical damage, within hard surface area.
T9	Leyland Cypress	Leyland Cypress	X Cupressocyparis leylandii	Semi-mature	No	6	E-2	1	180	-	2	2	0.5	2	1.5	Fair	Fair	Fair	C	10 to 20 yrs	2 Landscape Values	Fair	4 conifer trees acting as a screen, mechanical damage, within hard surface area.
T10	Leyland Cypress	Leyland Cypress	X Cupressocyparis leylandii	Semi-mature	No	6	E-2	1	190	-	2	2	0.5	2	1.5	Fair	Fair	Fair	C	10 to 20 yrs	2 Landscape Values	Fair	4 conifer trees acting as a screen, mechanical damage, within hard surface area.
T11	Hornbeam	Common Hornbeam	Carpinus betulus	Mature	No	10	N-2	1	370	-	2	2	2	2	4	Good	Fair	Fair	C	10 to 20 yrs	2 Landscape Values;1 Arboricultural Values	Fair	Bark wounding on stem, within hard standing, stem divides above 1.5 meters; construction damage noted.
T12	Maple	Sycamore	Acer pseudoplatanus	Mature	Yes	10	N-3	1	400	-	4	4	4	4	3	Good	Good	Fair	B	20 to 40 yrs	2 Landscape Values;1 Arboricultural Values	Fair	Mechanical damage, off site, building site, stem divides above 1.5 meters.
T13	Birch	Silver Birch	Betula pendula	Mature	No	9	N-4	1	220	-	2	2	1	1	3	Fair	Good	Fair	C	10 to 20 yrs	2 Landscape Values;1 Arboricultural Values	Fair	Thin crown, in hard standing area; construction damage noted.
H1	Leyland cypress	Cypress	x Cuprocyparis leylandii	Young	Yes	3	-	-	-	-	As drawn				-	Good	Good	Fair	B	20 to 40 yrs	2 Landscape Values	Good	Off site, under 75mm.
H2	Cherry species	Cherry	Prunus sp.	Young	Yes	3	-	-	-	-	As drawn				-	Good	Good	Good	B	20 to 40 yrs	2 Landscape Values	Good	Off site hedge row, cherry Laurel.

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 meters.
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 trees 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	Goof, 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	Goof, 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.



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Tree Constraints Plan

Catherine Shipham	**71 Hands Road, Heanor, DE75 7HB**

SCALE : 1 : 200 @ A4	DATE : 19/10/2021	N
MAP FILENAME : 21_5837_09_44_TCP_v1	Version: **v1**	Checked by: **MH**

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HERAS Tree protection fencing

T10
T9
T8
T7
T6
T4
T2
T5
T3
T1
T12
T11
T13
H2

Proposed Garage

71

STARTHE VIEW

Sequence of Works:

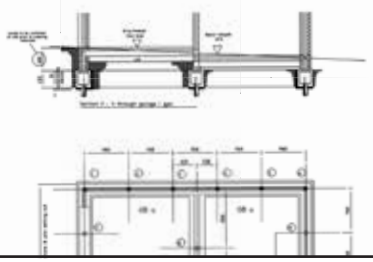
To be read with appended AMS.

1) Place ground protection boarding
2) Erect HERAS fencing on blue line to protect trees T7-T10
3) Construction Phase
4) ACoW sign off
5) Remove HERAS fencing

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

0 12m

Design detail for no dig garage base.



Hedgerow Cat B

ROAVR ENVIRONMENTAL

Tree Protection Plan

Catherine Shipham	71 Hands Road, Heanor, DE75 7HB

SCALE : 1 : 200 @ A4	DATE : 19/10/2021	North
MAP FILENAME : 21_5837_09_44_TCP_v1	Version: v1	Checked by: MH

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