

Arboricultural Report

Impact Assessment, Method Statement & Tree Planting Scheme



For planning purposes at

**Warren Court
Harefield Drive
Heywood
OL10 1RN**



Dated
17th March 2023



CROWN
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Arboricultural Report to BS 5837: 2012 for: Ben Snape

Crown Ref: 09318C

Site: Warren Court, Harefield Drive, OL10 1RN

Author: Joe Taylor

Date: 17th March 2023

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1. Introduction

1.1. Instruction

- 1.1.1. We are instructed by Ben Snape to undertake an Arboricultural Survey at Warren Court and produce our findings in a report. We are also instructed to assess the likely impact of development proposals, produce a Method Statement detailing how trees shall be protected from the proposed construction activity and a tree planting scheme to mitigate against proposed tree removal.

1.2. This report Scope and Purpose of the Report

- 1.2.1. This report is designed to accompany a planning application (part retrospective) for development proposals at the above site. Its purpose is to assist and inform the planning process. It is produced according to the guidance and recommendations within BS 5837: 2012 - *Trees in Relation to Design, Demolition and Construction*.
- 1.2.2. The Method Statement should be viewed as a *Heads of Terms* Method Statement which specifies the general principles to be adopted during construction and demolition. However, specific construction activities proposed within Root Protection Areas may need to be agreed in more detail if requested by the local authority at the reserved matters stage.

1.3. Drawings

- 1.3.1. The tree locations shown on the accompanying plans which are reproduced in Appendix 6 have been plotted according to measurements taken on site.
- 1.3.2. 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).
- 1.3.3. 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.
- 1.3.4. The *Impact 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 [5](#).
- 1.3.5. The *Tree Protection Plan* 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 [4](#).
- 1.3.6. The *Proposed Layout Plan* shows the tree constraints after tree removal. Dimensions between proposed buildings and tree canopies are notated.
- 1.3.7. The *Planting Plan* shows the locations of trees that are to be planted as part of the post-construction planting scheme. This plan accompanies the Planting Schedule which is to be found in Section 13.



2. Site Overview

2.1. Brief Description (Existing Layout)

2.1.1. The site co-ordinates are 53.593948° -2.202536° and the altitude is approximately 133m above sea level. (Co-ordinates may be pasted or typed into the following site: <http://maps.google.co.uk/> where maps, satellite imagery and street views may be accessed).

2.1.2. Our survey covered the area indicated in Figure 1.

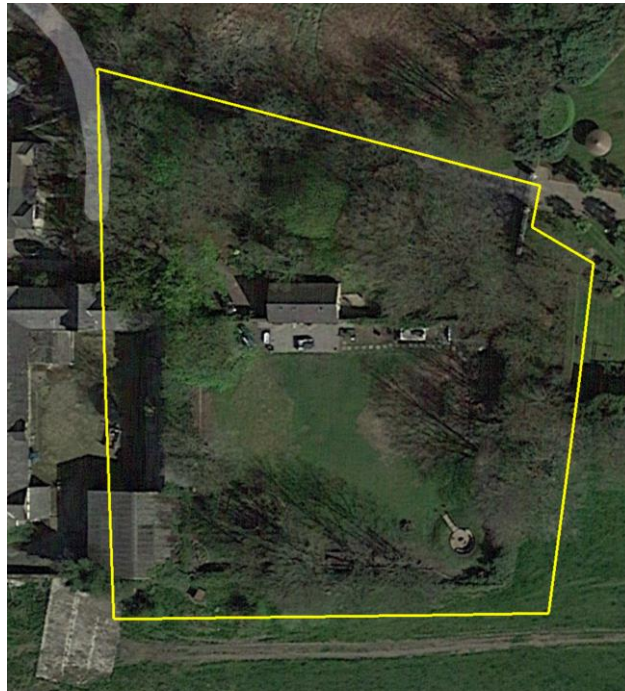


Figure 1 Extent of the survey (image is not current).

2.1.3. The survey area included the walled garden of Warren Court, which is a rectangular plot measuring approximately 51m x 42m. Towards the north of the garden is a single-storey building. The garden is largely given over to lawn and contains eight trees. Trees beyond the northern and eastern boundaries were also included in our survey.

2.1.4. To the north of the site is a driveway which is approximately level.

2.1.5. The Tree Constraints Plan and Tree Data Schedule should be referred to for descriptions and locations of all trees.

2.1.6. Photographs of the site are included in Section 14.

2.2. Soils

2.2.1. Geological maps (<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>) indicate that the underlying geology of the area is dominated by mudstone, siltstone and sandstone with superficial deposits of sand and gravel. This means that soils throughout the site are unlikely to be particularly susceptible to compaction and that the trees are likely to root relatively deeply.

2.3. Proposals Overview

2.3.1. It is proposed to construct a new residence as indicated on the accompanying plans.



3. Tree Survey and Data Schedule

This page is largely generic. Tree officers and other persons familiar with arboricultural reports may go straight to the following section and refer to the tree data in Appendix 6.

3.1. Survey Details

- 3.1.1. A ground level survey was undertaken on the 18th of March 2022. The survey was conducted by Joe Taylor. No climbed inspections or specialist decay detection were undertaken. Only trees with a stem diameter over 75mm were included, which lie within the site boundary or relatively close to it.
- 3.1.2. 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.
- 3.1.3. Wherever possible, dimensions are obtained using diameter tapes, logger's tapes, distometers and clinometers. Where obstacles prevent accurate measurement, dimensions are estimated. Trees on privately owned third party 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.

3.2. Data Schedule

- 3.2.1. The findings of the survey are presented in The Tree Data Schedule which is provided as a separate document as well as being appended to the end of this document within Appendix 6.
- 3.2.2. The Schedule includes scaled tree images based on measurements recorded for stem diameter, crown spread, crown height and overall height. Their purpose is to indicate, at a glance, the relative dimensions of each tree.
- 3.2.3. A definition of the Retention Categories can be found in Appendix 1. All other terms used within the Tree Data Schedule are defined and explained in Appendix 3.

3.3. RPA calculation - Single Stems & Multiple Stems

- 3.3.1. For single stemmed trees, the RPA is calculated according to the following formula:
$$\text{RPA radius} = 12 \times \text{stem diameter (measures at 1.5m above ground level)}$$
- 3.3.2. Where a tree has more than one stem, the equivalent-single-stem diameter is usually recorded. This is calculated by adding the squares of the stems and then finding the square root of this total. The radius of the Root Protection Area is then calculated by multiplying the equivalent-stem-diameter by 12.
- 3.3.3. Occasionally this method is not appropriate (e.g. for coppiced specimens where there are numerous stems). In such cases the diameter at ground level may be recorded or a stem diameter which would provide a suitable Root Protection Area calculation. The form of the tree is recorded in the notes section.



4. Vegetation Overview (independent of proposals)

This section summarises all the recommendations within the Tree Data Schedule regardless of whether trees are to be retained, felled or pruned to facilitate the proposed development. It does not specify works that may be required to facilitate the development proposals. The protection status of the trees is also reported in this section.

4.1. Preliminary Management Recommendations

- 4.1.1. The following recommendations are made in order to maintain the tree population in an acceptable condition:
- 4.1.2. Trees that are recommended for removal due to their poor condition are T16 and T18.
- 4.1.3. Defects were observed to T3, T10 and T19 that are not currently considered hazardous. However, these defects may worsen over time, so we recommend that they are monitored.
- 4.1.4. A metal probe indicated that some decay is present within the stem of T30, so we recommend specialist decay detection is undertaken to determine the extent of the decay.
- 4.1.5. All other trees were deemed to be in an acceptable condition.

4.2. Work Priority and Future Inspections

- 4.2.1. The table below suggests a schedule for completing the works recommended in the Tree Data Schedule based on the perceived risk:

Work Priority	Definition	Tree Number
Urgent	As soon as possible	None
Very High	Within 1 Month	None
High	Within 3 Months	T17
Moderate	Within 1 year	T3, T10, T16, T18 and T19
Low	Within 3 years	None

- 4.2.2. The table below suggests a schedule of future inspections based on the condition and location of each tree:

Inspection Frequency (years)	Tree Number
0.5	T17
1	T3 and T19
1.5	T10
3	All other retained trees

- 4.2.3. The trees should be inspected sooner if there is a noticeable decline in their condition or following extreme weather events.



4.3. Tree Protection Status – Site Specific

- 4.3.1. On the 25th of March 2022, we were informed by Sharon Hill of Rochdale Metropolitan Borough Council that:
- The site is not within a conservation area.
 - There are tree preservation orders affecting trees within the site.
 - There are tree preservation orders affecting trees immediately adjacent to the site.
- 4.3.2. We have viewed the TPO schedule and TPO plan, and we understand that the TPO protects the following trees: T1 – T4, T6, T11, T12, T16 – T18 and T20. However, T11 and T20 appear to be growing on the very edge of the woodland TPO, and it is not clear whether these trees are within the area covered by the TPO or are just outside of it.
- 4.3.3. Other trees included in our survey are not protected by a tree preservation order.

4.4. Tree Protection – General Notes

- 4.4.1. Before undertaking works to trees protected by a tree preservation order, consent needs to be obtained from the local authority which will provide application forms and advice to potential applicants. The removal of dead wood is exempt.
- 4.4.2. Where the works are proposed for reasons of safety or ill health, a report from a suitably qualified arborist will usually be required. Trees that are dead, dangerous or dying are technically exempt from protection, though it would be prudent to give the local authority 5 days' notice of intention and take photographs before undertaking works without prior consent being granted. Unauthorised works to protected trees may result in a criminal prosecution and a large fine (unlimited).
- 4.4.3. Where planning permission is granted and tree works have been approved as part of the planning consent, no further application is required in respect of protected trees and no further notice is required in respect of trees within a conservation area.



4.5. Species Present – Additional Information

- 4.5.1. The table below contains general information about the tree *species* (rather than the actual tree *specimens*) included in the survey. Its purpose is to assist readers who are unfamiliar with the characteristics of the various species.

Species	Typical Height at Maturity (m)	Typical Canopy Spread at Maturity (m)	General Notes
Ash	25	18	Large deciduous tree with a straight bole and a high open domed crown. Native to Britain and commonly found in woodlands and adjacent roadsides. Not suitable for small gardens. Easily identified by its oppositely arranged pinnate leaves and black buds. Branches are relatively brittle resulting in a fairly high incidence of small branch failure in windy conditions. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Fraxinus+excelsior for more info.
Beech	25	18	Deciduous tree native to W and S Europe. Does not have resilient heartwood, therefore typically lives for 100 - 150 years before decay may cause structural failure if unmanaged. Can be an extremely attractive tree at maturity due to its size and majesty. Young branches may retain their foliage through winter as is evidenced in beech hedges. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Fagus+sylvatica for more info.
Goat Willow	10	8	Also called Pussy Willow or Great/Common Sallow. Native and abundant in Britain except on the lightest soils. One of the first pioneer species to colonise an abandoned site due to its light far-blown seeds. Traditionally coppiced and used for basket making. rarely planted as an ornamental due to its untidy habit. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Salix+caprea for more info.
Horse Chestnut	25	18	Deciduous tree native to Albania and N Greece. Naturalised throughout the UK. Iconic landscape tree. Susceptible to attack by Bleeding Canker, as well as Leaf Miner and Leaf Blotch. Should be inspected regularly if located close to high public use areas. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Aesculus+hippocastanum for info.
Oak	22	18	Deciduous, long lived tree native and common throughout Europe with very durable timber. Excellent habitat tree - provides food and shelter for thousands of native species. Can be very attractive as a mature open grown specimen though not particularly ornamental, having no autumn colour or showy flowers. Responds well to pruning. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Quercus+robur for more info.
Sycamore	25	16	Deciduous tree native to S. Europe, widely naturalised in the UK. Often regarded as a weed species due to its invasive nature and ability to tolerate most conditions. Responds well to pruning. Not a good tree to park beneath in summer due to the sticky sap secreted by aphids. Visit http://www.pfaf.org/user/Plant.aspx?LatinName=Acer+pseudoplatanus for more info

- 4.5.2. The figures quoted regarding typical height and canopy spread should be treated as approximate. Actual heights and spreads vary according to several environmental factors such as soil conditions, climate and presence of competing vegetation. The figures quoted are not the maximum dimensions that the species may attain.



5. Arboricultural Impact Assessment

5.1. Overview

5.1.1. Proposed construction of a new detached dwelling. Part retrospective permission for construction of detached double

5.1.2. It is proposed to construct a new dwelling and detached double garage in retrospect (as previously approved 15/00716/FUL) as indicated on the accompanying plans. The central part of the house shall be a two-storey construction. The diagonal east and west wings shall be single-storey with rooms inside the roof space.

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

Activity	Trees Potentially Affected
Tree Removal: Retention Category A	None
Tree Removal: Retention Category B	None
Tree Removal: Retention Category C	None
Tree Removal: Retention Category U	None
Tree Pruning	T1, T8 and T14
RPA: House Foundations	T1 and T7
RPA: Garage Foundations	T11
RPA: New Surface	T1, T7, T9, T10, T11, T19 and T20
RPA: Underground Services	To be confirmed
RPA: Change of Ground Levels	None
RPA: Soil Compaction	All trees throughout the site (preventable by installing tree protection measures)

5.1.2. Other potentially damaging activities often associated with construction sites include demolition or the careless use of plant machinery, hazardous materials, or fires.

5.1.3. All of the above potential impacts are considered in detail throughout this section. Section 6 specifies the measures proposed to minimise all possible potential risks of damage to the retained trees.

5.2. Tree Removal

5.2.1. All trees within the site are to be retained.

5.3. Mitigation Planting

5.3.1. It is proposed to plant several new trees to increase tree cover throughout the site into the foreseeable future.

5.3.2. All of these trees are to be planted close to the garden boundaries.

5.3.3. Ornamental species have been selected for planting around the edge of the garden to provide year-round interest and maintain good site screening.

5.3.4. Species have been selected that are suitable for their locations to ensure they have a good chance of becoming established and are likely to thrive.



5.4. Impact on Tree Canopies

5.4.1. It is proposed to prune back the lower branches of T1, T8 and T14 that are growing towards the proposal to create a clearance distance of 2.5m. This shall require the removal of small tertiary branches, which should be pruned back to a secondary growth point. No additional pruning will be required to balance the tree. So long as the pruning works are undertaken sympathetically (working to BS 3998: 2010 guidelines), the tree shall not be significantly harmed or disfigured. These works are specified within the Tree Works Schedule in Section 8.

5.4.2. All other tree canopies shall be unaffected by the proposals.

5.5. Impact on Tree Roots

5.5.1. Foundations:

5.5.2. The proposal shall require excavation for garage foundations within the Root Protection Area of T11 and house foundations within the Root Protection Area of T1 and T7. The portion of the RPAs affected shall be as follows:

Tree No	Total RPA (m ²)	Area of RPA affected (m ²)	% of RPA affected
T1	122	2	1.6
T7	304	17.9	5.9
T11	108	20	11.1

(Note: the calculations for T7 are based on an amended RPA which takes into account the impact of the adjacent existing buildings on the likely rooting zone of this tree. The Tree Constraints Plan indicates both a notional RPA shown as a dotted circle, along with a more realistic RPA which extends further in all directions except beneath the existing buildings.)

5.5.3. The foundations for the new house will extend into the edge of the theoretical Root Protection Area of T1 and T7. However, only a small portion of the Root Protection Areas shall be affected, so the impact shall be negligible.

5.5.4. To minimise root severance, it is proposed to excavate to a depth of 0.6m within the Root Protection Area of T1 and T7 using hand tools only. This shall be done under the supervision of the project arborist. Deeper excavation may be undertaken using a mechanical excavator operating from a suitable load spreading surface or from outside Root Protection Areas. Excavation for the foundations shall not extend more than 300mm beyond the build-line in the direction of the tree. This will limit the extent of excavation towards the tree. Any roots growing close to the edge should be kept intact or pruned by the project arborist. These measures shall ensure that the impact of such a small incursion will be minimal.

5.5.5. Where garage foundations are proposed, circa 11% of the Root Protection Area of T11 is affected. Following enquiries as to how the garage and its foundations were constructed, we are unable to accurately assess the impact on T11 due to an absence of information. However, we have detailed the most sympathetic and least sympathetic construction methods below to provide a comprehensive assessment of the potential impact.

5.5.6. The most sympathetic construction method would include an above-ground raft or beam (max 100mm excavation) supported on narrow diameter piles. The piles would be located to avoid all major roots. Hand excavation would be undertaken in the presence of an appointed arborist. Such a sympathetic foundation would ensure minimal damage to roots and have no detrimental impact on tree health.



- 5.5.7. The least sympathetic construction method would include installing deep strip foundations and the loss of all roots within the garage's footprint. The loss of circa 11% of the Root Protection Area is likely to impact the health of T11; however, the portion of Root Protection Area affected coupled with the proximity to the stem (circa 2.6m) would not be considered likely to destabilise the tree. Consequently, we would anticipate the development of deadwood within the canopy to be the worst-case scenario for the short term. However, T11 is an early-mature oak with moderate vigour, so we anticipate that this tree will cope with such an impact over the long term.
- 5.5.8. Given that T11 overhangs the garage, we recommend that it is professionally inspected annually to periodically assess the potential impact of the garage foundations on its health. This monitoring shall manage the risk of harm from any dead branches resulting from the effects and allow for suitable mitigation measures to be employed if the health of T11 declines to an unacceptable level.
- 5.5.9. **New Surfaces:**
- 5.5.10. The existing hard driveway over the Root Protection Area of T9, T10, T19 and T20 shall require resurfacing.
- 5.5.11. In order to minimise the impact on roots, the following mitigation is proposed:
- A gravel sub-base containing no fine particles shall be incorporated into the design. This shall be contained within a 3D cellular confinement system to ensure that the weight of vehicles will be evenly spread over a wide area. This shall prevent excessive soil compaction and reduce the depth of sub-base required.
 - The new surface shall be installed entirely above ground. Any existing turf or vegetation may be removed along with very loose topsoil. However, no further excavation shall occur.
 - A porous surface and sub-base are proposed, which will enable the passage of oxygen and water to the soils beneath.
 - Where pavements are proposed close to T19, they shall be installed above the existing ground levels.
- 5.5.12. The Impact Assessment Plan indicates where it is proposed to install pedestrian paving over the Root Protection Area of T1, T7 and T9.
- 5.5.13. For T1, T7 and T11, only circa 1% of their Root Protection Areas shall be affected; consequently, the impact is considered to be negligible, and no restrictions on excavation or design are considered necessary.
- 5.5.14. For T9, the new surface shall affect circa 15% of the unsurfaced ground over the Root Protection Area, which is less than the maximum 20% recommended in BS 5837 (BS 5837 Section 7.4.2). To ensure minimal impact on T9, the following restrictions are proposed over the Root Protection Area:
- Excavation shall be limited to 200mm.
 - Only hand tools shall be used.
 - Any edging structure used shall be installed without excavation below this depth.
 - Any sub-base used shall not contain any fines (finely crushed aggregate material).
 - The finished surface shall be porous.
- 5.5.15. **Underground Services:**
- 5.5.16. Due to the potentially major impact of excavating trenches within Root Protection Areas, the locations of all underground services should be approved by the local authority after consultation with an appointed arborist to assess the potential impact on trees.



5.5.17. **Changes in Ground Levels:**

5.5.18. No changes to ground levels are proposed over Root Protection Areas.

5.5.19. **Soil Compaction:**

5.5.20. Tree protection measures specified are specified in Section 5. These include measures to minimise soil compaction. They should be maintained throughout the project to ensure minimal impact on tree roots due to construction activity.

5.6. Demolition Activities

5.6.1. The tree protection measures specified within Section 5 should be installed prior to the commencement of all demolition activities (including soil stripping) to prevent any detrimental impact on tree health.

5.7. Hazardous Materials

5.7.1. 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.

5.8. Cabins and Site Facilities

5.8.1. There is ample room for the siting of cabins and storage of materials/spoil during the construction phase without impacting on trees.

5.9. Boundary Treatments

5.9.1. The existing boundary walls are to be retained and repaired. No new foundations are proposed in any Root Protection Areas.

5.10. Impact of Retained Trees on the Development

5.10.1. The foundations and any new surfaces should be designed to accommodate all potential impacts due to future tree rooting activity. These include potential vegetation-related subsidence, vegetation-related heave, and lifting of surfaces / light structures due to direct root pressure.

5.10.2. The garage is not considered a living space, so the shade cast by the trees is not considered relevant from a planning perspective.

5.11. Summary

5.11.1. The proposal seeks to retain all of the vegetation surveyed.

5.11.2. Three trees (T1, T8 and T14) require minimal pruning to create an adequate clearance from the proposal.

5.11.3. Foundations are proposed within the RPA of T1 and T7. However, no more than 6% of each RPA shall be affected, so they will not be significantly impacted on. Both trees shall tolerate this with no observable detrimental impact. However, to ensure soil disturbance is kept to the minimum possible, it is proposed to excavate the foundations using hand tools (to a depth of 600mm) and ensure that the foundations do not extend more than 300mm beyond the footprint of the proposed extension toward to trees.

5.11.4. Foundations for the garage have been installed within the RPA of T11. Although the potential impact is unknown, we anticipate that this tree will cope with such an impact over the long term.



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Author: Joe Taylor

Date: 17th March 2023

- 5.11.5. A new pedestrian surface is proposed over the RPA of T1, T7 and T9. However, the small portion of RPA affected and the sympathetic construction methods shall ensure no detrimental impact.
- 5.11.6. It is proposed to replace the existing hard driveway over the Root Protection Area of T9, T10, T19 and T20. However, the sympathetic construction methods shall ensure no detrimental impact on trees.
- 5.11.7. Tree protection measures are specified throughout Section 6 to ensure no negative impact on retained trees due to construction activity.



6. Method Statement

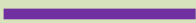
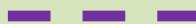
Section A: Introduction and Overview

6.1. Definition of Terms

- 6.1.1. Some terms used within the Arboricultural Method Statement have very specific meanings. These are defined below:
- 6.1.2. **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.
- 6.1.3. **Construction Exclusion Zone (CEZ).** These zones are created to protect roots and canopies from inadvertent damage by construction activity – see Section 6.7. -*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.
- 6.1.4. **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.

6.2. Tree Protection Barriers - Overview

- 6.2.1. The Tree Protection Plan indicates the location of all proposed tree protection barriers according to the following legend and overview:

Symbol on Tree Protection Plan	Barrier type See Section 9	Location
	In-Ground System or Back-Stay System	Around the Construction Exclusion Zones, close to where construction activity is proposed. As indicated on the Tree Protection Plan.
	Back-Stay System	N/A
	Barrier Mesh System	N/A

- 6.2.2. The barriers shall be installed prior to the commencement of any construction activity including soil stripping and delivery of materials. A detailed specification of the barriers can be found in Section 9.
- 6.2.3. The tree protection plan also indicates where ground protection measures shall be installed as specified in sections 6.9 onwards (Restricted Activity Zones) and Section 10–*Ground Protection Measures*.



6.3. Planning Status

- 6.3.1. Tree protection measures specified within this report should be agreed with the local authority so that they may be conditioned upon planning consent.
- 6.3.2. 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.
- 6.3.3. 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.

6.4. Overview of Protection Measures

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

Reference	Comments	Potential Impact	Protection measures
T8	Canopy is close to construction or demolition activity	Damage to branches.	Prior to commencement, pruning to be undertaken as specified in Section 8 - <i>Tree Works Schedule</i>).
T8, T11, T12 and T17	Access is required over the Root Protection Area.	Compaction and contamination adjacent to proposed works.	Ground protection measures to be installed before commencement and maintained throughout the project. Construction exclusion zone to be created over remainder of Root Protection Area. See Section 6.9 for all restrictions that apply.
T9, T10, T19 and T20	Vehicular surface proposed over RPA.	Root severance. Soil compaction. Reduced water and oxygen uptake.	Restricted Activity Zone created. Ground protection measures installed. Excavation limited to 100mm. 3D cellular confinement system incorporated into a 'no-fines' sub-base. Hand-dig methods to be used. Porous finish utilised. Tree officer or an appointed arborist invited to oversee.
T9	Pedestrian surface proposed over RPA.	Excessive root severance if excavation extends too deep.	Hand tools only to be used. Excavation depth limited to 200mm. Only hand tools shall be used.
T1 and T7	House foundations installed in RPA.	Root severance.	Excavation kept to a minimum and using hand tools only to a depth of 600mm. Foundations not to extend more than 300mm beyond the build line. Roots to be retained wherever possible, otherwise pruned. Tree officer or an appointed arborist invited to oversee.
All other retained trees	No works proposed in Root Protection Areas.	Soil compaction & contamination.	Protective fencing installed as specified in Section 9 and <i>Construction Exclusion Zone</i> created. No works permitted in Exclusion Zone.

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



6.5. Timing of Operations

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

Order	Phase	Activity
1st.	Pre-Construction Phase	Detailed design submission for approval (see Section 6.6 below). Discharge of any planning conditions relating to trees.
2nd.		Undertake all specified tree pruning (see Section 8 -Tree Works Schedule).
3rd.		Install the tree protection barriers (see Tree Protection Plan and Section 9 -Tree Protection Barriers.
4th.		Maintain a suitable load spreading surface and exercise caution in Restricted Zones A and C. (see Tree Protection Plan and Section 10 -Ground Protection Measures)
Protection measures confirmed acceptable by the local authority		
5th.	Construction Phase	Demolish existing structures and remove existing surfaces where applicable.
6th.		Install new buildings, hard surfaces and services taking into account restricted activities as specified in Sections 6.7 onwards
7th.	Post-Construction Phase	Remove protective barriers (fencing and ground protection measures as applicable).
8th.		Undertake restricted landscaping operations within Root Protection Areas, including boundary treatments, pedestrian surfaces, decking and any proposed tree planting.

6.6. Confirming Detailed Proposals

6.6.1. This Method Statement is a *Heads of Terms* method statement. This means that it specifies the general principles to be adopted during proposed development works. Often additional input is required from engineers to confirm the exact locations of services or technical specifications which are beyond the scope of an arborist. This is usually provided at the reserved matters stage (for an outline planning applications) or via planning conditions. The table below highlights where such confirmation is required.

Nature of Activity	Areas Potentially Affected	To be Confirmed
Services	Construction Exclusion Zones and Restricted Activity Zones	Exact location of all underground services and trenches. Location of any proposed soak-aways. Method of installation where services pass through Root Protection Areas.
Landscaping	Construction Exclusion Zones	Any specific landscaping proposals requiring approved by the local authority but not considered within this report.

6.6.2. The limitations specified within this report need to be considered in detail by building and/or demolition contractors. Any conflicts should be raised at an early stage so that issues may be resolved and agreed with the local authority. This may require the production of a revised Method Statement.



Section B: Restrictions on Activities – Specific Zones

6.7. Construction Exclusion Zones

6.7.1. 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 9 -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.

6.7.2. 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.

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

6.8. All Restricted Activity Zones

6.8.1. Within all of these zones (indicated on the Tree Protection Plan) the following restrictions apply:

- Only essential and specified works shall be permitted.
- Operations within these zones shall be supervised as specified within the Inspection Schedule in Section 7.
- All excavation and lifting of surfaces shall be undertaken using hand operated tools or a mechanical excavator operating from outside the Restricted Zone and carefully marshalled by the local authority tree officer or an appointed arborist.
- No materials or spoil shall be stored.
- No fires shall be permitted.
- All hazardous materials (including non-essential cement products) shall be forbidden.

6.8.2. Further restrictions specific to each zone are specified below:

6.9. Restricted Activity Zone A

6.9.1. Within these zones (indicated on the Tree Protection Plan) access will be required to facilitate construction. The following restrictions shall apply:

- No permanent or temporary structures shall be erected without written approval from the local authority.
- Ground protection measures shall be installed as specified in Section 10 -Ground Protection Measures. These shall remain in place throughout the entire construction phase.
- Vehicles or plant machinery in excess of 2 tonnes shall not be permitted in this area.
- Existing ground levels shall be retained undisturbed.



- Any resurfacing or installation of new hard surfaces shall be done in accordance with the Guidelines in Section [11](#) -New Surfaces.
- Excavation shall be limited to the adjacent foundations and trenches immediately alongside the proposed building foundations (if required for underground services). Such trenches shall be excavated using hand tools or a mechanical excavator operating from outside the Restricted Zone and carefully marshalled by the appointed arborist.
- No further excavation shall occur in this zone without consulting the appointed arborist and obtaining approval from the local authority.
- If roots are encountered in excess of 25mm diameter, they shall be retained wherever possible and protected with damp sacking during times that they are unearthed. Any roots in excess of 10mm that need to be severed shall be pruned with secateurs.
- 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 machinery in excess of 2m tall shall pass through or operate in this zone unless carefully marshalled in order to avoid damage to branches.

6.10. Restricted Activity Zone B

6.10.1. Within this zone (indicated on the Tree Protection Plan) it is proposed to install building foundations.

6.10.2. In order to minimise the impact on roots, it is proposed to utilise the Hand-Dig Method specified in Section [12](#). This shall be overseen by the local authority tree officer or an appointed arborist.

6.11. Restricted Activity Zone C

6.11.1. Within this zone (indicated on the Tree Protection Plan) it is proposed to install a new vehicular surface. The following restrictions shall apply:

- No other building works shall be permitted.
- Tree protection barriers shall be installed as indicated on the Tree Protection Plan. These shall remain in place until the new surface is being installed.
- Ground protection measures shall be installed as specified in Section [10](#) -Ground Protection Measures and shall remain in place until the new surface is installed. (Any existing hard surfacing may be retained in place of ground protection measures.)
- The new surface shall be installed according to the No-Dig method as specified in Section [11](#) -Surfaces.
- No vehicles or machinery shall pass over this area prior to the installation of the new surface unless ground protection measures are in place.

6.12. Restricted Activity Zone D

6.12.1. Within this zone (indicated on the Tree Protection Plan) it is proposed to install pedestrian surfacing. The following restrictions shall apply:

- No other building works shall be permitted.
- Ground protection measures shall be installed as specified in Section [10](#) -Ground Protection Measures and shall remain in place until the new surface is installed. (Any existing hard surfacing may be retained in place of ground protection measures.)
- Excavation shall be undertaken using hand tools only.
- Excavation shall be limited to 200mm, including any existing vegetation or turf.



- Any edging structure used shall be installed without excavation below this depth.
- Any sub-base used shall not contain any fines (finely crushed aggregate material).
- No fires shall be permitted.
- All hazardous materials (including non-essential cement products) shall be forbidden.
- Pavements to be used and dry jointed (i.e. no mortar joints) to permit infiltration of rain water through to the ground beneath.

Section C: Restrictions on Activities – Throughout the Site

6.13. Canopy Protection

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

- No machinery in excess of 2m shall pass beneath the canopy of any tree 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.

6.14. Site Hoarding

6.14.1. 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 [6.23](#) - *Hazardous Materials*).

6.14.2. 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.

6.15. Fence Posts or Decking Posts

6.15.1. If permanent fencing or decking is 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.

6.15.2. Walls shall be avoided over Root Protection Areas unless their foundations may be spanned over roots using a beam system.

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

6.16. Demolition and Initial Ground Works

6.16.1. 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.

6.17. Underground Services

6.17.1. If new services need to be installed in a Root Protection Area, the appointed arborist and the local authority shall be informed beforehand so that locations and installation methods may be agreed. Services shall be installed in a manner that preserves as many roots as possible. Three example methods are suggested below:

6.17.2. **1) Broken Trench Method:** The trench shall be excavated as a series of pits 0.8m wide x 1.2m long with undisturbed ground of 1.2m between each pit. These shall be excavated in the presence of the appointed arborist using hand tools or a mechanical excavator operating outside the Root Protection Areas.

6.17.3. Where roots in excess of 25mm are unearthed these shall be retained if possible and worked around. All smaller roots shall be pruned back to the sides of the pits with secateurs. The pits shall then be connected into a continuous tunnel at an appropriate depth to suit the drainage requirements. This shall be done using hand tools only.

6.17.4. **2) Air-Spade Method:** The upper 0.6m of trench shall be excavated using an air-spade and a hand spade under the supervision of the appointed arborist. The maximum number of roots possible shall be kept intact. Roots shall only be severed where they prevent access into the trench to excavate deeper levels. Excavation beneath retained roots shall be carefully undertaken by persons operating from within the trench.

6.17.5. Where an air-spade is not available, all soil must be carefully loosened with a garden fork to test for the presence of roots before excavating with a hand spade.

6.17.6. Subject to ground conditions and rooting activity the appointed arborist will determine whether the air-spade / garden fork shall be required at deeper depths.

6.17.7. **3) Trenchless Method:** Pits shall be excavated at either side of the service run, and a remotely controlled drill shall excavate the tunnel in which the services shall be installed. No other excavation shall be permitted.

6.18. Lighting, Bollards, CCTV and associated Cables

6.18.1. 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.
- Cables should be routed in a direction directly away from the tree. It will not be acceptable to excavate a trench across any Root Protection Areas.

6.19. Use of Heavy Plant

- 6.19.1. 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 6.7 onwards).
- 6.19.2. All machinery operatives are to respect these zones and ensure that no damage occurs to trees due to the careless use of machinery.
- 6.19.3. Plant machinery shall be limited to a maximum weight of 2 tonnes in all Restricted Zones.
- 6.19.4. Mechanical excavators should have tracks rather than wheels to help spread their load. They should be carefully marshalled when working close to tree canopies.

6.20. Scaffolding

- 6.20.1. 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.
- 6.20.2. 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.

6.21. Siting of Cabins and Storage of Materials

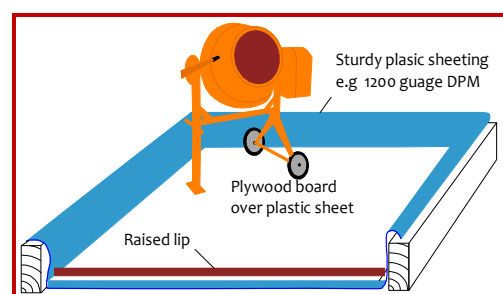
- 6.21.1. Cabins and heavy building materials may be located or stored anywhere outside of *Construction Exclusion Zones* and *Restricted Activity Zones*.
- 6.21.2. Any proposal to install cabins or materials within these zones shall be agreed in writing with the local authority prior to installation.
- 6.21.3. 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.

6.22. Pedestrian Paving

- 6.22.1. Any pedestrian paving that may be installed over Root Protection Areas, as part of a post construction landscaping scheme, must be installed in a manner sympathetic to tree roots as specified in Section 11.2. -*Pedestrian Paving*.

6.23. Hazardous Materials

- 6.23.1. Any mixing of cement based materials shall take place outside the *Construction Exclusion Zones* and *Restricted Activity Zones*. Where cement is to be mixed at considerable distances from trees and water run-off cannot enter Root Protection Areas, then no further special measures are required. Otherwise, provision shall be made to ensure that the





mixing area is contained so that no water run-off enters the Root Protection Area of any trees (see diagram for example). Mixers and barrows shall be cleaned within this area.

- 6.23.2. 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.

Section D: Post-Construction Phase

6.24. Removal of Tree Protection Barriers

- 6.24.1. This will be done after all major construction work is complete. Vehicular access will not be permitted within the Construction Exclusion Zones.
- 6.24.2. The local authority tree officer shall be made aware that the fencing is to be removed.

6.25. Landscaping

- 6.25.1. No machinery used within landscaping operations shall operate within the Root Protection Areas of retained trees.
- 6.25.2. Ground levels shall not be altered within Root Protection Areas without consultation and approval from the local authority.
- 6.25.3. It is recommended that the local authority tree officer or an appointed arborist visit the site and discuss with the site manager any strategies to improve conditions for existing or new trees in order to ensure their continued well-being.

6.26. Tree Planting

- 6.26.1. Trees planted in poor soils or compacted soils are unlikely to become established, so prior consideration should be given to rooting conditions. Where compaction or contamination is believed to have occurred expert horticultural or arboricultural advice should be sought.
- 6.26.2. Any new tree planting shall be carried out after completion of all construction activity in the vicinity.



7. Site Inspection

7.1. Inspection Schedule

- 7.1.1. 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 (see Section 7.2 below) who will provide the tree officer with a copy of inspection details.
- 7.1.2. The following inspection schedule is suggested though the local authority may specify additional supervision where deemed necessary.

Inspection	Attendees	Comments
Pre- Start To occur prior to any works taking place on the site.	N/A.	Site manager to study this Method Statement & contact the appointed arborist to agree all protection measures.
Pre-Construction Meeting After tree works completed & tree protection barriers / ground protection measures installed. Prior to any other activity, inc. demolition & soil stripping.	Site manager, appointed arborist and/or local authority tree officer. *	Tree protection fencing locations & specification checked. Additional ground protection measures checked. Further protection measures / restrictions agreed.
Intermediate Reporting Throughout the entire project. At least once per month.	N/A.	Site manager to liaise with the appointed arborist regarding any issues which may affect trees. General site photos indicating tree protection measures to be provided monthly.
Excavation in Restricted Zone B.	Site manager, appointed arborist and/or local authority tree officer.	At least one week's notice shall be given prior to commencing excavation.
Installation of driveway in Restricted Zone C.	Site manager, appointed arborist and/or local authority tree officer.	Attendance required at commencement.
Excavation for underground services through RPAs.	Site manager, appointed arborist and/or local authority tree officer.	Supervision required as well as an agreed methodology.
Post-Construction Meeting Post major construction activity but prior to removal of fencing & landscaping operations.	Site manager, appointed arborist and/or local authority tree officer.	Retained trees inspected. Further landscaping operations and restrictions to be agreed.
Post-Landscaping Meeting Confirm landscaping and mitigation planting is acceptable.	Site manager, appointed arborist and/or local authority tree officer.	N/A.

* Where agreed with the L.A. it may be acceptable to supply photographs of the fencing to avoid the necessity for a site visit.

7.2. The Appointed Arborist

- 7.2.1. The appointed arborist must keep the local authority updated at each of the stages within the inspection schedule and will advise on any unexpected issues arising throughout the project which could impact on trees.



8. Tree Works Schedule

8.1. Tree Works Specification

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

Tree Reference	Action Required	Notes
T1, T8 and T14	Prune lowest branches to create a clearance distance of 2.5m from the proposal	Branches to be pruned back to a secondary branch junction or the branch collar wherever possible. Pruning to be kept to a minimum to achieve the desired clearance of 2.5m.

- 8.1.2. **Pruning Standards:** Sympathetic pruning shall be carried out to BS 3998 (2010). Lopping of branches is to be avoided. Instead as system of 'drop crotching' or 'reduction via thinning' is to be used to achieve the desired clearance without spoiling the appearance, or form, of the trees. All pruning cuts shall be made close to the branch collar or a secondary growth point. Cuts to be made with sharp, clean tools. No wound sealants to be used.

- 8.1.3. **Additional works:** Any recommendations specified in the Tree Data Schedule (but not replicated in the above table) are intended to maintain the tree population in an acceptable condition. They are made for reasons of good arboricultural practice regardless of development proposals. However, they do not form part of this planning application. Where these trees are protected by a tree preservation order or are in a conservation area, consent must be sought from the local authority. Only the works listed in the table above form part of this planning application whereby no additional consent will be required if planning permission is granted.



9. Tree Protection Barriers

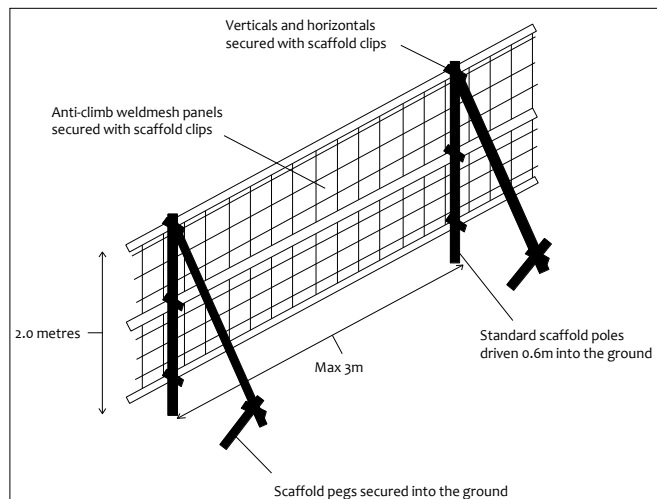
Detailed Specification

- 9.1.1. 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.

9.2. The In-Ground System

- 9.2.1. This system may be installed where indicated by a solid purple line on the Tree Protection Plan. It should be robust enough to withstand occasional knocks by plant machinery and, once installed, shall remain in place throughout the entire construction phase.

- 9.2.2. Vertical scaffold poles are driven into the ground, onto which are affixed horizontal scaffold poles and diagonal bracing struts. Weldmesh panels (or similar – e.g. Heras type fencing panels, or 18mm+ plywood boards) are secured to this scaffold framework using sturdy clips e.g. standard scaffold clips. The system is illustrated in the diagram to the right and is based on BS 5837 guidelines.



9.3. The Back-Stay System

- 9.3.1. This system may be installed where indicated by a solid or dashed purple line on the Tree Protection Plan. It is more practical over existing hard surfaces or where the fencing needs to be moved to enable permitted activities within a *Restricted Activity Zone*. This system should be able to withstand occasional knocks by machinery and should not be relocated except with the consent of the site manager and the approval of the local authority.

- 9.3.2. Within this system, weldmesh fencing panels (minimum height 2m) are affixed into rubber or concrete feet and clipped together with anti-tamper couplers. Where topography permits, two couplers should be used, spaced at least 1m apart. Alternate panels should be

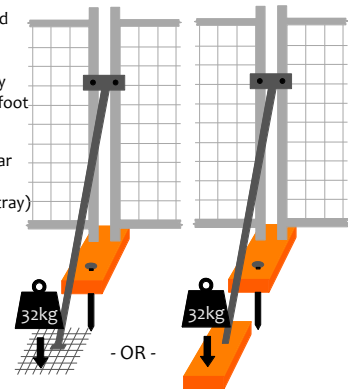
The 'Back Stay System' (an alternative to 'The In-Ground System')

2m X 3.5m weldmesh panels linked with anti-tamper couplings

Each panel attached to a back stay which is founded in an additional foot or mesh tray as illustrated

Minimum 32kg ballast to retain rear foot or tray (including the weight of the foot/tray)

Front feet to be secured with ground pins or additional ballast





attached to a diagonal back stay connected to an additional foot or baseplate secured with ground pins or additional ballast. Where ground pins are not used, the total weight of the foot/plate plus ballast should total not less than 32kg.

9.3.3. Alternatively, timber struts may be used to affix the panels to existing walls using brackets and screws where the fence panels are sufficiently close for this to be effective.

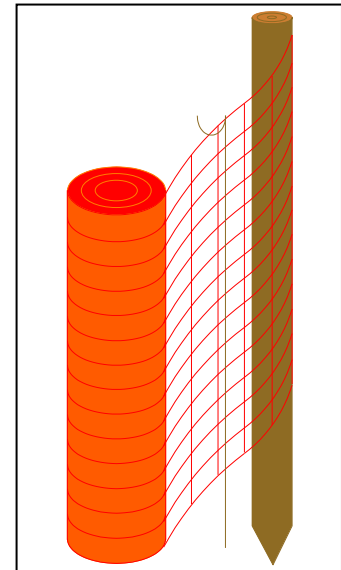
9.3.4. Where it is not possible to install diagonal struts (such as very close to a hedge) then the front feet shall be secured using ground pins or ballast.

9.4. The Barrier-Mesh System

9.4.1. Where indicated by a thick red line (solid or dashed) on the Tree Protection Plan, it shall be acceptable to install a less robust system than those specified above. This is because of the nature of construction activity or its distance from tree protection areas. The purpose of such a system shall be to demarcate the protection zone. It is not intended that such fencing will withstand knocks by construction machinery.



9.4.2. In this system, high visibility plastic safety fencing, 1m high, minimum grade 140g/m², is secured onto alternate wooden posts and fencing pins. Wooden posts to be located at 5m intervals, minimum dimensions 75mm.



9.5. Notices

9.5.1. 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.

10. Ground Protection Measures

Detailed Specification

10.1.1. Where indicated on the Tree Protection Plan (Restricted Activity Zones A and C), soils containing roots 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.

10.1.2. 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.

10.1.3. 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.

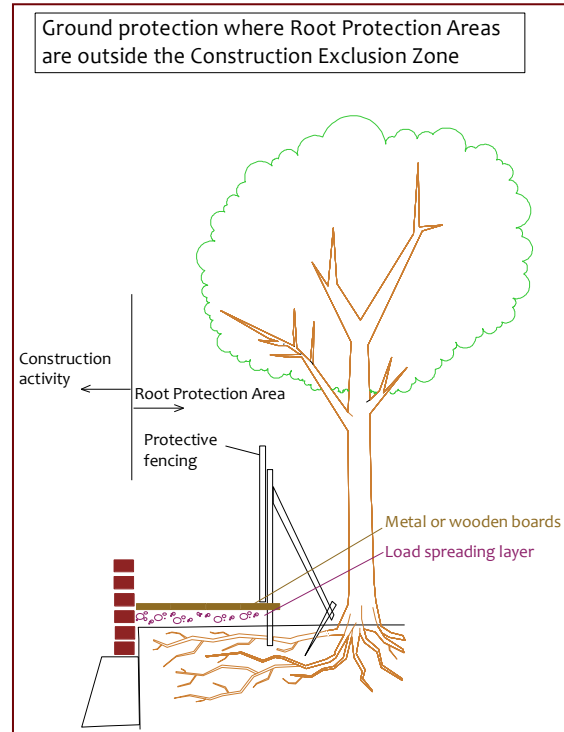
10.1.4. Where only light vehicles are to operate (e.g. barrows, trolleys or occasional cars), thick wooden boards or scaffold planks should also suffice, though at least 150mm of compressible woodchip will need to be installed first to help spread the load. Sturdier systems are specified below:

10.1.5. 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. CellwebTM - see Section 11).

10.1.6. 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.

10.1.7. 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.

10.1.8. 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.



11. New Surfaces

Detailed Specification

11.1. No-Dig Driveway Installation

11.1.1. This section details the No-Dig Method which is proposed when installing the new surface over Root Protection Areas (Restricted Activity Zone C).

11.1.2. Ground Preparation - NO DIG

- Surface vegetation may be killed using a translocated herbicide such as GlyphosphateTM. Turf maybe lifted to a depth of 50mm using a hand operated turf lifting machine; mechanical excavators may not be used.
- Loose topsoil which contains a high degree of organic matter and is not suitable for bearing the hard surface may be removed using hand tools. If any roots in excess of 25mm, or an abundance of roots in excess of 10mm, are encountered, the excavation shall cease and the local authority shall be informed so that an appropriate response may be agreed. In such circumstances, exposed roots shall be covered with damp sacking or soil.
- Occasional roots in excess of 10mm which are severed shall be neatly pruned with secateurs to minimise the likelihood of infection. If no roots are encountered and the operation is being overseen by the local authority (or an approved appointed arborist), it may be possible to continue to excavate in strata of 50mm until the arborist overseeing the operation deems that excavation should cease.

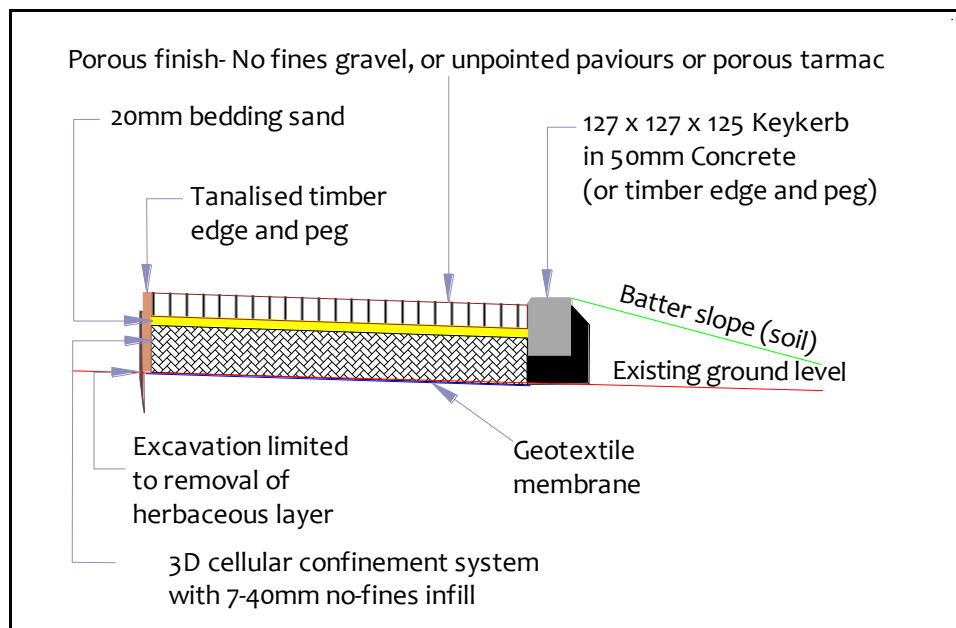


Figure 2: No-Dig Method

11.1.3. **Drive Edgings.** Edging solutions (such as kerbstones) requiring further excavation will not be acceptable within Root Protection Areas. Instead, an above ground system shall be installed such as a tanalised timber edge (treated for a 40 year design life) retained by narrow pegs driven into the ground. Alternative above ground systems must be approved by the local authority.

11.1.4. Where required, batter slopes may be installed to tie in with existing ground levels (max 1:3 gradient, maximum 100mm increase in ground level). However, no increase in ground

level shall be permitted immediately adjacent to any tree stem or associated buttress roots.

11.1.5. **The sub-base.** Once the edgings are in place, a geotextile membrane shall be laid down to prevent root penetration into the road surface. A thin layer (up to 35mm) of angular gravel or crushed aggregate gravel may then be laid over the membrane and levelled off.

11.1.6. A 3 dimensional cellular confinement system shall then be installed. Either of the two options specified below shall be acceptable from an arboricultural perspective:

11.1.7. **1) Rigid Cellular System** - A 3 dimensional cellular confinement system shall then be installed with a minimum thickness of 40mm. This may be filled with 7-14mm angular gravel. Example systems are illustrated below:



11.1.8. The entire cellular system shall be laid first and may be pinned in place using ground pins. This shall be followed by the infill, working from one end such that heavy machinery does not pass over any Root Protection Areas until the in-fill is installed.

11.1.9. **2) Flexible Cellular System** – see illustration. This will be filled with a no fines angular in-fill (e.g. 7 – 14mm or 20 – 40mm gravel).

11.1.10. I understand that a 100mm deep system should be adequate to cope with the expected loads, though this should be verified with the manufacturer. A limestone based in-fill will not be acceptable. Enough infill should be used to allow for settlement and compaction and no more. If required, the infill may be periodically topped up.

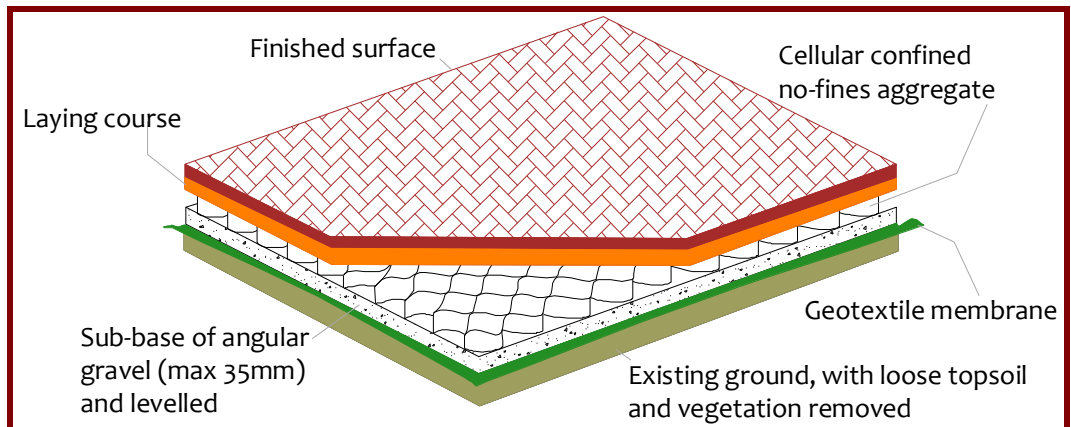


11.1.11. The entire cellular system shall be laid first and may be pinned in place using ground pins. This shall be followed by the infill, working from one end such that heavy machinery does not pass over any Root Protection Areas until the in-fill is installed. The entire system may then be lightly compacted to a degree appropriate for the expected load.

11.1.12. Up to 50mm of 2 - 6mm clean hard grit (no fines) angular granular fill may be overlaid as a laying course.

11.1.13. The Finished Surface. The following surfaces are acceptable over rooting areas:

- **No-Fines gravel.** This option offers the maximum permeability. However, loose gravel should be avoided close to the site entrance as it has a tendency to spill out into the adjacent public footway. Resin bonded gravel may be acceptable if it is shown to be sufficiently porous to enable rainwater to easily pass through to the sub-base below.
- **Block paving.** This is a good alternative as it allows a fair degree of permeability. Blocks with extra wide nibs shall be utilised to enable maximum infiltration of water between the blocks. Blocks shall be jointed with 1mm – 4mm clean hard crushed stone (no fines) brushed over the spaces and settled with the aid of a vibrating plate compactor.
- **Porous asphalt to BS EN 13108-7 (previously Pervious Macadam BS 4987 – 1 & 2).** This offers a degree of permeability and is preferred over concrete or asphalt containing-fines (e.g. Stone Mastic Asphalt (BS EN 13108-5) or Hot Rolled Asphalt (BS EN 13108-4)). This surface may require a porous binder course. Actual specification will vary according to ground conditions and expected load, and should be agreed with a Highways Engineer or Geotechnical engineer.



Over view Diagram – Road Construction Sympathetic to Trees

11.2. Pedestrian Surfaces

- 11.2.1. If/Where 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.



12. Foundation Types

Detailed Specification

12.1. Hand Dig Method

12.1.1. Where a foundation is specified over a Root Protection Area (i.e. Restricted Zone B). The following restrictions shall apply:

- Excavation shall be overseen by the local authority tree officer or an appointed arborist.
- The excavation shall not extend more than 300mm beyond the footprint of the proposed building walls.
- Hand tools shall be used during the excavation to a depth of 0.6m. Beyond this, a mechanical excavator may be used.
- If roots in excess of 25mm diameter are encountered close to the edge of the excavation, they shall be retained wherever possible and protected with damp sacking during times that they are unearthed. Any roots that need to be severed shall be pruned with secateurs.
- No spoil shall be stored.
- No fires shall be permitted.
- All hazardous materials (including non-essential cement products) shall be forbidden.
- All machinery in excess of 4m tall shall be carefully marshalled through this zone.



13. Planting Scheme

13.1. Tree Planting Schedule

- 13.1.1. It is proposed to plant eight standard sized trees in the locations indicated on the accompanying Proposed Planting Plan ref CCL/09318C/PPP. And specified below:

Ref No	Species		N ^o	Size	
N1	Yew	Taxus baccata	1	Standard	8-10cm girth, 2.5-3m height
N2	Purple Beech	Fagus sylvatica 'purpurea'	1	Standard	8-10cm girth, 2.5-3m height
N3	Scots Pine	Pinus sylvestris	2	Standard	8-10cm girth, 2.5-3m height
N4	Weeping Birch	Betula pendula 'Tristis	1	Standard	8-10cm girth, 2.75-3m height
N5	Japanese Flowering Cherry	Prunus 'Shirotae'	1	Standard	8-10cm girth, 2.5-3m height
N6	Tibetan Cherry	Prunus serrula	1	Standard	8-10cm girth, 2.5-3m height
N7	Crab Apple	Malus 'Red Sentinel'	1	Standard	8-10cm girth, 2.5-3m height

13.2. Tree Planting Specification

- 13.2.1. All stock shall be healthy and conform to BS 3936: 1992. Nursery Stock. Part 1: Specification for Trees and Shrubs. All stock to be materially undamaged, sturdy, vigorous, of balanced shape and without elongated shoots. Trees to be selected with a single, straight, stout stem and good graft union
- 13.2.2. All species are to be true to type, no substitutes are to be made without the written consent of the Local Planning Authority.
- 13.2.3. Any approved planting operations within the RPAs of retained trees are to be undertaken using hand tools only. No tracked / wheeled machinery to be used. No chemicals of any description to be used. No topsoil stripping, lowering or raising of ground levels (including the spreading of topsoil prior to seeding or turfing).
- 13.2.4. Ground which has been lightly compacted during construction is to be cultivated to a depth of 300mm. A minimum area of 1m x 1m for each tree.
- 13.2.5. Where chemical contamination or heavy compaction has occurred, or where the soil is determined to be relatively shallow or infertile, an appropriate amount of soil is to be removed and replaced with quality topsoil compliant with BS 3882. A minimum area 2m x 2m x 0.5m deep is to be replaced for each tree. Prior to backfilling with topsoil, bases and sides of all excavation to be de-compacted/loosened with a garden fork or spade.



- 13.2.6. Otherwise, a planting hole slightly larger than the root ball/ root spread shall be excavated by hand. The edge of the planting hole shall be roughened with a spade and the base dug over to a depth of 150mm to improve drainage.
- 13.2.7. The planting hole shall be backfilled with the same soil material and firmed to prevent air pockets.
- 13.2.8. Trees shall be planted with stem base at ground level, *Standard* trees (or smaller) shall be single staked at 30 - 50cm above ground level and attached with adjustable and flexible tree ties. *Heavy Standards* (or larger) shall be double staked at 80 - 1200cm above ground level and attached with adjustable and flexible tree ties. Stakes shall be driven into the ground such that they avoid the root ball. Stakes to be of tanalised timber with a minimum diameter of 75mm for *Standard* trees and 100mm for *Heavy Standards*.
- 13.2.9. Spiral rabbit guards (60cm x 50mm, clear recycled PVC) to be affixed around the base of each tree.
- 13.2.10. Minimum area of 1.5m diameter around each tree to remain vegetation free. Seasoned woodchip or medium grade bark mulch to be installed to a depth of 100mm within this area to deter weed competition.
- 13.2.11. Trees to be planted late October to late March and well watered in immediately after planting.

13.3. Aftercare

- 13.3.1. Trees to be regularly watered during the first growing season and during prolonged dry spells for at least two further seasons.
- 13.3.2. Following is a guide to watering requirements, though in practice these are heavily dependent upon climatic conditions:
 - All trees watered 3 times per month April through to September inclusive. During October, November and March the frequency may be reduced to 2 times per month. During December, January and February the frequency may be reduced to once per month.
 - At each watering session heavy standards should receive 20 gallons, standards should receive 15 gallons and light standards should receive 10 gallons. This equates to approximately 10 minutes, 7.5 minutes and 5 minutes from a domestic hose at moderate pressure.
 - The entire area beneath the canopy should be watered.
 - After 2 years the trees should only require watering during periods of extended dry weather.
- 13.3.3. Tree ties to be checked annually and repaired / adjusted as required.
- 13.3.4. Stakes to be removed after 2 - 3 growing seasons.
- 13.3.5. Any trees which fail to become established are to be removed and replaced with a new tree of the same species and specification as the original.



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Arboricultural Report to BS 5837: 2012 for:

Ben Snape

Crown Ref: 09318C

Site:

Warren Court, Harefield Drive, OL10 1RN

Author: Joe Taylor

Date:

17th March 2023

14. Photographs

Refer to the Tree Constraints Plan for photo locations

Photo 1.



Photo 2.



Photo 3.



Photo 4.



Photo 5.



Photo 6.





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Arboricultural Report to BS 5837: 2012 for:

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17th March 2023

Photo 7.



Photo 8.



Photo 9.



Photo 10.





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Arboricultural Report to BS 5837: 2012 for: Ben Snape

Crown Ref: 09318C

Site: Warren Court, Harefield Drive, OL10 1RN

Author: Joe Taylor

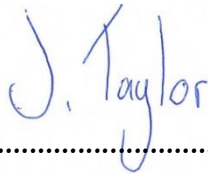
Date: 17th March 2023

15. Signature

This report represents a true and factual account of the trees and potential impact of development along with proposed protection measures and proposed new tree planting at

Warren Court
Harefield Drive
Heywood
OL10 1RN

Signed



.....

Joe Taylor - FdSc (Arboriculture), M.Arbor.A., Lantra Approved Professional Tree Inspector,
Arboricultural Consultant

on behalf of

Crown Consultants Ltd

Dated

17th March 2023





Appendix 1: BS 5837: 2012 – Guidance Notes

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

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

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

A1.1 Stage 1: Survey of Existing Trees

This identifies the existing trees on and adjacent to the site. Data is recorded for each tree and is presented in a Tree Data Schedule. Each tree is allocated a **Retention Category** according to its size, amenity value, condition and safe useful life expectancy. The categories are allocated independently of development proposals. Our interpretation of the Retention Categories is explained below:

A1.1.1 Retention Categories

A Category: Trees of high quality and amenity value. Usually, mature trees with a significant life expectancy which would enhance any development. Retention of these trees is strongly encouraged.

B Category: Trees of moderate quality and amenity value. Usually these are maturing trees or younger trees with exceptional form. Retention of these trees is desirable though the removal of occasional specimens may be acceptable.

C Category: Trees of low quality or small specimens with a relatively low amenity value. These trees are not considered to be a material planning constraint and their removal will generally be seen as acceptable in order to facilitate development.

U Category: Trees of such low quality that their removal is recommended regardless of development proposals.

A1.1.2 Occasionally trees are borderline and do not fall neatly into one of the categories A, B or C. In such cases we apply a superscript (+/-) such that:

C⁺ Indicates borderline C/B, though Category C is deemed to be most appropriate.

B⁻ Indicates borderline C/B, though Category B is deemed to be most appropriate.

A1.1.3 The British Standard suggests that each of the A, B and C categories may be further subdivided (A1, A2, A3, B1, B2, B3 etc) such that subcategory 1 denotes mainly arboricultural values, subcategory 2 denotes mainly landscape values and subcategory 3 denotes mainly cultural values (including conservation). Multiple subcategories may be used.

Our experience suggests that these subdivisions lack clarity and can be confusing. Within this report subcategories are **not** denoted. Where appropriate, the use of phrases such as 'Part of a formal group', or 'Has a high ecological value', or 'Offers good screening to the site' are incorporated into the observation section of the Tree Data Schedule. We believe this conveys all relevant landscape and cultural information without any confusion.

A1.1.4 **Tree Constraints Plan (TCP).** This indicates the position, crown spread, Retention Category and Root Protection Area of each tree. It is used to inform where development may proceed without causing damage to trees.



A1.1.5 Root Protection Area (RPA). This is the area around each tree likely to contain the majority of roots. It should ideally remain undisturbed to avoid a detrimental impact on tree health. For single stemmed trees It is calculated according to the formula “radius of RPA” = “12 x stem diameter”. For multiple-stemmed trees a more complex formula is used which may occasionally produce an RPA which seems inappropriately large relative to the trees canopy. This shape can then be modified to take into account site factors which influence rooting activity, e.g. foundations, soil type or impermeable surfaces. Where development works are proposed within the RPA they should be undertaken in a sympathetic manner to minimise root disturbance.

A1.1.5 Shade Constraints. The previous Standard (BS 5837 2005) suggested that shade constraints should be indicated on the TCP. This are denoted as a circle-segment drawn northwest to due east with a radius equal to the height of the tree. These do not represent the actual shade pattern which varies through the seasons. Rather, they indicate the area most shaded by the tree throughout the course of the year. Ideally habitable room windows should be located outside of these shade constraints. Where we consider it appropriate, we will include shade constraints information on our Impact Assessment Plan or Proposed Layout Plan.

A1.2 Stage 2: Arboricultural Impact Assessment

After the initial survey and the production of the Tree Constraints Plan, arborists and designers are encouraged to work together to establish a design proposal with minimal impact on the high quality trees. An assessment should be made of all possible impacts including the impact that the trees may have upon the proposal. The arborist may recommend mitigation strategies to minimise these impacts and help achieve a more harmonious juxtaposition between buildings and trees.

A1.3 Stage 3: Arboricultural Method Statement

This type of report specifies the measures necessary to protect trees against damage from construction activity. The Method Statement should be written in a manner that it may be conditioned and enforced by the local authority upon granting of planning permission. The site manager should be familiar with all aspects of the Method Statement and should ensure that all persons working on the site are aware of those aspects which appertain to their work. This includes service installation engineers and operators of plant machinery.



Appendix 2: Explanation of Tree Data & Glossary

This section explains the terms used in the **Tree Data Schedule** (see Section 3 and Appendix 6).

A4.1 General Observations

A4.1.1	Numbering System:	Each item of vegetation has its own unique number prefixed by a letter such that T1=Tree 1, G2=Group 2, H3=Hedge 3 and W4=Woodland 4, S5=Shrub 5.
A4.1.2	Age Categories:	
	Young	Usually less than 10 years old.
	Semi-Mature	Significant future growth to be expected, both in height and crown spread (typically below 30% of life expectancy).
	Early-Mature	Full height almost attained. Significant growth may be expected in terms of crown spread (typically 30-60% of life expectancy).
	Mature	Full height attained. Crown spread will increase but growth increments will be slight (typically 60% or more of life expectancy).
	Veteran	A level of maturity whereby significant management may be required in order to keep the tree in a safe condition.
	Over Mature	As for veteran except management is not considered worthwhile.
A4.1.3	Species:	Common names and Latin names are given.
A4.1.4	Height:	Measured from ground level to the top of the crown.
A4.1.5	Stem Diameter:	Taken at 1.5m above ground level where possible. On multi-stemmed trees this measurement may be taken at ground level, though usually an indication of the number of stems and average diameter is given, e.g. 3 x 30cm.
A4.1.6	Crown Height:	Measured from ground level to the height at which the main crown begins. Where the crown is unbalanced it is measured on the side deemed to be most relevant. This is usually the side facing the area of anticipated development.
A4.1.7	Tree Diagram:	This scaled drawing is computer generated based on measurements taken for stem diameter, crown height and spread, and overall height. It is designed to help the reader rapidly assess the data. It is not an accurate representation of the form of the tree.
A4.1.8	Crown Spread:	Measured N, E, S & W, taken from the centre of the stem and usually rounded up to the nearest metre.
A4.1.9	Observations:	If a tree's position is considered to be relevant it will be commented upon (e.g. overhanging a children's play area). Tree form and pruning history are also recorded along with an account of any significant defects. Defects and descriptive terms are dealt with in more detail at the end of this section.
A4.1.10	Recommendations:	Usually based on any defects observed and intended to ensure that the tree is in an acceptable condition.
A4.1.11	Priority Scale:	Depending upon the threat posed by the tree, and the likelihood of failure, recommendations should be carried out according to the following priority scale:
	Urgent	To be carried out as soon as possible.
	Very High	To be carried out within 1 month.
	High	To be carried out within 3 months.
	Moderate	To be carried out within 1 year.
	Low	To be carried out within 3 years.
A4.1.12	Inspection Frequency:	An interval of 6 months, 1 year, 1.5 years or 3 years is allocated before the next inspection is due. Wherever practical, consideration should be given to seasonal changes so that deciduous trees are not always surveyed in winter when they have no leaves, or in summer when leaves may obscure branches within the upper crown.
A4.1.13	Vigour:	An indication of growth rate and the tree's ability to cope with stresses:
	High	Having above average vigour.
	Moderate	Having average vigour.
	Low	Having below average vigour.
	Very Low	Tree is struggling to survive and may be dying.
A4.1.14	Physiological Condition:	
	Good	Healthy and with no symptoms of significant disease.
	Fair	Disease present or vigour is impaired.
	Poor	Significant disease present or vigour is extremely low.
	Very Poor	Tree is dying.
A4.1.15	Structural Condition:	
	Good	Having no significant structural defects.
	Fair	Some defects observed though no high priority works are required.
	Poor	Significant defects found. Tree requires monitoring or remedial works.
	Very Poor	Major defects which will usually require significant remedial works or tree removal.
A4.1.16	Amenity Value:	
	Very High	Exceptional specimen, observable by a large number of people.
	High	Attractive specimen, observable by a significant number of people.
	Moderate	One of the above factors is not applicable.
	Low	Unattractive specimen or largely hidden from view.
A4.1.17	Life Expectancy:	The estimated number of years before the tree may require removal. Classified as (<10), (10 – 20), (20 – 40), or (40+).
A4.1.18	Retention Category:	These are explained in detail in Appendix 1.

A4.2 Evaluation of Defects

Cavities, wounds, deadwood etc are all evaluated as follows:

Major	Such that structural integrity is, or will become, compromised and the tree is, or will inevitably become, hazardous.
Significant	A defect that may over time become a major defect, though not necessarily so. This will depend on the vigour of the tree and its ability to deal with decay etc.
Minor	A defect that is not likely to compromise the tree's structural integrity.



General Glossary

Adaptive growth	In tree biomechanics, the process whereby wood formation is influenced both in quantity and quality by the action of gravitational forces and mechanical stresses on the cambial zone.
Aerobic	Conditions in which oxygen is freely available, or to biomechanical processes that depend on the presence of oxygen.
Anaerobic	A condition marked by the absence of oxygen; Generally such areas are unsuitable for normal life and growth of plant tissues. These sites tend to be populated by bacteria capable of surviving low oxygen conditions often associated with Slime Flux.
Arboriculture	The culture and management of trees as groups and individuals primarily for amenity and other non-forestry purposes.
Arborist	A person possessing the technical competence through experience and related training to provide management of trees or other woody plants in a landscape setting. Generally involved with the development or management of trees for visual amenity or land management rather than the growth of trees for product or profit.
Barrier zone	A layer within an annual increment of wood which contains abnormal xylem cells, laid down by the cambium in response to wounding or other trauma.
Body language	In trees, the outward display of growth responses and or deformation in response to mechanical stress.
Bole	Or Trunk, the main stem of a tree below its first major branch.
Bracket	A type of fruiting body produced by various fungal species, plate like to hoof like in shape and often a one sided attachment to the wood or bark.
Branch bark ridge	A ridged area located at the union of a branch to a trunk or stem.
Branch Collar	Trunk tissue that forms around the base of a branch between the main stem and the branch, or between a main branch and a lateral branch. As a branch decreases in vigour or begins to die, the collar usually becomes more pronounced and completely encircles the branch.
Brown Rot	Form of decay where cellulose is degraded, while lignin is only modified.
Buttress Root	Roots that emerge from the base of the tree stem, normally large and well developed that rapidly reduce in diameter to create the Root Plate this offers structural support for the tree. Buttress roots divide rapidly forming the connection between the stem and the transport roots.
Cabling Bracing	Installing cables within the crown of a tree to prevent collapse.
Callus	Undifferentiated cells often formed at the edges of recent injuries. This tissue quickly becomes differentiated, forming cells of the type characteristic of that position on the tree (e.g. forming wood, bark, roots, etc.) see wound response tissue.
Cambium	A thin layer of actively growing and dividing cells, located between the xylem (sapwood) and bark of a plant; the part responsible for radial growth of a tree stem or branch.
Canopy	The topmost layer of twigs and foliage in a woodland, tree or group of trees.
Canker	A localised area of dead bark and cambium on a stem or branch, caused by fungal or bacterial organisms, characterised by woundwood development on the periphery. This may be annual or perennial.
Cavity	An open and exposed area of wood, where the bark is missing and internal wood has been decayed and dissolved.
Chlorotic	Also Chlorosis. A condition of the plant marked by yellowing of normally green foliage, often indicating nutrient deficiency or plant dysfunction.
Clinometer	Devices that measures vertical angles, and provides direct height measurements of objects by triangulation.
Co-dominant stems/trunk	Are forked branches or trunks of nearly the same size in diameter and lacking a normal branch union.
Compacted soils	Soils in which the air-space (oxygen space) has been reduced or eliminated, reducing water infiltration and percolation, reducing root presence and inhibiting new root development.
Compartmentalisation	The physiological process that creates the chemical and mechanical boundaries that act to limit the spread of disease and decay organisms.
Compression Failure	Localized buckling of fibres and other longitudinal elements produced by compression of wood along the grain; compression failures sometimes develop in standing trees.
Compression Strength	The ability of a material or structure to resist failure when subjected to compressive loading; measurable in trees using special drilling devices
Compression Wood	Abnormal wood formed on the lower side of branches and curved stems, with physical properties different from normal wood.
Conservation Area	In Great Britain, designated areas of architectural or historical interest, in which there are special procedures for planning applications. Additionally tree works cannot generally be undertaken without prior notification (Currently 6 weeks) to the relevant local planning authority. See also Tree Preservation Orders.
Core Sample	A sample of wood extracted from a trunk or branch, using an increment borer tool. The resulting core can be analysed for characteristics of growth, wood strength, structure, decay, and for species identification.
Crotch	The union of two or more branches; the auxiliary zone between branches.
Crown	The upper canopy of a tree, including the upper trunk, scaffold branches, secondary branches, stems and leaves.
Crown lifting / raising	Crown Lift The removal of the lowest branches, usually to a given height. It allows more residual light and greater clearance underneath for vehicles etc.
Crown reduction	The reduction of a tree's height or spread while preserving its natural shape.
Crown thinning	The removal of some of the density of a tree's crown, usually 5-25% allowing more light through its canopy and reducing wind resistance.
Deadwood (noun)	Deadwood is often present within the crown or on the stems of trees. It may be an indication of ill health, however, it may also indicate natural growth processes. If a target is present beneath the tree, deadwood may fall and cause injury or damage and should be removed, otherwise deadwood can remain intact for conservation purposes (insects, fungi, birds etc.).
Deadwood (verb)	The removal of dead branches from a tree's canopy, usually of a specified size (in diameter).
Decay	Progressive deterioration of organic tissues, usually caused by fungal or bacterial organisms, resulting in loss of cell structure, strength, and function. In wood, the loss of structural strength.
Decay Detection	The assessment of decay within a tree has been traditionally difficult, but recent advances have made it possible to achieve accurate representations of the internal section of a tree in both 2D and 3D, removing doubt over the condition of the tree and allowing accurate management decisions.
Defect	In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.
Defoliation	The losing of plants foliage.
Dieback	Progressive death of buds, twigs and branch tissues, on individual limbs resulting in Deadwood, or throughout the canopy,



	extreme cases can result in Stag Heading.
Dripline	A projected line on the ground that corresponds to the spread of branches in the canopy; the farthest spread of branches.
Epicormic shoots	Fast growing, weakly attached shoots/branches that often grow as a response to stress factors upon a tree or branch removal.
Failure	In connection with tree hazards, a partial or total fracture within the wood tissue or loss of cohesion between roots and soil. (In total failure affected parts will snap or tear away completely, Partial failure there is a crack or deformation, which results in an altered distribution of mechanical stress.
Feeder Roots	Fine fibrous Water and nutrient absorbing roots located in the outer root system.
Flush-Cut	In trees and shrubs, a pruning cut close to the parent stem, which removes the branch bark ridge.
Foliage	The live leaves or needles of the tree; the plant part primarily responsible for photosynthesis.
Formative pruning	The trimming of a tree to remove weaknesses and irregularities which may lead to problems. The formative pruning operation is aimed at reducing the potential for future weaknesses or problems within the tree's crown.
Gall	An abnormal, disorganized growth of plant tissues, caused by parasitic or infectious organisms such as insects, fungi, bacteria, or viruses.
Girdling	In woody plants, any form of damage that destroys the bark and / or the Cambium all the way around the stem, branch or root, normally resulting in death of the damaged section.
Girdling Root	In woody plants, a root that grows across the buttress, or across other roots, eventually causing constriction of the radial growth.
Growth Increment	The incremental growth added as new annual ring develops each season over existing wood. This is seen as (growth) rings in cross-sections of wood.
Hazard beam	An upwardly curved branch in which strong internal stresses may occur without the compensatory formation of extra wood (longitudinal splitting may occur in some cases).
Heartwood	Inner non functioning tissues that provide structural support to trunk.
Heave	In relation to shrinkable clay soils, expansion due to rewetting of a volume of soil previously subjected to the removal or water by plant / trees following felling or root severance. Also in relation to root growth, the lifting of pavements and other structures by radial expansion. Also in relation to tree stability, the lifting of one side of a wind rocked root plate.
Herbicide	A chemical compound that causes the death of a plant.
Included Bark	Bark that becomes embedded in a crotch between branch and trunk or between co-dominant stems, usually found in narrow or tight crotches, and causes a weak structure.
Increment Borer	A tool that cuts and extracts a narrow cylinder of wood from a tree for analysis of the wood tissue and growth increments.
Leader	The primary terminal shoot or trunk of a tree.
Limb	A large lateral branch growing from the main trunk or from another larger branch.
Lion Tailing	Often the result of poor pruning practices; the main leader or branches are largely devoid of side branches, growth is restricted to the end of branches and is likely to suffer damage through end loading.
Lopping	In trees, a general term that related to the removal of branches from a tree.
Monitoring	Due to the relative life span of trees in relation to our own, long-term monitoring provides a valuable insight to the health of trees, identifying decline and or stabilisation and or improvement.
Mulch	A material laid over the root system of a tree to help conserve moisture within the soil. Additionally it may help control the development of weeds close to the tree.
Mycelium	A mass of growing filaments (hyphae) formed by fungi.
Mycorrhizae	The symbiotic relationship between roots and certain beneficial fungi. Mycorrhizae are the combined root / fungal growth.
Occluding tissue	The general term of wood, cambium and bark that develop around the site of a wound on a woody plant
Pathogen	A microorganism that causes diseases within another organism.
Phloem	The principle conductive tissue that the products of Photosynthesis are transported around the plant
Photosynthesis	The process were light energy is used to create energy (Carbohydrate) for use within the plant.
Pollard	A term for a pollarded tree.
Pollard head	The swollen section of branch / stem that forms behind the pollarding cut.
Pollarding	The complete or partial removal of the crown of a young tree so as to encourage the development of numerous branches either for amenity or historically as fodder, repeated management is required cyclically to maintain the feature
Prune or Pruning	Selective removal of woody plant parts of any size, using saws, Loppers, Secateurs, or other pruning tools.
Reaction Wood	Wood with distinctive anatomical characteristics, formed in parts of leaning or crooked stems and in branches to provide additional strength / support. In hardwoods, tension wood usually forms. In conifers, compression wood is usually found.
Reaction Zone	A zone normally darker than surrounding wood that denoted the boundary often a defensive one between functional sapwood and dysfunctional or decaying wood.
Re-grading	The raising or lowering of a soil profile from its original grade.
Remedial pruning	The removal of old stubs, deadwood, epicormic growth, rubbing or crossing branches and other unwanted items from the tree's crown.
Resistograph	Invasive decay detection technique whereby the resistance offered by the timber to a spinning probe is measured and plotted.
Rib	In tree body language, a long narrow, axial protuberance which often over lays a crack.
Ring Barking	Artificial Girdling of the stem, to result in the death of a tree. May be used in habitat creation were the retention of dead standing trees is required.
Rod Bracing / Bolting	Traditionally, this has relied upon the installation of steel rods or bolts through the stems or limbs, to reduce twisting or splitting of the wood. The installation of such features does require legal interpretation.
Root Barriers	Both Buildings and services can benefit from the installation of root barriers to protect a soil volume from the ingress of roots.
Root Collar	The basal area of the tree; transition zone from trunk to root. Also sometimes called trunk flare.
Root Plate	The primary support area for the tree; an area of the root system close to the base that structurally anchors the tree to the soil.
Root Rot	Either a general term for decay within the wood of the lower stem / buttress roots, or a disease in which the fine roots are killed.
Root System	The portion of the tree containing the root organs, including buttress roots, transport roots, and fine absorbing roots; all underground parts of the tree.
Root Zone	The area and volume of soil around the tree in which roots are expected. May extend to three or more times the branch spread of the tree, or several times the height of the tree.
Sail Area	That area or the tree subjected to wind load.



Arboricultural Report to BS 5837: 2012 for: Ben Snape

Crown Ref: 09318C

Site: Warren Court, Harefield Drive, OL10 1RN

Author: Joe Taylor

Date: 17th March 2023

Sapwood	Xylem wood tissue, usually light in colour, representing the outer growth rings of the wood. Usually living, reactive wood tissue, in a healthy tree. See heartwood
Scaffold limbs / scaffold Branches	The branches that from the main network framework of the crown of a tree.
Senescent	A decline in growth and vigour due to age or stress factors.
Shrub	A woody plant that branches at or close to the ground level and so does not have a single stem.
Slime Flux	Relating to a toxic condition from the spreading of bacteria or their products from a source of infection; characterized by malodorous gases, or salt deposits upon the bark. If these products enter the sap stream, localised vessel necrosis can result, usually associated with anaerobic conditions.
Soft Rot	A kind of wood decay, were a fungi degrades cellulose within the cell wall, without causing overall degradation.
Soil Compaction	The compression of soil, causing a reduction of pore space and an increase in the density of the soil. Air is squeezed out and nutrients become locked. Tree roots cannot grow in compacted soil.
Sonic Decay Detection	Non invasive method whereby sound waves are passed through the tree and the speed is measured. Slow speeds indicate decay and a tomography picture representing the inner stem is produced.
Stag Heading	In a tree, a state of dieback were dead branches protrude beyond the current living crown.
Stress	In plant physiology, conditions were one or more physiological functions Are not working within normal parameters.
Stump Grinding	The removal of a tree stump using a specialist grinding machine.
Subsidence	In relation to vegetation, the removal of water by plant growth resulting in localised shrinkage in the soil volume.
Sucker	Same as sprout.
Suppressed	Trees which are dominated by surrounding vegetation and whose crown development is restricted from above.
Systemic	Affecting the whole plant or organism. A systemic compound is carried throughout the entire plant to all parts through the vascular system.
Target	Any person or object within reach of a falling tree or part of a tree that may be injured or damaged.
Target Pruning	The pruning of a branch were the wound affects only branch material, often result in a target shaped wound.
Tension Wood	Reaction wood typically formed on the upper side of limbs or curved stems; characterized by lack of cell wall lignifications (higher ratios of cellulose to lignin).
Tight Union / Tight Crotch	Also, narrow crotch. A crotch with a narrow angle between branches, often having included bark.
Tomography	The comparison of sound or stress waves through the tree allows the creation of a 2D or 3D representation of the internal structure of a stem or branch section and highlights areas of damage. Virtually non-injurious.
Topography	The configuration of surface features, including the vertical and horizontal relationships of the ground and other features.
Topping	Cutting large limbs back severely, without regard to form or habit of the tree. Cuts are usually made between lateral branch nodes. This practice is extremely injurious to trees, and promotes decay and structural weakness within the crown.
Tree	A woody plant that typically has a single stem, at maturity has a height of a least 4 metres and a stem diameter at breast height of at least 75mm.
Tree Preservation Order	In Great Britain, an order made by the local planning authority, where consent must be gained before undertaking all but exempt works to a tree.
Trunk Flare	The basal area of the trunk that flares or widens, and merges with the main roots. See root collar
Veteran Tree	Veteran trees are often found in large parks or estates and commonly affected by extensive decay or have been subject to extensive works. These trees are retained for historical importance and often pose greater risk than normal, which is generally justified. They need careful management and often propping or bracing to support them, some require fencing to limit access.
Vigour	Active, healthy growth of plants: ability to respond to stress factors.
Visual Tree Assessment (VTA)	An assessment of the mechanical condition of trees based upon their 'body language'. Trees are dynamic and respond to faults / decay / environmental factors in various ways, these responses can be indicative of structural integrity.
Wetwood	An infection caused by bacteria living inside the plant tissues. The bacteria ferment the plant fluids, resulting in death of nearby cells, and often causing exudations of fluid from the bark, often referred to as a Slime Flux.
White Rot	A kind of wood decay were a fungi attacks the lignin within the wood matrix
Wind loading	Forces placed upon tree canopy, branches, trunk and roots of a tree under windy conditions.
Wind Throw	The failure of a tree due to wind loading.
Witches Broom	A deformed or unusual growth of twigs from adventitious buds, caused by insects, disease, or dieback of twigs and buds.
Wood	Secondary Xylem; the main structural support and water conducting tissue of trees and shrubs.
Wound Response Tissue	Also Occluding Tissue, Wound Wood or Callus. Differentiated wood tissue that grows around the margins of a wound or injury.
Wound Wood	Wood with atypical features, formed in the vicinity of a wound and a term to describe the occluding tissues around a wound
Xylem	Plant tissues with special function of translocation of water and dissolved nutrients.



Appendix 3: Survey Methodology

- A2.1 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).
- A2.2 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.
- A2.3 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.
- A2.4 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.
- A2.5 Measurements are obtained using a diameter tape, clinometer, distometer and loggers tape. Where this is not practical measurements are estimated.
- A2.6 Some trees are surveyed as groups, though this is usually avoided close to areas likely to be developed.
- A2.7 Finally, a *Retention Category* is allocated as described in Appendix 1.1.1.

Appendix 4: Author's Qualifications

Qualifications & Experience of Joe Taylor - FdSc (Arboriculture), M.Arbor.A., Lantra Approved Professional Tree Inspector

Joe began his career in Arboriculture as a tree surgeon/climber. During his time as a tree surgeon, Joe has achieved City & Guilds NPTC qualifications in Chainsaw Maintenance and Cross Cutting, Tree Climbing and Rescue, Safe Use of Manually Fed Wood-chipper and Supporting Colleagues Undertaking Tree Related Operations.

Joe obtained a Foundation Degree in Arboriculture at Askham Bryan College in 2015 which he passed with merit. Joe is a professional member of the Arboricultural Association, the International Society of Arboriculture and the Royal Forestry Society and regularly attends industry related seminars in order to keep abreast of industry best practice.

Studying at Askham Bryan College reinforced Joe's passion for trees and drove his enthusiasm to learn more. Learning how trees interact with their surrounding environment and their importance within our urban and rural landscapes highlighted an interest in pursuing a career in consultancy.

Since working for Crown Consultants Joe has undertaken numerous surveys and produced numerous reports for the purpose of planning (BS 5837), tree condition surveys, subsidence risk assessments, root surveys and decay detection investigations.



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Arboricultural Report to BS 5837: 2012 for: Ben Snape

Crown Ref: 09318C

Site: Warren Court, Harefield Drive, OL10 1RN

Author: Joe Taylor

Date: 17th March 2023

Appendix 5: 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 Groundcover Plants.

BS 4043: 1989. Transplanting Root-balled Trees.

BS 8004: 1986. Foundations.

BS 8103: 1995. Structural design of Low-Rise Buildings.

BS 8206: 1992. Lighting for Buildings.

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

BS 3882: 2007. Topsoil.

BS 4428: 1989. General Landscaping Operations (excluding hard surfaces).

Permission to do Works to Protected Trees / Tree Law

Forestry Commission (Edinburgh, 2003), *Tree Felling – Getting Permission*. Country Services Division - Forestry Commission. Downloadable at [www.forestry.gov.uk/website/pdf/nsf/pdf/wgsfell.pdf/\\$FILE/wgsfell.pdf](http://www.forestry.gov.uk/website/pdf/nsf/pdf/wgsfell.pdf/$FILE/wgsfell.pdf)

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

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

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

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

Lighting Levels

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

British Standards Institution. Code of practice for day lighting. *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.crowntrees.co.uk

Crown Consultants site containing useful information

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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Arboricultural Report to BS 5837: 2012 for: Ben Snape

Crown Ref: 09318C

Site: Warren Court, Harefield Drive, OL10 1RN

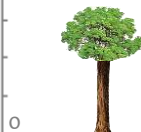
Author: Joe Taylor

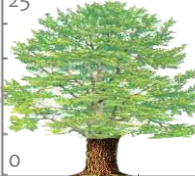
Date: 17th March 2023

Appendix 6: Tree Data Schedule and Site Plan(s)

The Tree Data Schedule and all plans accompanying this report follow this page. They are also provided as separate documents for ease of printing and referring between when viewing on a screen.

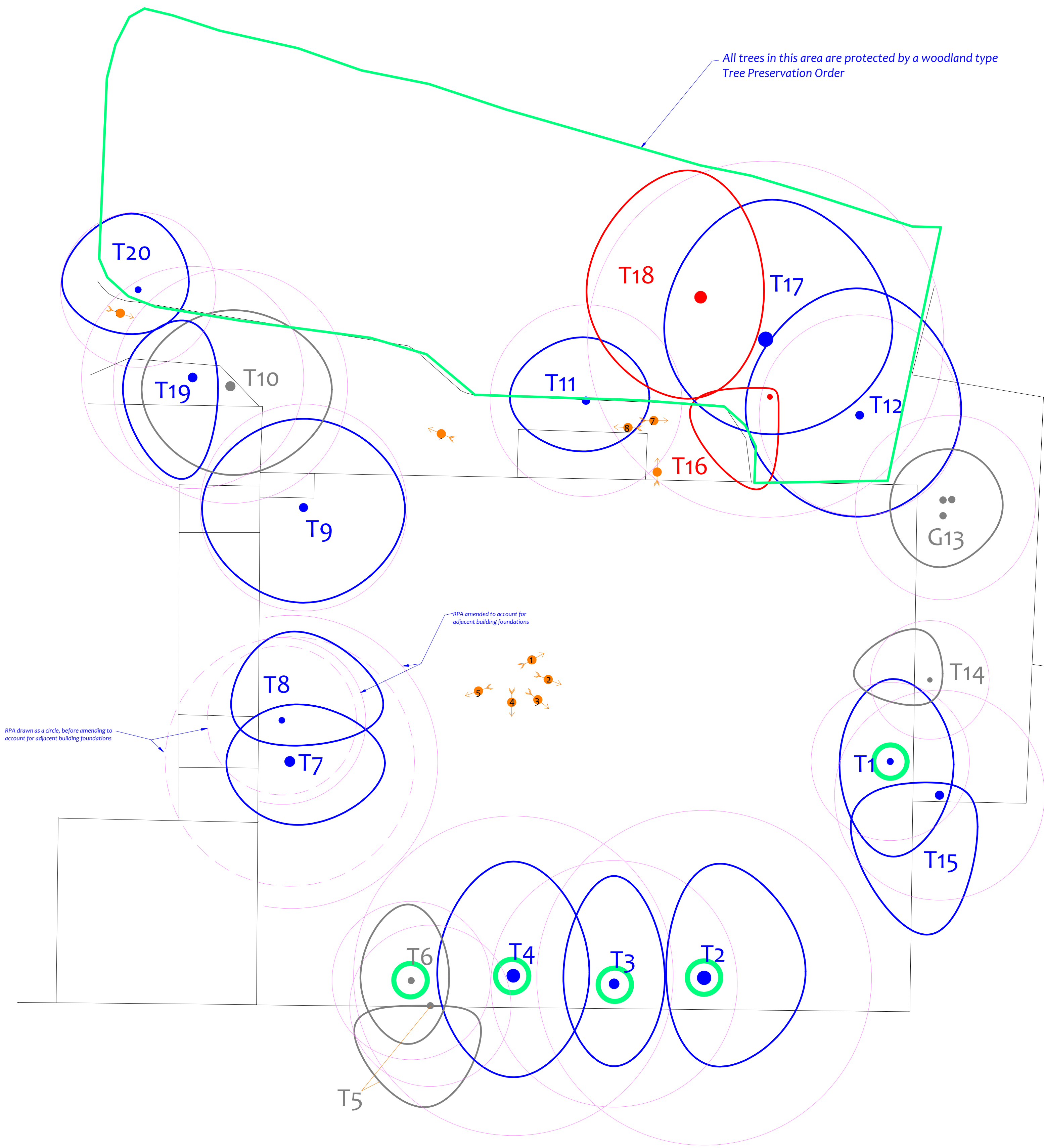
Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m) N W E S	Scaled Tree Diagram (m)	Notes	Recommendations (Independent of any development proposals)		Vigour	Amenity Value
								Priority	Inspect Freq (yrs)	Physiological Condition	Life Expectancy (yrs)
										Structural Condition	Retention Category
T1	Semi-Mature Beech Fagus sylvatica.	18	3	52	4 6.5 5 7.5		Position: Adjacent east boundary. Form: Single stemmed and vertical with a narrow, upright habit. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate Good Good	Moderate 40+ B -
								n/a	3		
T2	Mature Sycamore Acer pseudoplatanus.	20	2	110	3 9 7		Position: Adjacent south boundary. Form: Multi-stemmed at ground level with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Recorded stem diameter is equivalent for 6 stems (45cm).	No action required.		Moderate Good Good	Moderate 40+ B
								n/a	3		
T3	Mature Sycamore Acer pseudoplatanus.	19	4	81	4 8.5 6.5		Position: Adjacent south boundary. Form: Single stemmed & vertical with a balanced crown & co-dominant stem. History: No evidence of significant pruning. Defects: Loose bark and occasional exudates to south western stem at 0.5m above ground level - acceptable condition at present. Other: Recorded stem diameter is equivalent for two stems (69cm and 42cm).	Monitor.		Moderate Fair Fair	Moderate 40+ B
								Moderate	1		
T4	Mature Sycamore Acer pseudoplatanus.	21	3	105	6 9 8		Position: Adjacent south boundary. Form: Twin-stemmed at 1m with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Recorded stem diameter is equivalent for two stems (63cm and 84cm).	No action required.		Moderate Good Good	Moderate 40+ B
								n/a	3		
T5	Over-Mature Goat Willow Salix caprea.	7	0	53	6 0 8 4		Position: Adjacent south boundary. Form: Single stemmed and leaning with an unbalanced crown. (Suppressed). History: No evidence of significant pruning. Defects: No significant defects observed.	No action required.		Moderate Fair Fair	Low 10-20 C
								n/a	3		
T6	Semi-Mature Sycamore Acer pseudoplatanus.	16	5	52	4 6 5 3		Position: Adjacent south boundary. Form: Single stemmed and vertical with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate Fair Good	Low 20-40 C
								n/a	3		
T7	Mature Sycamore Acer pseudoplatanus.	16	2	82	5 4.5 7.5 5		Position: Adjacent west boundary. Form: Multi-stemmed at 2m with a balanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate Fair Fair	Low 20-40 B
								n/a	3		

Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m) N W S E	Scaled Tree Diagram (m)	Notes	Recommendations (Independent of any development proposals)		Vigour	Amenity Value
								Priority	Inspect Freq (yrs)	Physiological Condition	Life Expectancy (yrs)
										Structural Condition	Retention Category
T8	Semi-Mature Ash Fraxinus excelsior.	14	2	49	4 7 8 2		Position: Adjacent west boundary. Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate	Low
								n/a	3	Fair	20-40 B
T9	Early-Mature Sycamore Acer pseudoplatanus.	19	4	68	7 8 7.5		Position: North west corner of site. Form: Single stemmed and vertical with a well-formed crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		High	Moderate
								n/a	3	Fair	20-40 B
T10	Mature Horse Chestnut Aesculus hippocastanum.	12	1	77	6 8 7		Position: North of site. Form: Single stemmed and leaning heavily with a very unbalanced crown. History: Topped at circa 12m. Defects: Previously observed exudates are no longer visible, but cracking bark observed in small areas. Other: Heavily reduced.	Monitor.		Moderate	Low
								Moderate	1.5	Fair	10-20 C
T11	Early-Mature Oak Quercus robur.	16	3	63	5 5 4		Position: North of site. Form: Single stemmed and vertical with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		Moderate	Moderate
								n/a	3	Good	40+ B
T12	Early-Mature Oak Quercus robur.	20	8	66	10 8 8		Position: North of site. Form: Single stemmed with a slight lean and a balanced crown. History: No evidence of significant pruning. Defects: Significant deadwood throughout. Other: Acceptable condition at present.	No action required.		Moderate	Moderate
								n/a	3	Good	40+ B
G13	Semi-Mature Sycamore Acer pseudoplatanus.	av 8	av 6	av 55	av 4 4 4 each		Position: East of site. History: All heavily reduced.	No action required.		Moderate	Low
								n/a	3	Good	40+ C
T14	Semi-Mature Sycamore Acer pseudoplatanus.	17	11	39	4 1 2		Position: East of site. Form: Multi-stemmed at 0.5m with a narrow, upright habit. History: No evidence of significant pruning. Defects: No significant defects. Other: Actual recorded stem diameters are 20cm, 21cm, 26cm.	No action required.		High	Low
								n/a	3	Fair	20-40 C

Reference G = Group H = Hedge	Age & Species	Height (m)	Crown Ht (m)	Diameter (cm)	Crown Spread (m) N W E S	Scaled Tree Diagram (m)	Notes	Recommendations (Independent of any development proposals)		Vigour	Amenity Value
								Priority	Inspect Freq (yrs)	Physiological Condition	Life Expectancy (yrs)
										Structural Condition	Retention Category
T15	Mature Beech Fagus sylvatica.	21	2	69	7 11 3		Position: East of site. Form: Twin-stemmed at 3m with an unbalanced crown. History: No evidence of significant pruning. Defects: No significant defects. Other: Poor form.	No action required.		Moderate Good Good	Moderate 40+ B
								n/a	3		
T16	Semi-Mature Beech Fagus sylvatica.	8	2	42	7 8 0		Position: North of site. Form: Kinked stem. History: No evidence of significant pruning. Defects: Major tear wound at 1m with significant decay.	Remove.		Low Fair Very Poor	Low <10 U
								Moderate	N/A		
T17	Mature Beech Fagus sylvatica.	24	5	117	8 10 7.5		Position: North of site. Form: Twin-stemmed at 2m with a well-formed crown. History: No evidence of significant pruning. Defects: Significant decay to stem base likely.	Decay detection required.		Moderate Good Fair	Moderate 10-20 B
								High	0.5		
T18	Over-Mature Beech Fagus sylvatica.	24	6	96	9 5 8		Position: North of site. Form: Twin-stemmed at 4m with a slightly unbalanced crown. History: No evidence of significant pruning. Defects: Major cavity at 1.5m.	Remove.		Moderate Fair Very Poor	Low <10 U
								Moderate	N/A		
T19	Mature Horse Chestnut Aesculus hippocastanum.	16	2.5	73	5.5 2 4.5 8		Position: Adjacent to driveway. Form: Twin-stemmed at 5m with a slightly unbalanced crown. History: Topped at circa 10m. Defects: No significant defects. Other: Sparse canopy.	Monitor.		Low Poor Fair	Moderate 20-40 B
								Moderate	1		
T20	Semi-Mature Sycamore Acer pseudoplatanus.	20	4	51	6 4 3.5		Position: Adjacent to driveway. Form: Single stemmed and vertical with a well-formed crown. History: No evidence of significant pruning. Defects: No significant defects.	No action required.		High Good Good	Moderate 40+ B
								n/a	3		



Tree Constraints Plan
(Existing Layout)



Photographs

Photo 1.



Photo 2.



Photo 3.



Photo 4.



Photo 5.



Photo 6.

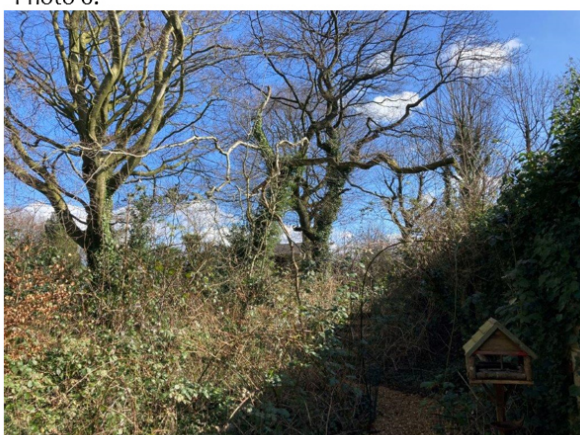


Photo 7.



Photo 8.



Photo 9.



Photo 10.



Tree Ref.	Species	Height (m)	Root Protection Area		
			Radius (m)	m ²	Square (m)
T1	Beech	18	6.2	122	11.1
T2	Sycamore	20	13.2	547	23.4
T3	Sycamore	19	9.7	297	17.2
T4	Sycamore	21	12.6	499	22.3
T5	Goat Willow	7	6.4	127	11.3
T6	Sycamore	16	6.2	122	11.1
T7	Sycamore	16	9.8	304	17.4
T8	Ash	14	5.9	109	10.4
T9	Sycamore	19	8.2	208	14.5
T10	Horse Chestnut	12	9.2	268	16.4
T11	Oak	16	7.6	180	13.4
T12	Oak	20	7.9	197	14.0
G13	Sycamore	8	6.6	137	11.7
T14	Sycamore	17	4.7	69	8.3
T15	Beech	21	8.3	215	14.7
T16	Beech	8	5.0	80	8.9
T17	Beech	24	14.0	619	24.9
T18	Beech	24	11.5	417	20.4
T19	Horse Chestnut	16	8.8	241	15.5
T20	Horse Chestnut	17	9.0	254	16.0
T21	Sycamore	20	6.1	118	10.8

Drawing No:	CCL 09318C / TCP Rev: 1
Title:	Tree Constraints Plan (Existing Layout)
Site:	66 Hammersmith Road W4 8UD
Scale:	0 5 10m 1:200
Paper Size:	A1



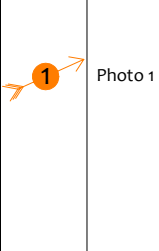
Tree Retention Categories	
Stems & canopies shown	
	Category A tree
	Category B tree
	Category C tree
	Category U tree

	Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.
	Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees, or younger trees with good form. Retention of these trees is desirable though less than Category A trees.
	Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.
	Trees unsuitable for retention due to their very poor condition.



Tree Constraints Plan

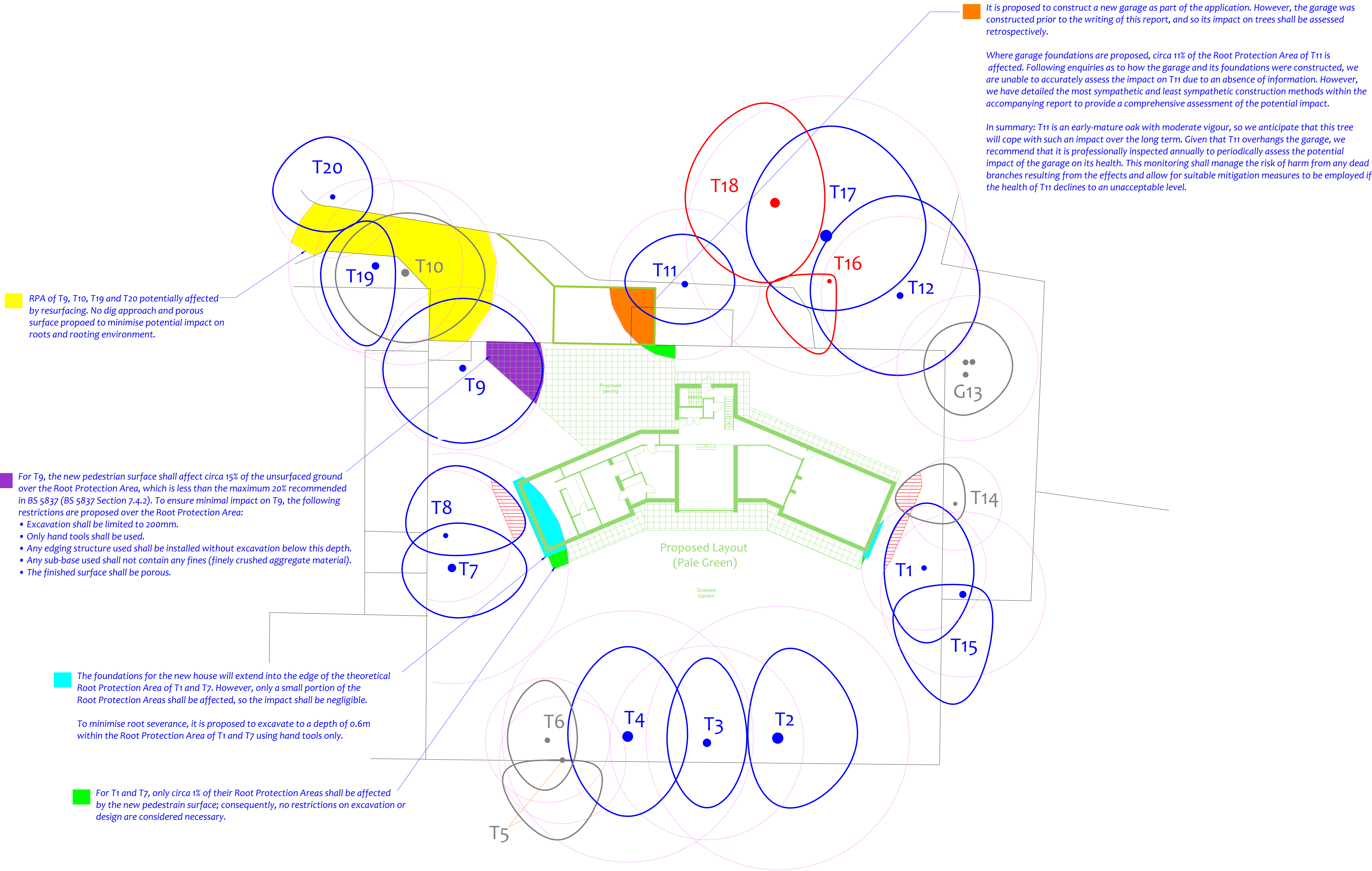
	B5 5837 Root Protection Area (radius = 12xstem diameter)	
	Root Protection Area needing amendment due to site conditions, e.g. presence of existing road or building.	
	Root Protection Area having been amended to account for site conditions	
T1 = Tree No 1	G2 = Group No 2	H3 = Hedge No 3



MN = Measured North:
Canopy spreads are sometimes measured to an approximate N defined by site features. Often more accurate, especially where rows of trees are not aligned N-S or E-W.



Impact Assessment Plan
(Existing Layout with Proposals Overlaid)



It is proposed to construct a new garage as part of the application. However, the garage was constructed prior to the writing of this report, and so its impact on trees shall be assessed retrospectively.

Where garage foundations are proposed, circa 11% of the Root Protection Area of T11 is affected. Following enquiries as to how the garage and its foundations were constructed, we are unable to accurately assess the impact on T11 due to an absence of information. However, we have detailed the most sympathetic and least sympathetic construction methods within the accompanying report to provide a comprehensive assessment of the potential impact.

In summary: T11 is an early-mature oak with moderate vigour, so we anticipate that this tree will cope with such an impact over the long term. Given that T11 overhangs the garage, we recommend that it is professionally inspected annually to periodically assess the potential impact of the garage on its health. This monitoring shall manage the risk of harm from any dead branches resulting from the effects and allow for suitable mitigation measures to be employed if the health of T11 declines to an unacceptable level.

Tree Ref.	Species	Height (m)	Root Protection Area		
			Radius (m)	m ²	Square (m)
T1	Beech	18	6.2	122	11.1
T2	Sycamore	20	13.2	547	23.4
T3	Sycamore	19	9.7	297	17.2
T4	Sycamore	21	12.6	499	22.3
T5	Goat Willow	7	6.4	127	11.3
T6	Sycamore	16	6.2	122	11.1
T7	Sycamore	16	9.8	304	17.4
T8	Ash	14	5.9	109	10.4
T9	Sycamore	19	8.2	209	14.5
T10	Horse Chestnut	12	9.2	268	16.4
T11	Oak	16	7.6	180	13.4
T12	Oak	20	7.9	197	14.0
G13	Sycamore	8	6.6	137	11.7
T14	Sycamore	17	4.7	69	8.3
T15	Beech	21	6.3	215	14.7
T16	Beech	8	5.0	80	8.9
T17	Beech	24	14.0	619	24.9
T18	Beech	24	11.5	417	20.4
T19	Horse Chestnut	16	8.8	241	15.5
T20	Horse Chestnut	17	9.0	254	16.0
T21	Sycamore	20	6.1	118	10.8

Drawing No: CCL 09318C / IAP Rev: 1
Title: Impact Assessment Plan
(Existing Layout with Proposals Overlaid)
Site: Warren Court
OL10 1RN
Scale: 1:200 Paper Size: A1



Tree Retention Categories	
Stems & canopies shown	
	Category A tree
	Category B tree
	Category C tree
	Category U tree

Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.

Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees, or younger trees with good form. Retention of these trees is desirable though less than Category A trees.

Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.

Trees unsuitable for retention due to their very poor condition.

Impact Assessment Plan

(Existing Layout with Proposals Overlaid)

BS 5837 Root Protection Area (radius = 12xstem diameter)

Root Protection Area needing amendment due to site conditions, e.g. presence of existing road or building.

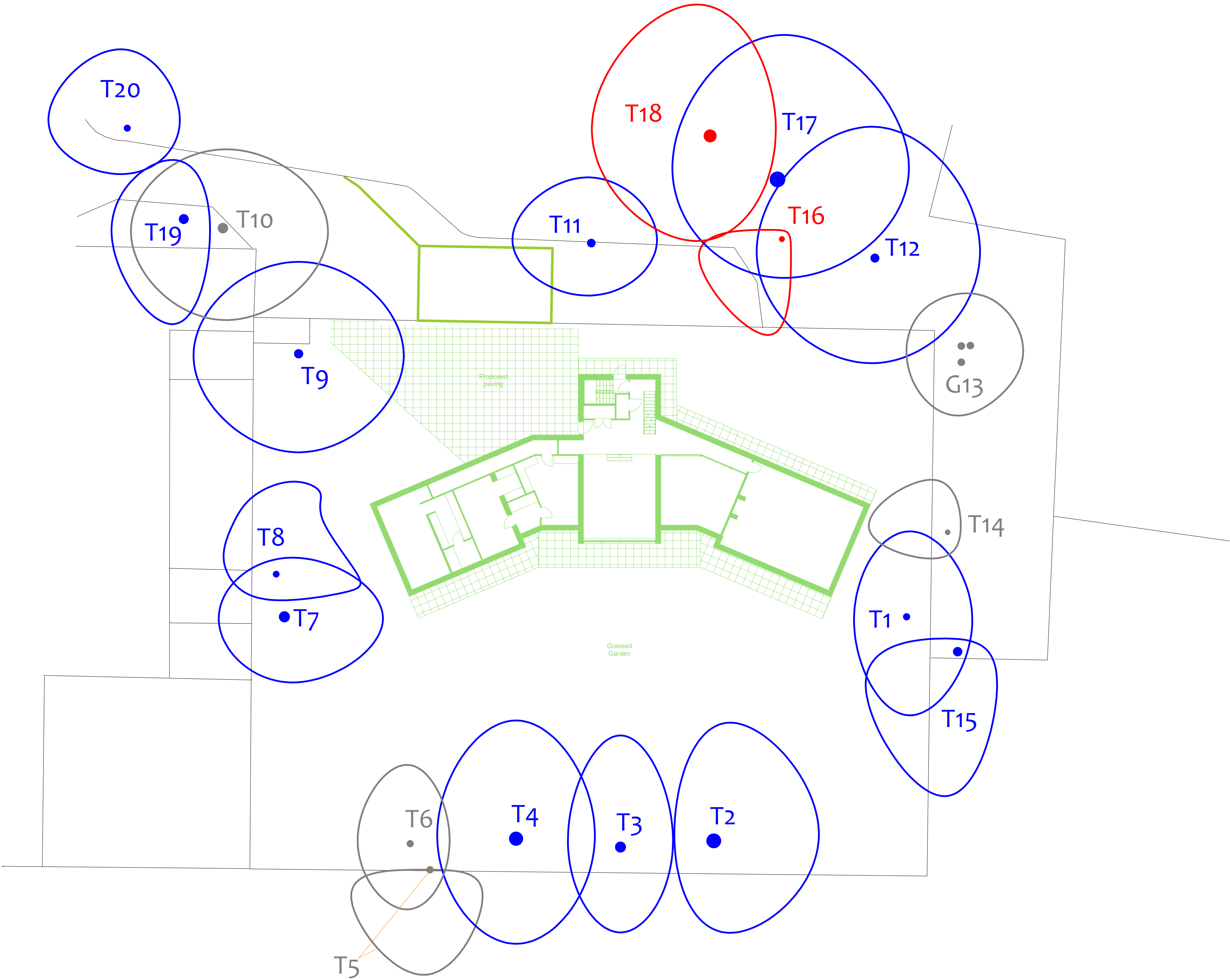
Root Protection Area having been amended to account for site conditions

Tree to be removed to facilitate the proposal

Tree to be removed due to its low quality



Proposed Layout Plan
(Showing Only Retained Trees)



Tree Ref.	Species	Height (m)	Root Protection Area			
			Radius (m)	m ²	Square (m)	
T1	Beech	18	6.2	122	11.1	
T2	Sycamore	20	13.2	547	23.4	
T3	Sycamore	19	9.7	297	17.2	
T4	Sycamore	21	12.6	499	22.3	
T5	Goat Willow	7	6.4	127	11.3	
T6	Sycamore	16	6.2	122	11.1	
T7	Sycamore	16	9.8	304	17.4	
T8	Ash	14	5.9	109	10.4	
T9	Sycamore	19	8.2	209	14.5	
T10	Horse Chestnut	12	9.2	266	16.4	
T11	Oak	16	7.6	180	13.4	
T12	Oak	20	7.9	197	14.0	
G13	Sycamore	8	6.6	137	11.7	
T14	Sycamore	17	4.7	69	8.3	
T15	Beech	21	8.3	215	14.7	
T16	Beech	8	5.0	80	8.9	
T17	Beech	24	14.0	619	24.9	
T18	Beech	24	11.5	417	20.4	
T19	Horse Chestnut	16	8.8	241	15.5	
T20	Horse Chestnut	17	9.0	254	16.0	
T21	Sycamore	20	6.1	118	10.8	



Tree Retention Categories	
Stems & canopies shown	
	Category A tree
	Category B tree
	Category C tree
	Category U tree

Trees of high quality with an estimated life expectancy of 40+ years. Usually large trees with significant presence or smaller trees with excellent form. Retention of these trees is highly desirable.

Trees of moderate quality with a life expectancy of 20+ years. Usually maturing trees, or younger trees with good form. Retention of these trees is desirable though less than Category A trees.

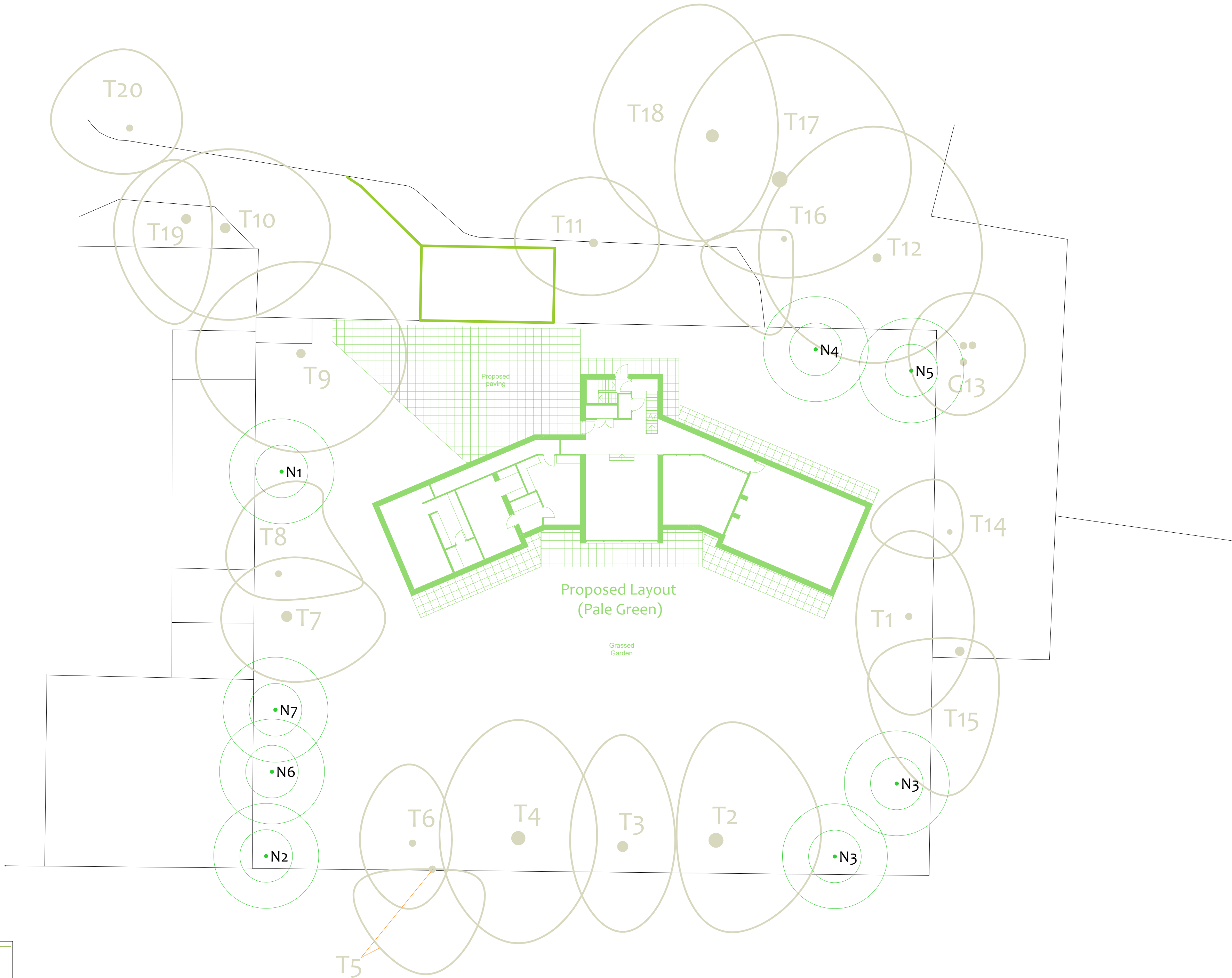
Unremarkable trees of low quality and merit. Individual specimens are not considered to be a material planning consideration.

Trees unsuitable for retention due to their very poor condition.

Proposed Layout Plan



Proposed Planting Plan



Ref No	Species		N°	Size	
N1	Yew	Taxus baccata	1	Standard	8-10cm girth, 2.5-3m height
N2	Purple Beech	Fagus sylvatica 'purpurea'	1	Standard	8-10cm girth, 2.5-3m height
N3	Scots Pine	Pinus sylvestris	2	Standard	8-10cm girth, 2.5-3m height
N4	Weeping Birch	Betula pendula 'Tristis'	1	Standard	8-10cm girth, 2.75-3m height
N5	Japanese Flowering Cherry	Prunus 'Shirotae'	1	Standard	8-10cm girth, 2.5-3m height
N6	Tibetan Cherry	Prunus serrula	1	Standard	8-10cm girth, 2.5-3m height
N7	Crab Apple	Malus 'Red Sentinel'	1	Standard	8-10cm girth, 2.5-3m height

Drawing No:	CCL 09318C / PPP Rev: 1
Title:	Proposed Planting Plan
Site:	Warren Court OL10 1RN
Scale:	0 5 10m 1:2000
Paper Size:	A1



Proposed Tree Planting	
	Proposed new tree reference N1, showing future canopy at 2m and 4m (radius)

Proposed Planting Plan

Tree Ref.	Species	Height (m)	Root Protection Area		
			Radius (m)	m²	Square (m)
T1	Beech	18	6.2	122	11.1
T2	Sycamore	20	13.2	547	23.4
T3	Sycamore	19	9.7	297	17.2
T4	Sycamore	21	12.6	499	22.3
T5	Goat Willow	7	6.4	127	11.3
T6	Sycamore	16	6.2	122	11.1
T7	Sycamore	16	9.8	304	17.4
T8	Ash	14	5.9	109	10.4
T9	Sycamore	19	8.2	209	14.5
T10	Horse Chestnut	12	9.2	266	16.4
T11	Oak	16	7.6	180	13.4
T12	Oak	20	7.9	197	14.0
G13	Sycamore	8	6.6	137	11.7
T14	Sycamore	17	4.7	69	8.3
T15	Beech	21	8.3	215	14.7
T16	Beech	8	5.0	80	8.9
T17	Beech	24	14.0	619	24.9
T18	Beech	24	11.5	417	20.4
T19	Horse Chestnut	16	8.8	241	15.5
T20	Horse Chestnut	17	9.0	254	16.0
T21	Sycamore	20	6.1	118	10.8