BS 5837:2012 Tree Survey, Arboricultural Method Statement and Tree Protection Plan

Gordon House
6 Lissenden Gardens
London
NW5 1LX

30th January 2020

Contents Page

Tables

Appendices

1. Introduction

Usherwood Arboriculture has been instructed to provide a Tree Survey, Arboricultural Method Statement and Tree Protection Plan in relation to the discharge of condition 11 of full planning permission 2016/4935/P for the erection of a two storey roof extension at Gordon House, 6 Lissenden Gardens, London, NW5 1LX. The survey has been carried out in accordance with BS5837:2012, Trees in relation to design, demolition and construction- Recommendations.

Drawing No.	Title	Drawn by
533-PL-100	Existing Plans	Ook Arcitects
533A-PL-110	Proposed Plans	Ook Architects

Table 1. Drawings and documents supplied for consideration within this report.

2.Executive Summary

This document looks at the potential impact of the construction of a two storey roof extension upon 3 Local Authority owned London Plane street trees growing in proximity to Gordon House, 6 Lissenden Gardens. The arboricultural method statement seeks to provide sufficient information to ensure the risk of construction related damage to the 3 category B trees is kept to a minimum. No trees are to be removed as a consequence of the proposed development.

3.The Site

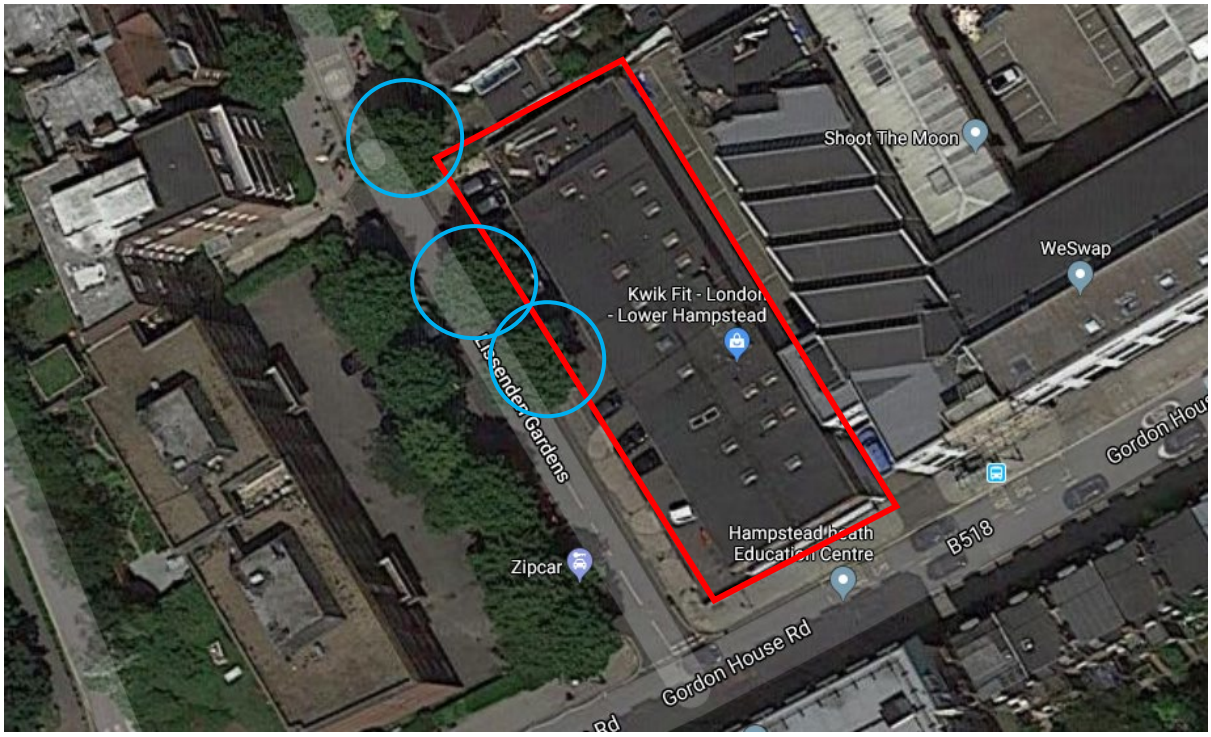
The application site is is situated on the corner of Lissenden Gardens and Gordon House Road within the Dartmouth Park conservation area. An auto repair centre occupies the ground floor with commercial space above. The site frontage consists of asphalt hard-standing bounded by brick walls that separate it from the pavement of Lissenden Road where the 3 street trees are located.

Soil conditions.

The British Geological Survey, Geology of Britain viewer describes the local bedrock geology as London Clay formation- Clay and Silt and the superficial layer as Sand and Gravel.

Legal Constraints

Trees can sometimes be the subject of a Tree Preservation Order (TPO) or a property may be situated within a designated conservation area. Both a TPO and conservation area designation require the owner/occupier or those wishing to work on trees to seek the Council's consent or provide written notice prior to carrying out any works. It is a criminal offence to carry out any works to protected trees without the Council's consent. The trees considered within this document are owned and maintained by Camden Council.



Aerial image courtesy of Google Maps with site outlined in red and subject trees in blue.

4.Tree Survey

Trees were assessed in accordance with recommendations and guidelines contained within British Standard 5837:2012 - 'Trees in relation to design, demolition and construction-Recommendations' henceforth referred to as BS5837. The survey was carried out in relation to the condition and quality of trees growing either within or near the boundary of the site. Where details have been omitted such as the heights of crown break and the direction of the first major lateral branch, these details were not seen as being relevant to this application. Where access allowed, tree heights were measured with a Haglof electronic clinometer and trunk diameters with a diameter tape measure. Crown spreads were measured with a tape measure at the four cardinal points.

All trees were assessed from the ground utilizing the Visual Tree Assessment method as developed by Mattheck and Breloer (The Body Language of Trees, Research for Amenity Trees No 4 Department of the Environment).

This tree survey should not be treated as a hazard assessment, it has been carried out to inform the planning process with regards to the appropriate retention and protection of trees as visual and ecological assets within the landscape. However, where clear and obvious defects have been observed, the relevant parties have been informed.

Tree Assessment and Categorization

Tree quality ratings have been assessed in accordance with BS5837's Table 1, Cascade chart for tree quality assessment.

U= Trees in such a condition that any existing value would be lost within 10 years and which should in the current context, be removed for reasons of sound arboricultural management. (Trees that have serious, irremediable structural defects, such that their early loss is expected due to collapse or ill health including trees that will become at risk due to the loss of other U category trees).

A = Trees of high amenity quality and value in such a condition as to be able to make a substantial contribution (a minimum of 40 years is suggested).
1) Trees that are particularly good examples of their species if rare, unusual or essential components of groups or formal or semi-formal arboricultural features.
2) Trees, groups of trees or woodland which provide a definite screening or softening effect to the locality in relation to views in or out of the site, or those of particular visual importance.
3) Trees groups or woodlands of significant conservation, historical, Commemorative or other value (e.g. veteran tree or wood pasture).

B = Trees of moderate quality and amenity value: those in such a condition as to be able to make a significant contribution (a minimum of 20 years is suggested).
1) Trees that might be included in the high category but are down-graded because of impaired condition (e.g. remediable defects).
2) Trees, groups of trees or woodland that form distinct landscape features but do not form essential components of the landscape.
3) Trees with clearly identifiable conservation or other cultural benefits.

C = Trees of low quality and amenity value currently in adequate condition to remain until new planting is established (a minimum of 10 years is suggested) or trees under 150 mm stem diameter.
1) Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.
2) Trees presenting groups or woodlands but not with a significantly higher landscape value and or offering low or temporary/transient screening benefit.
3) Trees with no conservation or other cultural benefits.
Note: Category C trees are the least suitable for retention, where they would impose a significant constraint on the development their removal for development purposes may be considered acceptable by the LPA.

5.Tree Survey Data & Appraisal

This survey concerns two individual trees, full details of the survey data can be found in the Tree Survey Schedule at **Appendix 1**. An explanation of Tree Quality category ratings is set out on the previous page.

Category A individual trees and groups of trees.
No trees were graded as category A (trees of high quality) as part of this survey.

Category B individual trees and groups of trees.
Three individual trees were graded as category B (trees of moderate quality) as part of this survey.

Category C individual trees and groups of trees.
No trees were graded as category C (trees of low quality) as part of this survey.

Category U individual trees and groups of trees.
No trees were graded as category U (trees unsuitable for retention) as part of this survey.

Species Diversity

1 individual tree species was identified during the survey.

Table 1: Tree species recorded and their botanical names

Common Name	Scientific Name
London Plane	Platanus x hispanica (acerifolia)

Table 2. Tree species recorded and their scientific names.

T1- Local Authority owned London Plane


Photos above show the recently re-pollarded T1 London Plan.

T1, T2 & T3, (cat B) London Planes make impressive mature specimens, owned and maintained by Camden Council, the trees are under regular pollard management. See schedule at appendix 1 for full details.

T2- Local Authority owned London Plane


Photos above show T2 with a strong lean toward the application site.

T3 - Local Authority owned London Plane

Photo above shows T3 with palets leaning against trunk and T1 and T2 behind.

6.Arboricultural Impact Assessment (AIA)

The Arboricultural Impact Assessment sets out the potential risks and threats associated with proposed construction to trees both within and near to an application site and seeks to minimise those risks through a sound and recognised methodology set out within an arboricultural method statement.

Below Ground Constraints

The consented development comprises an addition to the height of the existing building and does not require any major excavation below ground, specifically within the notional root protection areas of the subject trees.

Minor works will include the removal of the existing asphalt surface between the footpath and entrance shown as an orange square on the tree protection plan at appendix 2.

The asphalt surface will be relaid upon the existing subbase with no further excavation expected.

A methodology for the removal of the asphalt surface can be found in the arboricultural method statement.

Root Protection Areas

The **Root Protection Areas (RPA)** have been calculated in accordance with Table D1 of BS5837:2012. Notional RPA's are plotted on tree protection plan at **appendix 2**. The RPA is defined by the formula in paragraph 4.6 from the British standard and may be refined by considering current on-site constraints to root activity such as buildings, walls, earthworks, roads, paved surfaces and services.

In this instance, it is my opinion that the rooting area of the three local authority owned London Planes is likely to be within the area defined on the tree protection plan as the realistic rooting area.

The above conclusion is based on optimum conditions for root growth below ground. The sub base beneath the highway is likely to be too compacted to provide ideal substrate for root growth whilst the foundation of the current building would normally be a block for tree roots to extend beneath the building. Slightly better (less compact) conditions exist beneath the footpath and also beneath the forecourt of Georgian House.

Only those trees proposed for retention with root systems which could be impacted upon during construction activities have been included within Table 3 on the following page.

T No.	Species common name	stem diameter mm	Radius of nominal circle m	RPA m^2
T1	London Plane	750	9m	$254m^2$
T2	London Plane	680	8.2m	$211m^2$
T3	London Plane	630	7.6m	$181m^2$

Table 3: Retained trees and their RPA's.

Root Systems

Root systems can easily be damaged during construction works, leading to the sometimes-rapid decline of valuable retained trees. The biggest problem for trees on or close to construction sites is the compaction of soil caused by inappropriate vehicular movement and storage of materials especially where the site is founded on a compressible clay soil.

Numerous surveys have shown that a significant proportion of a tree's roots proliferate in the top 600-1000mm of soil. There will of course be roots that may go down to depths of 3 metres or more although these will be in the minority. Roots in the upper soil surface find it far easier to intercept moisture, acquire oxygen and perform gaseous exchange. You also find that as soil depth increases so does its strength or compaction making it harder for roots to push through with new extension growth.

Root morphology differs from species to species and is largely dependent on the soil type and ground conditions, however the fine roots responsible for moisture and nutrient uptake can last anything from a single day through to a year, with the tree producing new fine roots on a regular basis. The larger and more structural roots are a permanent part of the tree

convey moisture and nutrients from the soil via the fine roots, into the trunk and canopy. The larger roots are of course responsible for the tree's stability as well as being areas of carbohydrate storage. Younger trees are more able to adapt to change and have more potential energy to explore alternative rooting environments whereas more mature trees are slower to react to a changing soil environment and are adapted to expend their energy on other important functions.

Above Ground Constraints

All three trees have been regularly maintained as pollards and during my site visit, it was evident that the works had only recently been repeated. This means that the reduced crowns of all three trees are sufficiently compact with adequate clearance from the building as to not require any further protection.

Protection of trunks at ground level

The standard way to protect the trunk or main stems of trees from inadvertent construction damage is to install a wooden tree box as shown in the photo below left. However, this will not be possible for this particular project due to the narrowness of the remaining pavement between the tree and site as well as the angle of lean of all three trees as shown in the second photo below.

It is proposed to hold a pre-start meeting with the contractor to discuss a delivery protocol for materials with the only potential risk being from goods being craned from delivery vehicles to the storage area as well as the delivery and pick up of skips.

Photos above show a standard tree box installed around a London Plane, with the second photo showing the lack of space for a box at Lissenden Gardens.

7.Arboricultural Method Statement (AMS)

The arboricultural method statement sets out a precautionary approach towards tree protection. Any operations including access, proposed within the RPA (or crown spread where this is greater) should be described within an arboricultural method statement, to demonstrate that the operations can be undertaken with minimal risk of adverse impact to retained trees.

This method statement is to be read in conjunction with the tree protection plan attached at **appendix 2.**

The methodology sets out to provide sufficient protection to the rooting environments and above ground components of all trees within the vicinity of the proposed construction throughout the duration of works.

Pre commencement Site Meeting-

A site meeting will be held between the project arboriculturalist, site manager and other interested parties to ensure that tree protection methodologies are understood by all those involved in the project.

Access facilitation and pre start tree works.

- None required.

Installation of protective fencing

- Protective fencing is not required at this site.

Installation of Ground Protection

- Ground protection is not required at this site, the existing hard standing provides an adequate base for short term storage of dry materials.

Construction Phase

- Construction will continue in a conventional manner with no specific requirement for arboricultural methodologies or input.

Post Construction- External Hard Surfaces

- The existing asphalt surface will be carefully removed with the use of of a hand held pneumatic breaker.

- The surface will be broken up and sub base left in-situ to be relaid with the replacement surface.

- The works will be monitored by the project arboriculturalist, a protocol for dealing with exposed roots is set out below.

If any tree roots are encountered during the excavation process, roots up to 25mm shall be cut back with a sharp pair of by-pass loppers, except where they occur in clumps. Roots occurring in clumps or of 25mm diameter and over should be severed only following consultation with the project arboriculturalist or Local Authority tree officer.

If substantial tree roots are to be left exposed for any length of time, these must be covered with a damp hessian rap to minimize desiccation. Hessian should be removed immediately prior to backfilling with a suitable soil or sharp sand, not builders sand which contains sodium, detrimental to tree roots.

Dealing with tree roots found during excavation works.

Site Supervision

- The first site supervision visit will be in the form of a pre-commencement meeting as set out on the previous page.
- The project arboriculturalist will be available to advise on any tree related issues that may arise throughout the duration of the project.
- The second supervision visit will be carried out during the removal of the existing asphalt forecourt.
- A final visit will be carried out once works are completed. Trees will be checked to ensure that they remain in pre-project condition.
- A short report will be issued to the client and local authority verifying issues raised and outcomes of all visits.

General measures to be adopted in proximity to trees-

- All tree protection measures will be set in place prior to commencement of any works relating to the approved planning consent.
- No bonfires on site.
- No storage of products or mixing of materials within the RPA's of trees unless stated.
- No construction materials are to be stored within the confines of the protective fencing (CEZ).
- Storage of materials on soft ground in proximity to any other trees and hedges away from construction is to be avoided.
- No discharging of any products associated with construction near trees or hedges
- No refueling/topping up of hydraulic fluids etc. on plant machinery within or close to the RPA of trees.

- There will be no lowering or raising of soil levels within the root protection areas of retained trees except where specified and agreed by the LPA.

- There will be no excavation or trenching for the installation of services within the root protection areas of retained trees.

8. Conclusion

Provided the contents of this document are adhered to, I am confident that the construction of the two-storey roof extension can proceed without detriment to the three local authority owned trees.

9. Qualifications & Experience

I have been involved in the horticultural and arboricultural industries for over 30 years, firstly as a contractor and for the last 15 years as a Local Authority tree officer and consultant. I hold the AA Tech cert arb, and ND Arb (RFS) as well as being a Lantra accredited Professional Tree Inspector. I am also a technical member of the Arboricultural Association and professional member of the Consulting Arborists Society.

Lawrence Usherwood
Usherwood Arboriculture

84 Cromwell Road
Caterham
Surrey
CR3 5JB

Phone: 07753 211306
email: lawrence@usherwoodarboriculture.co.uk
http://usherwoodarboriculture.co.uk/

Appendix 1: Tree Survey Schedule

Trees have been listed on the schedule with their common names, botanic or scientific names can be found in Table 2.

Tree height is normally measured and rounded up to the nearest metre for trees above 10 metres in height using a Haglof electronic clinometer.

Stem or trunk diameters were measured using a diameter tape in mm at 1.5 metres above ground where access allowed, otherwise diameters have been estimated.

Crown spread has been measured in metres from the trunk to the tips of the live lateral branches taken at the four-cardinal points N-E-S-W using a ground tape.

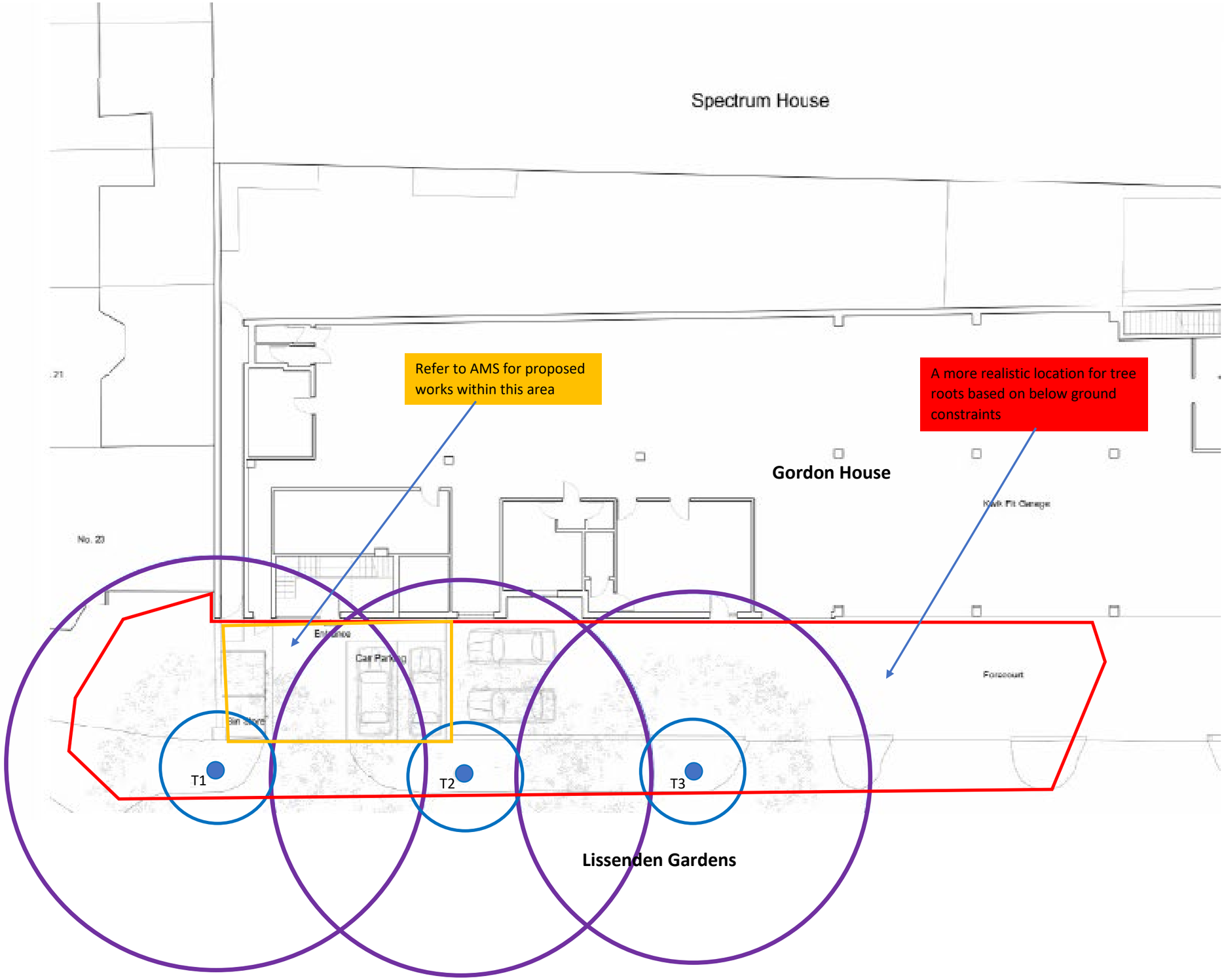
Age Class
Young - Trees in the first fifth of full life expectancy
Semi-mature - Trees in the second fifth of full life expectancy
Early-mature - Trees in the third fifth of full life expectancy
Mature - Trees in the fourth fifth of full life expectancy
Post-mature – Trees having reached full life expectancy and trees in natural decline
Veteran - Trees of interest biologically, culturally and aesthetically due to certain features and/or age.

ERCY-The estimated remaining contribution in years calculated considering the tree's species, location, current age and physiological and structural condition at the time of the survey.

BS5837 Survey Data

Ref.	Species	Measurements	General Observations	Category	Recommendations
T001	Plane, London (Platanus x hispanica)	Height (m): 9# Stem Diam (mm): 750 Spread (m): 3N, 3.5E, 2.5S, 2W Life Stage: Mature	Local authority owned tree under regular pollard management. T1 has recently been re-pollarded.	B2,3 RPA Radius: 9.0m. Area: 254 sq m.	
T002	Plane, London (Platanus x hispanica)	Height (m): 9# Stem Diam (mm): 680 Spread (m): 2N, 3.5E, 2.5S, 2W Life Stage: Mature	Local authority owned tree under regular pollard management. T1 has recently been re-pollarded.	B2,3 RPA Radius: 8.2m. Area: 211 sq m.	
T003	Plane, London (Platanus x hispanica)	Height (m): 9# Stem Diam (mm): 630 Spread (m): 2N, 3E, 2.5S, 2W Life Stage: Mature	Local authority owned tree under regular pollard management. T1 has recently been re-pollarded.	B2,3 RPA Radius: 7.6m. Area: 181 sq m.	

Appendix 2: Tree Protection Plan



USHERWOOD ARBORICULTURE

Key

Category B Trees

Notional RPA's

Realistic Rooting Area

Refer to AMS

TREE PROTECTION PLAN

Drawn by L Usherwood

Baseplan Drawn by Ook Architects

Date 03.02.2020

NOT FOR CONSTRUCTION

Drawing No. UA/TPP/01

Client: English Rose Estates (Gordon House) Ltd.