

Arboricultural Survey

Stephenson Way
Euston
London
NW1 2HD

10th October 2018



PJC ref: 4973/18-01 Rev 01

This report has been prepared by

PJC Consultancy Ltd

on behalf of

TP Bennet Architecture

**Prepared
by**

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Beginning his career in 2012 studying the Level 3 extended diploma
George went on to work abroad in Australia as a climber and
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CONTENTS

1 Introduction

2 Site visit and survey methodology

3 Site details and survey findings

Appendices:

1. Tree Constraints Plan
2. Tree Survey Schedule
3. Cascade Chart for tree quality assessment
4. Photographs

1 INTRODUCTION

1.1 **Instruction:** PJC Consultancy has been instructed by TP Bennet Architecture to provide an initial arboricultural survey of land at Stephenson Way. The survey is to be undertaken in accordance with BS5837: 2012 '*Trees in relation to design, demolition and construction – Recommendations*'.

1.2 **Survey objectives:** This survey has been undertaken with the following objectives:

- To record a schedule of significant trees (dimensions and locations) situated at the prospective development site.
- To assess the quality and value of the existing tree stock in terms of arboricultural, landscape, historical/conservation, or public amenity value.
- To provide information relating to planning constraints that may restrict works to trees at the site.
- To provide an assessment of the material constraints posed by the existing tree stock on potential future developments at the site.

1.3 **Scope of this report:** This report is concerned with all significant trees and arboricultural features located within the site boundary. Additionally, trees located around the curtilage of the site have also been surveyed when they are considered likely to have the potential to impact on the development (in relation to root and crown protection or foundation design).

1.4 **Contents of report:** This report includes the following:

- A summary of the existing tree stock and notable arboricultural features.
- Tree Constraints Plan in accordance with BS5837: 2012.
- Tree Survey Schedule containing the relevant measurements and information for each tree or tree group as required in BS5837: 2012.

1.5 **Documents and information provided:** The following documents were used to aid the preparation of this report:

- Drawing ref. D0000 D1 – Topographical Survey

2 SITE VISIT AND SURVEY METHODOLOGY

2.1 **Site visit:** A site visit was carried out on 11th September 2018. The weather conditions at the time were overcast however, the visibility was adequate for visual tree inspection from ground level.

2.2 **Tree survey information:** The following information was recorded in the Tree Survey Schedule for each individual tree (average dimensions are recorded for groups):

- Tree reference number.
- Species (common and scientific name).
- Overall tree height (m).
- Stem diameter (mm) per stem or average diameter for multi-stemmed trees with six or more stems.
- Branch spread (m) measured to the four cardinal points.
- Existing height (m) above ground level of lowest significant branch and direction of growth (for individual trees only).
- Existing height (m) above ground level of canopy.
- Age class (young, semi mature, early mature, mature, over mature or veteran).
- Physiological condition (good, fair, poor).
- Structural condition (good, fair, poor).
- Comments (general description of tree(s) including any notable features).
- Preliminary management recommendations (prescriptions for tree management processes based on the current land use and not related to the prospective development).
- Tree categorisation (see below).
- Root protection area (m²).
- Root protection radius (m).

2.3 **Tree categorisation:** The condition and value of each tree was evaluated based on the current land use. Each tree or tree group has been awarded either category A, B, C or U and a sub category of either 1,2 or 3 or a combination of the sub categories.

2.4 Tree categorisation summary:

- A – Trees of good condition and high arboricultural, landscape or conservation value. Must have a potential life span in excess of forty years.
- B – Trees of moderate condition, with minor defects or sub-optimal form but are still of modest arboricultural, landscape or conservation value. Must have a potential life span in excess of twenty years.
- C – Unremarkable trees of poor condition or form with limited arboricultural, landscape or conservation value, or trees with a stem diameter under 150mm. Must have a potential life span in excess of ten years.
- U – Trees of such impaired condition that they cannot realistically be retained as living trees in the context of the current land use for more than ten years. These trees do not need to be removed if they are not dangerous and do not conflict with the proposed development, but should not be considered a constraint to development.

2.5 Tree sub categorisation summary:

- 1 – Trees have mainly arboricultural value, e.g. trees of good condition, form and vitality or rare tree species.
- 2 – Trees have mainly landscape value, e.g. trees of landscape prominence, that serve to screen unsightly views or that are required for privacy. Also trees present in groups that attain higher collective rating that they would as individuals.
- 3 – Trees with mainly cultural value including conservation, e.g. commemorative trees, trees of historical significance or veteran trees.

2.6 Each tree can only be categorised as A, B or C but may comply with more than one sub category. A cascade chart further explaining how tree categorisation is decided is included in Appendix 3.

2.7 Root protection areas: A root protection area represents the minimum area of root growth required to support a tree. It is a standardised calculation based on the stem diameter(s) measured at 1.5m and is not necessarily representative of the actual root spread or total rooting area. The formulas used to calculate root protection areas are shown below:

Table 1: Root protection area formulas

For single stemmed trees, root protection areas are calculated as follows:

$$\text{Root protection area (m}^2\text{)} = \frac{(\text{stem diameter (mm)} \times 12)^2 \times \pi}{1000}$$

For trees with two to five stems, a combined stem diameter is calculated as follows:

$$\sqrt{(\text{stem diameter } 1)^2 + (\text{stem diameter } 2)^2 \cdots + (\text{stem diameter } 5)^2}$$

For trees with more than five stems, the combined stem diameter is calculated as follows:

$$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$$

2.8 The root protection areas are plotted onto the Tree Constraints Plan in Appendix 1, and recorded in the Tree Survey Schedule in Appendix 2. These are represented as a circle on the plan (unless significant rooting constraints are present), and are colour coded depending on the category the tree has been awarded. Where existing site conditions/features are present that are deemed likely to have affected the root morphology, the root protection areas have represented as a polygon of equivalent area.

2.9 The proposed layout should avoid level changes or the placement of new buildings and areas of hard surfacing within the root protection areas of retained trees. In certain situations, engineered solutions are available to allow construction within the root protection areas however further input from an arboriculturalist should be sought regarding their site-specific viability before these methods are relied upon.

2.10 The disturbance of a tree's root system can result in crown dieback and even death of the tree. Roots are used to support the tree structurally as well as the absorption of moisture and nutrients from the soil. They also act as storage and transport for water and nutrients.

2.11 Direct damage such as root severance can lead to ill health, as can compaction of the soil by construction traffic, heavy plant and storage of materials. Changing the nature of the surface above the growing medium, (i.e. from porous to non-porous), can alter the resources available to the tree, which in turn can lead to its decline.

2.12 The majority of root growth is usually found within the top 600mm of soil. As such, even shallow disturbance within root protection areas can potentially have a significant impact on the trees.

2.13 The root protection areas must be left free from excavation and disturbance, and protected from compaction or contamination during any proposed works. Any construction works within a root protection area required for the proposed layout must be justifiable within an arboricultural impact assessment.

2.14 **Limitations of survey:** Direct access into the site was not possible on the date of the site visit, so the trees were surveyed from Stephenson Way and all dimensions were estimated. Although the trees were not directly accessed, their structure and condition were clearly visible from Stephenson Way (refer to photographs in Appendix 4) and it was feasible to assess the quality and visual amenity value possessed by each tree.

2.15 This survey represents a preliminary overview of the condition and value trees at the site. It is not a detailed assessment of any individual tree and although preliminary management recommendations are included, this report will not be sufficient to be used as a detailed condition and safety survey.

2.16 The information and measurements in this report are representative of the date of the site visit. The tree survey data will need to be updated to reflect tree growth and changes in the condition of trees after prolonged periods.

3 SITE DETAILS AND SURVEY FINDINGS

3.1 Site location: The site is situated on Stephenson Way, more broadly to the south-west of Euston Station in the London Borough of Camden. It has a central OS national grid reference of TQ 29419 82444. The surrounding land use is comprised of offices to the north of the site. University College London (UCL) Farr institute is located directly south, and the road junction between North Gower Street and Stephenson Way is located to the west. The location of the site within its environs is shown in figure 1.

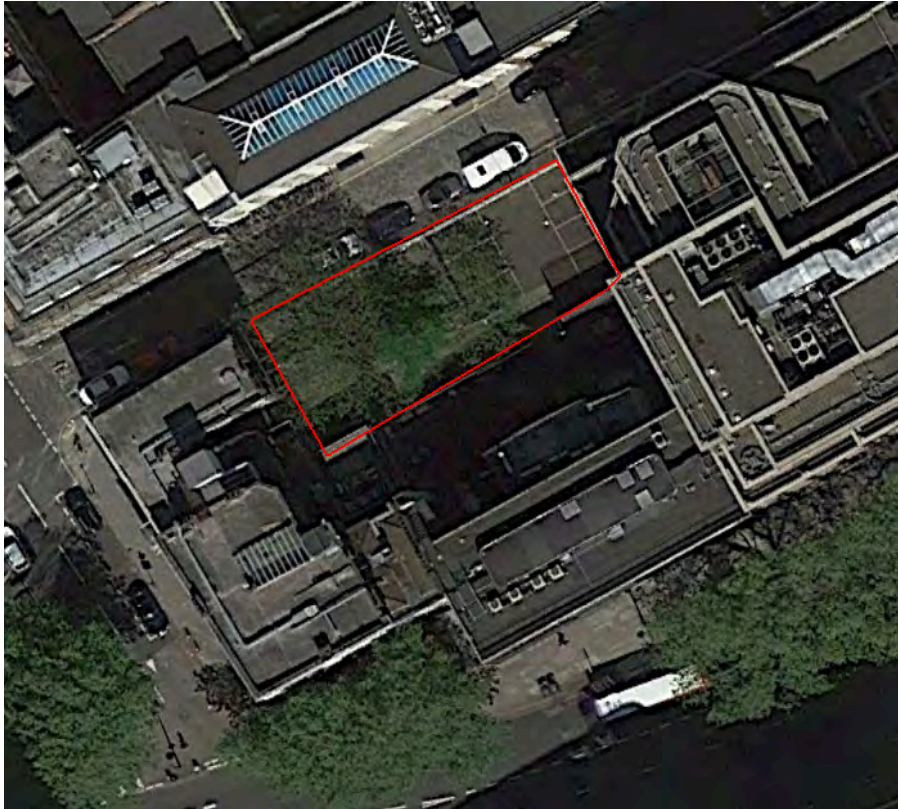


Figure 1: Location of Site and Environs (Map data: © 2018 Google)

3.2 Site layout: The site is located directly south of Stephenson Way and adjoins University College London's Farr Institute. Its northern curtilage is surrounded by a galvanised security fence. The site is split into three sections including a delivery area for UCL, an asphalt car park and a disused steel structure. To the west of the site is a large building in a state of disrepair with exposed underfelt and timber batons.

3.3 Appraisal of tree stock: T1 is a large tree of heaven (*Ailanthus altissima*) with a large spreading crown. The tree has grown through and out of the steel structure, and in places is supported and leaning on the structure. Tree of heaven is a fast-growing species with shallow surface roots which sucker readily. This species tends not to be an ideal choice in urban settings, as they can cause severe damage to built infrastructure if not properly managed. In this instance the tree roots have caused extensive damage to the surrounding tarmac and pavement.

3.4 At its western extents T1 is coming into contact with the neighbouring building and will need to be reduced to avoid direct conflict, also to facilitate future renovation works occurring to the building. On the north side of the tree a large overextended limb is growing through the galvanised security fence, overhanging the pavement and parking areas. Due to its size and location, this tree presents the risk of further damage to the surrounding tarmac and pavement. It was likely never intended to be growing in its current location. Future pressures to remove the tree to prevent further damage to the surrounding infrastructure have resulted in the tree having a predicted useful life expectancy of less than 10 years and its categorisation as U.

3.5 T2 is a medium sized Italian alder (*Alnus cordata*) which exhibits a drawn-up growth habit. Its crown is slightly suppressed on its west side by the adjacent tree of heaven. Significant damage has been caused to the tarmac surrounding the steel structure by this tree. On the date of the survey the tree appeared in good condition with good branch unions and a dense crown. This tree is likely to be self-set, due to its very close proximity to a metal post and the Armco barrier behind it. Despite currently being of reasonable condition, it is anticipated that T2 will need to be removed within 10 years to avoid significant damage to the surrounding infrastructure. This has resulted in its categorisation as U.

3.6 T3 is a tree of heaven (*Ailanthus altissima*), located in the corner of the asphalt car park. Incremental root growth has damaged the surrounding tarmac surface. The stem and crown of T3 are encroaching and rendering unusable a single parking space. To the north and south, low hanging limbs partially inhibit access for larger vehicles. During the site visit a van was observed turning around in this area, and small limbs were snapped as a result of direct conflict with the vehicle. Due to the vigorous nature of this species it is expected that this tree will cause further nuisance and direct damage to the site, surrounding tarmac and Armco barriers. Despite currently being of reasonable condition, it is anticipated that T3 will need to be removed within 10 years to avoid significant damage to the surrounding infrastructure. This has resulted in its categorisation as U.

3.7 The area of Stephenson Way adjacent to the site is devoid of trees, and from the outside the trees within the site could be seen as an asset to the visual amenity of the street scene. However upon close inspection it is clear that these trees are not suitable in this location, as they are causing significant damage to their immediate surroundings.

3.8 Measurements and further information for each tree can be viewed in the Tree Survey Schedule in Appendix 2.

3.9 **Tree categorisation summary:** A total of three trees were surveyed and recorded in the Tree Survey Schedule. All three trees were categorised as U due to their short predicted useful life expectancy.

3.10 **Statutory tree protection:** Camden Borough Council Planning Department was contacted by e-mail to establish restrictions to tree works at the site. It was reported on the 24th September 2018 that no tree preservation order (TPO) protects the trees on this site and the site is not located within a conservation area.

3.11 Any persons proposing to undertake tree works should still check the status of the trees with the local authority, and gain the necessary consent before the works are undertaken. Financial penalties and/or criminal proceedings can result if tree works are carried out on a protected tree without consent. The entirety of the tree is protected, both above and below ground.

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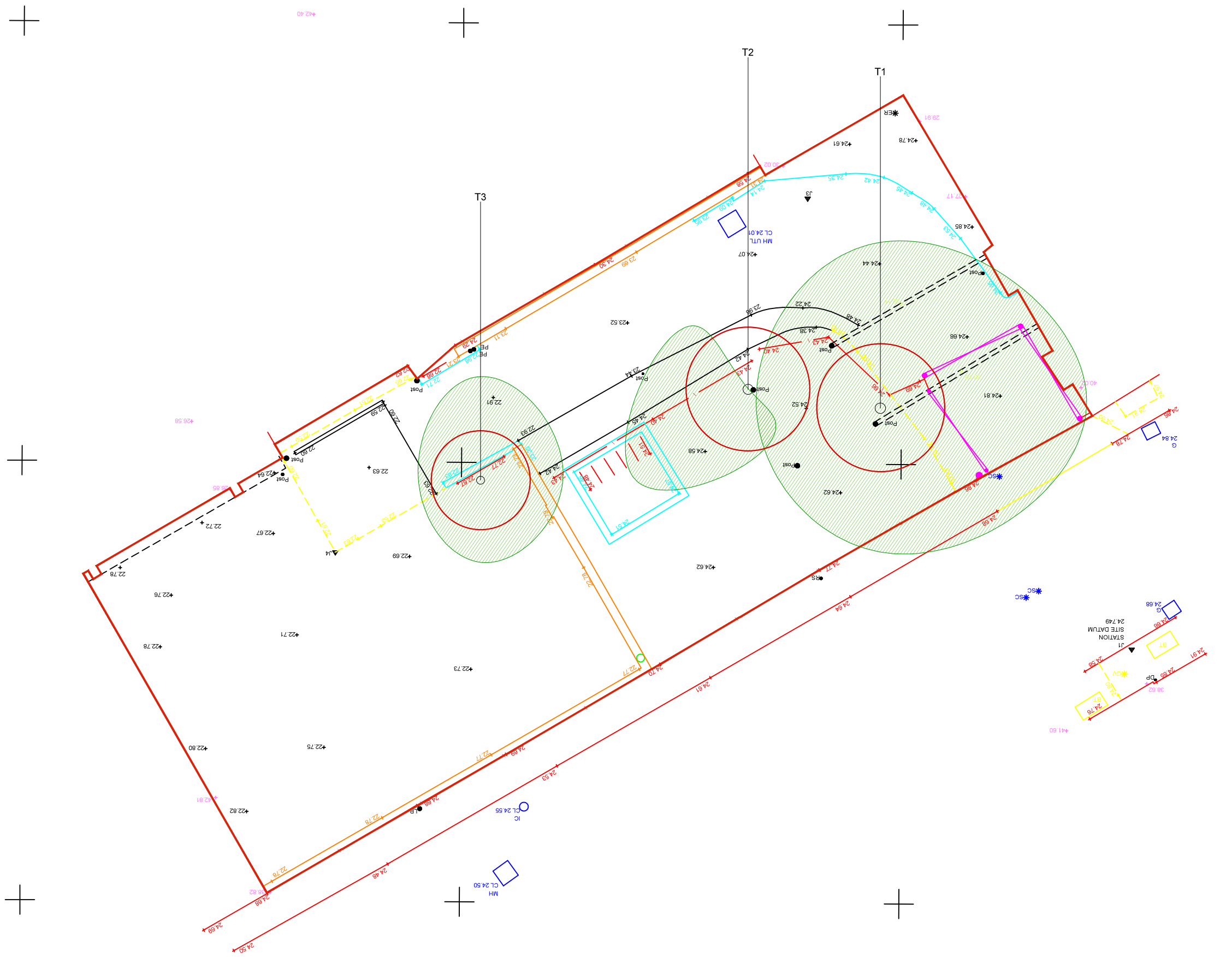
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Date: 10th October 2018

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APPENDIX 1

Tree Constraints Plan



- Key:**
- Root protection area for category U* tree
 - Tree canopy

* Tree categorised in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'.
 Appendix 2, (Tree Survey Schedule) contained within the arboricultural ref. PJC/4973/18-01 contains further information for each tree.
 This drawing should be viewed in colour.
 Tree numbers suffixed with PA indicate the tree position is approximate.

Drawing no: PJC/4973/18/A Rev: - Sheet number: 1 of 1

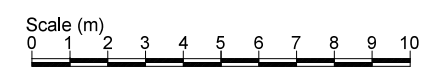
Client and site:
 TP Bennet Architecture
 Stephenson way
 Euston, London
 NW1 2HD

Drawing title: Tree Constraints Plan

Date drawn: 17/09/2018

Scale: 1:200 at A3

Drawn by: GM **Checked by:** PD



APPENDIX 2

Tree Survey Schedule

Site: Stephenson Way
 Survey date: 11/09/2018
 Surveyor: George Morris

Tree Survey Schedule



Tree ref.	Species	Height (m)	Stem diameter (mm)	Branch spread (m)	Crown clearance (m)	Age class	Physiological condition	Structural condition	Comments	Preliminary management recommendation	Category grading	Root Protection Area (m ²)	Root Protection Radius (m)
T1	Tree of heaven (Alnus altissima)	14	260 Estimated	N: 8 E: 10 S: 7 W: 6	Crown: 1 East Branch: 1.5 West	Mature	Good	Fair	Tree is growing inside and through large steel structure. Tree has spreading canopy and minor deadwood is present over road.	Consider removing to prevent further damage to surrounding infrastructure.	U	30	3.1
T2	Italian alder (Alnus cordata)	12	200 Estimated	N: 2 E: 7 S: 4 W: .5	Crown: 0 East Branch: 1.5 East	Semi-mature	Good	Good	Tree is growing between steel structure and barrier. Leans to the east due to larger neighbouring tree. Tarmac damage around stem.	Consider removing to prevent further damage to surrounding infrastructure.	U	18	2.4
T3	Tree of heaven (Alnus altissima)	11	200 Estimated	N: 5 E: 4 S: 4 W: 3	Crown: 2 South Branch: 3 North	Semi-mature	Good	Good	Tree impacting on tarmac car park. Tree has an even crown spread and is contacting fence to the south.	Consider removing to prevent further damage to surrounding infrastructure.	U	18	2.4

APPENDIX 3

Cascade Chart for Tree Quality Assessment



Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)	Identification on plan
Trees unsuitable for retention		
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of their current land use for longer than 10 years.	<ul style="list-style-type: none"> • Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after the removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning). • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality. Note Category U trees can have existing or potential conservation value which it might be desirable to preserve	Red
	1 Mainly arboricultural qualities	2 Mainly landscape qualities
		3 Mainly cultural values, including conservation
Trees to be considered for retention		
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years.	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue).	Green
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remedial defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation.	Blue
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories.	Grey

APPENDIX 4

Photographs



Photograph 1 – Trees T1–T3 viewed from Stephenson Way.



Photograph 2 – Tree T3 viewed from Stephenson Way.



Photograph 3 – Damage caused to tarmac by T1.



Photograph 4 – Damage caused to tarmac by T3.



Photograph 5 – Tree T2 growing next to steel frame.



Photograph 6 – Tree T1 growing through steel structure.



Photograph 7 – Damage caused to tarmac by incremental root growth.



Photograph 8 – Limbs from T1 overhanging the pavement and road.



Photograph 9 – Limbs from T1 contacting derelict building.