

# Trees and Construction

## BS5837:2012 Tree Survey, Arboricultural Implications Assessment

**Site:** 107 Victoria Avenue, Hillingdon, Middlesex,  
UB10 9AJ

**Ref:** AIA/20374/A2

**Client:** Nader Harb



(Mail) 2nd Floor | 1 Hunters Walk | Canal Street | Chester | CH1 4EB

0333 123 7080 | [info@indigosurveys.co.uk](mailto:info@indigosurveys.co.uk)

[www.IndigoSurveys.co.uk](http://www.IndigoSurveys.co.uk)

<b>Arboricultural Consultant (Author):</b>
Rod Benzie ND Arb, BSc Forestry

- April 2021 -



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Revision	Description	Date
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## 1. INTRODUCTION

- 1.1 **Instruction:** This advice has been prepared for Nader Harb (hereafter; client) and is in respect of the tree related considerations at Site at corner of 107 Victoria Avenue, Hillingdon, Middlesex, UB10 9AJ (hereafter; site).

As the proposal relates to development works at site, the advice herein is produced in accordance with the British Standard 5837 : 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations*' (hereafter; BS5837).

- 1.2 **Scope of this report:** This report has been produced in accordance with BS5837 and is intended to demonstrate how trees have been properly considered in relation to the approved application and associated plans. The objective is to provide tree protection details relating to the scheme's potential impact on trees and vice versa.

- 1.3 Following instruction the site was surveyed by Rod Benzie BSc MA ArborA (hereafter; Consultant) on the 23rd March 2021. Pursuant to the agreed brief a site assessment and a BS5837 tree survey were carried out with the production of arboricultural advice for the client in the form of the '*BS5837 Tree Survey*'.

The previous arboricultural advice supported the approved planning application of which, together with the tree related planning conditions, will inform this detailed arboricultural method statement / tree protection advice.

- 1.4 The details herein are subject to caveat at Appendix I, outlines relevant terms and definitions at Appendix II and constitutes the findings of the preliminary site survey, the assessment of the accepted scheme and the tree related planning conditions.

- 1.5 The tree survey and site observations were used to illustrate the site's arboricultural constraints in plan format as a 'Tree Constraints Plan' (hereafter; TCP). This is used as a base layer with the approved scheme outline as an overlay to inform this advice as a Tree Protection Plan (hereafter; TPP); the survey table and TPP are at Appendix III.



## 2. SITE & APPLICATION INFORMATION

- 2.1 The site is currently occupied by semidetached house with gardens to the front and rear. The garden to the rear is occupied by various outbuildings
- 2.2 Proposal: It is understood that it is intended to develop the site by the demolition of the existing rear single story building and build a proposed new dwelling to the side of the existing house as per provided Proposed site plan
- 2.3 The site requires consideration from an arboricultural perspective due to the presence of trees on and around the site; these trees are deemed to be within impacting distance of the existing property and potential construction area.
- 2.4 The trees -
- 2.4.1 The tree survey and assessment resulted in the BS5837 quality/retention categories of 'A' – Good 'and 'C - low' being attributed to trees/tree groups; it is also worth noting that the BS5837 circular RPAs are considered to halt at the extents of existing property.
- 2.4.2 There are established features on and off site these trees being T1 to T5 which are classed as 'C' class apart from T1 which is 'A' class.



### 3. FINDINGS & RECOMMENDATIONS

3.1 The following information, as with the prior contents of this report, should be read with the appended tree data table and tree constraints plan (20374/TCP/01).

#### 3.2 General Considerations for Tree Retention / Removal

3.2.1 Based on the boundary line location/neighbour's site location of T1 to T5 their retention and protection is to be assumed as part of the scheme.

3.2.2 The smaller scale, declining or limited contribution trees are categorised as low quality 'C' category trees. These may be suitable for retention for the most part but should not present a significant constraint to the scheme as mitigation planting can replicate and enhance their contribution.

3.2.3 The off site 'A' class tree is the most 'notable' tree on site and has an impact on the surrounding amenity. This tree should be protected by avoidance and by temporary measures during site works.

3.2.4 The removal of the above trees or vegetation may have an impact on the green cover in the first instance, however, the scheme presents a significant enhancement opportunity. Said removals would have no impact on the long term amenity of the site and will allow for the selection of native species to enhance amenity and biodiversity.

### 4. SCHEME / IMPLICATIONS ASSESSMENT

4.1 For this assessment, the proposed scheme has been considered (see; s.2.2 herein). This includes consideration for arboricultural management / tree works for H&S tree risk management, tree removal and pruning options, design solutions, tree protection and sensitive measures to account for trees. As per s.1.6 and s.2.2 herein, the TCP scheme overlay illustrates the proposed scheme.

#### 4.2 *Consideration for T1-*

4.2.1 Proposed new house extension, is within RPA it is intended to install the foundations using manual installation using pile/pad type foundation with void underneath. The location is as shown on the TPP

4.2.2 Root damage can be minimized by using:

Pad and beam type foundation with site investigation used to be determined their optimal location whilst avoiding damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement, to a minimum depth of 600mm;

Beams, laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation.



Where pad and beam are to be installed near to trees, the smallest practical pad diameter should be used, as this reduces the possibility of striking major tree roots and reduces the size and depth of the hole required. Ground boards should be used while installation is in progress. Use of pile/pad and beam with manual installation will negate the need for excessive crown raising during construction phase. Precast pads or plastic lined holes will protect the soil and adjacent roots from the potentially toxic effects of uncured concrete.

#### 4.2.3 *Consideration for T2 to T5 -*

These trees can adequately be protected by avoidance

### 5. **METHOD STATEMENT 'CONSIDERATIONS'**

#### 5.1 Arboricultural Construction Restrictions

5.1.1 The following restrictions are considered relevant for tree protection purposes which are illustrated on the appended Tree Protection Plan:

- a) **Tree Works** - are to be completed prior to any and all site works: no tree works not specified within this AIA (or leaning against or attaching of objects to a tree) are permitted unless agreed in writing by the council (subject to standard exemptions).
- b) **Tree Protection** - a site compound will be set up within the application boundary, excluding the surveyed trees as per the TPP, or Protective Barrier Fencing (PBF) is to be installed as per the TPP.
- c) **Construction Exclusion** - the fenced off areas are Construction Exclusion Zones (CEZ).
- d) **Site Restrictions** - no chemicals/materials are to be transported/stored/used/mixed within the CEZ, and no fires are to be lit and no machinery, plant or vehicles are to be washed down within 10m of the tree's canopy or in a CEZ.
- e) **Ground Works** - during site works RPAs/CEZ may not be breached, i.e. no surface works, without the consultant's prior advice and council consent, and no mechanical digging or scraping is permitted within RPAs/CEZ;
- e) **Sensitive Landscape** - the PBF may be temporarily moved to allow pedestrian access to start sensitive soft landscape works within RPA, i.e. turf removal, retained soil levels, new planting, mulch borders.
- a) **Completion** - only following construction and hard landscape completion can PBF be removed and remaining soft landscape works undertaken within RPAs / CEZ (ground levels to be retained and works undertaken manually with non driven machinery).



## 5.2 Arboricultural Site Monitoring / Supervision

- 5.2.1 The council will typically request '*a scheme of supervision for the arboricultural protection measures*' to confirm tree protection and adherence to working methods around trees.
- 5.2.2 The appointed site contractor and project manager will be provided with an approved AMS and TPP and will need to be briefed as to prohibited works and tree protection.
- 5.2.3 A record of each site visit will be kept and a summary letter drafted for the client, the site manager and the local authority (to be sent to the client for distribution), thus -
- (1) ***Pre-commencement*** to confirm approved tree works, site hoarding / tree protection fence line and construction restrictions for ground works;
  - (2) ***Demolition of existing rear building. Hard surfaces*** to be broken out by hand .
  - (3) ***Installation of Pile and Beam for new proposal.*** Suitable pile locations to be excavated avoiding major roots; manual installation
  - (4) ***Halfway*** through the program to confirm maintained tree protection, no tree damage and exclusion of RPA access;
  - (5) ***After-construction*** to confirm excavations of existing hard surfaces and discuss tree protection requirements with the landscape team.
  - (6) ***Development completion*** after all hard landscape works and tree and shrub planting is complete to sign off the site as having adhere to the AMS.

## 5.3 Underground utilities

- 5.3.1 Any new underground utilities are to utilise the construction area and hard surface extents for new installations and avoid the need for works in proximity to trees. Certainly, utility installations are to be:
- Located outside of RPAs and construction exclusion zones; and
  - Installed only following the installation of the protective barrier fencing to ensure the retained trees and their RPAs are protected.

## 5.4 Sensitive Ground Works within RPAs

- 5.4.1 Any excavations necessary within a RPA or designated CEZ (as illustrated on the TPP - each RPA and the areas enclosed by PBF) must:

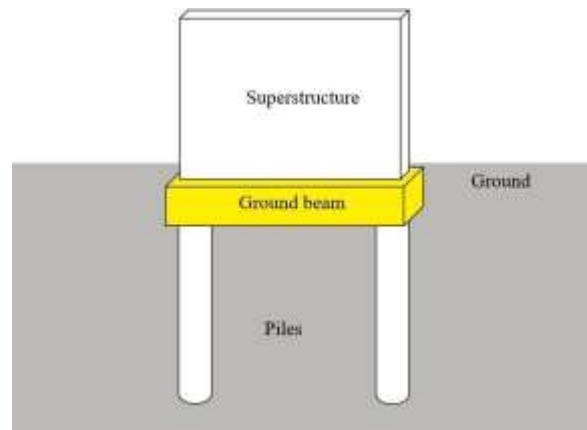
Use sensitive excavation techniques to protect the tree roots and their existing growing conditions, i.e. sensitive manual excavations / air spade.

- 5.4.3 The RPA excavation areas are to be marked out [as per the TPP] on surfaces and undertaken by hand with the use of manually operated (hand held) tools.



- 5.4.4 The excavations are to be preventative and carefully avoid damage to tree roots; therefore, individual 50mm layers are to be excavated at a time within an RPA/CEZ. This is to ensure that excavations do not incur on the existing soil levels, i.e. no downward regrading of soil levels within RPAs.
- 5.4.5 Any exposed roots shall be packed with a clean damp sand (not builders sand) and wrapped in hessian sacking to protect them from temperature changes and drying out.
- 5.4.6 Small roots (those less than 25mm in diameter) may be carefully pruned back with a clean sharp tree saw. However, pruning large roots (those greater than 25mm in diameter) will require the advice of the consultant and permission of the council; these may be necessary for a tree's health and stability.
- 5.4.7 Once the surface layer material has been removed, any hessian wrapping will be removed and roots will be surrounded/packed with a sharp sand and any existing ruts, holes or dips are to be infilled with a mix of sharp sand and high grade tree planting soil.
- 5.5 Pile and Beam Wall and Slab Foundations within RPA's
- 5.5.1 Root damage can be minimized by using:
- Pile and beam type foundation with site investigation used to be determined the optimal location for the pile whilst avoiding damage to roots important for the stability of the tree, by means of hand tools or compressed air soil displacement, to a minimum depth of 600mm;
  - Beams (proposal) as described above, laid at or above ground level, and cantilevered as necessary to avoid tree roots identified by site investigation.
  - Suggested pile locations to be confirmed by consultant engineer.
- 5.5.2 Where pile and beam are to be installed near to trees, the smallest practical pile diameter should be used, as this reduces the possibility of striking major tree roots and reduces the size and depth of the hole required. Ground boards should be used while installation is in progress. Use of pad and beam with manual installation will negate the need for excessive crown raising. Precast pads or plastic lined holes will protect the soil and adjacent roots from the potentially toxic effects of uncured concrete.





Dia 1 Principle of the Proposal- Pile and beam

## 5.6 Ground Protection

- 5.6.1 Supplementary ground protection and BS5837 Scaffolding are to be used in conjunction with the installation of the PBF; surface works within retained trees' RPAs are to be delayed until construction completion.

At the point of PBF being installed, the enclosed RPA sections become Construction Exclusion Zones (hereafter; CEZ) to protect the trees' rooting areas during construction.

- 5.6.2 Due to the PBF installation and use of ground protection within RPAs (for the duration of works), is anticipated that construction related RPA incursion will occur. However, where this situation arises, it will be necessary to protect tree roots and their growing environment. The advice of the consultant will be sought, and the written permission of the council will be required.
- 5.6.3 It is anticipated that, temporary ground protection will be needed, i.e. for exposed RPAs of T1.

Specifically, the ground is to be protected from impact where it may be subject to direct pedestrian/vehicular movements. The ground protection is to be appropriate for the intensity of the pedestrian or vehicular movements thus -

- a) For pedestrian movements within an exposed RPA, the ground protection is to consist of "a single thickness of scaffold boards on top of a compressible layer laid onto a geotextile, or supported by scaffold"; and
- b) For wheeled or tracked movements within an exposed RPA, the ground protection is to "be designed by an engineer to accommodate the likely loading".

## 5.7 Landscape Detail

- 5.7.1 The new tree planting illustrated on the 'proposed site plan' will need supplementary detail on species and nursery selection, planting method and maintenance.

## 5.8 Report Handling



- 5.8.1 This report is released to the client and architect to be distributed at their discretion and the consultant is available for queries relating to this report and/or trees.
- 5.8.2 The proposed scheme is reviewed in respect of the arboricultural constraints and is considered to be achievable in line with the BS5837 guidance. The tree protection methods herein may be approved by the council for which a planning approval will be subject to a final and detailed Arboricultural Method Statement based on the approved information and other detail perhaps not available at the pre-planning approval stage, i.e. utility layout, final landscape plan, construction management plan (CMP) etc.
- 5.4.3 This AMS and the TPP may be approved by the council in support of the application, subject to a conditioned final AMS and TPP as a means of authorised tree protection measures; all site personnel will have access to a copy and the tree work and protection details are to be inspected as per s.5.2 for '*Arboricultural Monitoring / Supervision*'.

**This concludes our advice.**



## Appendix I

### Caveat

Any and all information supplied to Indigo Surveys Ltd by/on behalf of the client is assumed to be accurate unless otherwise informed. | This advice is limited to the observations made on the date of inspection as detailed herein and any deletion, editing or alteration will result in the advice being null and void in its entirety. | This advice in its entirety may be deemed null and void if remedial works are undertaken on any area of the site, on or after the date of the survey. | No liability is assumed by the author or by Indigo Surveys Ltd for any misuse, misinterpretation or misrepresentation of this advice. | This advice is not valid in adverse or unpredictable weather conditions or for any failure due to 'force majeure' or unpredictable events. | No responsibility is assumed either by the author of this advice or by Indigo Surveys Ltd for any legal matters that may arise as a consequence. | Neither the author nor Indigo Surveys Ltd will be required to attend court or give testimony as part of this agreement. | The responsibility for any works undertaken on the basis of the recommendations of this advice does not form part of this agreement.



## Appendix II

### Terms and Definitions

*“Arboriculturist”* - person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.

*“Competent Person”* - person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached.

*“Topographical survey”* - an accurately measured land survey undertaken to show all relevant existing site features. A method of carrying out topographical surveys is given in RICS specification Surveys of land buildings and utility services at scales of 1:500 and larger.

*“BS5837 Tree survey”* - should be undertaken by an arboriculturist to record information about the trees on or adjacent to a site. The results of the tree survey, including material constraints arising from existing trees that merit retention, should be used (along with any other relevant baseline data) to inform feasibility studies and design options. For this reason, the tree survey should be completed and made available to designers prior to and/or independently of any specific proposals for development.

*“Tree categorisation method”* - trees should be categorised in accordance with the BS5837 cascade chart by an arboriculturist. This is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions to be made concerning which trees should be removed or retained in the event of development occurring.

*“Root protection area (RPA)”* - layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure is treated as a priority, shown as an arboricultural constraint in m<sup>2</sup>. The radius is calculated using the BS5837 calculation method. An arboriculturist may change the shape of an RPA but not reduce its area.

*“Arboricultural implications assessment”* - a study, undertaken by an arboriculturist, to identify, evaluate and possibly mitigate the extent of direct and indirect impacts on existing trees that may arise as a result of the implementation of any site layout proposal.

*“Arboricultural method statement”* - methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.

*“Tree protection plan”* - a scale drawing, informed by descriptive text where necessary, based upon the finalised proposals, showing trees for retention and illustrating the tree and landscape protection measures.

## Appendix III

<b>Data Table:</b>	As appended (BS5837 Tree Survey Key & Table)
<b>Tree Constraints Plan:</b> (TCP / Scheme Overlay)	As appended (20374/TCP/01)
<b>Tree Protection Plan:</b> (Application Stage)	As appended (20374/TPP/01)

# **TREE SURVEY IN ACCORDANCE WITH BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'**

**CLIENT:** Nader Harb

**PROJECT REF:** 21374/A1

**SITE:** 107 Victoria Avenue, Hillingdon, Middlesex, UB10 9AJ

**CONTACT:** /

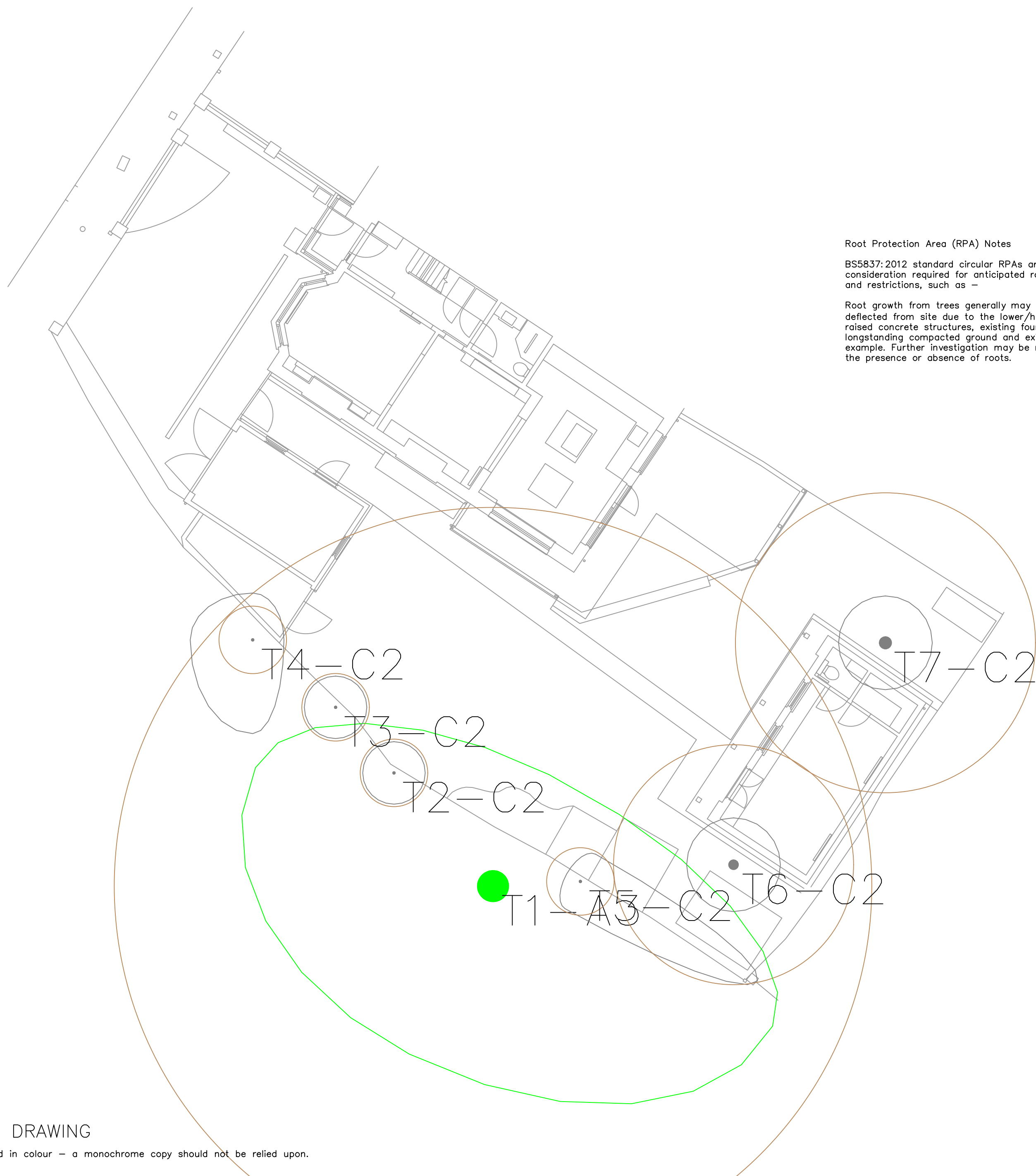
**SURVEY DATE:** 23 March 2021

**ARB CONSULTANT:** Rod Benzie BSc MArborA NDArb

TREE REF. #	SPECIES	AGE	HEIGHT (in m)	CANOPY (in m) N - S - E - W				STEM (in mm)	RPA (in m)	CLEARANCE (in m)	1st BRANCH (in m)	VITALITY	LIFE EXPEC.	NOTES	BS CAT.		MANAGEMENT
T1	English Oak. Quercus robur. Fagaceae	OM	20	4	6	10	8.5	1010	12.1	2	2.25W	Good/ Fair	40+	Slight lean south. Managed by crown lifting and reduction historically. Last reduction 3-5 years . Reduction 50% of crown volume. Buildings and hard surfaces within the RPA. Co-dominant branch structure. Large occluded branch wounds on lower trunk. Ivy is establishing. Linear cavities on higher scaffolds. Large pieces of deadwood	A	3	
T2	Blackthorn. Prunus spinosa. Rosaceae	Y	4	1	1	1	1	90	1.1	1.5	1.5W	Good/ Fair	20-40	Self sown. Multistemmed from 0.85m	C	2	
T3	Cherry. Prunus (species). Rosaceae	Y	5	1	1	1	1	90	1.1	2	2W	Good/ Fair	20-40	Self sown. Multistemmed from 0.85m. Multistemmed tree 3 stems	C	2	
T4	Cherry. Prunus (species). Rosaceae	Y	4	1.5	3	1	2	90	1.1	2	2S	Good/ Fair	20-40	Self sown. Multistemmed tree 2 stems. bowed stem	C	2	
T5	Elderberry. Sambucus nigra. Adoxaceae	EM	4	1	1	6.5	0.5	90	1.1	1	1E	Good/ Fair	10_20	Self sown. Multistemmed tree 2 stems. bowed stem. Asymmetric shape due to light competition	C	2	
T6	Apple. Malus	EM/M	4	1.5	1.5	1.5	1.5	320	3.8	2	1.5	Fair	10_20	Heavily pruned garden fruit tree	C	2	
T7	Apple. Malus	EM/M	4	1.5	1.5	1.5	1.5	400	4.8	2	1.5	Fair	10_20	Heavily pruned garden fruit tree	C	2	

# **TREE SURVEY 'KEY' - BRITISH STANDARD 5837:2012 'TREES IN RELATION TO DESIGN, DEMOLITION & CONSTRUCTION - RECOMMENDATIONS'**

<b>TPO/CA</b>	-	On client request: presence of Tree Preservation Orders (TPO) / site location within a Conservation Area (CA) & date checked;
<b>TREE REF. #</b>	-	Tree reference number: tag or plan number (T - individual tree, G - group of trees/shrubs, H - hedge);
<b>SPECIES</b>	-	Genus, species and/or common name;
<b>AGE</b>	-	Age classification (NP - new planting, Y - young, EM - Early-Mature, SM - semi mature, M - mature, LM - late mature, OM - over mature);
<b>HEIGHT (in m)</b>	-	Approximate height of tree in metres;
<b>CANOPY (in m) N - S - E - W</b>	-	Approximate branch spread in metres of the four principal compass points;
<b>STEM (in mm)</b>	-	Stem diameter in millimetres: measured in accordance with s.4.6 of BS5837;
<b>RPA (in m)</b>	-	Circle radius of the Root Protection Area: calculated using the stem diameter (single/multiple stem variant, as outlined within BS5837);
<b>CLEARANCE (in m)</b>	-	Crown clearance in metres above the adjacent ground level;
<b>IST BRANCH (in m)</b>	-	Clearance in metres to first significant branch and direction of growth (where relevant);
<b>VITALITY</b>	-	Physiological condition typically gauged from canopy cover and annual extension growth (good, fair, poor, dead);
<b>ESTIMATED REMAINING CONTRIBUTION</b>	-	Approximate number of years a tree will continue to contribute without the need for oppressive arboricultural intervention, categorised in years as <10, 10-20, 20-40 and >40;
<b>NOTES</b>	-	Structural and physiological condition observations;
<b>BS CAT.</b>	-	BS5837 tree quality assessment category: resulting from structural/physiological condition and remaining contribution (approximate useful life expectancy); Standard retention category <b>U</b> : in such a condition that any existing value would be lost within 10 years; Standard retention category <b>A</b> : high quality and value, in such a condition as to be able to make substantial contribution of 40+ years; Standard retention category <b>B</b> : moderate quality and value, in such a condition as to make a significant contribution of 20+ years; Standard retention category <b>C</b> : low quality and value, currently in adequate condition to remain until new planting could be established 10+ years; Standard retention sub-category, mainly due to: <b>1</b> - Arboricultural values, <b>2</b> - Landscape values, <b>3</b> - Cultural values, including conservation;
<b>MANAGEMENT</b>	-	Preliminary management recommendations (as appropriate);
<b>' * '</b>	-	Within the survey schedule denotes an estimate



Root Protection Area (RPA) Notes

BS5837:2012 standard circular RPAs are illustrated here, with consideration required for anticipated root growth influence and restrictions, such as –

Root growth from trees generally may be absent restricted or deflected from site due to the lower/higher level changes, raised concrete structures, existing foundations, hard surfaces, longstanding compacted ground and existing structures for example. Further investigation may be required to establish the presence or absence of roots.

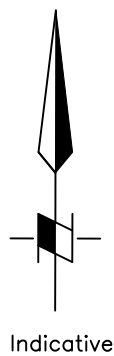
KEY

- Tree Crown Spread
- Root Protection Area (RPA)
- Tree Stem
- T1 Tree No.
- Removed Tree

Tree Condition Category

- A
- B
- C
- U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'

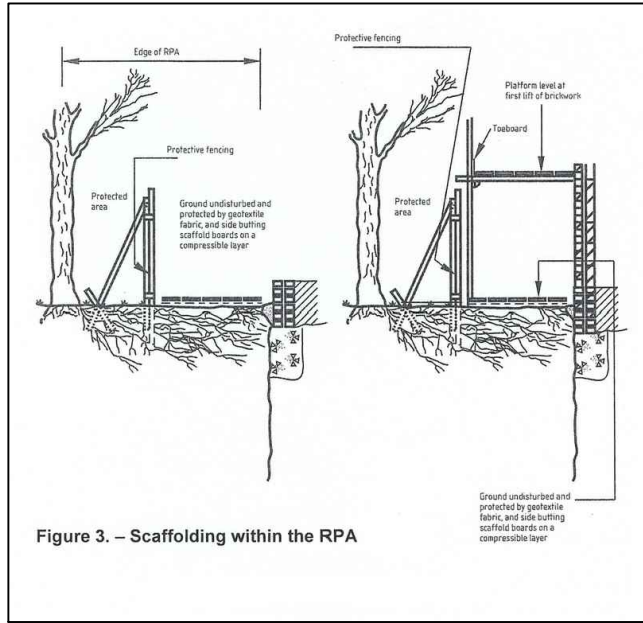


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REV.	DESCRIPTION	DWN	CHK'D	DATE		
CLIENT Nader Harb						
PROJECT 21374/A1 107 Victoria Avenue, Hillingdon, Middlesex, UB10 9AJ						
TITLE Tree Constraints Plan						
DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RPHB	29/03/2021	AT	29/03/2021			1–200
<div><p>(Mail) Second Floor, 1 Hunter's Walk, Canal Street, Chester. CH1 4EB Telephone: 0333 123 7080 <a href="http://www.indigosurveys.co.uk">www.indigosurveys.co.uk</a></p></div>						
Drawing Number 21374/A1/TCP/01						A1 REV.
THIS DRAWING IS CONFIDENTIAL AND MUST NOT BE REPRODUCED WITHOUT THE CONSENT OF INDIGO SURVEYS LTD.						





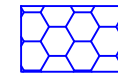
- Tree Protection Specification**
- The tree protection measures outlined within the Arboricultural Method Statement (ref: 21374/AMA\_AMS) are to be adhered to as illustrated on this Tree Protection Plan (ref: 21374/A2-TPP-01), and the additional details below, thus:
- Tree works are to be completed prior to commencement of any and all site processes: no additional tree works (not specified in the method statement), or leaning against or attaching of objects to a tree, are permitted.
  - Protective Barrier Fencing (PBF), with Tree Protection Signs fixed at least every 5m (see detail and illustration on this TPP), is to be installed prior to the site works commencing.
  - The existing rear building sensitive demolition and new proposal footings is to be installed with pile and beam type foundation using sensitive work techniques.
  - Hard Surfaces within RPAs are to be retained where ongoing access is required and supplementary Ground protection is to be installed for exposed soft surfaced RPA sections for material drop-off and storage (needs to be load bearing and prevent chemical run-off or leaching into soils).
  - No chemicals or materials are to be transported or stored or used or mixed within a RPA or Construction Exclusion Zone (CEZ).
  - No fires are to be lit and no machinery, plant or vehicles are to be washed down within 10m of a tree canopy or in a CEZ.
  - During site works RPAs and CEZs may not be breached, i.e. no surfacing works, without the prior advice of the consultant and the consent of the council.
  - No mechanical digging or scraping is permitted within a RPA or CEZ.
  - When all construction works are completed the PBF can be removed however, should be realigned consistent with the final landscape design to allow for the hard landscape improvement works to be undertaken ahead of the soft landscape shrub and tree planting works.



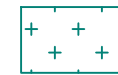
**Tree Removals**  
T6 & T7 to be removed to facilitate the scheme; replacement tree detail to be included within the landscape scheme.



**Protective Barrier Fencing (PBF):**  
Heras panels to be placed as indicated and also existing boundary fence to be retained throughout the development (as per the illustration on this plan).



**Sensitive Ground Works** – To be used when demolishing the existing structure and breaking out of any hardsurfaces. Also the installation of the pile footings for the new proposal.



**Ground Protection** – Temporary ground protection which will be a combination of ground protection boards and BS5837 scaffolding as shown. To be used as indicated around T1 with tree protection signs, to be fixed in place for the duration of site works for tree protection and to remain until construction completion, then to be realigned for hard landscape.

**KEY**

- Tree Crown Spread
- Root Protection Area (RPA)
- Tree Stem
- T1 Tree No.
- Removed Tree

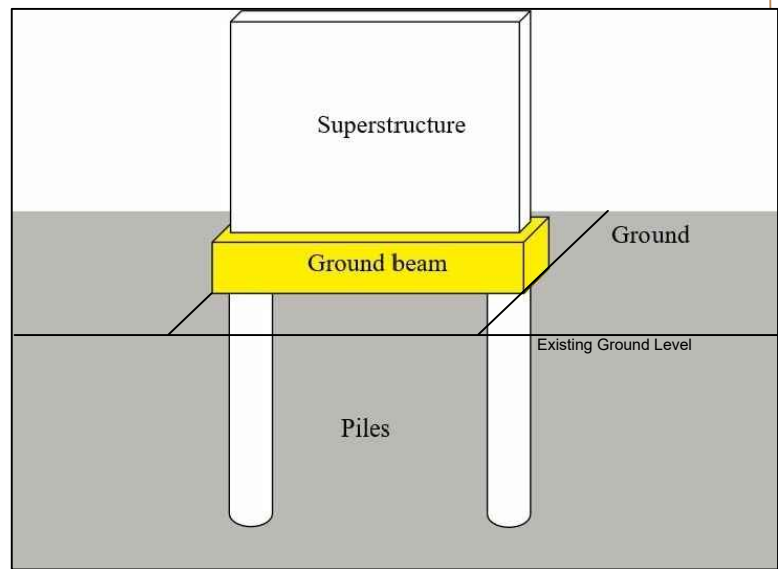
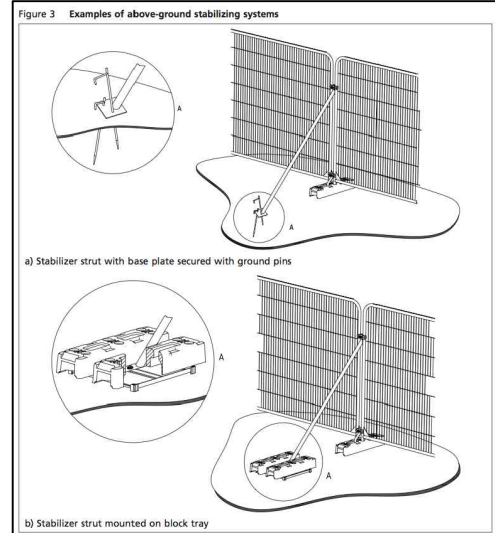
**Tree Condition Category**

- A
- B
- C
- U

The surveyed trees are illustrated on this Constraints Plan which is prepared in accordance with British Standard BS5837: 2012 'Trees in Relation to Design, Demolition and Construction – Recommendations'

**Conflict with T1** – The footprint of the proposal expanding into the RPA of T1. Solutions – for T1 Use suspended pile type foundation with manual installation under supervision. Alternative is to dig a trial trench to establish the presence and quantity of roots. If no significant roots are found then trench foundations can be constructed manually.

**Protective Barrier Fencing – Example Design**



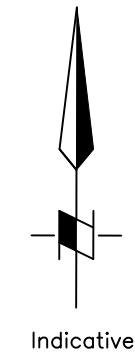
Example of principle of piled foundation with superstructure supported on beams

**Protective Barrier Fencing** – to exclude retained trees from construction works with tree protection signs, fixed in place for the duration of site works for tree protection

**Construction Exclusion Zone** – all RPAs on site, and areas enclosed by tree protection fencing are to have no landscaping until construction completion, soil levels to be retained and works to be undertaken manually (turf, planting etc.)

**Ground Protection** – Temporary ground protection to be used in location indicated throughout construction phase only to be moved during landscaping

**Demolition of Existing Building** – Existing single story building to be demolished using sensitive working techniques



REV.	DESCRIPTION	DWN	CHK'D	DATE
	Based on TCP 21374 & Ground Floor and Site Plan	RB	TB	06/04/21

CLIENT  
Nader Harb

PROJECT  
21374/A2  
107 Victoria Avenue, Hillingdon,  
Middlesex, UB10 9AJ

TITLE  
Tree Protection Plan

DWN	DATE	CHK'D	DATE	APP'D	DATE	SCALE
RPHB	29/03/2021	AT	29/03/2021			1-200

**Indigo** Ltd  
Surveys

(Mail) Second Floor, 1 Hunter's Walk, Canal Street, Chester, CH1 4EB  
Telephone: 0333 123 7080  
www.indigosurveys.co.uk

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A1  
REV.

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