AD Tree CONSULTING

PRACTICAL ARBORICULTURAL SOLUTIONS

Arboricultural Report
incorporating:

Tree Survey

Arboricultural Impact Assessment

Tree Protection Plan

Arboricultural Method Statement

Site:

Garages at Southbourne Gardens, Ruislip, London, HA4 9SW

Produced by:

Alastair Durkin BSc (Hons) MArborA

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Dated:28th October 2017

Arboricultural consultancy – Planning & development

Tree inspection & management – hazard evaluation

Trees & the law - Mortgage and insurance

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EXECUTIVE SUMMARY

Four trees and one group of shrubs/trees of low landscape importance are to be removed from within the site and from within neighbouring property in order to facilitate development.

Retained trees will be protected in accordance with BS 5837.

Improvement to the rooting area of T1 by removal of hard standing and replacement with soft landscaping will be to the benefit of the tree and will help to ensure that the amenity it provides to the local area will continue for many years to come.

It is anticipated that the arboricultural impact of the proposal will be neutral overall due to a combination of the measures put in place to protect the existing trees, rooting environment enhancements within the RPA of T1, and the mitigation for tree loss by well designed replanting of high quality trees.

1.0 Instruction and Purpose of Report

1.1 This report has been commissioned by Mr Vincent O'Sullivan of VOSS Construction.

1.2 I have been instructed to visit the garages site at Southbourne Gardens, Ruislip and to survey the existing trees and those growing nearby in order to assess the arboricultural implications of the proposed development scheme.

1.3 I am to provide details of any necessary tree protection measures and produce any necessary arboricultural method statements for the purposes of planning submission.

1.4 I am to include any further information within my report, which I deem may add clarity to the information gathered on site and presented within the report.

1.5 I am to submit details of any necessary tree management, mitigation, amelioration or working methods that are considered necessary in order to facilitate the development proposals, whilst retaining a healthy tree stock.

2.0 Documents Supplied

2.1 Of the documents supplied, those considered most pertinent to this report are:

- Topographical survey (BA22961216_01)
- Proposed block plan (637-102 Rev H)
- Proposed ground floor plan (637-L103)
- Proposed first floor housing plan ()
- Proposed elevations (E1-E2; E3-E4; E5-E7)

3.0 Scope and Limitations

3.1 This report relates only to the arboricultural elements of the proposed development site.

3.2 The contents of this report are based only on the information available at the time of the site visit.

3.3 A full detailed tree hazard inspection and risk evaluation is beyond the scope of this report and no detailed assessment has been undertaken.

3.4 It is understood via an online search using the lbhillingdon.maps.arcgis.com function that there are no Tree Preservation Orders or conservation area controls in place at the proposal site.

3.5 The survey was undertaken in accordance with the recommendations contained within *BS5837: 2012 Trees in relation to design, demolition and construction – Recommendations* (BS5837).

3.6 Where feasible any pruning proposals will accord with the recommendations contained within *BS3998: 2010 Tree work – Recommendations* (BS3998).

3.7 The authority of this report ceases after one year from the date of the inspection or when any site conditions change, or pruning or other works unspecified in this report are carried out to, or affecting, the subject tree(s), whichever is the sooner.

4.0 Qualifications and Experience

4.1 This report is based on my observations at the time of my visits, in the context of my own experience. A summary of my qualifications, training and experience can be viewed at http://www.adtrees.co.uk, or found within my LinkedIn profile: https://uk.linkedin.com/in/adtreeconsulting

5.0 Tree Survey Method

5.1 All my observations were conducted from ground level. No detailed inspection of the subject trees was undertaken.

5.2 The weather at the time of my survey was fair.

5.3 All observations were conducted from within the site boundaries or public places. No access was made to private properties and therefore any commentary on trees within neighbouring sites was made in the context of what could be observed at distance and with buildings obstructing the view.

5.4 The positions of the subject trees detailed within the schedule (Appendix A) and within the tree protection plan (Appendix B) are those plotted on the topographical survey.

5.5 The subject trees measured at over 75mm stem diameter were categorised in accordance with the recommendations contained within Table 1 of BS5837. Large shrubs and hedges have only been plotted on the plans where they are considered to be important amenity features, such as where they provide boundary screening.

5.6 Heights were estimated using a laser rangefinder unless otherwise specified.

5.7 Stem diameters (SD) were measured in accordance with the recommendations contained within Annex C of BS5837.

5.8 Crown diameters were measured by pacing, or with a laser rangefinder where sight lines allowed. Where access was difficult or unavailable distances were estimated.

6.0 Site Description

6.1 The site is situated within a mixed residential and commercial use area within Thornton Heath (Figure 1).

Figure 1 – 'Birds Eye' view of the approximate site boundary facing north

6.2 According to the Geology of Britain viewer[1] the underlying bedrock consists of Lambeth Group – clay, silt and sand. The Landis Soilscapes Viewer[2] further indicates that like much of the inner London area this bedrock is overlaid in the upper 30cm horizon with loamy and clayey deposits. In urban areas, however, soils are frequently disturbed to considerable depth due to intensive development. As such, no great reliance should be placed on the information currently available.

6.3 The loamy, clay soils are not free draining in this area and can be prone to compaction - where the passage of surface traffic causes the loss of pore spaces

[1] http://mapapps.bgs.ac.uk/geologyofbritain/home.html

[2] http://www.landis.org.uk/soilscapes

within the soil, and deterioration of the soil structure. This can lead to damage or death of underlying tree roots as a consequence. The protection of areas where roots proliferate is therefore a priority.

6.4 In general loamy clay soils are of high fertility and are a good medium for tree root growth, provided drainage is adequate. At the proposal site there are few if any locations where normal root distribution can be expected, due to impedance by subterranean obstructions and the existence of hard standing. Nevertheless, where roots do proliferate within the indicated soil type I would expect a healthy root mass to be present. In the hard landscaped areas I would expect root distribution to be erratic and unpredictable with roots exploiting areas outside their open grown range in places. As such great care must be taken during development activities to avoid harm being caused.

7.0 The Proposal

7.1 The proposal is for the demolition of the existing garage buildings and the erection of an apartment building comprising 6 x 2 bed residential flats with associated communal amenity space and parking.

8.0 Subject Trees

8.1 A schedule of the 16 individual trees and one group of trees growing on and immediately adjacent to the proposal site is included at Appendix A.

8.2 The trees have not been tagged, as positions are readily identifiable on site from the tree survey/tree protection plan at Appendix B.

8.3 Each of the trees surveyed has been given a category in accordance with the recommendations within of Table 1 of BS5837. These categories are colour coded for plan purposes.

8.4 In summary the four categories as defined within BS5837 are:

A – Trees of high quality with an estimated remaining life expectancy of at least 40 years (shown green).

B – Trees of moderate quality with an estimated remaining life expectancy of at least 20 years (shown blue).

C – Trees of low quality with an estimated remaining life expectancy of at least 10 years, or trees with a stem diameter below 150 mm (shown grey).

U – Trees to be felled irrespective of development proposals, as they are in such a condition or location that they cannot realistically be retained in the context of the current land use for longer than 10 years (shown red).

8.5 If considered relevant in the context of the proposals subcategories to the grades A, B and C are provided by the addition of suffixes 1, 2 or 3. The definitions can be summarised as:

1 – Mainly arboricultural qualities
2 – Mainly landscape qualities
3 – Mainly cultural values, including conservation

8.6 In accordance with BS5837, A and B category trees should be considered as a constraint to the development of the site and they should therefore provide a substantial contribution to the site. As a result, A and B category trees should be retained and incorporated into the scheme where possible.

8.7 In general, C and U category trees are considered to be of relatively low quality, or are young specimens that can be easily replaced. A balance should therefore be struck between the objectives of the development and the retention of lower value C category trees. Category U trees should not be considered as a constraint on development.

8.8 Notwithstanding the BS5837 categorisation it is generally considered desirable to retain trees wherever reasonably possible to ensure continuity of tree cover and to provide a mature landscape to the development. Where trees are removed, if feasible, they should be replaced in such a way that they can achieve their full growth potential.

8.9 Of the trees surveyed I have defined 14 x trees as 'C' category and 2 x trees as 'B' category. The group of Portuguese laurel (G1) has been given a 'C' category (Table 1). However, without the benefit of close inspection, due to restricted access to the offsite trees, this categorisation could be subject to change.

Table 1 - Summary of Tree survey BS5837 categorisation

	Total	A	B	C	U
Trees	16	0	2	14	0
Groups	1	0	0	1	0

8.10 T1 is a mature and reasonably healthy, although heavily ivy clad, Lime tree (*Tilia platyphyllos)* growing within the site, or possibly straddling the site boundary, and to the north east of the existing garage buildings. It is the most visually important tree in close proximity to the proposal site and neighbouring properties but it is nevertheless a tree of reduced overall landscape importance due to its building locked location. It does, however, afford considerable value as an amenity to the proposal site. I have assigned this tree a BS5837 category of 'B1'.

8.11 The remaining trees surveyed have all been given a BS5837 category of 'C' or 'U'. These trees are relatively low quality specimens or are outgrowing their location, as in the case of T5 (Lawson Cypress). The generally poor quality of the tree stock can be attributed to poor growing conditions, suppression by other nearby trees, or both limiting factors together.

ARBORICULTURAL IMPACT ASSESSMENT

9.0 Tree Retention, Removal and Mitigation

9.1 Of the 4 individual trees and 1 group surveyed that are growing within the proposal site, only the most important Lime tree (T1) is to be retained. This is a tree of significant stature and its retention is therefore a priority. The tree has been substantially reduced in the past leaving truncated branches and multiple weak branch attachments, but with careful management and cyclical pruning this tree can afford considerable amenity to the development for many years to come.

9.2 Of the trees surveyed a total of 4 trees are to be removed including the offsite T6 (Lawson cypress) with the landowner's permission (Table 2). This tree is not a high value specimen and is already outgrowing its location, causing light loss to main habitable rooms of the neighbouring dwellings. Its retention is also incompatible with the access width necessary to serve the development. Similarly the retention of T3, T4 and T5 cannot be achieved whilst gaining the access width necessary to serve the development. All of the trees to be removed fall within the 'C' BS5837 category. Although T3, T4 and T5 are visible from Southbourne Gardens they are not of high quality and have little overall landscape value, or long-term retention potential.

9.3 G1 is a group of Portuguese laurel shrubs/trees growing very close to the western boundary. Visually this group is of moderate quality, but its retention cannot be achieved whilst providing the necessary parking for the proposal, and allowing for the necessary working area around the footprint of the main construction area.

9.4 Notwithstanding the relatively low value of the trees to be removed, provision can be made for replacement planting with high quality, small garden variety trees, and low lying shrubs within a detailed landscaping scheme. These trees could be located within the amenity space to the east of the proposed apartment block.

9.5 It is also proposed to improve the growing conditions of the Lime tree (T1) by the creation of a soft landscaped area, where the majority of the RPA to the south of the tree is currently laid to concrete. This will provide the tree with superior growing conditions, reduce levels of stress associated with poor rooting environments and will therefore help to ensure its long-term retention.

9.6 In summary none of the trees to be removed should pose a significant constraint on development of the site, particularly considering the scope for replacement planting.

10.0 Tree Pruning Works

10.1 No tree pruning works are required in order to facilitate development.

Table 2 – Tree works proposed

Tree works proposed	Tree ID
Trees to be removed to facilitate construction	T3, T4, T5, T6, G1

11.0 Root Protection Area Incursion

11.1 Redevelopment of the site will require works within the RPA of T7-T16.

11.2 In respect of T10-T16 only replacement of the existing hard standing surface will be undertaken. No disturbance of the sub base is necessary. As such it is highly unlikely that significant roots will be harmed, in the unlikely event that they are present at all, due to the inhospitable rooting environment associated with hard standing areas. During the main development phase the hard standing will act as effective ground protection for the trees.

11.3 Some works may be necessary within the RPA of T9, an offsite *prunus sp.* tree. However, the rooting of this tree is already heavily restricted by the existing access road and it is unlikely that major roots have proliferated in the area affected. Furthermore the ample room available within the garden for roots to proliferate means that should roots need to be removed then the tree is likely to be able to adapt within in a short timeframe. In any case as the tree is BS 5837 'C' category and not of high landscape value it is not considered reasonable for technical measures such as no dig surfacing to be put in place in order to protect the RPA.

12.0 Post Development Pressure

12.1 The term 'post development pressure' in relation to retained trees can be described as a situation where potentially harmful or inappropriate tree works are likely to be considered necessary by any future occupiers in order to improve the relationship between the tree and nearby structures. Works may be required in order to reduce apprehension and the perception of risk associated with tree failure, to reduce shading, or to reduce the nuisance associated with debris falling from trees. Where these trees are protected by virtue of the planning process, or through statutory protection such as TPOs, the local authority may find the requirements for tree works difficult to resist. As a consequence, officers can raise concerns within the planning process in order to prevent situations where potential exists for these problems to arise.

12.2 In the case of the current proposal, by virtue of the building design it is not anticipated that any significant post development pressure for tree removal will occur.

13.0 Conclusions

13.1 Four trees and one group of shrubs/trees of low landscape importance are to be removed from within the site and from within neighbouring property in order to facilitate development.

13.2 Where possible with regard to the layout of the proposal the trees to be retained will be protected in accordance with BS 5837 (see AMS).

13.3 The improvement to the rooting area of T1 by removal of hard standing and replacement with soft landscaping will be to the benefit of the tree and will help to ensure that the amenity it provides to the local area will continue for many years to come.

13.4 It is anticipated that the arboricultural impact of the proposal will be neutral overall due to a combination of the measures put in place in order to protect the existing trees and enhance the rooting environment of T1, and the mitigation for tree loss by well designed replanting of high quality trees.

ARBORICULTURAL METHOD STATEMENT

14.0 Introduction to AMS

14.1 In order to safeguard both the above and below ground parts of the retained trees during development works, it will be necessary to implement tree protection measures as detailed below.

14.2 All site personnel should be made aware of the contents of this AMS and be given an arboricultural induction by the Site Manager based on its contents.

14.3 Local planning Authorities (LPAs) have the power to serve **Temporary Stop Notices** in order to protect trees that are being harmed by development because tree protection measures are not being carried out. Adhering to the requirements of the AMS will ensure that tree protection related enforcement action is avoided.

15.0 Pre-commencement Meeting

15.1 A pre-commencement site meeting involving representatives of the Development Company, the LPA and the Arboricultural Consultant can be held if deemed necessary by the LPA in order to ensure that the tree protection process, sequence and methods of construction are understood and agreed.

16.0 Protection of Trees During Development

16.1 The BS5837 recommends a Root Protection Area (RPA) is provided for each retained tree. The RPA is based on an area equivalent to a circle with a radius of 12 times the stem diameter, measured at 1500mm above ground level (Appendix D), and a more complex calculation is used for multi stemmed trees. The RPA represents the minimum area of the root system that must be retained in order to ensure that trees suffer no significant adverse effect if all the roots outside the RPA were to be severed. In practice it is highly unusual for all roots outside the RPA to be lost, and as such the mass of roots retained outside the RPA can frequently compensate for relatively low-level RPA encroachments. In all cases, however, an individual assessment should be made.

16.2 The RPA for each retained tree is initially plotted as a circle centred on the stem of the tree. Where pre-existing subterranean features or other factors indicate that root distribution has occurred asymmetrically, a polygon equivalent to the defined area can be produced to more accurately represent the more likely root distribution. In the case of T1, where roots may have been constrained by the existing hard standing, the polygon has been retained as a circle due to the slightly broken up and therefore permeable nature of the hard standing. In the case of T7-T16, as there is little further RPA encroachment than the existing hard standing and no development activity is to occur outside the site boundaries it is not considered necessary to adjust RPAs.

16.3 In order to protect trees from damage caused by the passage of vehicles and machinery, or the storage of materials during the development process, it will be necessary to form a construction exclusion zone (CEZ) based on the RPA of the trees

identified during the tree survey and indicated on the Tree Protection Plan (TPP) (Appendix B).

16.4 In this case the formation of a CEZ will be achieved by using a combination of fencing and ground protection utilising the existing hard surface around T1 and T10-T16. An example of the protective fencing design is given at Appendix C and will be utilised as indicated on the TPP.

16.5 During development it can become necessary to phase certain stages or methods of tree protection between the demolition, construction and landscaping phases, and to improve access generally. If this becomes necessary the fencing will be adjusted back and further ground protection installed in its place in order to allow a greater working area. No such phasing of works has been anticipated in this instance, however.

16.6 In any event it must be made clear to all parties entering the site that the purpose of the tree protection is to prevent any unsupervised development activities within the CEZ, and that the tree protection, whether barriers or ground protection, must be retained intact and fit for purpose without exception, unless otherwise specified by a supervising Arboricultural Consultant in consultation with the LPA Tree Officer. Once barriers are removed any landscaping activities must also be carefully controlled within RPAs.

17.0 Tree Protection Fencing

17.1 The location of protective fencing to be installed on site is detailed within the TPP (Appendix B).

17.2 Alternative specification

17.3 Protective fencing shall consist of a 2.m high welded mesh panels on rubber or concrete feet, joined together with a minimum of two anti-tamper couplers with one metre separation, installed so that they can only be removed from inside the fence. The panels are to be supported on the inner side by stabilizer struts and attached to a base plate secured with ground pins in accordance with *figure 3* of BS 5837. '*Tree Protection Area – Keep Out!*' signs shall then be fixed to every forth panel (Appendix E).

18.0 Ground Protection

18.1 Ground protection will take the form of the retention of existing hard surfacing during the main stages of construction.

19.0 Excavation within RPAs

19.1 Where excavation is undertaken within the root protection area (RPA) of T9 in order to construct the access a trench will be carefully dug by hand along the nearest line of RPA encroachment. This will minimise the potential for root severance and damage associated with machine bucket excavation.

19.2 Any roots encountered will be carefully and neatly cut back to the face of the excavation nearest the tree using a sharp pruning saw, loppers or secateurs.

Note: All hand excavation and pruning of roots will be supervised by the Site Manager, following an induction by the appointed Arboricultural Consultant, or directly supervised by the appointed Arboricultural Consultant.

19.3 Once the roots have been cut back any further excavation can continue with the use of machinery, provided any remaining RPA is either securely fenced off or is protected from compaction by the use of ground protection as detailed at Section 18 of this report.

20.0 Underground Services

20.1 Where possible all new services will be laid outside the RPAs of the retained trees. However, it is likely that some incursion will be required within the RPA of T1. If this is the case then all works will be undertaken in accordance with the guidelines contained within the National Joint Utilities Group publication *NJUG Volume 4 – Guidelines for the Planning, Installation and maintenance of Utility Apparatus in Proximity to Trees*.

21.0 Site logistics

21.1 Site logistics; including plant parking and storage of materials will be undertaken from the existing hard standing or temporary ground protection. Any ground protection required for piling rig placement will be specified by the piling company within a detailed method statement prior to construction.

22.0 Sequencing of Works

Table 3 - Sequencing of works, personnel and responsibilities

Stage	Action	Personnel
1	Issue arboricultural report and Tree Protection Plan and AMS to Site Manager	Client/Project Manager
2	Give Arboricultural Consultant (AC) at least one weeks notice of pre-commencement meeting if required	Client/Project Manager
3	Pre-commencement meeting (if required)	Site Manager, Tree Officer (if available) and AC
4	Arboricultural induction	All site personnel
5	Undertake tree removal	Site Manager to monitor
6	Erect protective fencing	AC to inspect
7	Construction phase	Site Manager
8	Removal of protective fencing and existing ground protection	Site Manager
9	Soft landscaping stage	Site Manager/landscaping company

23.0 Further Recommendations

24.1 The successful integration of the proposal with the retained trees will need to take account of the following recommendations:

a) Underground service route locations.

b) Site logistics; including piling rig placement if used, plant parking and storage of materials.

c) All works and sequencing of work should be undertaken as specified within the method statements included within this report.

24.0 List of Contacts

Table 4 - List of contacts pertinent to the report

Contact	Name	Company/LPA	Contact	Report issued to?
Client	Vincent O'Sullivan	VOSS Construction Management Services Ltd	Vinosullivan14@gmail.com	Yes
Architect	Steve Badger	Studio 303 Ltd	stevebadger@studio303.co.uk	Yes
Planning Consultant	Georgia Barrett	Maddox Planning Consultants	Georgia@maddoxassociates.co.uk	Yes
Arboricultural Consultant	Alastair Durkin	AD Tree Consultants	alastair@adtrees.co.uk	N/A
Tree Officer	John Bartlett	London Borough of Hillingdon	jbartlett@hillingdon.gov.uk	No

APPENDIX A: **Tree Survey Schedule**

Appendix A - Tree Survey Schedule

Date: 3rd February 2017
Site: Southbourne Gardens, Ruislip
Surveyor: A. Durkin

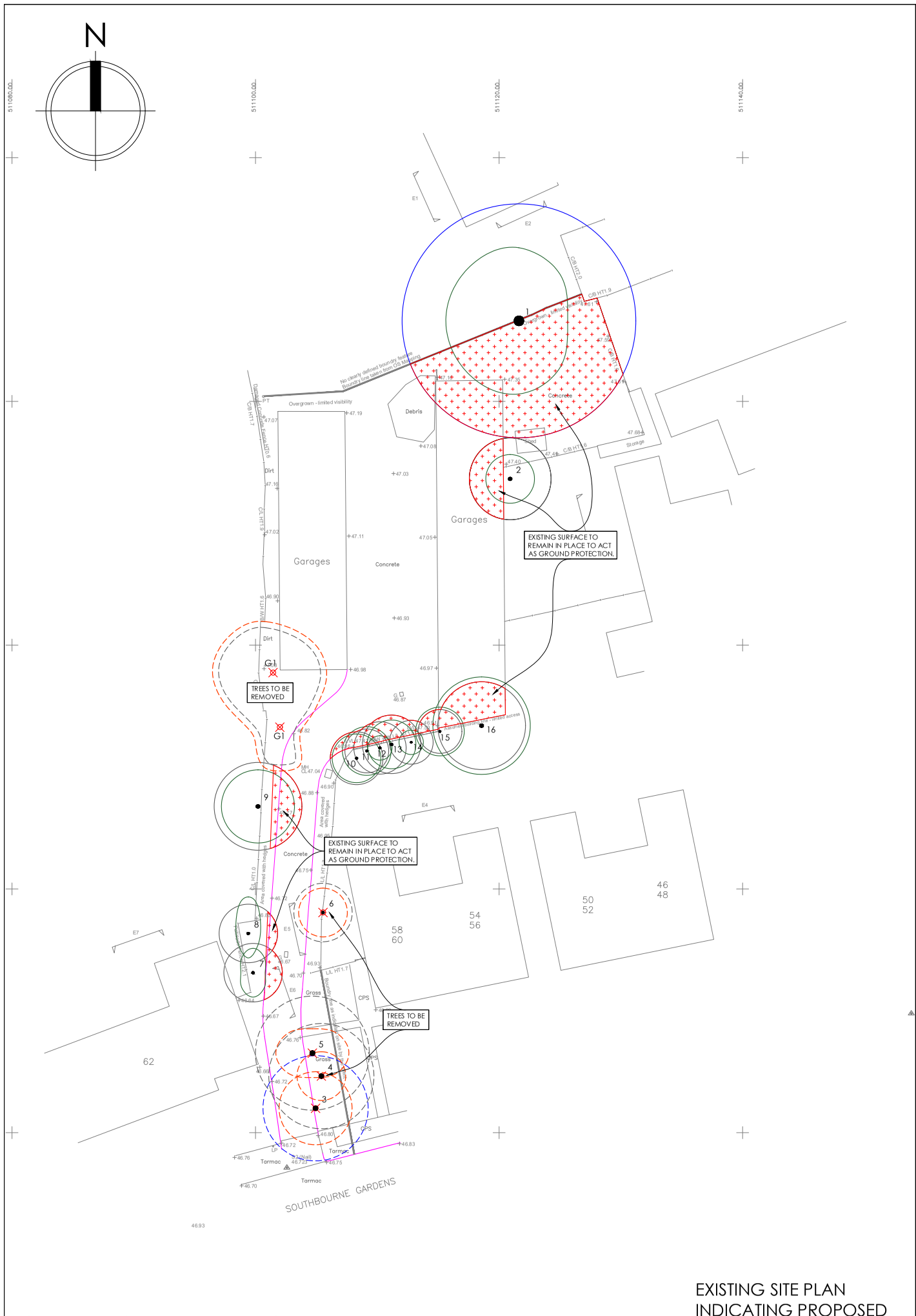
Tree No:	English name	Height (M)	Stem diameter (MM)	Crown spread NESW (M)				Ground clearance	Age class	Physiological Condition	Structural condition	Remaining contribution	BS Category	RPR (M)	RPA (M^2)
T1	Lime	13	800 est	6	4	6	6	3	LM	N	Av	>40	B	9.6	289.5
Comments: heavily Ivy clad to crown break (which prevented SD measurement). Substantially reduced in past, leaving truncated branches and multiple weak attachments. **Recommendations:** Remove ivy to allow inspection of stem and basal area. Continuation of cyclical pruning within 3 years to prevent failure of branches at weak attachment points and maintain manageable size.															
T2	Holly	7	280	2	2	2	2	2	EM	N	Av	>10	C	3.4	35.5
Comments: Small garden tree. Attractive, but very close to existing garage structure and will outgrow location circa 10 years growth.															
T3	Ash	8	360	3	3	3	3	3	EM	N	Av	>40	B	4.3	58.6
Comments: Weak fork at 2.2m with bark inclusion & associated compensatory growth. Pruning wounds partially occluded.															
T4	Pine	12	360	2	2	2	2	3	M	P	P	>10	C	4.3	58.6
Comments: Suppressed by T3 & T5. Clad with dead ivy. Forks at 3m. Poor quality tree.															
T5	Lawson cypress	13	390	2	3	2	3	3	M	N	Av	>20	C	4.7	68.8
Comments: Weak fork at 4m – higher chance of future failure at union. Roots starting to dislodge curb stone.															
T6	Lawson cypress	9	200	2	2	2	2	0	EM	N	Av	>10	C	2.4	18.1
Comments: Will soon outgrow its location close to front elevation of dwelling, with circa 10 years growth.															
T7	Portuguese Laurel	3.5	200	2	1	2	1	1	EM	N	Av	>40	C	2.4	18.1

Tree No:	English name	Height (M)	Stem diameter (MM)	Crown spread NESW (M)				Ground clearance	Age class	Physiological Condition	Structural condition	Remaining contribution	BS Category	RPR (M)	RPA (M^2)
Comments: Heavily reduced, forming hedge															
T8	Portuguese Laurel	6	200	3	1	2	1	1	EM	N	Av	>40	C	2.4	18.1
Comments:															
T9	Prunus sp.	7	300	3	3	3	3	2	M	N	Av	>40	C	3.6	40.7
Comments: Offsite tree															
T10	Lawson cypress	9	180 est	2	2	2	2	1	EM	N	Av	>20	C	2.2	14.7
Comments: Offsite tree															
T11	Lawson cypress	9	150 est	2	2	2	2	1	EM	N	Av	>20	C	1.8	10.2
Comments: Offsite tree															
T12	Holly	5	5 x 80 est	1	1	1	1	1	EM	N	Av	>20	C	2.1	14.5
Comments: Offsite tree															
T13	Lawson cypress	9	200 est	2	2	2	2	1	EM	N	Av	>20	C	2.4	18.1
Comments: Offsite tree															
T14	Holly	5	150 est	1	1	1	1	1	EM	N	Av	>20	C	1.8	10.2
Comments: Offsite tree															
T15	Holly	7	150 est	2	2	2	2	2	EM	N	Av	>20	C	1.8	10.2
Comments: Offsite tree															
T16	Hawthorn	8	300 est	4	4	4	4	2	M	N	Av	>40	C	3.6	40.7
Comments: Offsite tree															

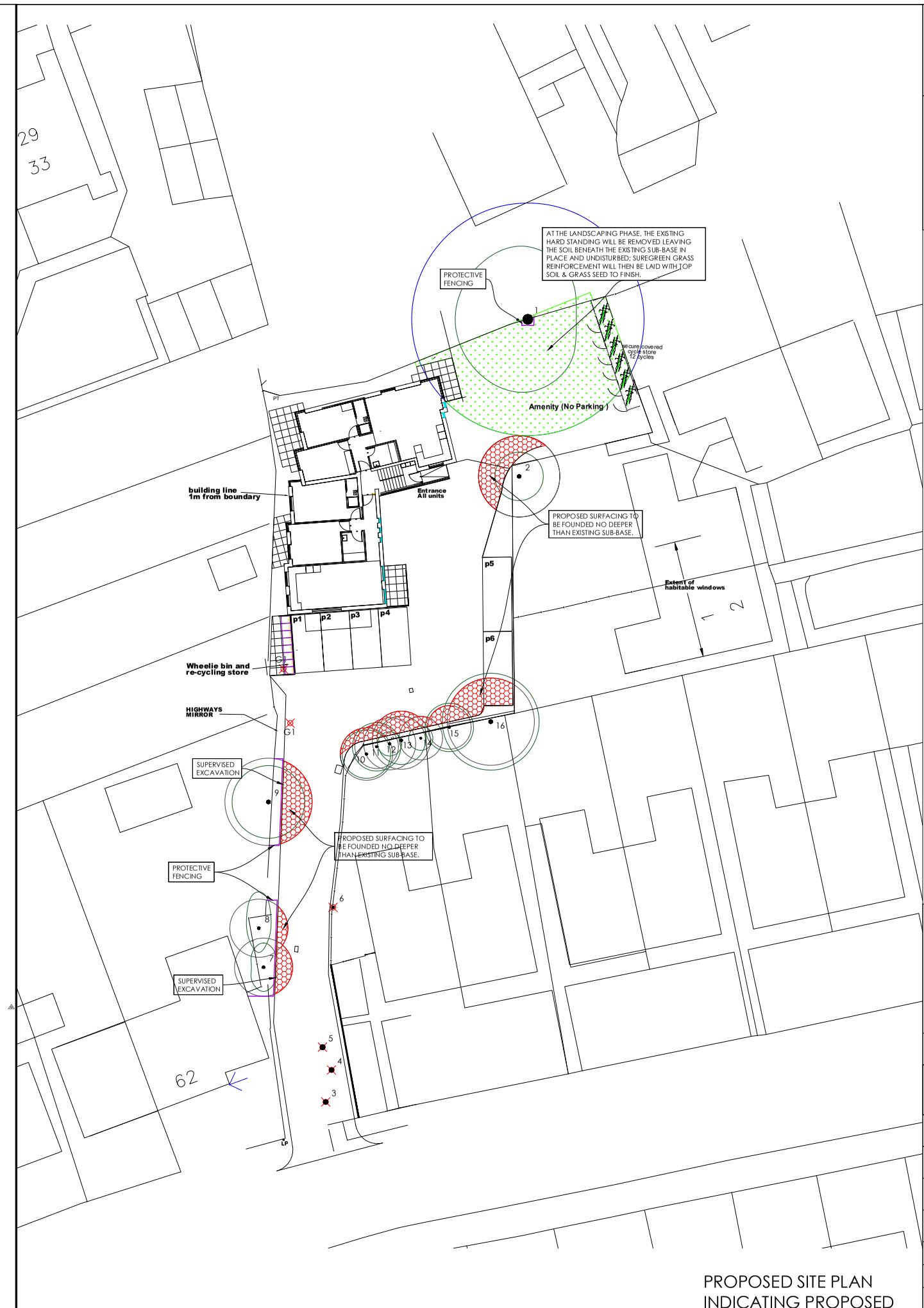
Tree No:	English name	Height (M)	Stem diameter (MM)	Crown spread NESW (M)				Ground clearance	Age class	Physiological Condition	Structural condition	Remaining contribution	BS Category	RPR (M)	RPA (M^2)
G1	4 x Portuguese Laurel	7	250 av					2	EM	N	Av	>40	C	3	28.3
Comments:															

Notes	
Age class	**Y** - Newly planted/Young - *Not fully established and capable of being transplanted or easily replaced* **SM** - Semi-mature – *In first quarter of usual life expectancy for species (LES)* **EM** - Early-mature - *In first third of LES* **M** - Mature - *Approximately half LES* **LM** - Late-mature - *In last third of LES* **VA** - Veteran/ancient – *Over usual LES*
Physiological Condition (PC)	**(N) Normal / (S) Stressed** / **(P) Poor** (leaf size, colour and density; shoot extension growth and the volume of deadwood present)
Structural Condition (SC)	**(G) Good** (no major defects observed / **(Av) Average** (remediable defects) / **(P) Poor** (irremediable defects)
Height/Crown Spread (N,E,S,W) / Dimensions	Measured in metres (with laser or estimated (*) when line of sight is poor)
BS Category	British Standard 5837:2012 Table 1 category. Refers to tree/group quality and value: **A – High, B – Moderate, C – Low, U – Trees that cannot realistically be retained in the context of the current land use for longer than ten years**. Sub category (1, 2, 3) is given if considered appropriate.
Stem diameter	Measured at 1.5m above ground level and used to calculate the root protection area (RPA). For multi-stemmed trees a cross-sectional area is calculated from the sum of the diameter of each stem to give a notional overall stem diameter.
Root Protection Radius (RPR)	A minimum radius from the tree trunk that should ideally be left undisturbed during the development process. Derived from a 12 x multiple of the stem diameter. Used to calculate the Root Protection Area (RPA).

APPENDIX B: **Tree Survey & Tree Protection Plan**



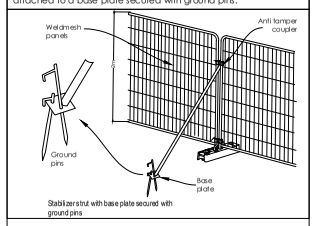
EXISTING SITE PLAN INDICATING PROPOSED TREE REMOVALS



PROPOSED SITE PLAN INDICATING PROPOSED TREE PROTECTION

Protective Fencing:

Protective fencing shall consist of a scaffold framework in accordance with figure 3 of British Standard 5837 (2012); comprising 2m tall welded mesh panels on rubber or concrete feet. Onto this, weldmesh panels shall be securely fixed with wire or scaffold clamps joined together using a minimum of two anti-tamper couplers, installed so that they can only be removed from inside the fence. The distance between the fence couplers shall be at least 1m and shall be uniform throughout the fence. The panels shall be supported on the inner side by stabilizer struts, attached to a base plate secured with ground pins.



AD Tree CONSULTING
PRACTICAL ARBORICULTURAL SOLUTIONS

Title:	TREE PROTECTION PLAN
Site:	Garages at Southbourne Gardens, Ruislip, London, HA4 9SW
Dwg No:	TPP/??/2017
Rev:	---
Based on:	Topo. survey & Proposed site plan
Client:	VOSS Construction Ltd
Date:	Jul 2017
Scale:	1:200 @ A1
Drawn:	AD

Tree Reference No.	T1	Canopies of trees:		Category 'B' BPA:	
Category 'C' BPA:		Trees to be removed:		Ground protection:	
Protective fencing:		Proposed surface:		Supervised excavation:	
Proposed grass:					

AD Tree Consulting
david@adtrees.co.uk
07976 780983

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APPENDIX C: **Tree Protection Fencing Detail**

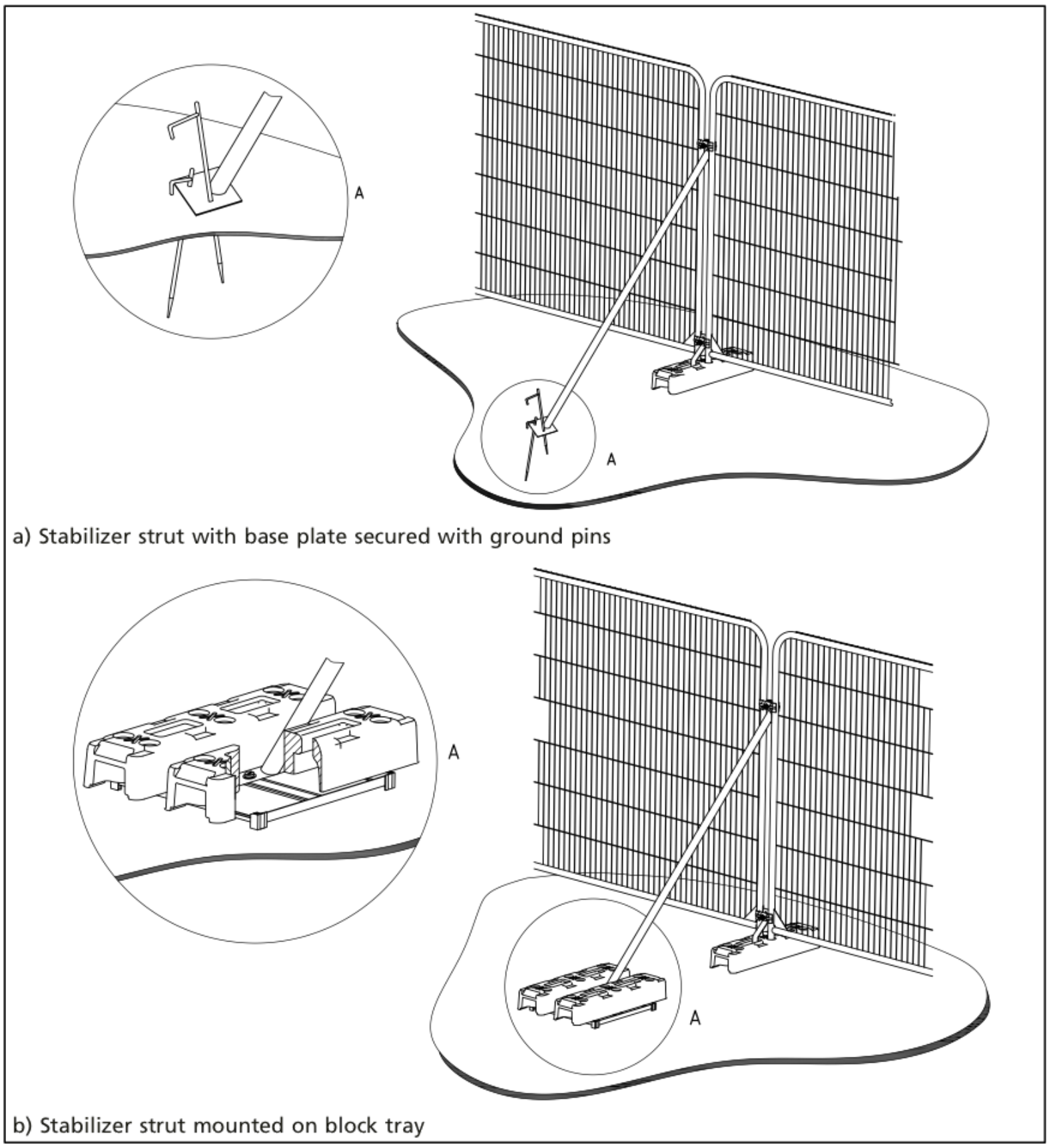

Figure 1 – Alternative specification for protective barrier

APPENDIX D: Root Protection Area Table

Table 4 – Root protection area (RPA) for single stemmed trees

Single stem diameter mm	Radius of nominal circle m	RPA m^2	Single stem diameter mm	Radius of nominal circle m	RPA m^2
75	0.90	3	675	8.10	206
100	1.20	5	700	8.40	222
125	1.50	7	725	8.70	238
150	1.80	10	750	9.00	255
175	2.10	14	775	9.30	272
200	2.40	18	800	9.60	290
225	2.70	23	825	9.90	308
250	3.00	28	850	10.20	327
275	3.30	34	875	10.50	346
300	3.60	41	900	10.80	366
325	3.90	48	925	11.10	387
350	4.20	55	950	11.40	408
375	4.50	64	975	11.70	430
400	4.80	72	1 000	12.00	452
425	5.10	81	1 025	12.30	475
450	5.40	92	1 050	12.60	499
475	5.70	102	1 075	12.90	519
500	6.00	113	1 100	13.20	547
525	6.30	124	1 125	13.50	573
550	6.60	137	1 150	13.80	598
575	6.90	150	1 175	14.10	625
600	7.20	163	1 200	14.40	652
625	7.50	177	1 225	14.70	679
650	7.80	191	1 250+	15.00	707

APPENDIX E: Protected Trees Sign

TREE PROTECTION AREA
KEEP OUT!

TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND ARE SUBJECTS OF A TREE PRESERVATION ORDER
(TOWN & COUNTRY PLANNING ACT 1990)

CONTRAVENTION OF TREE PRESERVATION ORDER MAY LEAD TO **CRIMINAL PROSECUTION**

THE FOLLOWING **MUST** BE OBSERVED BY ALL PERSONS:-

- THE PROTECTIVE FENCING MUST NOT BE REMOVED
- NO PERSON SHALL ENTER THE PROTECTED AREA
- NO MACHINE OR PLANT SHALL ENTER THE PROTECTED AREA
- NO MATERIALS SHALL BE STORED IN THE PROTECTED AREA
- NO SPOIL SHALL BE DEPOSITED IN THE PROTECTED AREA
- NO EXCAVATION SHALL OCCUR IN THE PROTECTED AREA

ANY INCURSION INTO THE PROTECTED AREA MUST BE WITH THE WRITTEN PERMISSION OF THE LOCAL PLANNING AUTHORITY