

HAMPS VALLEY LIMITED

BS 5837:2012 Tree Survey Report

& Arboricultural Impact Assessment

Location;
Squirrels Nest,
Endon,
Staffordshire

Date of Inspection;
15th March 2017

Commissioned by;
ASAP Architects

Survey carried out by;
Kristian Turner. FdSc Arb. Tech Arbor A
Arboriculturual Association Professional Tree Inspector.

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1.0:Summary

1.1: Hamps Valley Ltd Tree Experts was commissioned in March 2017 by Stuart Bryant to conduct a preliminary tree survey under the guidelines of **BRITISH STANDARDS 5837:2012** *Recommendations for trees in relation to design, demolition and construction.* (BS5837) and an Arboricultural Impact Assessment (AIA) of the proposed redevelopment of the two garages at Squirrels Nest, Endon, Staffordshire.

1.2: The primary purpose of this report is to make an appraisal of the trees that stand on the afore mentioned land, Squirrels Nest. This report evaluates the condition and amenity value of the trees assesses any constraints they may impose on re-development proposals. This report provides information on any tree that should be removed and how the trees being retained should be protected during the development process.

1.3: The tree survey of the application site was carried out by Kristian Turner (of Hamps Valley Ltd) on the 15th March 2017 during daylight hours.

1.4: The appraisal found that of the five trees surveyed, three are of a standard that they should be considered a restraint on planning. T3; a semi-mature Yew, T4; a mature Cedar and T5; a Cherry tree. The remaining two trees should not be considered a restraint on planning, T1; a Sycamore is in poor condition, requiring immediate attention, T2; a Holly of no great value. T3 and T5 will have no effect on development. T4, covered by a TPO requires a small amount of pruning and careful protection however the roots will not come into conflict with proposed development due to historic groundwork.

Any trees to be retained should be protected taking into account the minimum distances for tree protection barriers advocated in BS5837:2012. See Fig 3 for the extent of such protective barriers required around each of the retained trees.

1.5: Full details of arboricultural works recommended for the trees are listed in the Tree Data Tables in Appendix 6 of this report.

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2.0:Introduction

2.1: Background and commission

Hamps Valley Ltd Tree Experts was commissioned in March 2017 by Stuart Bryant to conduct a preliminary tree survey under the guidelines of **BRITISH STANDARDS 5837:2012** *Recommendations for trees in relation to design, demolition and construction.* (BS5837) and an Arboricultural Impact Assessment (AIA) of the proposed redevelopment of the two garages at Squirrels Nest, Endon, Staffordshire.

Our current understanding of the proposed development is that it will include:

- Demolition of two garages.
- Groundworks.
- Building one garage.
- Building one carport.

2.2: Aims of the survey

This arboricultural assessment aims to

- evaluate the condition and amenity value of the trees on site.
- advise on how the trees are likely to impact on the proposed development.
- advise on how the proposed development is likely to impact upon the trees.
- provide information on any trees that should be removed.
- provide information on how those trees being retained should be protected during development process.

2.3: Site Context

The site of the proposed development is the driveway of Squirrels Nest. The proposed development is too put two new structures on to the footprint of the original garages with a slight over lap. The whole property is located on a slope rising from the East. The driveway rises steeply from Church Lane, at the North of the site on to a flat area of driveway. The driveway is on hard standing with a covering of gravel. Along the Northwest edge of the drive is a retaining wall holding back the higher ground above the wall the ground slopes steeply up to the neighbouring property with a boundary wall. along the South east edge of the drive is another retaining wall, this time supporting the driveway from the lower ground of a lawn. At the southern edge is a set of steps leading down to the house. The driveway has two garages, one on the East side and one on the West side built near the upper retaining wall. Near to the East garage is a Mature Cedar. This tree was once on the lawn area until the edge of the drive was extended and built up, raising the level of ground around the base of the tree, Fig 3.

The survey area and location are shown in Fig 1, Squirrels Nest, Endon, Staffs.



Fig 1: Location of site. Squirrels Nest. (Google maps 2017)

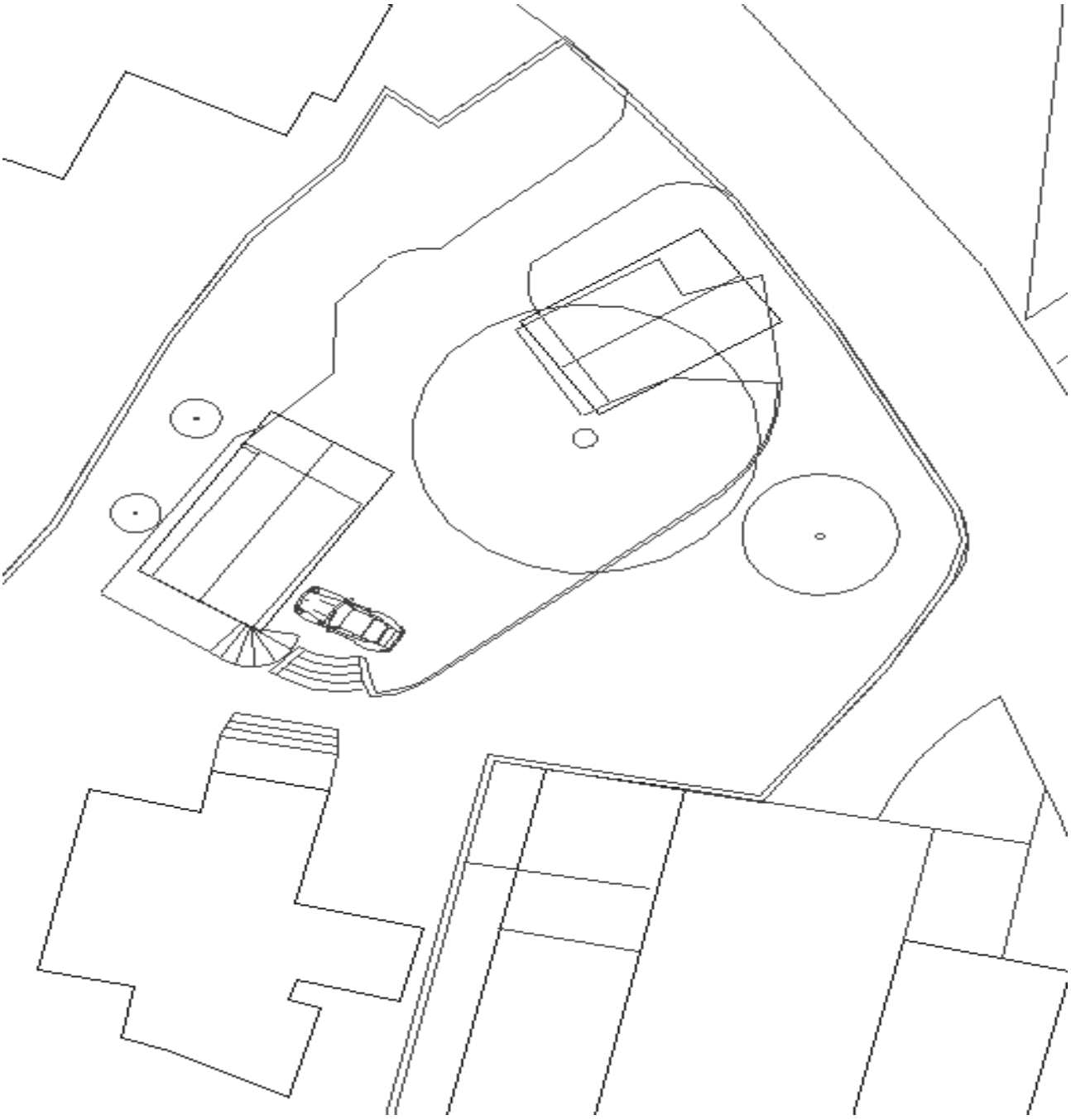

Fig 2: Survey Site showing the proposed new buildings overlaid over the pre-existing garages.

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3.0: Survey Methodology, Collection and Assessment of Data

3.1: Survey Methodology

The site was surveyed by Kristian Turner, 15th March 2017. The inspection only consists of a visual tree assessment, no decay detection or other specialised equipment was used. The survey was carried out from ground level. The weather during the survey was bright with good sunshine.. Visibility was good, although occasionally impeded by the low morning sun. Due to the time of year the deciduous trees were not in leaf.

3.2: Tree height, crown spread and canopy height were estimated; a tape measure was used for all other dimensions, although in some instances the undergrowth prevented access to the trees in this case all of the tree measurements were estimated.

Data was collected to comply with the recommendations of BS5837:2012 *Trees in relation to construction* (BS5837).

3.3: Trees are dynamic living organisms and although their health and structure can be assessed, an absolutely safe assessment is not realistic as unpredictable failure can never be ruled out. Trees are also susceptible to climatic conditions and more extreme weather, including high winds, drought and snow. These conditions can cause healthy trees to fail. Hamps Valley Ltd cannot be held liable for any such failures. It would be advisable to re-inspect after any period of severe weather. Therefore this report is only valid in relation too; the weather, the condition of the trees and the condition of the site on the day of the investigation.

3.4: No soil samples were taken for analysis on this investigation.

3.5: Any site information, history or legal descriptions given are taken as accurate.

3.6: The report is only valid as a whole, any alterations or omissions invalidate it entirely. The report is valid for six months only. Any legal matters that arise from this report are not the responsibility of Hamps Valley Ltd and the consultant is not required for any further testimony or investigations unless relevant new arrangements are made.

3.7: **Survey personnel**. Kristian Turner has 13 years experience working with trees in the Arboricultural industry. He currently holds a FdSc in Arboriculture after studying at the Central University of Lancashire, is a Technician grade member of the Arboricultural Association and is a Professional Tree Inspector through the Arboricultural Association.

4.0: Data Collection

The tree location plan is shown appendix 1.

4.1: The trees are plotted individually and have their root protection area (RPA) and canopy spread shown with the tree identifiers.

4.2: Key to report

4.3: Reference number

4.4: Species name is given as the common

4.5: The height is the measurement from ground level to the highest point of the tree to the nearest meter.

4.6: Stem diameter at 1.5m from ground level given in mm. # denotes estimated measurement (where access is unattainable)

4.7: Crown spread given at North (N), East (E), South (S), West (W) in meters.

4.8: Height of the first significant branch and direction of growth in meters (2m W) and the height of the canopy in meters.

4.9: The age of the tree as categorised in one of the following age brackets;

Young (Y), Semi-mature (SM),

Mature (M), Over mature (OM), Veteran (V).

4.10: General observations of the structure and physiological condition.

4.11: Estimated remaining contribution, in years (<10, 10+, >20, >40, 40+)

4.12: Category U or A to C grading (Table 1)

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Table 1 Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• 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 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; see 4.5.7.*			See Table 2
	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)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	See Table 2
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 remediable 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	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	See Table 2
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 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	See Table 2

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Table 2: Category Grading of Trees on Site

Abbreviation	Description	Category	Colour Code
U	Trees which should be removed irrespective of any development proposal	Fell	Dark red
A	Trees of high quality whose retention is most desirable	High	Light
B	Trees of moderate quality whose retention is desirable	Moderate	Mid blue
C	Trees of low quality which could be retained	Low	Grey

5.0: Tree Survey

5.1: General observations

The British Standard BS5837:2012 *Trees in Relation to Design, Demolition and Construction - Recommendations'* gives recommendations and guidance of the principals that should be applied during the development process to achieve a satisfactory juxtaposition of trees with structures. With regard to the design issues and the assessment of trees on development sites, BS 5837 recognises in section 5.1.1 that:

> *"The constraints imposed by trees, both above and below ground (see Note to 5.2.1) should inform the site layout design, although it is recognized that the competing needs of development mean that trees are only one factor requiring consideration. Certain trees are of such importance and sensitivity as to be major constraints on development or to justify its substantial modification. However, care should be taken to avoid misplaced tree retention; attempts to retain too many or unsuitable trees on a site can result in excessive pressure on the trees during demolition or construction work, or post-completion demands for their removal."*

5.2: BS5837 also adds in 5.1.2 that:

> *"As trees can affect and be affected by many aspects of site operations, during the conception and design process the project arboriculturist should be involved in ongoing review of layout, architectural, engineering and landscape drawings. All members of the design team should be made aware of the requirements for the successful retention of the retained trees and should make provision for these throughout the development process."*

5.3: BS5837 advises that the physical size of trees can: dominate new development and give rise to concern about safety, cause obstruction of light and views, and incite objections about falling leaves and debris. These factors are most important when taking into consideration the juxtaposition of trees and new development, and usually this can only be resolved by allowing sufficient space for the trees or by removing the trees.

5.4: The Trees

For the purpose of this report the trees have been treated as;

- 5 individual trees
- All the trees are in a conservation area and T4 is subject to a TPO.

5.5: T1; a mature Sycamore. The tree has a lean South from the base before straightening up and then splitting into two stems at 3m. The North stem has died back significantly and the top of the other is also dying back. This may be due to interference with the roots while building of the neighbours wall. Large dead hanger over drive. Heavily reduce/pollard the tree to see if it retrenches. Retain and protect

5.6: Tree T2 a mature Holly. A multi stemmed tree with weak forks at the base and a sparse crown. Retain and protect.

5.7: Tree T3 semi mature Yew. This tree is growing on top of the upper retaining wall. It has previously been raised over the garage. The crown is largely one sided due to group pressure. retain and protect.

5.8: All the above trees are growing on the steep area of ground on top of the upper retaining wall up to the Northwest boundary wall. As well as these identified trees there is a screen of shrubs and bushes made up of Conifers, Laurels and smaller Hollies as well as other smaller plants.

5.9: Tree T4 Mature Cedar. This is a good looking specimen located in the centre of the driveway. It has several historic pruning wounds along the stem that leads to a fair scaffold structure. The crown has some signs of dieback, the owner informs me that the tree was stressed for a while but has recovered slightly. The base of the tree is actually located approximately 1-1.5m below ground level where it used to be located in the lower garden before the driveway was extended, Fig 3. This work was completed 20+ years ago. This tree should be retained, the tree will require crown raising too 6m to allow for the new carport and to give access for work, This would not be a large operation as the crown is already a good height. This tree is subject o a tree preservation order. Due to a species of fungus that is affecting Cedars in the UK (*Sirococcus*) the tree should be regularly inspected.

5.10: T5 Semi-mature Cherry. This tree has a weak fork at the base with the rest of the tree being of a good shape. The tree is located on the lower garden and far enough away from the driveway so that it should not come into conflict with the development. blocking access to the lower garden will protect this tree. Due to the weak fork near the base it may be sensible to consider a crown reduction in five years to alleviate stress on the fork. Retain and protect.

5.11: All other tree information will be found in the Tree Data Table, appendix 6.



Fig 3; The Cedar located on the lower garden before the driveway extension

6.0: Barriers and Surfaces

6.1: Protective barriers

Barriers for the protection of trees on development sites should be fit for the purpose of excluding construction activity and be appropriate to the type and proximity of the work. In particular, attention should be paid to ensure that such barriers remain rigid and complete during all phases of development. In most instances, barriers should consist of rigid framework comprising vertical post and horizontal rails well braced to resist impacts. An appropriate fence type should then be securely fixed to this framework with clamps or wire. . The protection of the subject trees and their subsequent health and future potential is totally dependent upon all persons operating within the site. Communications are vitally important to ensure that all parties understand the reasons for tree protection and the existence of the barriers.

6.2: It is imperative that these barriers, as specified in British Standard BS 5837 2012 '*Trees in Relation to Design, Demolition and Construction - Recommendations'*, should be put up around the retained trees prior to the commencement of any construction operations. It is expected that the erection of tree protection barriers will be conditional on on the

approval of a planning application that calls for their use. To avoid any ambiguity the precise location of the tree protective barriers should be agreed on site with the local authority arboricultural officer and then marked out clearly on the ground.

6.3: Location of protective barriers: British Standard BS 5837 advocates the use of "root protection areas" (RPAs), formed by calculating a circle 12x the stem diameter for single-stem trees . For trees with multiple stems one of two calculations should be used

a) For trees with two to five stems. the combined stem diameter should be calculated as follows:

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

b) For trees with more than five stems, the combined stem diameter should be calculated as follows:

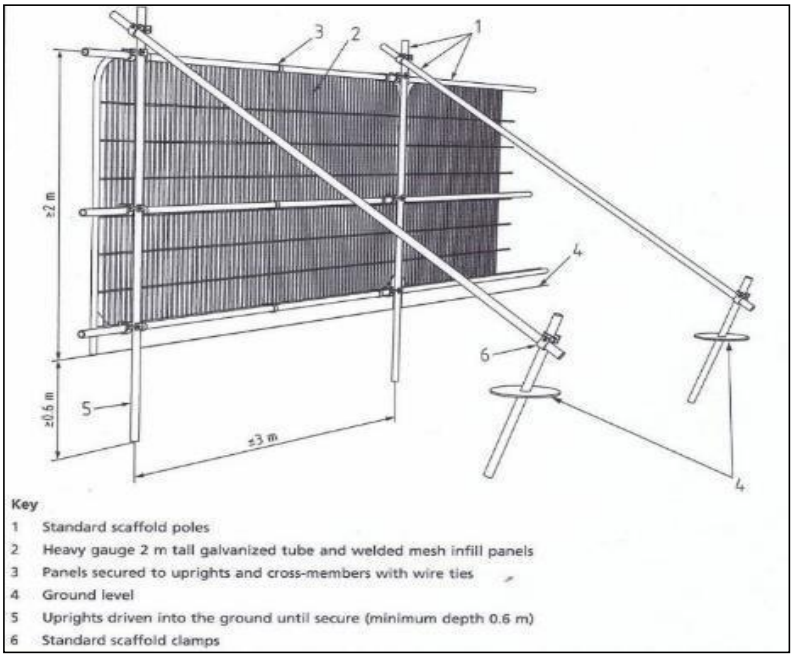
$$\sqrt{(\text{mean stem diameter})^2 \times \text{number of stems}}$$

Table 3: example RPA dimensions from BS5837:2012

Single stem diameter mm	Radius of nominal circle m	RPA m²	Single stem diameter mm	Radius of nominal circle m	RPA m²
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

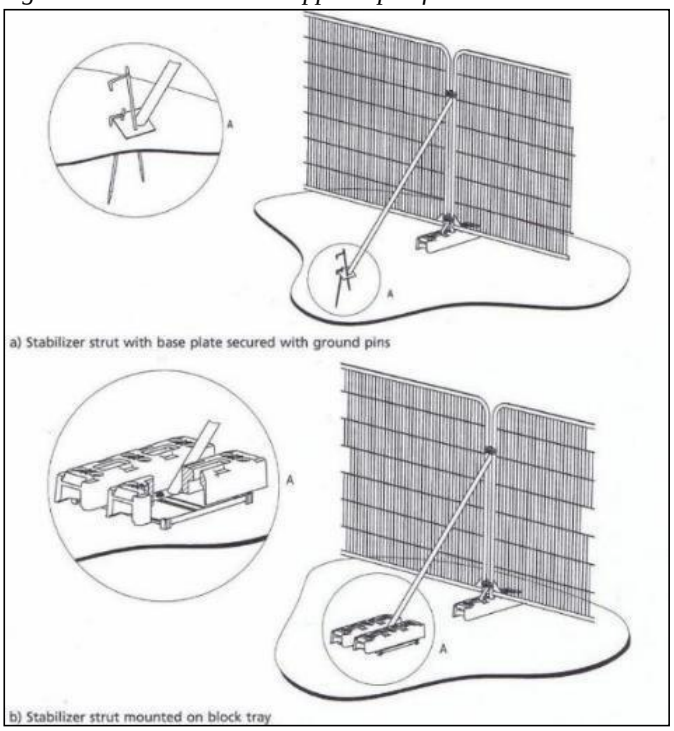
6.4: Specification for the tree protection barriers: The default specification for tree protection barriers should normally consist of a vertical and horizontal scaffold framework, well braced to resist vehicle impacts. The vertical tubes should be spaced at a maximum interval of 3m and driven securely into the ground. Onto this framework, proprietary welded mesh panels ('heras') should be securely fixed. Care should be exercised when locating the vertical poles to avoid underground services and, in the case of the bracing poles, also to avoid contact with structural roots. The general specification for the protective barriers is outlined in Fig 3:

Fig3: Specification for protective barriers



6.5: In this case, the site circumstances may not necessitate the default level of protection and it may be possible to agree an alternative specification with the local planning authority. For example, 2m tall 'Heras' panels on rubber or concrete feet would provide an adequate level of protection from cars, vans, pedestrians and manually operated plant machinery in certain areas. The fence panels could be joined together using anti-tamper couplers, installed so that they can only be removed from inside the fence. The panels should be supported on the inner side by stabilizer struts, which should normally be attached to a base plate secured with ground pins

Figures 4a and 4b- Panel support specifications



6.6: Whatever the level of protection utilised, no storage of materials or any construction operations should occur within any of the fenced off areas. Ideally, a notice similar to that shown below should be attached to the barriers.

Figure 5: Example of notice to be erected



6.7: Prohibited Activities

The following activities shall not be carried out under any circumstances:

a. no fires to be lit on site within 10m of the nearest point of the canopy of any retained tree on or adjacent to the proposal site;
b. no equipment, signage, fencing etc. shall be attached to or be supported by any retained tree on or adjacent to the application site;
c. no temporary access within designated RPA without the prior written approval of the LPA;
d. no mixing of cement, dispensing of fuels or chemicals within 10 metres of the tree stem of any retained tree on or adjacent to the application site;
e. no soakaways to be routed within the RPA of any retained tree on or adjacent to the application site;
f. no stripping of topsoil, excavations or changing of levels to occur within the RPA of any retained tree on or adjacent to the application site;
g. no topsoil, building materials or other to be stored within the RPA of any retained tree on or adjacent to the application site; and
h. no alterations or variations of the approved works or tree protection schemes shall be carried out without the prior written approval of the district planning authority.

6.8: Methodology - excavation with RPAs

To avoid damage to tree roots, the existing ground levels should be retained within the RPAs of all trees. The ground within the RPAs of the trees should not be disturbed, and the topsoil should remain. Consequently, it may be necessary to undertake any excavation works within RPAs by hand. As a general rule, tree roots with a diameter of 25 mm or less can be severed cleanly (by use of a handsaw or sharp secateurs) without any detrimental effect to the health and stability to the tree. However, if roots of a diameter greater than 25 mm are encountered, the local authority Arboricultural Officer and/or Arboricultural Consultant should be consulted as to implications their severance would present to the health and stability of the tree. If this method is employed, it would be prudent to prepare a simple method statement based on the enclosed guidance taken from National Joint Utilities Group (NJUG) Publication Volume 4: 2007 '*Guidelines for the Planning, Installation and Maintenance of Utility Apparatus in Proximity to Trees.*

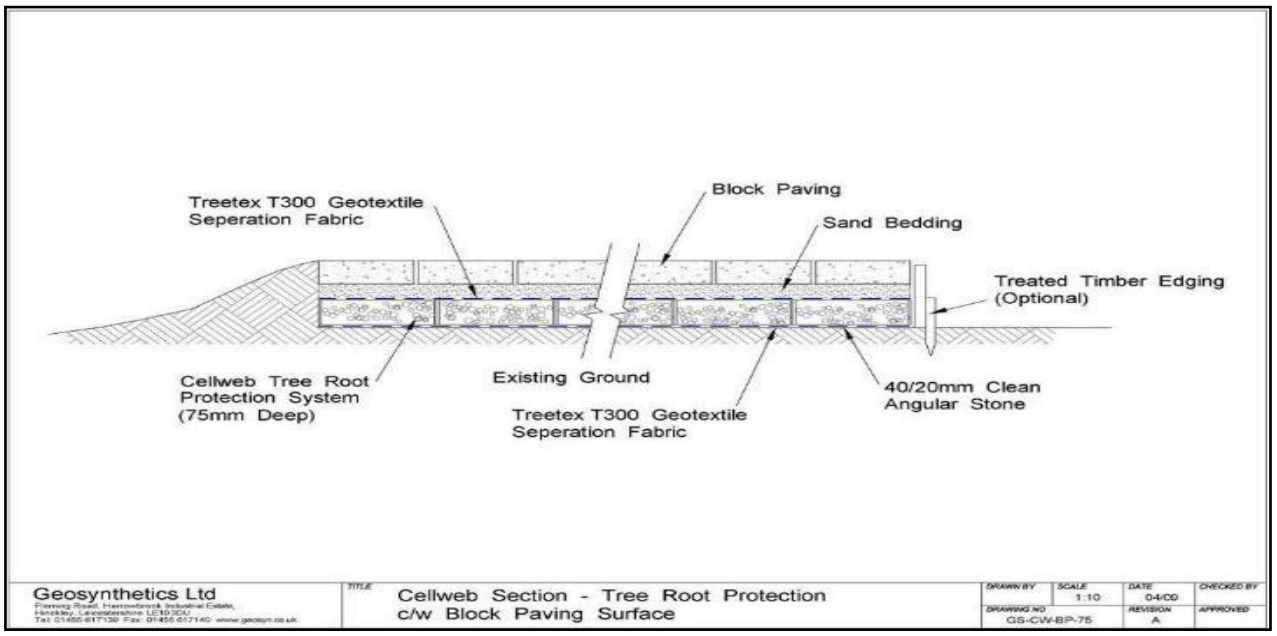
6.9: Methodology - temporary ground protection within RPAs -

It may be impossible for installation of the new vehicular access. Any such access may result in changes to the existing soil structure with corresponding damage to the health and condition of the tree's root system. Section 9.3 of BS5837:2012 makes provision for such situations by recommending that access/working zones within the protection areas may be acceptable when created by using a combination of barriers and appropriate ground protection: In this instance steel road plates or an alternative system such as 'Groundtrax' should be utilised.

6.10: Methodology - special surfaces

When the proposed driveway is installed in the vicinity of it is possible that roots may be encountered. Within the RPAs of these trees any possible root injury can be mitigated by the utilisation of 'special surfaces' incorporating a 'no dig' methodology as recommended in Arboricultural Practice Note 12: 2007 "Through the Trees to Development " (APN 12). Cellular confinement systems such as 'Geoweb' and 'Cellwebb' can be used to implement the principals of APN 12 (Figure 6).

Figure 6 – Example special surface



6.11: When utilised correctly with free draining aggregates and a permeable surface, these cellular confinement systems provide a shallow and free draining base that support the passage of vehicles whilst allowing water and oxygen to permeate down to tree roots. This enables a 'no dig' construction technique to be used avoiding the severance of trees roots and preventing soil compaction around tree. This method of surface construction is specifically designed for use within the RPAs of retained trees.

6.12: Please note it is important not to treat the example above as finalised specification. It is provided as an indication of construction methods suitable for use to reduce damage to the root systems of retained trees by soil compaction and direct mechanical injury. It is therefore recommended that a qualified and competent engineer assess the suitability of the recommended specifications and finalise the details prior to commencement of any works.

6.13: Scaffolding

The erection of any scaffolding within the RPA of any tree must be verified with the architect after agreement with the local planning authority. The weight and downward pressure during use of any scaffolding within the RPA of any tree must be supported on bearers of a sufficient size, such as scaffolding boards. The aim of the bearers is to spread the working load across the RPA. The access point for the scaffolding should be outside the RPA.

7.0: Structural Damage

7.1: The potential risk for any direct or indirect structural damage to the proposed development being associated with the trees on and adjacent to the site is dependent on diverse factors, such as: tree species and age, soil type, foundation depth, climate, etc. This complex interaction of tree, soil, building and other influencing factors is so inherently unpredictable, that any accurate prediction of such incidence is impractical without detailed investigation and is outside the remit of this report and it is recommended that a structural engineer be consulted on this matter. Further information on this can be found in the following papers:

(i) National House Building Council (NHBC) Standards Chapter 4.2 Building near trees,

(ii) Building Research Establishment (BRE) Digest 63 Soils and foundations: 1,

(iii) Building Research Establishment (BRE) Digest 64 Soils and foundations: 2,

(iv) Building Research Establishment (BRE) Digest 67 Soils and foundations: 3,

(v) Building Research Establishment (BRE) Digest 240 Low-rise buildings on shrinkable clay soils: Part 1,

(vi) Building Research Establishment (BRE) Digest 241 Low-rise buildings on shrinkable clay soils: Part 2,

(vii) Building Research Establishment (BRE) Digest 242, Low-rise buildings on shrinkable clay soils: Part 3 and;

Building Research Establishment (BRE) Digest 298 Low-rise building foundations; the influence of trees in clay soil

8.0: Conclusions and Tree Protection Plan

8.1: T1 requires a crown reduction, regardless of development, for safety reasons. Heavily reducing/pollarding the tree will allow for retention of the tree. There were no obvious signs of fungal fruiting bodies to identify the reason for the severe dieback however the construction of the neighbours boundary wall may have interfered with roots to cause the dieback. Carrying out this operation will allow the tree to recover and establish new roots safely

8.2: T4 requires crown raising to 6m to give clearance for development and work. The other trees do not require any work.

8.3: The trees (T1, T2, T3) located above the upper retaining wall have had their RPA's recalculated, in line with BS5837 guidelines to allow for the retaining wall and the neighbours boundary wall, Appendix 1. This has kept the same size area of root coverage but changed the shape to within the walls as the roots will have done when they meet a barrier.

8.4: The RPA of T4 has a plotted area larger than the actual calculated RPA, Appendix 1 . The photo in fig 3 shows the tree twenty plus years ago, before the current driveway extension, the base of the tree is one to one and half meters below the current level of the driveway. It is unknown if the tree grew against the wall or if the driveway was previously extended up to the tree.

If the tree grew against the wall then the mass of roots will have changed shape and will protrude further South. However if the tree was there previous to any driveway then the roots will fit a more conventional pattern. I have therefore presumed that the tree has recovered from any root damage and has grown a system of roots in the area shown, Appendix 1 , this area gives allowance for both circumstances. In either event the roots however will have come up against a barrier above the original height of the base of the tree, the foundations and base layer for the driveway. It would therefore be reasonable to presume that there will be no roots located within the ground above the original lower garden level and the current driveway level.

8.5: With the tree protection plan in place and adhered to, the proposed development will have little impact on the trees on site. Apart from the required crown raise on the Cedar (T4) the only area of conflict is the small area of upper retaining wall to be removed just North of the West garage to allow for the proposed new garage. (See the tree protection plan) The roots of the trees above the upper retaining wall have grown behind and will be protected by the retaining wall. The roots of the Cedar have had 20+ years of acclimatisation of compaction and are deep enough to avoid damage.

8.6: The impact of the trees on the proposed development are no different from the current buildings. Shading is not an issue as the buildings are dwellings. Leaf drop is an issue but no more than the owners are used to already. The use of gutter guards will help with drains. The growth of the Cedar will impact on the ground around the proposed car port however with the correct pile foundations this will be negated.

8.7: The impact of construction on the trees will be dealt with using this **tree protection plan**.
The area above the upper retaining wall is very steep, it may not be possible to erect the recommended barriers. As these barriers will not be required to stop construction traffic and the ground is to steep to use as a storage area, a lesser barrier could be erected, i.e. orange plastic netting.
The lower garden can be cordoned off with a barrier along the path leading to the garden, appendix 2
The trunk of the Cedar will require protection due the proximity of work not normally permitted due to RPA barriers. The use of a fencing similar to the recommended in chapter 6 but in a smaller square to stop any damage to the trunk.

8.8: Tree protection Plan; barriers shown in appendix 2

1. Erect orange plastic fencing along the top of the upper retaining wall.
2. Erect barrier on lower garden as per chapter 6.
3. Place protection around the trunk of the Cedar in a 2m square
4. Use only hand tools to remove the section of upper retaining wall and only remove what is necessary to allow the build. The area to be marked and agreed by the planning authority.
5. Demolish the old garages from within.

Using an Arboricultural consultant to check ground protection and RPA barriers is recommended.

8.4: Any trees for retention should have substantial barriers erected to protect the RPA.

8.6: The removal of trees and new developments can affect the local landscape. The loss of trees and the impact of new developments can lessened by the planting of new trees that are a suitable species and the correct distance from existing buildings, proposed developments and any utilities above and below ground.

8.7: Having a planting scheme proposed in the planning application can help the LPA to visualise the finished project.
For advice on suitable planting species and locations please use a professional arboricultural consultant working to BS 5837:2012

8.9: Any recommended tree work should be carried out by fully insured and qualified arborists to the British Standards for tree work BS: 3998. 2010.

9.0: Other Considerations

9.1: Trees Subject to Statutory Controls

Certain trees on the site are may be covered by a Council Tree Preservation Order It will be necessary to check this before work commences The works specified above are necessary for reasonable management and should be acceptable to the local authority. However, tree owners/ managers should appreciate that they may take an alternative point of view and have the option to refuse consent.

9.2: Felling Licence

The felling of trees in the United Kingdom is controlled by the Forestry Commission under the Forestry Act 1967. A ‘felling licence’ from the Forestry Commission is normally required to fell growing trees, although in any calendar quarter up to 5 cubic metres in any quarter can be felled without licence providing not more than 2 cubic metres are sold. However, certain types of felling are exempt such as the removal of trees that are dead, dying, dangerous and or causing a nuisance.

9.3: Trees outside the Property

Full co-operation and liaison with tree owners will be required to conduct the recommended works on any trees included in this report that are not within the ownership of the applicant. The implications of non-cooperation requires legal interpretation and are beyond the scope of this report. By common law, branches from trees on adjacent properties extending over boundaries can be pruned back to the boundary line without the permission of the owners. However, the material belongs to

the tree owner and the same guidance on statutory controls apply, as discussed in section 5.1.

9.4: Implementation of Tree Work

When appointing a tree contractor, only suitably qualified and experienced companies should be used. Always ensure that the contractor carries adequate Public and Products Liability Insurance, along with appropriate Employer's Liability Insurance. The contractor should carry out all tree works to BS 3998:1991 *Recommendations for Tree Work*, as modified by more recent research findings.

9.5: Replacement Trees

Ideally, replacement trees should be planted in mitigation for any being lost and to supplement those existing. For the most effective impact these trees should be 'Extra Heavy Standard Trees' conforming to British Standard 'Nursery Stock BS 3936: Part 1 1992, with a stem girth of 14 to 16 cm at 1m from ground level and a minimum height of 350 cm. They should be secured with twin stakes and cross strut, with tie and flat back spacer. Ideally, an irrigation/aeration pipe should be installed and the soil surface mulched at a radius of 0.5 m from the base of the tree.

9.6: Wildlife

All operations should take account of wildlife needs and be planned to take advantage of weather conditions and season for minimum damage and disturbance.

9.7: Bats

Specific consideration should be given to the possible presence of roosting bats, which are protected under British law by the Wildlife and Countryside Act (WCA) 1981 (as amended), and bats are classified as European Protected Species under The Conservation (Natural Habitats, &c.) Regulations 2010. This makes it an offence to kill, injure or disturb a bat and to destroy any place used for rest or shelter by a bat. The Countryside and Rights of Way Act (CRoW) 2000 strengthens protection given by the WCA and covers 'reckless' damage or disturbance to a bat roost.

9.8: Breeding Birds

Any proposed tree removal should be carried out outside the bird nesting season (which runs approximately from March to September inclusive) to avoid adverse impacts to any nests present. Any proposed works that cannot be timetabled out with the bird nesting season must be immediately preceded by a check for active nests immediately prior to works commencing – this should be undertaken by a suitably-experienced bird ecologist. Clearance works should only take place once this ecologist has confirmed that no active bird nests will be affected by the works. If active nests were found then working restrictions would be put in place until all chicks had fledged. All wild birds and their nests, whilst in use, are protected under the WCA 1981 (as amended) from harm or destruction during the nesting season.

9.9: Future considerations

The remaining trees should be inspected on a regular basis by a qualified arboriculturist. Trees are living organisms whose health and condition can change rapidly. The conclusions and recommendations of this report are valid only for a period of one year. This period of validity maybe reduced in the case of any change in conditions to, or in proximity to, the trees.

10.0: Bibliographical References

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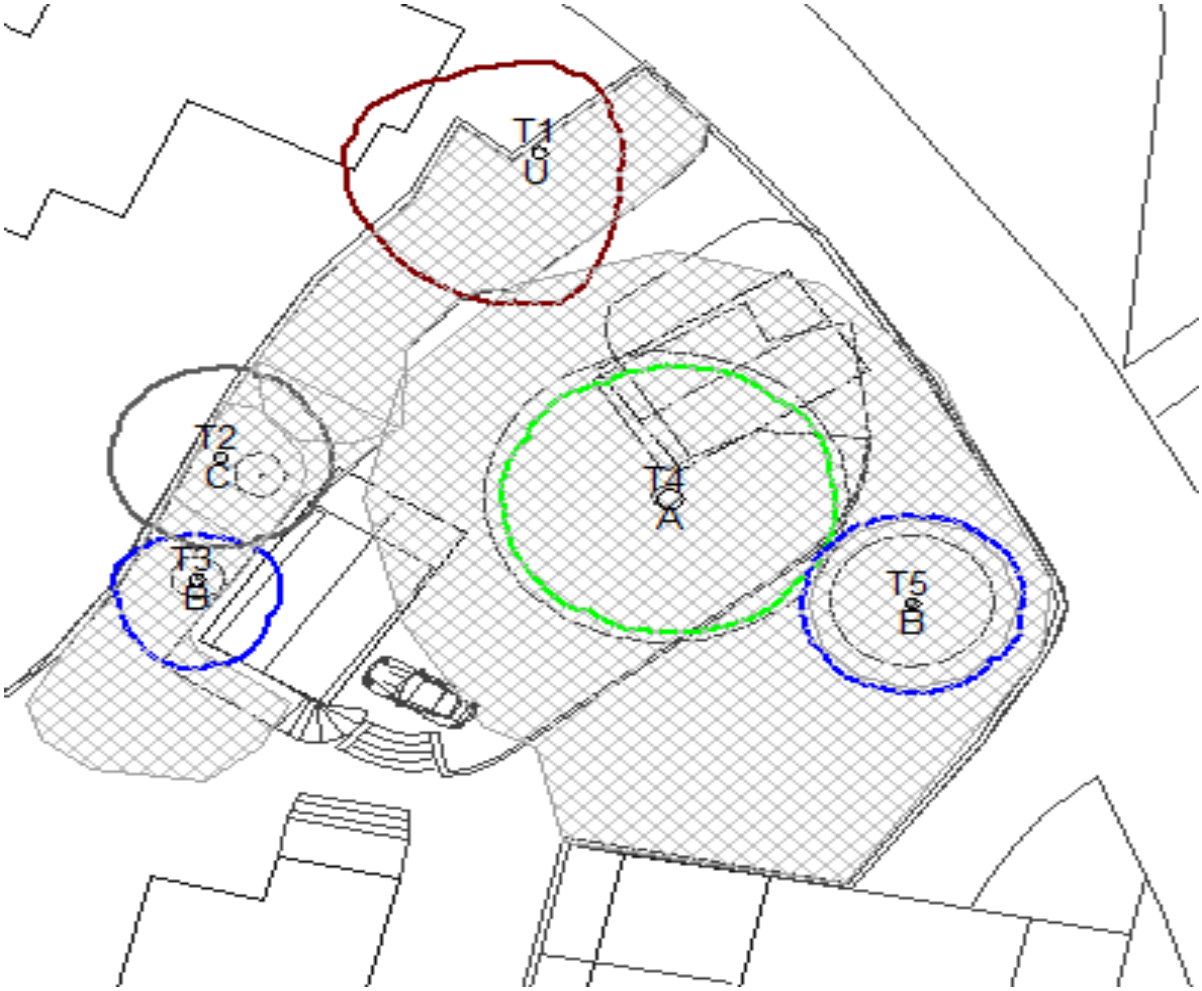
Appendix 1 A plan of the trees on site. The RPAs shown as the shaded areas. The crown spread in coloured outlines.



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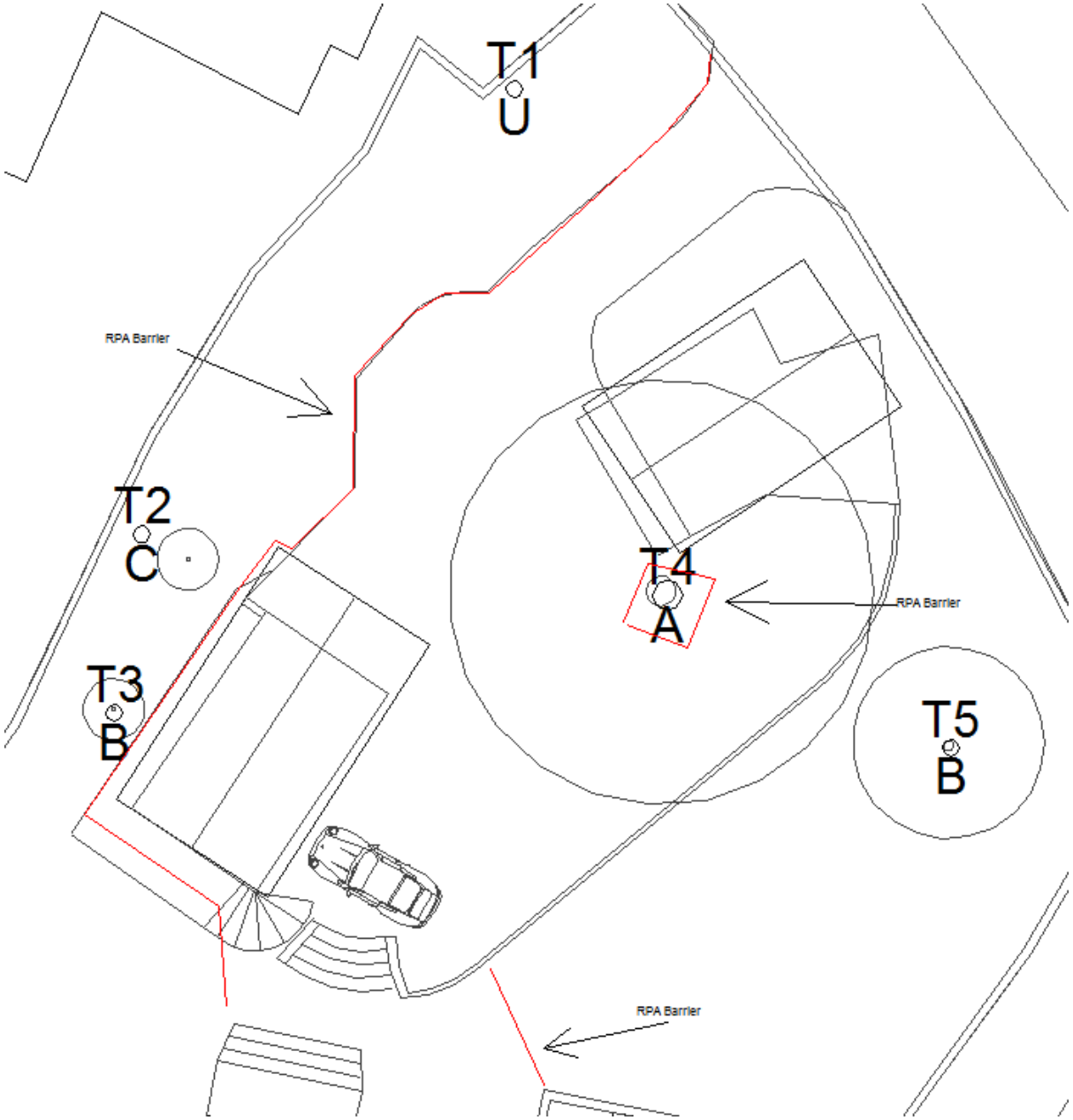
Appendix 2, The RPA barriers.



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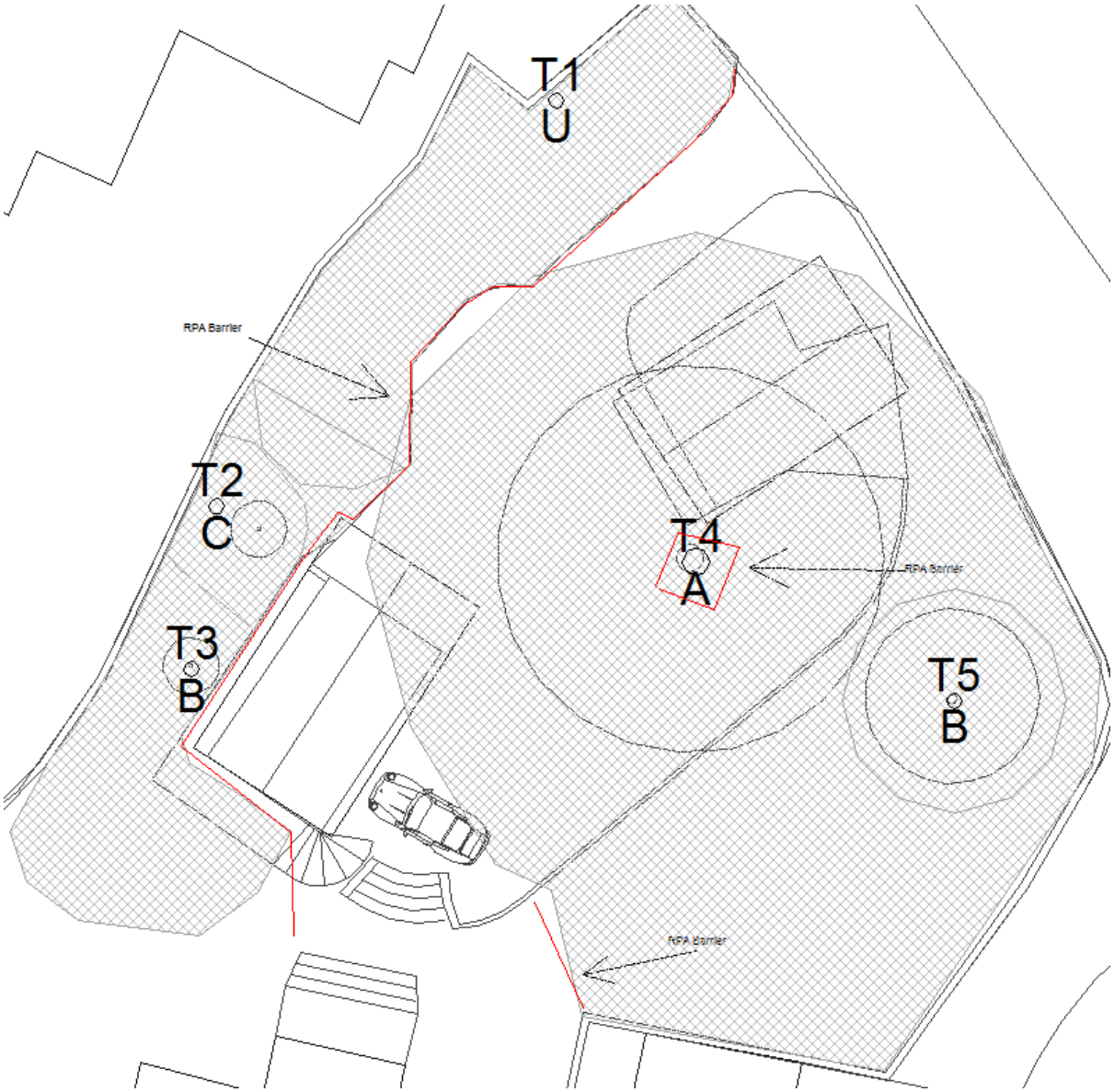
Appendix 3: RPA barriers with the RPA's plotted on



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