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BS5837:2012
Arboricultural Survey
Impact Assessment
&
Arboricultural Method Statement

[redacted]

Site Address:
Land at and to the rear of
12 Claygate Lane
Hinchley Wood
Esher
KT10 0AQ

Robert Toll
HND Urban Forestry - ND Forestry - MArborA

Ref: RMT694
Site inspection date: 8th February 2022
Date report published: 24th July 2023
Prepared for Peter Cook

Arboricultural ASSOCIATION Professional Member
PRO2239

Contents

Appendices

1 Instructions

1.1 I was instructed by Simon Flower of Wynngate on the 21st January 2022 to undertake a survey of trees that are on or adjacent to land to the rear of 12 Claygate Lane, Hinchley Wood, Esher, KT10 0AQ in accordance with *British Standard 5837:2012 Trees in relation to design, demolition and construction – Recommendations*.

1.2 I am a qualified arboriculturalist as detailed at as it is detailed at **Appendix 8** and this report has been produced in support of a planning application to Elmbridge Borough Council for the demolition of an existing property & construction of six houses & three apartments.

2 Introduction

Site Description

2.1 The residential property 12 Claygate Lane consists of a house at the north-eastern end of the site with a driveway onto Claygate Lane. To the rear is a long garden with a patio adjacent to the south-western elevation of the house and grass over the remaining areas.

2.2 The land to the rear of 12 Claygate Lane is overgrown scrub growth with trees growing around the boundaries. There are two wooden sheds located centrally within the site.

Image 1 – Land to the rear of 12 Claygate Lane, Hinchley Wood, Esher, KT10 0AQ is shown by an indicative yellow line

Image courtesy of Google Map Data © 2023

Limitations

2.3 I carried out the survey from ground level with the aid of a Bosch GLM 120 C Professional Laser Measure to measure distances, a Nikon Forestry Pro height measurer and diameter tape.

2.4 I was supplied with a topographical survey showing the growing locations of the majority of trees and groups on or immediately adjacent to the proposal site.

2.5 I have annotated the trees and groups T8, G9, T10, G13, T15, T16, G22, T26, G27, T33, T34, T36 and T37 onto the plans to the best of my ability. I did this by taking measurements from known site features annotated on the ordnance survey drawing and plotting the trees and groups accordingly.

2.6 All measurements taken to calculate root protection areas and canopy spreads have been measured wherever possible. Where it has not been possible to access certain areas, dimensions have been estimated.

2.7 This report does not constitute a safety survey of the trees included within it. It is advised that if there are concerns regarding the risk posed by trees to persons and property then a tree condition inspection should be commissioned.

Legal Restrictions

2.8 I have not contacted the local planning authority (LPA) directly to ascertain whether the trees on or adjacent to the site are protected by Tree Preservation Orders (TPO) or if they are within a Conservation Order.

2.9 On the 21st July 2023 I carried out a check on the Elmbridge Borough Council online protected tree maps. They indicate that trees T6, T14, T15, T19, T21 and T25 are protected by TPO EL:12/24.

2.10 Trees protected by a TPO benefit from statutory protection and no work can be carried out to them (including cutting roots, branches or felling) without the written consent of the LPA. In the event that planning permission is granted and trees are shown as removed or requiring works to facilitate development then this overrides the protection afforded by a TPO or Conservation Area. The removal of deadwood, the removal of dead trees or works to trees that are urgently necessary to remove an immediate risk of serious harm, can be carried out under exemption and without the submission of a formal application.

2.11 It is an offence under the Wildlife and Countryside Act 1981 and the Rights of Way Act 2000 to disturb nesting birds or roosting/breeding bats. When carrying out tree work care should be taken to avoid disturbance. If necessary, advice should be taken to avoid disturbance. If necessary, advice may need to be sought from a qualified Ecologist.

Tree survey

2.12 I visited the site on 8th February 2022 and surveyed a total of total of thirty-two trees and six groups. The surveyed trees and groups have been categorised in accordance with British Standard 5837:2012 as shown at **Appendix 1** and the tree survey schedule can be seen at **Appendix 2**.

2.13 At the time of my survey one tree was considered to be category A and high value and two trees were considered to be category B and moderate value. The remaining trees are considered to be category C and low value, except for two trees which are dead.

Table 1 – Tree categorisations as BS5837:2012

Category A	Category B	Category C	Category U	Dead trees
T25	T6, T19	T1, T2, T3, T5, G7, T8, G9, T10, t11, T12, G13, T14, T15, T16, G17, T20, T21, G22, T23, T24, T26, G27, T28, T29, T30, T31, T32, T33, T34, T35, T36, T37, T38	-	T4, T18

2.14 It was noted that there are other trees that are located on or adjacent to the land to the rear of 12 Claygate Lane, Hinchley Wood, Esher, KT10 0AQ but they have not been included within this report. This is because it is deemed that they are:

far enough from the area proposed for development that they will not be affected;
they will be adequately protected by the tree protection measures afforded to the surveyed trees;
they are specimens of limited significance;

Measurements

2.15 Wherever possible all diameter measurements have been measured using a diameter tape at a height of 1.5m. Where it has not been possible to access the stems at 1.5m above ground level due to such things as dense Ivy, trees being offsite or the tree being inaccessible, an estimated measurement has been taken. All estimated measurements include the word “estimated” or the abbreviation “est” in the tree survey schedule shown at **Appendix 2**.

2.16 In some instances the diameter measurement has been taken at a height other than 1.5m due to such things as low fork unions. Where this has occurred, I have detailed this in the tree survey schedule shown at **Appendix 2**.

Canopy spreads

2.17 The canopy spreads have been measured from ground level using a laser measure and visual assessment The canopy spreads have annotated on the tree constraints plan and tree protection plan at **Appendices 3 and 4**.

Root protection area (RPA) definition

2.18 The RPA is a 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 are treated as a priority.

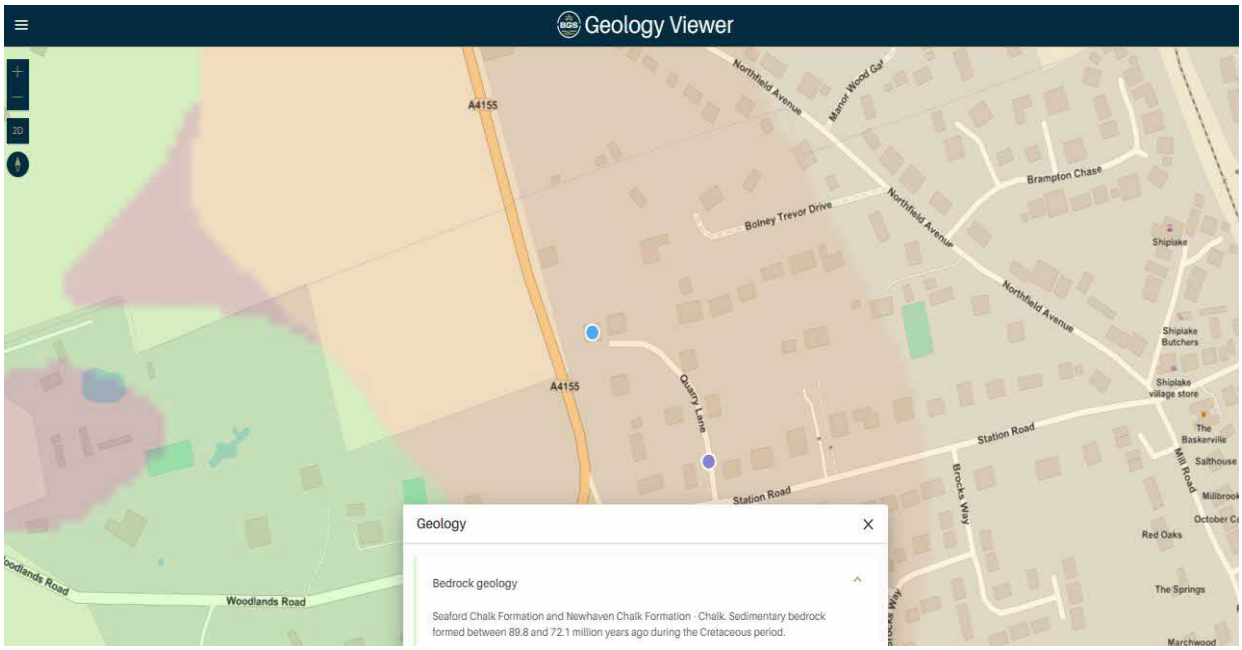
(*British Standard 5837:2012 – Trees in relation to design, demolition and construction – Recommendations – The British Standard Institute 2012).*

3 Soil Assessment

3.1 The soil assessment is necessary to establish whether the soil on the proposal site is shrinkable. Tree roots and those of other vegetation have the potential to extract moisture from shrinkable soils such as clay, making the soil expand and contract as the soil desiccates and re-hydrates. Where new structures are proposed on shrinkable soils and close to trees, foundations will need to be sufficiently deepened or able to withstand to minimise the risk of indirect damage to foundations.

3.2 No soil assessments have been undertaken however a check on the Geology of Britain Viewer gives the soil type as London Clay Formation - Clay and Silt. This means that the underlying soil is shrinkable and as such foundations will need to be deepened because of the risk indirect damage by clay shrinkage. If further assessments are undertaken that show that there is shrinkable clay, then foundations must be designed in accordance with the guidance within the National House Building Council's Standards Chapter 4.2 Building near trees or similar guidance.

Figure 1 – The British Geological Survey indicates that the soil make up at land at and to the rear of 12 Claygate Lane, Hinchley Wood, Esher, KT10 0AQ is shrinkable London Clay Formation - Clay and Silt.



4 Arboricultural Impact Assessment

Arboricultural Impact Assessment overview

4.1 The arboricultural impact assessment assesses the direct and indirect effects of the proposed design on trees that are growing or adjacent to the site. Where appropriate mitigation will be recommended to prevent or minimise harm and details mitigation as appropriate. Consideration will be given to the practicality of the design and the viability of tree retention.

Tree removals

4.2 To facilitate development, it will be necessary to remove fifteen category C trees and two category C groups.

4.3 Trees T1, T2, T5, T11, T12, T20, T23, T28, T31, T32 and groups G22 and G27 will require removal to facilitate construction of the plots 2, 3, 4 and 6 respectively, including the creation of adequate useable garden space.

4.4 Trees T10, T29, T30, T35, T36 and group G9 will require removal to facilitate construction of the main access.

4.5 In all instances, the trees and groups for removal are C category trees that are unremarkable and low quality. The removal of these trees could be mitigated by suitable replacement planting around the proposal site.

Access facilitation pruning

4.6 Access facilitation pruning works will be required to one category B tree T19, one category C tree T21 and three category C groups G9, G22, G27.

4.7 The eastern canopy spread of group G7 will require reduction back to the edge of the new access road to create adequate space or its construction.

4.8 The eastern canopy spread of group G13 will require reduction back to the common law to facilitate construction of the plot 6.

4.9 The northern end of group G17 will reduction back to the edge of the nearest parking bay to create adequate space for its construction.

4.10 Tree T19 will crown lifting works over the access and parking bays to provide 4m clearance above ground level. These works will require small diameter branches so their will be minimal impact on the health and amenity of this tree.

4.11 Tree T21 will require reduction works to its western canopy spread to create adequate clearance from the eastern elevation of plot 4. The western crown spread of tree T21 is more extended than the majority of the crown so its reduction will better balance the tree. Notwithstanding that this tree is under the protection of a TPO, it is considered to be an unremarkable specimen hence its categorisation as C.

4.12 Category C trees and groups should not be a material constraint to development; therefore the works are considered to be acceptable, on this occasion. The works to

the category B tree T19 are minor and as such will not pose a material risk to the health or amenity value of this tree.

Tree protection fencing

4.13 Tree protection fencing will be required throughout the construction process to restrict construction access within the RPAs of trees T6 – T8, G13, T14, T15, T16, G17, T19, T21, T24 - T26, T33 and T34. The areas to be protected by the tree protection fencing can be seen as blue lines on the accompanying Tree Protection Plan at **Appendix 4**.

4.14 Tree protection fencing will consist of a scaffold framework, well braced to resist impacts, with vertical tubes spaced at maximum intervals of 3m. Onto this, weld mesh panels or 2m high shuttering board will be securely fixed with wire or scaffold clamps. Un-braced weld mesh panels on unsecured rubber or concrete feet will not be used as these are not resistant to impact and are too easily removed by site operatives. An alternative system of bracing which does not require a scaffold framework may be practical however this will need the written consent of the LPA.

Ground protection

4.15 It has been stated above, the RPA is a sacrosanct area of ground where encroachment by construction activities should be avoided wherever possible. In the case of trees T6 and T14, group G7 there will be a requirement for construction access within their RPAs throughout development. Where it is considered that the construction working space or temporary access is justified within their RPAs, this will be facilitated by a set-back in the alignment of the tree protection barrier and suitable ground protection will be installed. Areas to be protected with ground have been shown as orange hatching at **Appendix 4**.

4.16 In all cases the objective should be to avoid compaction of the soil, which can arise from the single passage of a heavy vehicle or continual pedestrian movement over the same area, especially in wet conditions. Compaction of the soil can impair root development and function leading to a decline in the physiological and structural condition of the tree.

Implications in relation to constructing hard surfacing close to trees

4.17 Where the construction of a surface cannot be avoided within the fenced RPA of retained trees, the soil substrate will form part of the construction profile (sub grade), a ‘NO-DIG’ approach is to be adopted.

4.18 Proposed sections of the access and parking bays will overlap with the RPAs of trees T6, T14, T19 and T25 and group G7. To minimise the impact on the RPAs the surface (including any associated edge support) should be engineer designed to take account of site-specific data including soil type, current level if soil type and anticipated axle loads of vehicle using the new surface.

4.19 The surface must:

- Provide adequate resistance to applied loads and avoiding localised ground compaction by evenly distributing the carried weight over the track width and wheelbase of any vehicles that will use the access.

- Provide resistance to or tolerance of deformation by tree roots.
- Provide oxygen diffusion according to seasonal demand (gas porous).
- Provide water throughout to meet seasonal demand (permeable).
- Preserve the soil structure during installation to prevent lack of water, exclusion of oxygen, excessive resistance to penetration (density or soil strength) and or chemical toxicity.

4.20 Construction may (where appropriate) incorporate:

- The use of a three-dimensional Cellular Confinement System (CCS), such as Cellweb, as an integral component of the subbase, to act as a suspension layer by creating cells into which recommended material is contained. Here it is necessary to install a geotextile layer between the ground and the cells to prevent mixing and the cellular materials being pressed into the ground.
- Alternatively, where the use of a CCS is not appropriate due to the underlying soil (and/or other site factors) reinforced concrete slabs, supported and suspended on mini-piles and incorporating a designed system that allows for the passage of water and oxygen to the underlying soil maybe used.
- Other engineered-designed surfaces that address the requirements of the above performance specification may also be used.

4.21 Examples of acceptable hard surface include washed gravel (not binding gravel or hoggin as these are almost impermeable when consolidated); dry jointed paving slabs, pavers or bricks on a sharp sand foundation, permeable paving blocks or pre-made concrete slabs with 50mm diameter holes at regular spacing of 300-600mm (to be agreed) with a no-fines aggregate back filling of the openings.

4.22 Section 7.4.2.3 of British Standard 5837:2012 recommends that proposed new permanent hard standing should not exceed more than 20% of the total unsurfaced ground within RPAs. The table shown as table 2 provides a break-down of the total overlaps into the RPAs of trees T6, T14, T19 and T25.

Table 2 – Table showing new surfacing overlap into RPAs of trees

Tree no.	RPA area	Existing surfacing within RPA	Unsurfaced areas within RPA	New overlap into unsurfaced RPA	Percentage of new overlap into unsurfaced RPA
T6	366.4m²	0m²	366.4m²	57.5m²	15.7%
T14	241.1m²	0m²	241.1m²	11.5m²	4.7%
T19	289.5m²	0m²	289.5m²	5.7m²	19.7%
T25	466.1m²	0m²	466.1m²	90.5m²	19.4%

4.23 On this occasion it has been demonstrated that the respective total overlaps into the unsurfaced RPAs of trees T6, T14, T19 and T25 do not exceed 20% threshold. As such the new surfacing within the RPAs of this/these three trees can be constructed using a no dig cellular confinement system (Cellweb). This demonstrates that there is overriding justification to be able to construct the respective new surfaces in accordance with recommendations detailed at clause (section) 7 of BS5837:2012.

4.24 Group G7 has been categorised category C and as such should not be considered a constraint to development. Therefore, it has not been necessary to assess to the overlap by the new driveway into its RPA.

Car port posts

4.25 The new car ports will overlap with the RPAs of trees T6 and T19. The localised excavations for the posts will pose minimal risk to the health of these two as long as they are carried sensitively to avoid damaging roots. To avoid damaging roots, all excavations within the RPAs must be carried out by hand or compressed air device (Air Spade) and under the supervision of an appropriately qualified arboriculturalist. If the posts are to be secured using concrete, the holes will be lined with an impermeable membrane such as polythene.

4.26 The use of a car port will allow for cars to be parked under trees without detritus falling on cars, which can be a cause of conflict.

Areas for site compounds, storage and mixing

4.27 Site compounds will be located away from trees wherever possible and ideally 2m from any protective barriers.

Services

4.28 The proposed layout of incoming (water, gas and electricity) and outgoing (foul sewer) services is not yet established but they should be installed outside root protection areas. If it is necessary for a trench to be dug through an RPA a specific method statement will be required which will need to specify that the trench will be hand dug and that care will be taken to preserve all roots encountered which are larger than 25 mm diameter.

4.29 It is anticipated that the services required for plots 4, 5 and 6 will pass through the RPAs of either tree T6 or T25, or possibly both. To minimise the impact on the RPA, it is recommended that methods such as hand digging, compressed air excavation or direct drilling need to be utilised.

4.30 Hand digging and compressed are excavation will create a trench, but will aim to keep intact any root with a diameter of 25mm or greater. The service will then installed through the root system.

4.31 Direct drilling requires two pits, one for the drill to enter and one for exit, which must be excavated outside the RPAs. The drill will pass under the rooting area of the tree allowing the services to installed without harming roots.

Soil amelioration

4.32 Prior to submission of the full planning application, pre-applications have been submitted to the LPA Elmbridge Borough Council. A consultation response from the LPA Tree Officer Russell Gibbons advised that the soil amelioration (soil improvements) would be looked upon favourably. Taking these comments into account, it is my view that soil amelioration within the RPAs of trees T6, T19 and T25 would be appropriate taking into account new no dig surfaces that overlap into their respective RPAs.

4.33 Soil amelioration will involve compressed air injection into those areas of the respective RPAs that will not subject to no dig surfacing. To aid moisture retention the RPAs of these trees will be covered with a 100mm layer of bark mulch which will aid moisture retention and suppress weed growth.

4.34 The feedback from the Tree Officer also suggested the watering of continual watering of trees during development. Having considered this feedback I am of the opinion that this is potentially problematic in terms of tree health and the practicalities of a development. My concerns are as follows:

a. It is not a recommendation within British Standard 5837:2012 for watering to take place during development;
b. Pumping large quantities of water around trees could result in the soil becoming saturated thereby having a negative effect, especially during wet periods;
c. There would need to be frequent testing of the soil to examine its moisture content;
d. Pumping water during summer months when the ground is very dry will probably result in a large amount of water wastage from run off and could result in flooding of the neighbouring properties;
e. Pumping large quantities of water on a development site will potentially result in a quagmire where vehicles are continually operating;
f. Trees, especially those that are mature, probably won't need additional water because they have survived on the site with the same environmental factors;
g. Trees are dormant during the autumn and winter months so it's unnecessary;
h. If there are hose pipe bans then this could be awkward if neighbours see large quantities of water being poured around trees;

4.35 Taking these points into account I have not included a specification for continual during development because in my experience it is unnecessary and potentially problematic.

Replacement tree planting

4.36 To mitigate the loss of the fifteen category C trees and three category C groups, it has been proposed to plant five trees. At the time of planting these trees will have a minimum size of Extra Heavy Standard (12 – 14cm) and the species will have the potential to grow to be large size trees. The following species could be considered:

London Plane – Platanus X hispanica
Sycamore – Acer pseudoplatanus
Wellingtonia – Sequoia dendron 'Giganteum'
New Horizon Elm - Ulmus 'New Horizon'
Broad- Leaved Lime – Tilia platyphyllos

Conclusions

4.37 I visited the land to the rear of 12 Claygate Lane, Hinchley Wood, Esher, KT10 0AQ on 8th February 2023 and surveyed a total of thirty-two trees and six groups.

4.38 At the time of my survey one tree was considered to be category A and high value and two trees were considered to be category B and moderate value. The remaining trees are considered to be category C and low value, except for two trees which are dead.

4.39 All trees were categorised in accordance with British Standard 5837:2012 as shown at **Appendix 1**.

4.40 The development will require the removal of fifteen category C trees and three category C groups.

4.41 Access facilitation pruning works will be required to one category B tree, one category C tree and three category C groups.

4.42 No dig surfaces will be required within the RPAs of trees T6, T14, T19 and T25. It has been demonstrated within this report that the respective total overlaps into the unsurfaced RPAs of these trees do not exceed 20%. As such it has been demonstrated that the use of three-dimensional cellular confinement system can be utilised in accordance with clause (section) 7 of BS5837:2012.

4.43 The trees to be retained will be protected during development and methods for ensuring their protection have been described.

4.44 The development is sympathetic to the leafy character of the area.

5 Arboricultural Method Statement

Access facilitation works

5.1 The agreed pruning works and tree removals will be carried out as preliminary works as detailed at **Appendix 2**. These works will be carried out by suitably qualified arborists to the standards set out in BS3998: 2010 Tree works – recommendations. Heavy machinery must not be used on unprotected ground.

Pre-commencement meeting

5.2 Prior to the commencement of development all tree protection will be erected and a site meeting will be held between the appointed building contractors/project manager, the appointed arboriculturalist and local authority Tree Officer as it is stipulated at **Appendix 5.** This meeting is necessary to agree that the position of the tree protection is correct.

Soil amelioration

5.3 The soil amelioration will be carried out in the RPAs of trees T6, T14, T19 and T25. This will involve compressed air be discharged into the soil to open pore space and there will be an injection of Biochar to aid root function. The compressed air will not be discharged into the areas of RPA that are to be covered by no dig surfacing.

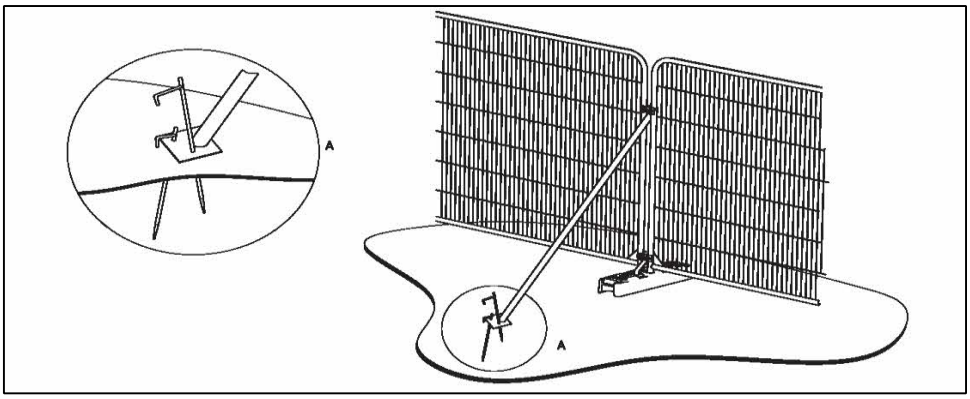
5.4 Following completion of the soil decompaction the RPAs will be covered with a 100mm layer of bark mulch. The bark mulch will leave a 500mm gap from the woody buttresses and the exposed upper roots of the trees.

5.5 If RPAs covered in mulch are within gardens, the mulch will be removed when landscaping works take are carried out. Those areas of the RPAs that within amenity land will retain the bark mulch.

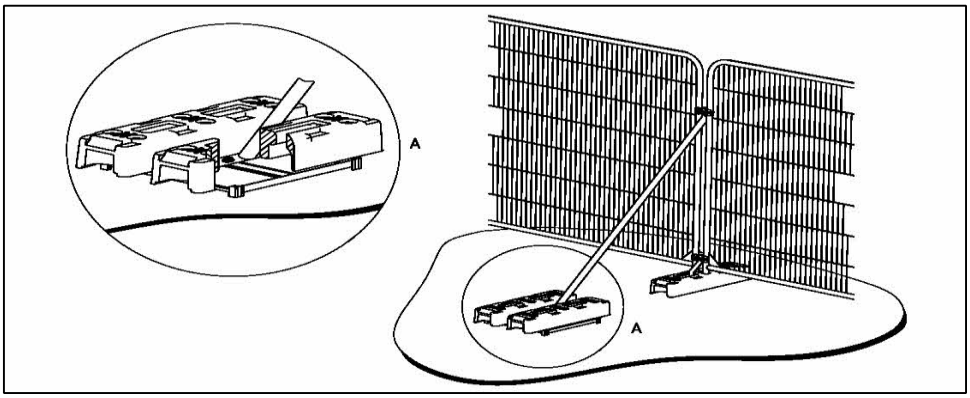
Protective barriers/fencing

5.6 All tree protection barriers will be erected in the positions shown in **Appendix 4** and in accordance with the specifications detailed in Figures 2 and 3.

Figures 2 and 3 – Examples of above-ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Image taken from British Standard 5837:2012 – Trees in relation to design, demolition and construction – Recommendations.

Warning signs

5.7 All weather notices will be attached to the tree protection fencing.

Figures 4 – Examples of tree protection warning sign.

5.8 All ground protection will be laid as follows:

Specification of temporary ground protection within RPAs

5.9 A permeable geotextile such as Terram will be laid and onto this will be placed treated timber (100 mm x 80 mm) at spacings of no more than 1m. The area between the timber bearers will be filled with a compressible material such as woodchips and will then be covered by 20 mm thick marine ply which will be screwed down onto the timber (Figures 5 and 6). The plywood may need to be coated with a non-slip paint.

Figure 5 – Specification for ply board ground protection

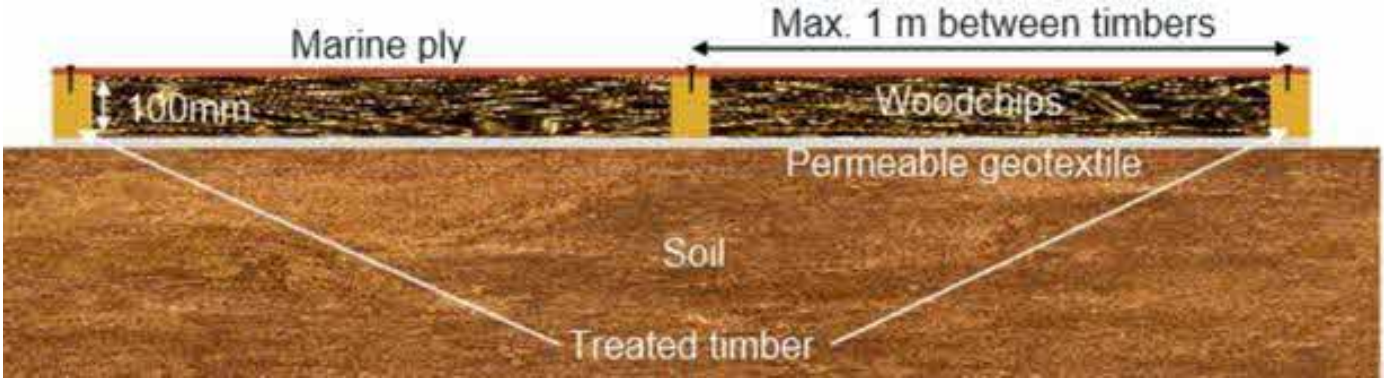


Figure 6 – Plywood sheeting used as ground protection.

5.10 Single thickness of scaffold boards placed on top of driven scaffold frame to form a suspended walkway (Figure 7)

Figure 7 – Specification for scaffold ground protection.

5.11 Development can commence in accordance with the planning consent.

Sensitive excavations for car port posts within RPAs

5.12 The appointed arboriculturalist will be invited to site supervise the excavations within the RPAs to depth of circa 600mm. The excavations will be carried out using hand tools or compressed air device (Air Spade). If roots of 25mm diameter or greater are uncovered at the proposed post location, then the location will be adjusted to avoid it. The holes must be lined with an impermeable membrane if concrete is to be poured.

Method of constructing no dig surfaces close to trees (access road and parking)

5.13 A cellular confinement system with a minimum depth of 100mm, or the minimum depth specified by an engineer to support cars, 4x4s and vans, will be utilised in this instance.

5.14 The appointed arboriculturalist will be invited to site to supervise the installation. Prepare the site by carefully hand raking any excessive organic matter and removing all debris and significant protrusions such as rocks. Use ground protection system if vehicular movements are unavoidable.

5.15 Ensure that the prepared surface is reasonably even and fill any significant depressions with 40/20 granular material to achieve an even surface profile. Do not roll or consolidate the area.

5.16 Install tanalised timber edging boards to the perimeter of the construction zone as appropriate to the total layer profile thickness. Avoid damage to tree roots when placing posts and pegs.

5.17 Install a geotextile layer across the site (a possible suggestion is Treetex T-300 supplied by Geosynthetics). The adjacent roles of geotextile membrane should overlap

by 150mm. It may be necessary to lightly pin the geotextile membrane in place until the overlying layers are installed.

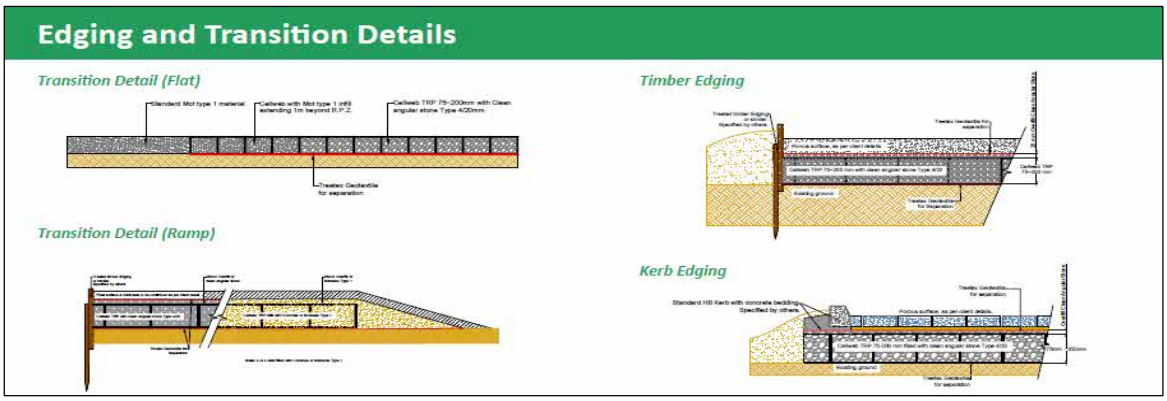
5.18 Place the Geogrid layer over the Geotextile Membrane layer and fix down using steel pins to hold flat. Overlap adjacent rolls by minimum 150mm. Avoid tree root damage and soil compaction by avoiding vehicular movements over the area.

5.19 Open out and lay the specified layer thickness of the Cellular Confinement System and pin in place between the edging boards. Pin the CCS in place using Steel Fixing Pins or similar and fully expanded position whilst the cells are being filled and to stop the structure from being pushed up by migrating aggregate during the filling process. Pin spacing will vary according to the site conditions but will generally be required at 1m - 2m centres on flat surfaces, mainly placed around the perimeter of the area and where adjacent sections of CCS about each, with less in the middle of the area. Drive the pins in so that they are just touching the top of the cells but do not compress the fabric. Avoid any obvious surface tree roots during the pinning process.

5.20 Fill the CCS, working toward the trees from the furthest point away and using the filed CCS as a platform. The Cells must be filled with clean, open graded angular aggregate, normally in the particle size range of 5mm - 45mm – not single sized or rounded aggregate. The surface can be rolled to settle the stone into the cells but a compaction plate (whacker) should not be used. Do not contaminate the filled cells with site debris, soil or mud.

5.21 Install the final binder course and permeable surface courses as per the manufacturer's instructions.

Figure 8 – Cellweb edging and transition details



Service installation

5.22 The new service trenches and manholes within the RPAs of trees T6 and T25 will be excavated using hand tools or compressed air device. Following installation of the services, the hole will be backfilled and the no dig driveway laid as detailed.

5.23 If the use of hand tools or compressed air excavation is not practical, direct drilling will be utilised. The entrance and exit pits must be excavated outside RPAs.

5.24 Following completion of all development the tree protection can be dismantled to allow landscaping works to take place.

Appendix 1 – British Standard 5837:2012 tree categorisation chart

TREES UNSUITABLE FOR RETENTION				
CATEGORY AND DEFINITIONS	CRITERIA			IDENTIFICATION ON PLAN
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 of BS5837:2012***			RED . RGB 127.000.000
TREES TO BE CONSIDERED FOR RETENTION				
CATEGORY AND DEFINITIONS	CRITERIA - SUBCATEGORIES			IDENTIFICATION ON PLAN
	1 Mainly arboricultural values	2 Mainly landscape values	3 Mainly cultural values, including conservation	
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)	LIGHT GREEN . RGB 000.255.000
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	MID BLUE . RGB 000.000.255
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.	GREY . RGB 091.091.091

Appendix 2 - Tree survey schedule

Tree No.	Species	Height (m)	Trunk dia. at 1.5m	Canopy Spread	Crown Height (m)	Age Class	Physiological Condition	Structural Condition	Comments/ Recommendations	Useful Life Expect	BS5837 grade	Root Protection Area	
												Radius	RPA Area
T1	Tree of Heaven *(Ailanthus altissima)*	12m	623mm	N3m NE5m E4m S4m SW5m W3.5m	5m	Mature	Good	Fair	Medium deadwood. Damaged north-eastern primary limb at 6m with decay. Opening with elongated wound on northern stem between 2m and 5m. Crease in south-eastern main stem with dysfunctional bark from gl to 2m. **Works required for development:** Remove tree.	20+	C	7.5m	175.6m²
T2	Apple *(Malus sp.)*	9m	300mm est 314mm	N3m E4m S7m W3m	1m	Mature	Good	Fair	Ivy impedes survey. Medium deadwood. **Works required for development:** Remove tree.	10+	C	5.2m	85.3m²
T3	Common Holly *(Ilex aquifolium)*	9m	300mm est	N3m E3m S3m W3m	2m	Semi mature	Good	Good	Off-site tree.	10+	C	3.6m	40.7m²
T4	Wild Cherry *(Prunus avium)*	12m	-	-	-	Dead	-	-	Dead tree. **Works for safety:** Remove tree.	-	-	-	-
T5	Common Oak *(Quercus robur)*	18m	387mm 431mm	N5m E6m S6m W5m	6m	Early mature	Good	Fair	**Works required for development:** Remove tree.	10+	C	7.0m	151.8m²

Tree No.	Species	Height (m)	Trunk dia. at 1.5m	Canopy Spread	Crown Height (m)	Age Class	Physiological Condition	Structural Condition	Comments/ Recommendations	Useful Life Expect	BS5837 grade	Root Protection Area	
												Radius	RPA Area
T6	Common Beech *(Fagus sylvatica)*	22m	900mm est	N9m E9m S9m W9m	2m	Mature	Good	Fair	Medium deadwood. Tight compression fork with included bark at 3m.	20+	B	10.8m	366.4m²
G7	Group of Leyland Cypress	9m	Max 385mm	N3.5m E3.5m S3.5m W3.5m	2m	Semi mature	Good	Fair	Closely planted trees forming a tall hedge; topped at 8m.	10+	C	4.6m	67.1m²
T8	Common Yew *(Taxus baccata)*	4m	112mm est	N1.5m E1.5m S1.5m W2m	1m	Young	Good	Fair	Suppressed as overtopped by adjacent tree.	10+	C	1.3m	5.7m²
G9	Group of Common Holly Common Yew	8m	Max 250mm est	N3m E3m S3m W3m	1m	Semi mature	Fair	Fair	Vegetation impedes survey. Several trees heavily ivy covered. **Works required for development:** Reduce eastern canopy to the edge of the new access road.	10+	C	3.0m	28.3m²
T10	Common Oak *(Quercus robur)*	10m	150mm est	N2m E2m S2m W2m	8m	Semi mature	Good	Good	Vegetation impedes survey. **Works required for development:** Remove tree.	10+	C	1.8m	10.2m²
T11	Common Holly *(Ilex aquifolium)*	7m	178mm	NE2m SE1.5m SW1m NW1.5m	2m	Young	Good	Fair	**Works required for development:** Remove tree.	10+	C	2.1m	14.3m²

Tree No.	Species	Height (m)	Trunk dia. at 1.5m	Canopy Spread	Crown Height (m)	Age Class	Physiological Condition	Structural Condition	Comments/ Recommendations	Useful Life Expect	BS5837 grade	Root Protection Area	
												Radius	RPA Area
T12	Common Oak *(Quercus robur)*	8m	398mm	NE6m SE5.5m SW2m NW3m	3m	Early mature	Good	Fair	Crown has been previously topped at 7m. **Works required for development:** Remove tree.	10+	C	4.8m	71.7m²
G13	Group of Common Holly Common Ash	7m	Max 185mm	N1m E1m S1m W1m	0.5m	Young	Fair	Fair	**Works required for development:** Reduce eastern canopy to the common boundary.	10+	C	2.2m	15.5m²
T14	Common Oak *(Quercus robur)*	17m	730mm @500mm	NE4m SE5.5m SW7m NW7m	5m	Mature	Good	Fair	Previously lost central stem at 1m.	10+	C	8.8m	241.1m²
T15	Common Oak *(Quercus robur)*	12m	209mm	NE1.5m SE1.5m SW4m NW4m	4m	Semi mature	Good	Fair	One-sided crown as suppressed by adjacent tree.	10+	C	2.5m	19.8m²
T16	Common Hawthorn *(Crataegus monogyna)*	6m	200mm est	N2m E2m S2m W2m	4m	Early mature	Good	Fair	Ivy impedes survey.	10+	C	2.4m	18.1m²
G17	Group of Common Hawthorn Common Holly	5m	Max 100mm est	NE2m SE2m SW2m NW2m	1m	Young	Good	Fair	**Works required for development:** Reduce northern edge by to edge of new parking bay.	10+	C	1.2m	4.5m²
T18	Atlas Cedar *(Cedrus atlantica)*	15m	-	-	-	Dead	-	-	Off-site tree. Dead tree.	-	-	-	-

Tree No.	Species	Height (m)	Trunk dia. at 1.5m	Canopy Spread	Crown Height (m)	Age Class	Physiological Condition	Structural Condition	Comments/ Recommendations	Useful Life Expect	BS5837 grade	Root Protection Area	
												Radius	RPA Area
T19	Common Oak *(Quercus robur)*	18m	800mm est	N7m NE2m SE9m SW9m NW9m	2m	Mature	Good	Fair	Ivy impedes survey. One-sided crown due to competition from adjacent tree. Medium deadwood. **Works required for development:** Crown lift to provide 4m clearance over the parking bays.	10+	B	9.6m	289.5m²
T20	Holm Oak *(Quercus ilex)*	9m	252mm 249mm	NE3.5m SE3.5m S5.5m SW5.5m NW3.5m	0.5m	Semi mature	Good	Fair	Tight compression fork with included bark at 500mm. **Works required for development:** Remove tree.	10+	C	4.3m	56.8m²
T21	Common Oak *(Quercus robur)*	14m	400mm est	NE4m SE3m SW7m NW6m	1m	Early mature	Good	Fair	Ivy impedes survey. Trunk leans 30 degrees to west, straightening to vertical at 4m. **Works required for development:** Reduce the western the canopy by 2.5m to leave final canopy spread of c4.5m.	10+	B	4.8m	72.4m²
G22	Group of Common Hawthorn	7m	Max 200mm est	NE2m SE2m SW2m NW2m	1m	Early mature	Fair	Fair	Ivy impedes survey. **Works required for development:** Remove group.	10+	C	2.4m	18.1m²

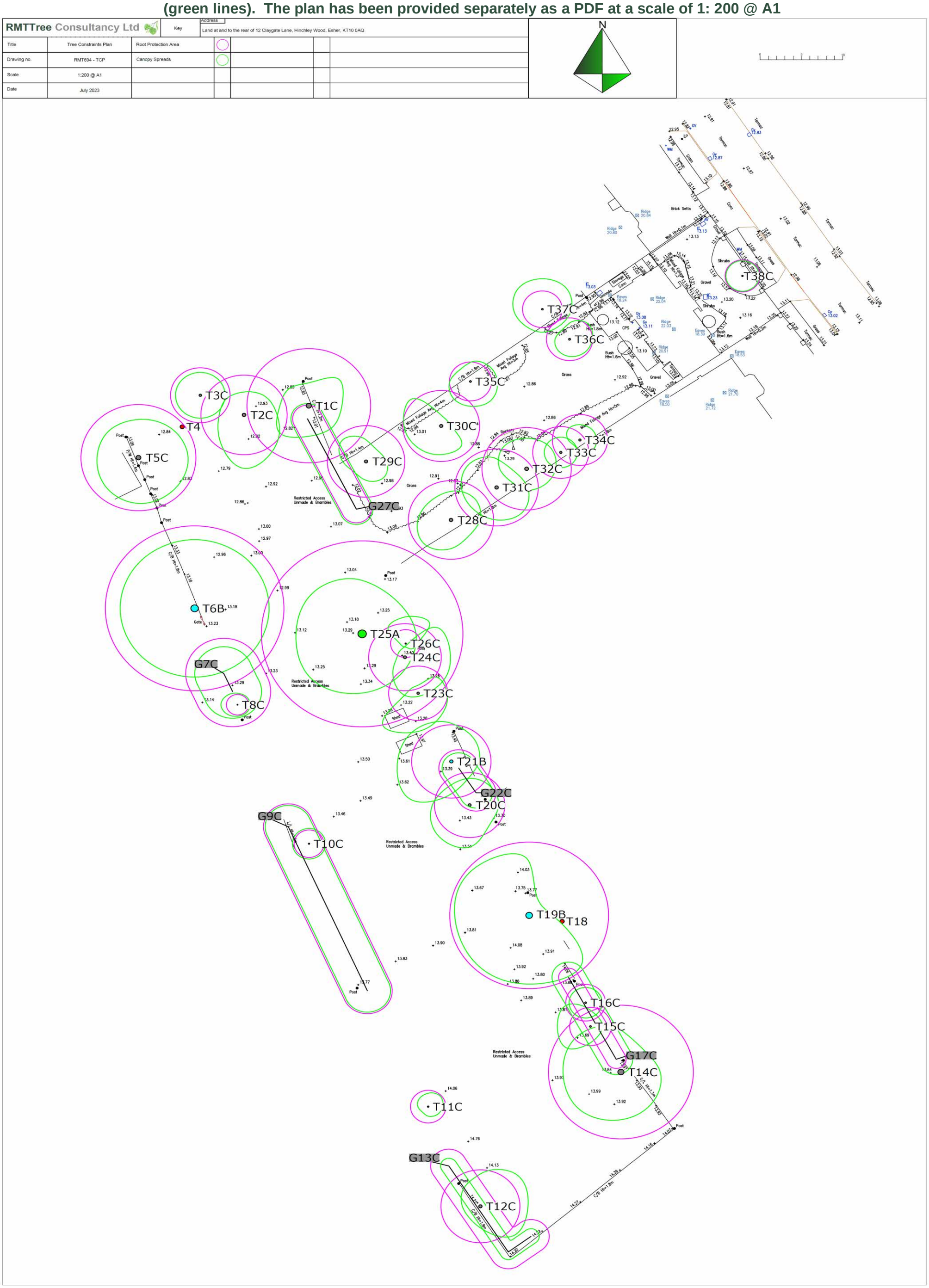
Tree No.	Species	Height (m)	Trunk dia. at 1.5m	Canopy Spread	Crown Height (m)	Age Class	Physiological Condition	Structural Condition	Comments/ Recommendations	Useful Life Expect	BS5837 grade	Root Protection Area	
												Radius	RPA Area
T23	Holm Oak *(Quercus ilex)*	12m	297mm	NE3m SE4m SW6m NW1m	0.5m	Semi mature	Good	Fair	One-sided crown as suppressed by adjacent tree. **Works required for development:** Remove tree.	10+	C	3.6m	39.9m²
T24	Holm Oak *(Quercus ilex)*	11m	366mm	NE5.5m SE5.5m S5m SW2m NW1m	2m	Semi mature	Good	Fair	One-sided crown as suppressed by adjacent tree.	10+	C	4.4m	60.6m²
T25	Common Beech *(Fagus sylvatica)*	18m	1015mm	NE6m SE7m SW8.5m W8m NW8m	2m	Mature	Good	Good	Medium deadwood.	40+	A	12.2m	466.1m²
T26	Holm Oak *(Quercus ilex)*	7m	152mm	NE4m SE1m SW0.5m NW3m	2m	Young	Good	Fair	Suppressed as overtopped by adjacent tree.	10+	C	1.8m	10.5m²
G27	Group of Common Holly Common Hazel Common Yew Common Oak	8m	Max 150mm est	NE2m SE2m SW2m NW2m	1.5m	Semi mature	Good	Fair	**Works required for development:** Remove group.	10+	C	1.8m	10.2m²
T28	Common Yew *(Taxus baccata)*	8m	301mm 306mm	NE4m SE3m SW4.5m NW3.5m	1m	Early mature	Good	Good	**Works required for development:** Remove tree.	10+	C	5.2m	83.3m²
T29	Leyland Cypress *(X Cupressocyparis leylandii)*	11m	250mm 300mm est	NE2m SE3m SW2m NW4m	2m	Early mature	Fair	Fair	Ivy impedes survey. **Works required for development:** Remove tree.	10+	C	4.7m	69.0m²

Tree No.	Species	Height (m)	Trunk dia. at 1.5m	Canopy Spread	Crown Height (m)	Age Class	Physiological Condition	Structural Condition	Comments/ Recommendations	Useful Life Expect	BS5837 grade	Root Protection Area	
												Radius	RPA Area
T30	Apple *(Malus sp.)*	7m	387mm	NE1m SE3.5m SW4m NW5m	2m	Mature	Good	Fair	Medium deadwood. **Works required for development:** Remove tree.	10+	C	4.6m	67.8m²
T31	Apple *(Malus sp.)*	6m	420mm	NE3m SE4.5m SW4m NW4.5m	3m	Mature	Good	Fair	Crown has been previously reduced. **Works required for development:** Remove tree.	10+	C	5.0m	79.8m²
T32	Common Yew *(Taxus baccata)*	6m	450mm	NE4m SE3m SW2.5m NW4m	0.5m	Early mature	Good	Good	**Works required for development:** Remove tree.	10+	C	5.4m	91.6m²
T33	Common Yew *(Taxus baccata)*	5m	200mm 200mm est	N2m E2m S2m W2m	1.5m	Semi mature	Good	Fair		10+	C	3.4m	36.2m²
T34	Portuguese Laurel *(Prunus lusitanica)*	3.5m	278mm	NE2m SE2m SW1m NW2m	0m	Mature	Good	Fair		10+	C	3.3m	35.0m²
T35	Holm Oak *(Quercus ilex)*	9m	212mm	NE3m SE3.5m SW3m NW2m	1.5m	Semi mature	Good	Good	**Works required for development:** Remove tree.	10+	C	2.5m	20.3m²
T36	Common Pear *(Pyrus communis)*	2m	233mm	NE3m SE2.5m SW2m NW1.5m	2m	Semi mature	Good	Good	**Works required for development:** Remove tree.	10+	C	2.8m	24.6m²
T37	Magnolia *(Magnolia soulangiana)*	8m	200mm @250mm est	NE4m SE3m SW3m NW4m	3m	Semi mature	Good	Good		10+	C	2.4m	18.1m²

Tree No.	Species	Height (m)	Trunk dia. at 1.5m	Canopy Spread	Crown Height (m)	Age Class	Physiological Condition	Structural Condition	Comments/ Recommendations	Useful Life Expect	BS5837 grade	Root Protection Area	
												Radius	RPA Area
T38	Purple Crab (Malus x purpurea)	6m	175mm est	N2m E2m S2m W2m	5m	Mature	Good	Fair	Ivy impedes survey	10+	C	2.1m	14.3m²

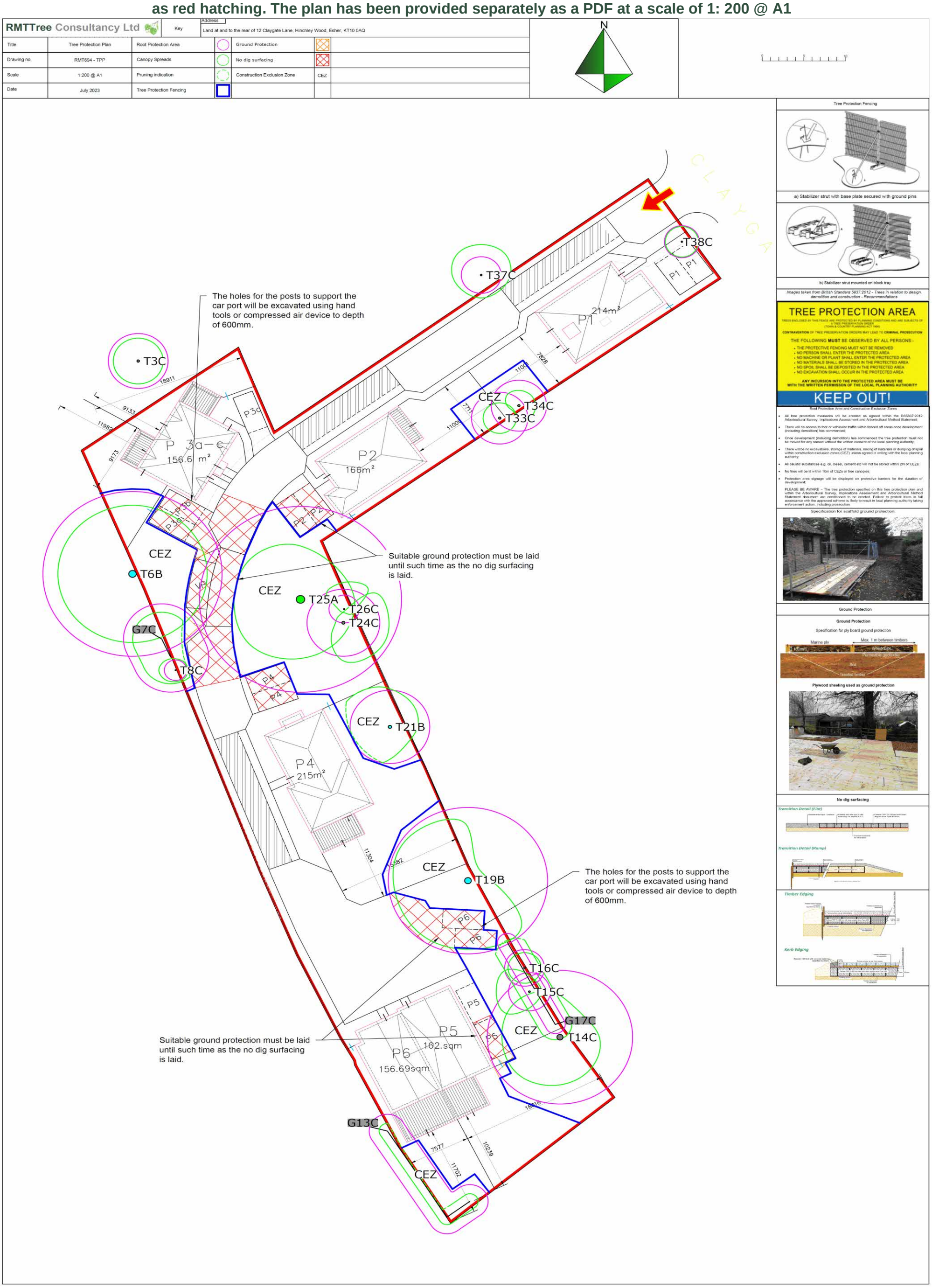
Appendix 3 – Tree Constraints Plan – RMT694 – TCP

Tree constraints plan (TCP) showing retained trees, tree numbers, root protection areas (magenta circles/polygons) and canopy spreads (green lines). The plan has been provided separately as a PDF at a scale of 1: 200 @ A1



Appendix 4 – Tree Protection Plan – RMT694 – TPP

Tree protection plan (TPP) showing retained trees, tree numbers, root protection areas (magenta circles/polygons) and canopy spreads (green lines). The location of protective fencing is shown as blue lines, ground protection as orange hatching and no dig surfacing as red hatching. The plan has been provided separately as a PDF at a scale of 1: 200 @ A1



Appendix 5 – Arboricultural site supervision schedule

Activity	Supervision Required
Pre-commencement meeting between the local authority arboricultural officer, the appointed arboriculturalist and the appointed building contractor/project manager.	
During sensitive excavations within the RPAs of trees T6 and T19.	
During setting out of the Cellweb system, but prior to pouring the road stone.	
At any time that there are conflict issues with the agreed tree protection.	

Following every visit the appointed arboriculturalist will fill out the site monitoring form which is shown at **Appendix 6** and this will be forwarded to the LPA.

Appendix 6 – Site monitoring form

RMTTree Consultancy Ltd			
Site monitoring form			
Date of visit		**Site**	
Consultant in attendance			
Observations/status of tree protection/comments:			
Recommendations (if necessary):			
Date of next visit		**Signature**	

PRODUCT DATA SHEET

Geosynthetics Limited Tel: 01455 617 139 Fax: 01455 617 140 Email: sales@geosyn.co.uk

Cellweb® TRP Installation Guide

Step 1: Prepare Surface

Step 2: Lay out Treetex™

Step 3: Lay out Cellweb® TRP

- Cellweb® TRP is a NO DIG tree root protection measure and it is recommended that no excavation be performed without prior approval and guidance from the Local Authority Arboricultural Officer.
- Soil compaction from vehicles, machinery and materials is to be strictly prohibited during construction within Root Protection Areas (RPAs).
- Approval must be obtained from the Local Authority that the design and the method of construction is acceptable.
- Further information is available from the following two documents;
  - British Standard BS5837: 'Trees in Relation to Design, Demolition and Construction' (2012).
  - Arboricultural Advisory and Information Service: Practice note 12 – 'Through the Trees to Development' (APN12).

Installation Method

1. Prepare the Surface

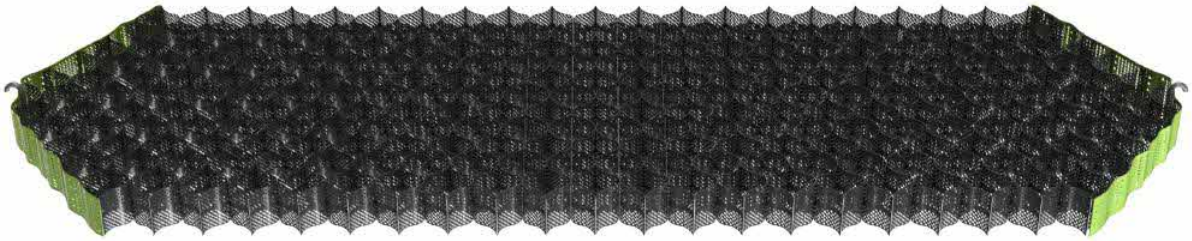
- Remove the surface vegetation using appropriate hand held tools or herbicide (see Note 1).
- Remove any surface rocks, debris and organic material.
- Create a level surface by filling any hollows with clean angular stone or sharp sand.
- Do not level off high spots or compact the soil through rolling.

2. Lay out the Treetex™ Non-Woven Geotextile

- Lay out the Treetex™ over the prepared area, overlaying the edges of the required area by 300mm.
- Overlap any joins by 300mm minimum or more, depending on soil structure (see Note 2).

3. Lay out the Cellweb® TRP Cellular Confinement System

- Lay out the collapsed Cellweb® TRP on-top of the Treetex™.
- Place one of the supplied J pins into the centre cell at the end of the panel and secure into the ground.

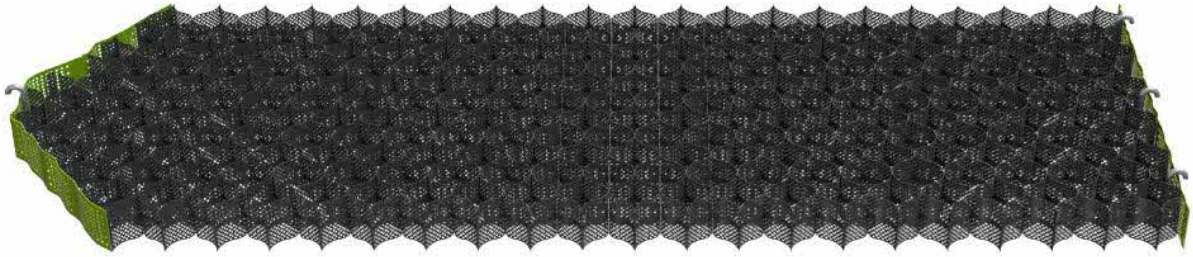


Cellweb® TRP - Installation Guide

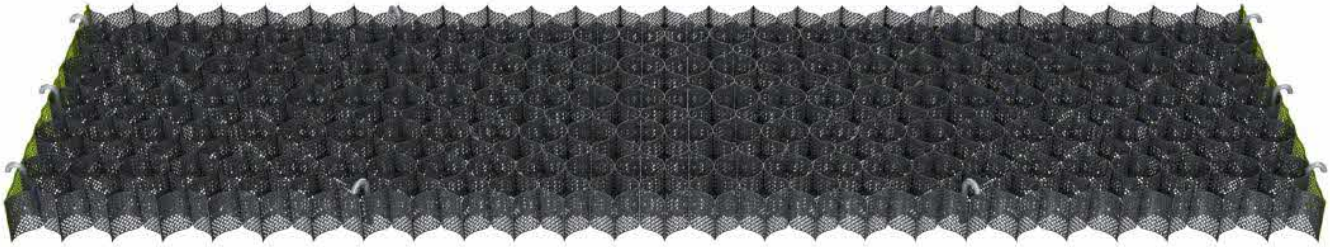
Step 3: Pinning Cellweb ® TRP

Step 3: Stapling Cellweb ® TRP

- Pull out the Cellweb® TRP to its full 8.1m length and secure its length with another J pin.



- Now measure its width to 2.56m and secure in each of the corners with the J pins.
- Use 10 pins per panel to create a panel measuring 8.1m x 2.56m.



- This will produce a cell size of 259mm x 224mm which is the required cell diameter. Each cell must be fully extended and under tension.
- Staple adjacent panels together at each cell (see Note 3).
- If a curved path or shape is required, this should be cut when the Cellweb® TRP panel is pinned out to 8.1 x 2.56m, ensuring complete cells remain. Do not try to curve or bend the Cellweb® TRP panels into place.
- All cells must be fully opened to the required diameter.

DR: 81/V4/13.05.16 (Page 2 of 3)

Step 4: Clean Angular Stone

Step 5: Edge Restraints

Step 6: Surface Options

4. Infill the Clean Angular Stone

- The infill material must be a clean angular stone, Type 4/20mm or Type 20/40mm (see Note 4).
- Do not use M.O.T type 1 or crushed stone with fines for tree root protection.
- Infill the Cellweb® TRP cells with the clean angular stone, working towards the tree and using the infilled panels as a platform.
- Minimum 25mm overfill of clean angular stone when used in conjunction with a hard surface.
- No compaction is required of the infill. Do not use a whacker plate or other means of compaction.
- Encourage settlement of the stone with the use of a light roller or with 2-3 passes of the construction plant used for installation.
- If the clean angular stone is being used as the final surface; regular maintenance will be required to ensure a minimum overfill of 50mm.

5. Edge restraints

- Excavations for kerbs and edgings should be avoided within the RPAs.
- Where edging is required for footpath and light structures, a peg and treated timber board edging is acceptable
- Other options include wooden sleepers, kerb edging constructed on-top of the Cellweb® TRP system, plastic and metal edging etc.

6. Surface options

- All surfaces in Root Protection Areas must be porous. Surfaces can include block paving, asphalt, loose gravel, grass and gravel retention systems (e.g Golpla), resin bound gravel, concrete etc.

NOTES

1. **Herbicide:** According to BS5837:2012 "The use of herbicides in the vicinity of existing trees should be appropriate for the type of vegetation to be killed, and all instructions, warnings and other relevant information from the manufacturers should be strictly observed and followed. Care should be taken to avoid any damaging effects upon existing plants and trees to be retained, species to be introduced, and existing sensitive habitats, particularly those associated with aquatic or drainage features."
2. **Geotextile:** We recommend the installation of a Treetex™ under the Cellweb® TRP, or under the sub-base, if installed. The overlapping between adjacent rolls of Geotextile should be: CBR > 3%: 300mm minimum, CBR between 1% and 3%: 500mm minimum. CBR ≤ 1%: 750mm minimum.
3. **Staples:** Number of staples per join: 200mm: 5 staples. 150mm: 4 staples. 100mm: 3 staples. 75mm: 3 staples.
4. **Granular Fill:** Open graded sub-base, clean angular stone Type 4/20 or Type 20/40. Please refer to BS7533-13:2009 and to the Design Manual for Roads and Bridges (DMRB), Volume 4 Geotechnics and Drainage, Section 1 Earthworks, HA44/91, Volume 7 – IAN 73/06 Design Guidance for road pavement foundations and Manual of Contract Documents for Highway Works (MCHW), Volume 1 Specification for Highway Works for the construction and maintenance of the fill material.

Appendix 8 – Qualifications and experience

Robert Toll has been working with trees since 2004 when he completed his studies.

In 2000 he began his studies at Riseholme College, Lincoln where achieved a pass with merit in Forestry at National Diploma level. In 2002 he attended Moulton College in Northampton where he gained a Level Five Higher National Diploma in Urban Forestry with merit.

In 2004 Robert began work as a temporary tree inspector at Northampton Borough Council, undertaking inspections of trees in response to enquiries from the public. After 4 months Robert took up a permanent tree inspector role at Coventry City Council which predominantly involved undertaking safety inspections of trees on school sites.

In 2006 Robert moved to Warwick District Council to take up a temporary post of Tree Protection Officer which involved reviewing old area tree preservation orders and identifying those trees which were considered worthy of protection under new specific orders. He also streamlined the council procedure for making new tree preservations orders, cutting the time from making to serving from up to 2 weeks to within 2 hours.

In 2008 Robert moved to Hart District Council, Hampshire to take up the role of Tree Officer within the planning department. This role included determining works trees applications, commenting on planning proposals, liaising with the public and providing arboricultural advice to other departments within the Council.

Between 2014 and 2016 Robert took up the role of Tree Officer at Elmbridge Borough Council, Surrey, once again carrying out tasks such as determining works trees applications, commenting on planning proposals and liaising with the public. While at Elmbridge Borough Council he passed the Arboricultural Association's Professional Tree Inspection course.

Robert is a professional member of the Arboricultural Association.