

Helyg

T R E E S U R V E Y S

Arboricultural Method Statement

In Relation to Development of Land at 40
Twickenham Rd, Teddington. TW11 8AW

Produced by Rob Fear, Arboricultural Consultant for
Helyg Tree Surveys

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1. INTRODUCTION

- 1.1. I have been instructed by Starlight Projects Ltd. in August 2024, to produce an arboricultural method statement to discharge planning conditions. The original survey was carried out by Dan MacIntyre in June 2022, in accordance with the British Standard, BS 5837:2012¹ and the original impact assessment and method statement report (2218_40 Twickenham Rd_Arb Report_S123__Rev02) was written by Rob Fear in June 2022 and updated in March 2023. Data from that report is referred to in this report.
- 1.2. My professional qualifications include a Foundation Degree in Arboriculture (Level 5) with over 15 years of industry experience. My professional memberships include professional membership with the Arboricultural Association and the Associate membership with the Institute of Chartered Foresters. I hold professional indemnity and public liability insurances for appropriate values and can provide these certificates upon request, along with my professional qualifications.
- 1.3. The purpose of this report is to:
 - Assess and detail any impacts to trees that may occur as part of the proposed development, and;
 - Provide protection measures for trees and working methods to limit tree damage.

REPORT LIMITATIONS

- 1.4. A topographical survey has been provided showing tree positions and this is assumed to be correct (Plan ref: *Twickenham_Rev_B_Topo.dwg*). Tree impacts and removals were assessed from the latest design layout plan ref: 2113_Teddington New House_Revised Planning Drawings (150323).

¹ British Standards Institute (2012) *BS5837:2012 Trees in Relation to Design, Demolition and Construction-Recommendations*. British Standards Publications Ltd.

2. IMPACT ASSESSMENT

SUMMARY OF PROPOSALS AND IMPACTS

- 2.1. The proposal is to build a new detached property to the southeast of the existing property, that is to be demolished. The resurfacing of the existing driveway with new driveway ramp along the northern boundary, changes in levels, flood attenuation and defence measures are all part of this proposal. The existing timber structure and boat house is to be demolished and another built of similar proportions in its place.
- 2.2. Seven trees (T2, T8, T9, T10, T11, T19, T20) will need to be removed to enable construction, although three further trees (T5, T14, T16) are recommended to be removed as they are of low value (Cat C and U) with serious defects or poor form and this would benefit the adjacent trees.
- 2.3. Eight retained trees are likely to be impacted to some extent by the proposal, however most will have less than 10% of their RPA's impacted, with only four trees (T1, T12, T13 and T21) exceeding this percentage, but all now fall beneath 20% RPA impacted. For T1, the existing hard surface is being utilised for the driveway with only a small area of increased levels to facilitate the ramp construction. In addition, with the proposed use of a 3D cellular confinement system (upon the existing hard standing base) the conditions for water and gas exchange beneath the existing hard surface will be much improved.
- 2.4. The RPA of T1 and T21 have been adjusted to be located further into the site away from Twickenham Road, at the request of the tree officer to account for the potential root barrier created by the road. This movement to exclude all of the road from the RPA has resulted in an increase in RPA coverage within the site. This in turn has shown a higher degree of RPA conflict than may be appropriate, as the road may offer some degree of rooting environment as is found in other urban situations. Therefore, the degree of conflict with the proposal and T1 and T21 should be viewed with this in mind.
- 2.5. The design has gone through many iterations balancing the constraints posed by a number of different factors. The main ones being RPA's, flood defence requirements (EA requires a minimum of 4m from the building), flood storage/excavation requirements and overlooking neighboring property issues. The building footprint has therefore been moved as far north away from impacted trees as is possible.
- 2.6. The table below includes details of all trees required for removal or impacted by proposed activities

Table 2: Tree removals and impacts

TREE ID	SPECIES	BS5837:2012 CATEGORIES	REASON FOR REMOVAL AND IMPACT
T1	<i>Acer pseudoplatanus</i> (Sycamore)	B	Existing hard standing surface to be utilised as majority of driveway area. Minor (currently unsurfaced) RPA conflict with proposed driveway ramp. Approx. 2% of unsurfaced RPA affected, with no dig construction methods and 3D cellular

			<p>confinement system required for finished surface undertaken with arboricultural supervision.</p> <p>Temporary ground protection required during demo/construction.</p> <p>New boundary treatment to be constructed under arboricultural supervision, with no trenching and sensitive position of post holes.</p> <p>Facilitation pruning required on south side canopy (crown lift of minor branches to maximum of 5m around gateway only), to provide sufficient clearance for vehicle access.</p>
T2	<i>Acer pseudoplatanus</i> (Sycamore)	C	New access ramp within a large proportion of RPA. Removal required.
T3, T4	<i>Acer pseudoplatanus</i> (Sycamore), <i>Fraxinus excelsior</i> (Ash)	B, B	<p>RPA conflict with proposed new boathouse.</p> <p>To be built within existing boathouse footprint and using timber post staging constructed under arboricultural supervision.</p>
T5	<i>Juglans regia</i> (Walnut)	C	Removal proposed for H+S purposes due to advanced stem decay and asymmetric crown.
T6	<i>Acer pseudoplatanus</i> (Sycamore)	B	<p>Conflict with building footprint. Approx. 3% of RPA affected. Hand dig and arboricultural supervision required.</p> <p>Demolition and stripping of existing building foundation and other light structures to be done under arboricultural supervision where within RPA.</p>
T8	<i>Prunus</i> sp.	C	Building footprint within large proportion of RPA
T9	<i>Prunus</i> sp.	C	Building footprint within large proportion of RPA
T10	<i>Ilex aquifolium</i>	U	Poor form with asymmetric canopy too close to building line. Removal required.
T11	<i>Ilex aquifolium</i>	C	Poor form with asymmetric canopy too close to building line. Removal required.

T12	<i>Acer negunda</i> (Box Elder)	C	Conflict with building footprint. Approx. 19% of RPA affected. Hand dig and arboricultural supervision required. Canopy reduction is likely required to mitigate for root loss, to be determined during supervision.
T13	<i>Acer pseudoplatanus</i> (Sycamore)	B	Conflict with building footprint. Approx. 19% of RPA affected. Hand dig and arboricultural supervision required. Facilitation pruning of 1.5m potentially required for upper building clearance (however, it is likely that a crown reduction may be required to mitigate for root loss, to be determined during supervision).
T14	<i>Acer negundo</i>	C	Removal proposed due to poor condition, form, and asymmetric crown.
T16	<i>Acer negundo</i>	U	Removal proposed due to poor condition and form.
T17	<i>Acer pseudoplatanus</i> (Sycamore)	B	Conflict with building footprint. Approx. 3% of RPA affected. Hand dig and arboricultural supervision required.
T19	<i>Acer negundo</i>	U	Building footprint conflict and poor structural condition - removal required
T20	<i>Ilex aquifolium</i>	C	Flood storage void within large proportion of RPA. Removal required.
T21	<i>Acer pseudoplatanus</i> (Sycamore)	A	RPA conflict with flood storage void requirements. Approx. 14% of RPA affected. Hand dig and arboricultural supervision required. New boundary treatment to be constructed under arboricultural supervision, with no trenching and sensitive position of post holes.

CONCLUSIONS

- 2.7. Due to all the category A and B trees surveyed being retained with only impacts to a small number, this proposal is considered acceptable from an arboricultural point of view. Providing that the tree protection details covered in the method statement in Section 3 are followed.

3. PROTECTION OF RETAINED TREES & ARBORICULTURAL METHOD STATEMENT

- 3.1. This section describes the order of events, protection and working methods to be observed near trees, as well as protection measures. It is presented in sequential order and all methods and protection measures will need to be implemented as described.
- 3.2. Because of this, it should be circulated to all relevant parties (both prospective and engaged) involved with site management and works, including demolition contractors, construction managers, technical managers, landscape architects, drainage engineers, and any other disciplines that will be involved in groundworks near trees.
- 3.3. The contents within should be checked with them, and they should be satisfied that the guidance is workable from a buildability point of view and accept the guidance must be followed.
- 3.4. An arboricultural consultant should be appointed well in advance of any site works so that adequate resource can be allocated to the project. The role of the appointed arboricultural consultant will be to advise on tree-related matters, tree protection elements and supervision prior to and throughout the course of construction. A written record should be kept of each meeting or supervision element detailing issues and, in the case of any excavation quantities, depth, and size of roots encountered – an example form for this is provided at *Appendix G*.
- 3.5. The appointed arboricultural consultant will be responsible for keeping an auditable record of tree related site issues and circulating this record to all relevant parties, however, they will not be responsible for instructing external contractors or managing them. In this instance the arboricultural input required is:
 - Check tree protection fencing and ground protection measures have been installed to correct positions and correct specification prior to any construction or demolition activity commencing on site;
 - Ensure tree protection remains fit for purpose with a small number of ad-hoc site visits to check condition;
 - Supervise all demolition and construction activity near retained trees T3, T4, T6, T7, T12, T13, T15, T17, T18, and carry out any root pruning as required, (adequate planning and scheduling will be required for this);
 - Supervise all construction and demolition activity near trees T1 and T21 and agree on 3D cellular confinement systems to be used and method prior to these works commencing.
 - Agree on final surfacing treatment, new fencing and advise on any pruning required
- 3.6. As a cellular confinement system is proposed to be used that will need to provide suitable point load by vehicles, then the specification should be confirmed by the chosen cellular confinement system manufacturer. Some ground investigations by the chosen manufacturer may also need to be carried out to confirm suitability of the most appropriate confinement system. Details of an example specification and installation method provided in Appendix F of this report.

PRE-CONSTRUCTION - INSTALL TREE PROTECTION FENCING AND GROUND PROTECTION

- 3.7. Tree protection fencing (Appendix E) should be erected to the alignment shown with the light blue dashed fence line, together with all ground protection measures shown on the Tree Removal and

Protection Plan. This should be installed before any site clearance, soil stripping, service installation or any other form of construction related preparatory works.

- 3.8. A clear and dimensioned tree protection plan will be provided in accordance with the approved documents to aid accurate setting out.
- 3.9. A site visit must be scheduled with the appointed arboricultural consultant to sign off the tree protection fencing prior to any construction related works beginning.
- 3.10. The tree protection fencing should consist of a series of heras panels secured together and set on concrete or plastic feet which have been fixed in position using 500mm long steel rebar J pins². The ground pins should be driven in each corner of the foot at angles to prevent movement or be braced in position with 750mm long survey pegs driven at each side and a cross brace screwed over the foot in an inverted U formation. Supporting struts should also be fixed to the backside of the fence to add additional support accounting for any slope. Signs should then be fixed to every third panel informing operatives of the need to respect and not move fencing. A fence specification and example of signage is shown at *Appendix E*.
- 3.11. This fenced area then forms a **RESTRICTED AREA** or **NO CONSTRUCTION ZONE** for the duration of works on site. On no account should fencing be moved, or any other access gained into the fenced area for construction related activities unless it is written within this document.
- 3.12. The ground levels within the restricted areas shall not be altered, nor shall any excavation be made, without the written consent of the local planning authority**
- 3.13. A demolition and construction access route should be agreed with the arboricultural consultant prior to commencement of any demolition/construction related works. Ground protection panels will be required, and the specification will depend on the size and route of machinery or vehicles accessing the site.
- 3.14. Existing hard standing may provide sufficient ground protection within RPA's, but this will be agreed on site with the arboricultural consultant.
- 3.15. **All necessary ground protection panels are required to avoid soil compaction within RPA's, and will need to be installed prior to any construction/demolition related activity commencing.**

The specification of this protection must exceed the weight requirements of any demolition/construction activity planned and details of this must be provided for approval with the arboricultural consultant prior to use.

- 3.16. These protection measures should remain in place until all construction is complete unless agreed with the arboricultural consultant.
- 3.17. **No site construction or preparatory works must take place until the above protection measures are in place.**

² <https://www.ultimate-one.co.uk/8mm-dia-galvanised-steel-jpins-500x50x50mm-heavyduty-20-pack-p-1071>

DEMOLITION/CONSTRUCTION PHASE

- 3.18. Fencing and any other tree protection measures should remain in place until all construction is complete.
- 3.19. All site operatives should be made aware of the need to respect trees and their protective fencing. The following precautions should be observed and relayed to all operatives working on site during an induction:

INFORMATION FOR SITE INDUCTION – RESPECT TREES AND FENCING!

- Protective fencing should not be moved without the acceptance of council Tree/Landscape Officer or an Arboricultural Consultant, or until all construction is complete.
- Any damage to fencing should be reported to site foreman and re-instated immediately, to ensure that it remains effective in protecting the area around trees.
- No materials, fuel, large volumes of water or chemicals to be discharged or mixed where they are likely to flow toward trees in the event of spillage.
- Wheel wash stations should be self-contained units where they are sited near retained trees or resultant water should be directed well away from areas where they may flow toward tree root areas.
- Any concrete mixing stations should be located outside of all RPA's and have protective bunds constructed around them to ensure containment of resulting debris or contaminants.
- Any spillages of potential contaminants (e.g. cement, bitumen, chemicals) near trees must be reported immediately to the project manager or arboricultural consultant and action taken to either flush the soil with large volumes of water or create a bund to avoid contaminants flowing toward tree protection areas.
- No materials or spoil should be stored against fencing.
- No fires to be lit on site.
- No equipment, signage, fencing, tree protection barriers, materials, components, vehicles or structures to be attached to or supported by a retained tree.

DEMOLITION PHASE – DEMOLITION AND EXCAVATION NEAR TREES T21, T3, T4, T6

- 3.20. Specific activities:
- Demolition of existing shed adjacent T21, to provide location of temporary site office/WC.
 - Site access and delivery unload point to utilise existing hard surface between T1 and T21.
 - No excavation of existing hard surface to take place.
 - Wheel wash facilities positioned near temporary site office, must be within a self-contained unit, unless it can be ensured that run off is directed away from T21 (and any other retained trees).
 - Demolition of existing house and other smaller structures within RPA of T3, T4 and T6.
- 3.21. The demolition activity near trees noted above should proceed on a precautionary basis so that root damage is minimised. Demolition and excavation will need to be carried out under the supervision of an appointed arboricultural consultant and adequate notice will need to be given to ensure diary conflicts do not delay works.
- 3.22. Excavation, where necessary, should be carried out under supervision of an arboricultural consultant in the areas shown with orange crosshatch near these features. Where tree roots over 25mm diameter are encountered, they should be carefully exposed back to the tree side of the trench to beyond the

open trench face, using hand tools. The use of digging bars, picks and shovels will therefore be required. Care should be taken to ensure roots are not torn, ripped or shattered by digging implements.

- 3.23. Once roots are exposed, they should be pruned by the arboricultural consultant, using sharp and clean secateurs or pruning saw immediately, on no account should the ends or exposed roots be left exposed for any significant period of time. The cut will leave a clean surface and be perpendicular to the parent root and setback from the trench edge, as described above, so that it does not come into contact with any contaminants. The cut surface should be clean, straight and not have torn or ragged edges to help regeneration of new rootlets.
- 3.24. Once roots are pruned and the final dig depth is reached a layer of hessian or landscape fabric should be pinned over the trench face where root ends are present to form a curtain between any new built elements. In the case of drainage runs and other services, a root curtain will not be required, providing the trench can be backfilled on the same day.
- 3.25. Root pruning should not be carried out in extreme temperatures, such freezing or snowy conditions, and if works are carried out during summer months, then the area of pruned roots should be well watered following pruning.

CONSTRUCTION PHASE – EXCAVATION NEAR TREES T3, T4, T6, T7, T12, T13, T15, T17, T18, T21

- 3.26. The excavation and construction activity near trees noted above should proceed on a precautionary basis so that root damage is minimised. Excavation will need to be carried out under the supervision of an appointed arboricultural consultant and adequate notice will need to be given to ensure diary conflicts do not delay works.
- 3.27. Excavation should be carried out under supervision of an arboricultural consultant in the areas shown with orange crosshatch near these features. Where tree roots over 25mm diameter are encountered, they should be carefully exposed back to the tree side of the trench to beyond the open trench face, using hand tools. The use of digging bars, picks and shovels will therefore be required. Care should be taken to ensure roots are not torn, ripped or shattered by digging implements.
- 3.28. Once roots are exposed, they should be pruned by the arboricultural consultant, using sharp and clean secateurs or pruning saw immediately, on no account should the ends or exposed roots be left exposed for any significant period of time. The cut will leave a clean surface and be perpendicular to the parent root and setback from the trench edge, as described above, so that it does not come into contact with any contaminants. The cut surface should be clean, straight and not have torn or ragged edges to help regeneration of new rootlets.
- 3.29. Once roots are pruned and the final dig depth is reached a layer of hessian or landscape fabric should be pinned over the trench face where root ends are present to form a curtain between any new built elements. In the case of drainage runs and other services, a root curtain will not be required, providing the trench can be backfilled on the same day.
- 3.30. Root pruning should not be carried out in extreme temperatures, such freezing or snowy conditions, and if works are carried out during summer months, then the area of pruned roots should be well watered following pruning.

CONSTRUCTION PHASE – NO DIG –INSTALLATION OF CELLULAR CONFINEMENT SYSTEM (CCS) – T1, T21

- 3.31. The construction of the cellular confinement system (CCS) surface may require tree protection fencing to be moved. Works should be phased so that this can be carried out without impacting on other site works or safety of operatives.
- 3.32. A minimum 150mm depth cellular confinement system (CCS) is recommended for the new driveway, this is shown in orange hatch on the Tree Removal and Protection Plan at *Appendix D*. The exact edging finish should be agreed with the arboricultural consultant and the chosen manufacturer can aid with this aspect.
- 3.33. The existing vegetation upon the area of open ground around the tree will need to be strimmed and woody stumps grubbed out by hand initially. The loose soil should then be raked over to create and even surface.
- 3.34. Level changes required should be built up using gravel and sand, or by utilising the cellular confinement system and working with the gradients. The area around the tree should not be excavated into. Once a suitable gradient has been achieved a layer of geotextile landscape fabric should be laid on the surface and the CCS unraveled and pegged out over the proposed area as per the manufacture recommendations.
- 3.35. Once the CCS is pegged out on the geotextile to cover the proposed surface it should be infilled with the correct stone to give around 25mm overfill. The CCS must be infilled with the stone specified at *Appendix F*, and as described below. The desired edging can then be installed and staked in pace with timber or steel rebars.
- 3.36. The use of the correct stone is imperative as this achieves permeability and load-bearing capability, MOT type 1 or 2 is unsuitable and must not be used. Graded and clean angular 4-20mm stone with no fines must instead be used. A 20-40mm graded clean angular stone is not considered suitable because the shallowness of the CCS depth does not enable the stone to bind. However, if following on site investigations, the chosen manufacturer recommendations dictate that this can be used then it should.
- 3.37. Once the stone has been filled in place it should be compacted using a nonvibrating roller not greater than 4T Gross weight. Following the settlement of stone, a further layer of geomembrane should be laid and the final wearing course installed.
- 3.38. If the cellular confinement system is installed before the construction of the superstructure is completed then it is recommended that the tree should still be provided physical protection, albeit at reduced dimensions. In this instance a series of Heras panels should be erected around the tree stem to protect the remaining RPA that has not been covered by the CCS. This will need to be agreed with the arboricultural consultant.

CONSTRUCTION PHASE – VEHICLE ENTRANCE

- 3.39. Swing gates are now proposed at the vehicle entrance from Twickenham Road and these will be surface fixed to existing masonry. No excavation will be required.

CONSTRUCTION PHASE – DRAINAGE AND OTHER SERVICES

- 3.40. Details of proposed drainage and other services have not been provided at this stage. All proposed drainage and other services must be located outside of retained trees RPA's.

POST CONSTRUCTION INSPECTION

- 3.41. Following completion of all construction and landscape works all tree protection fencing can be removed, and a post development tree inspection should be carried to identify any remedial works to reduce risks or avoid nuisance.

APPENDIX A

SURVEY METHODOLOGY

The survey was carried out by Dan MacIntyre whose professional qualifications include the Arboricultural Association Technical Certificate, Level 3 National Certificate in Arboriculture. Dan holds the International Society of Arboriculture Tree Risk Assessment Qualification (TRAQ) and is a Lantra Certified Professional Tree Inspector with over 15 years of industry experience. His professional memberships include the Arboricultural Association, Institute of Chartered Foresters, International Society of Arboriculture and Small Woods Association. He holds professional indemnity and public liability insurances for appropriate values.

The data recorded includes:

- Height - gathered using tru-pulse laser clinometer or estimated in metres.
- Diameter - measurements taken at 1.5 metres above ground level (complying with requirements for BS5837). Girth data was gathered using a metric diameter tape, callipers or estimated where access was restricted.
- Tree crown spread – estimated measurement of the four cardinal points to provide information to be used with the arboricultural constraints plan
- Age class - estimated from an examination of the tree in question.

Age Classification

The following classification is employed:

- Y - Young: Saplings and young trees under 10 years of age
- EM – Early Mature: Trees older than 10 years but less than one-third of the life expectancy of their species, normally making substantial extension growth.
- SM – Semi Mature: Trees between one third and two-thirds of the life expectancy of their species. More or less full height and large girth, increasing only slowly.
- M – Mature: Trees beyond two-thirds of the life expectancy of their species. No significant extension growth.
- V – Veteran: Trees that shows features of biological, cultural or aesthetic value that are characteristic of an individual surviving beyond the typical age range for the species.

Structural Condition

Trees were assessed, from ground level only, for any structural defects including, but not limited to, cracks, cavities, decay, previous wounding and root movement. The categories given for structural condition are:

- Good – No visible significant defects noted;
- Fair – Minor defects noted that could be remedied through tree surgery works;
- Poor – Significant defects noted that predispose the tree to structural failure.

Physiological Condition

Trees were assessed for vigour and any signs of stress or ill health including, but not limited to, the presence of pests, diseases or pathogens and expected tree growth rates for species and age of a tree. The categories given for physiological condition are:

- Good – Growth rates as expected for species and no signs of pests or disease
- Fair – Growth rates appear below average for species and age, the presence of minor pest or disease that can be remedied.
- Poor – Growth rates well below expected for species and age with the possibility of infestation of pests or pathogen present.
- Dead – Little or no live growth. Unlikely tree will survive into following growing season.

Tree Condition/Comments.

Structural condition is also commented on and this will include such items as the presence of decay and structural defects.

Groups of similar trees were identified and treated in a similar way as the individual trees. Trees are generally plotted as groups where they form cohesive landscape features such as avenues, planting schemes in landscaped beds or shelterbelts

Trees are living organisms and their condition can change rapidly in response to environmental variables. Condition remarks refer to the date of survey and cannot be assumed to remain unchanged. While there is no such thing as a safe tree, regular inspection of trees is recommended to reduce the foreseeable risks associated with trees.

Estimated Remaining Contribution in Years

This is an estimate based on currently known factors of the possible remaining life of the tree. Clearly, it is impossible to predict changes in condition which may occur in the future, and this reflects what is considered reasonable under existing circumstances.

The estimated remaining contribution in years will be dependent on the interaction of the typical longevity of the species, its current age and condition with prevailing environmental factors. The estimated remaining contribution in years is also dependent on future tree management that can extend useful life in some instances.

BS 5837. METHOD AND BACKGROUND

This section briefly describes the methodology behind the recording and categorisation of trees.

All trees and tree groups inspected were categorised using the British Standard, BS5837:2012 and the attached Tree Constraints Plan (*Appendix C*) shows tree positions, numbers, retention categories and Tree Root Protection Areas (RPA). A schedule of the trees is included in *Appendix B*, which include species, physiological and structural condition, age, recommendations and quality categories. The survey methodology is described in *Appendix A*.

Tree and group locations were recorded with the use of a topographical survey and this is assumed to be accurate.

Trees have been recorded as individuals or as groups. The British Standard sets out the description of a group as follows: "*The term "group" is intended to identify trees that form cohesive arboricultural features either aerodynamically (e.g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally including for biodiversity (e.g. parkland or wood pasture), in respect to each of the tree subcategories.*"

Where a tree in a group has characteristics that distinguish it from the rest of the group, it is generally recorded as an individual. Such trees may include but are not limited to, veteran trees, trees with significant defects, and specimen trees of different species that stand out from within the group.

The trees surveyed were categorised using the method explained in BS5837:2012. This method categorises individual trees, groups and woodlands in a systematic way. Each tree, group or woodland is identified on an attached plan.

Initially, it is determined if the tree should be regarded as a U category tree. U category trees are those that are of low value, which has little future due to poor physiological and structural condition. There may be instances where retention of a U category tree is appropriate, such as habitat enhancement, but this should be carefully considered and adequate space given to such retained features.

Other trees are graded A, B or C. The initial category should reflect the value of the trees in making an important contribution to the amenity of the site over a period of time. The higher the category, the longer the perceived time period.

A subcategory is included 1, 2 or 3. This subcategory reflects the type of value the surveyor feels the tree presents in regards its value to 1 – arboricultural, 2 – landscape, 3 – cultural or conservation. Unfortunately, the allocation of two or more subcategories does not increase the quality category but does indicate that it has a broader range of benefits.

The survey data and tree positions help inform the extent of tree Root Protection Areas (RPA) to ensure that development activities do not harm trees. BS5837 defines the root protection area as '*the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability*'.

Once design proposals are finalised those trees that can be retained should be afforded protection of their RPA with robust fencing to ensure damage (above and below ground) does not occur. This protected area should be viewed as a no-access area for the duration of any construction works, including demolition (a Construction Exclusion Zone).

The table below reflects the BS:5837 cascade chart.

BS5837:2012 Categories	Definitions	Retention implications to a site
Category A (Shown as green on the plans)	Trees of high quality and value able to make a substantial contribution to the site.	Efforts should be made to retain trees and amendments to a proposed scheme should be identified in preference to tree removal.
Category B (Shown blue on the plans)	Trees of moderate quality and value able to make a significant contribution to the site.	Where possible amendments to a proposed scheme should be considered in preference to tree removal.
Category C (shown as grey on the plans)	Trees of low quality and value in an adequate condition until new planting can be established, trees with impairments downgrading them from A or B category OR young trees with a stem diameter of less than 150mm.	The retention of trees may be advantageous in the short term, but they should not be seen as a constraint to development.
Category U (shown as red on the plans)	Trees that have limited condition that will fail or die within 10 years and/or should be removed for reasons of arboricultural best practice	Not a material consideration in the planning process but may have other benefits that should be considered.

APPENDIX B
TREE DATA TABLE
Key to Inspection Report Form

Ref No.	Tree, group or hedge number, to correspond with all tree plans
Species	Genus and variety, common names are given.
Ht	Height in metres, top height given for group features. Either estimated or measured using Trupulse laser clinometer.
Dia	Stem diameter at 1.5m from ground level in millimeters. Measured using calipers or estimated where access was restricted. An average value is presented for group features.
N,S,E,W	Crown spreads at cardinal points, north, south, east and west. Measured or estimated in metres. Average spread shown for group features
LcH	Height of lower crown, estimated in metres.
PC, SC	Physiological (PC) and Structural Condition (SC). Based on assessment of tree/group and recorded as Good, Fair, Poor or Dead.
Age Class	Y – Young EM – Early mature SM – Semi Mature, M – Mature V – Veteran
Cat and Sub Cat	BS 5837:2012 categories and subcategories, please see section 3 for methodology and details.
ULE	Estimated useful life expectancy

APPENDIX C

TREE CONSTRAINTS PLAN

APPENDIX D

TREE REMOVAL AND PROTECTION PLAN

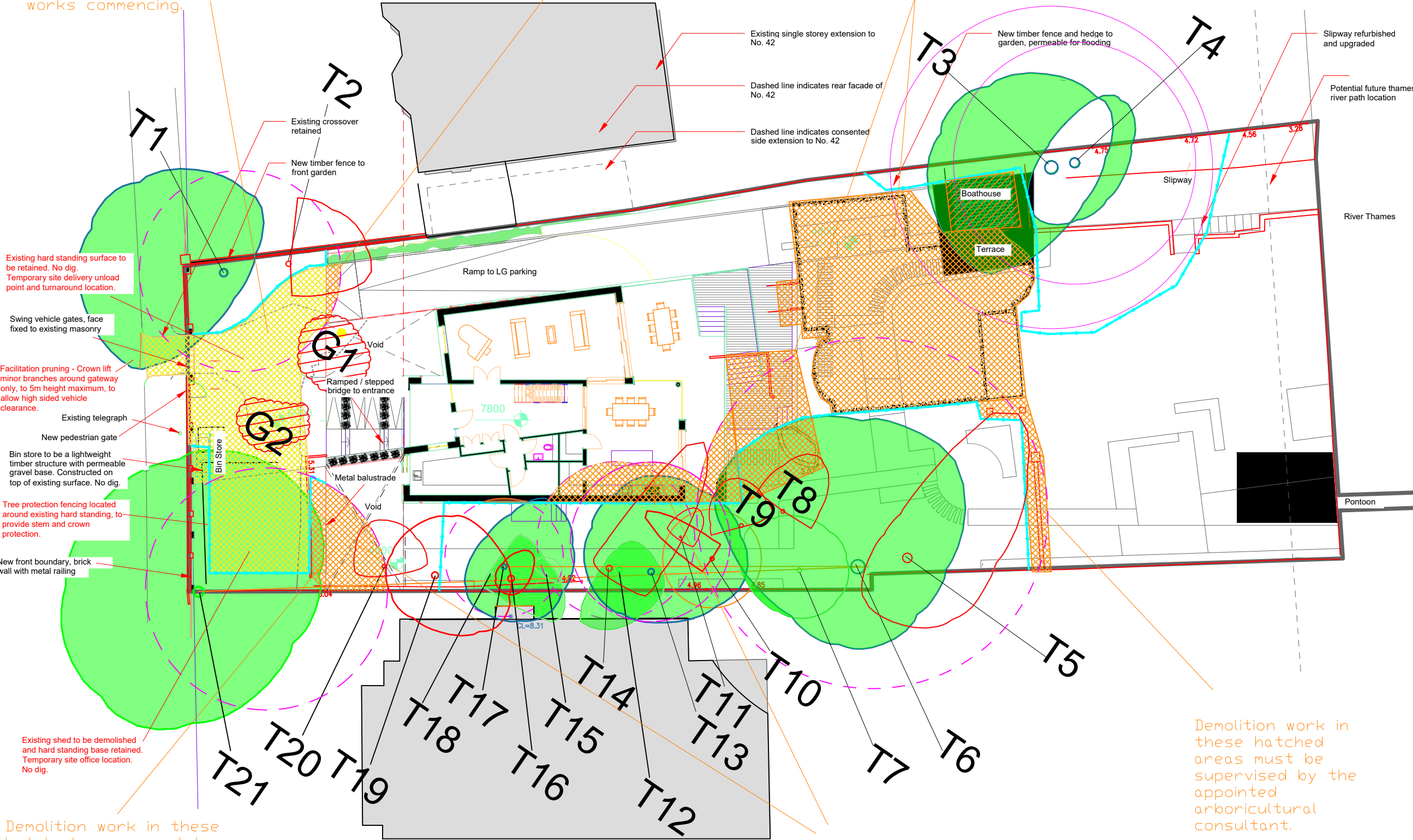
APPENDIX E

TREE PROTECTION FENCE SPECIFICATION AND SIGNS

New driveway (utilising existing hard surface base), ramp and bin store to be constructed on top of existing hard surface base, using 'no dig' methods and cellular confinement systems where within RPA's as a minimum. All undertaken under arboricultural supervision. Details to be checked by appointed arboricultural consultant prior to works commencing.

All demolition/construction work in these hatched areas must be supervised by the appointed arboricultural consultant.

All demolition/construction work in these hatched areas must be supervised by the appointed arboricultural consultant.



- Legend**
- Groups Retained
 - Groups Removed
 - Trees Retained
 - Trees Removed
 - Root Protection Area
 - Root Protection Area (Hatched =adjusted RPA)
 - Arboricultural supervision/ 'No dig' required
 - Arboricultural supervision/ 'No dig' required upon existing hard standing
 - Tree Protection Fencing (TPF)
 - Adjusted Root Protection Area due to below ground obstructions

Rev.	Date	Amendment	Drawn	Chkd.	Appd.



Client
Urban and Urban Properties Ltd.

Project Title
40 Twickenham Road

Drawing Title
TREE PROTECTION PLAN

Drawn RF	Date 20_08_24	Checked RF	Date 20_08_24	Approved RF	Date 20_08_24
Project No. 22_18			Drawing File 		
Drawing No. 1			Rev. 1		

Demolition work in these hatched areas must be supervised by the appointed arboricultural consultant.

All construction and excavation work in these hatched areas must be supervised by the appointed arboricultural consultant.

heras® 151 and 151steadfast system

Having invented the original concept of temporary fencing back in the 80's, Heras is proud of its reputation as a true innovator.

Our latest solution for securing site perimeters and protecting the public has been phenomenally successful since its launch, and offers the ultimate market leading temporary fencing system.

Our safest, most stable and most secure system ever offers you total peace of mind, and unrivalled performance.

You can be sure that by installing the Heras® 151 Steadfast System (patent pending), you are conforming fully to the latest HSE Guidelines on "Protecting the Public" from the dangers of construction sites.

Heras has campaigned widely over recent years against falling product standards, and has consulted closely with senior figures across the construction industry to ensure our products meet and exceed your expectations. This latest innovative system means you should never again need to compromise on:

- Value for money
- Quality
- Performance
- Design
- Ease of installation.

All backed up with unbeatable service from our nationwide branch network – deal direct with Heras – your safety first fencing supplier:

Fully Tested and Certificated

- Extensive independent testing by Sheffield Hallam University has proved the performance of the system, resisting wind speeds well in excess of gale force.
- The HSE has confirmed that the system meets all of the guidelines in the HSG 151 Publication "Protecting the Public - Your next move".
- In turn, therefore, we can offer customers a certificate of compliance when they purchase this system from Heras.
- It is your responsibility to ensure the system is correctly installed and fixed. For help and advice, contact your nearest branch.

151 system

The key components of the Heras 151 system are as listed.

Round Top Panel with Anti-Climb Mesh

- The strongest panel on the market, with 3 sides formed from a continuous length of tube, eliminating the top corner weld, often the weakest point in traditional panel design.

High Visibility Orange Block

- Permanently coloured with a durable UV stabilised "in-viz" casing and filled with solid high density concrete.
- Effectively highlights any potential trip hazard.
- Beware of cheap imitations – painted coatings will chip and peel.

Heraslock® Anti-Tamper Coupler

- Providing additional security, these couplers can only be removed with the use of the specialist tool.

151 steadfast system

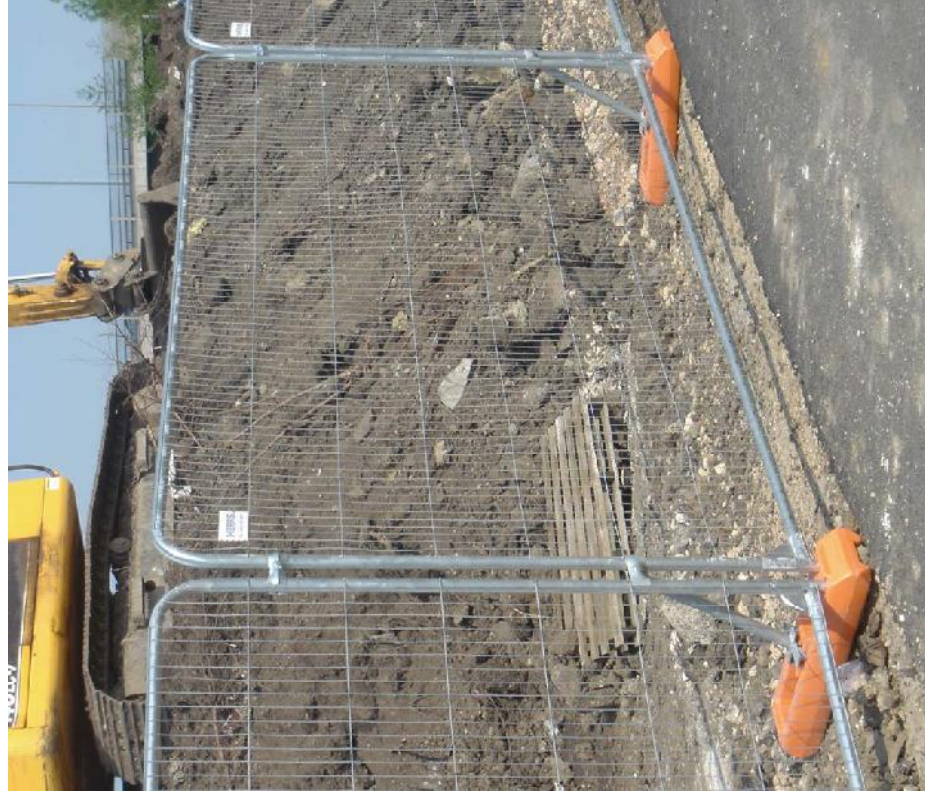
The Heras 151 steadfast system incorporates all the benefits of the 151 system, with the addition of the patented...

Heras® Steadfast Strut

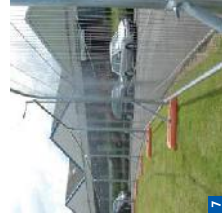
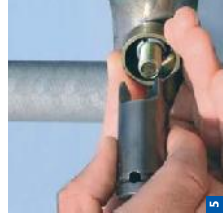
- The unique design of this clever strut dramatically increases the stability of the fence.
- The strut fits neatly within the high visibility block allowing a neat and compact solution, and acts as an integrated anti-lift device.
- 3 additional fixing holes incorporated into the design allow for soil pins and thunderbolts, dependent on ground conditions.

Optional Extras

- Heras® Steadfast Safety Strips with reflective coating can be fitted in minutes to highlight site dangers.
- Front support brackets allow vastly improved performance on softer ground conditions and fit quickly and easily into the high visibility blocks.



ROUND TOP PANELS WITH ANTI-CLIMB MESH



1. Front stabiliser.
2. High visibility footblocks.
3. Round top panel.
4. Steadfast strut.
5. Anti-tamper coupler.
6. Optional steadfast safety strips.
7. Anti-climb round top panel with steadfast struts to increase stability.

Our latest solution for securing site perimeters and protecting the public has been phenomenally successful since its launch, and offers the ultimate market leading temporary fencing system.



**PROTECTIVE FENCING. THIS
FENCING MUST BE
MAINTAINED IN ACCORDANCE
WITH THE APPROVED PLANS
AND DRAWINGS FOR THIS
DEVELOPMENT.**



**TREE PROTECTION AREA
KEEP OUT !**

(TOWN & COUNTRY PLANNING ACT 1990)

**TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY
PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A
TREE PRESERVATION ORDER.**

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

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

APPENDIX F

CELLULAR CONFINEMENT SYSTEM DETAILS – NO-DIG DRIVEWAY

THE GEOWEB® SOLUTION

TREE ROOT PROTECTION (TRP) SYSTEM

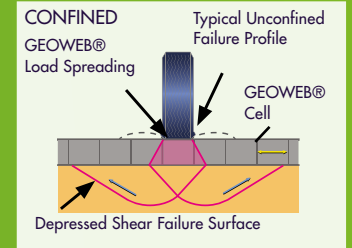
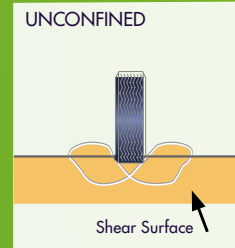


Used extensively in civil engineering construction for over 30 years, the GEOWEB® system is a three-dimensional structure that:

- provides strength to confined soils
- distributes loads laterally, not vertically
- reduces point loads
- reduces compaction of the subsoil

Manufactured from high quality, high-strength polyethylene with a textured surface and perforated walls, GEOWEB® cells with selected infill control shearing, lateral and vertical movement, and reduce subbase depth requirements.

The GEOWEB® system is a low impact development (LID) solution with exceptional load-bearing capabilities and environmental benefits. The system has a long history of solving heavy load support problems for roadways, road base support, parking lots, road shoulders, ports, trucking/intermodal terminals and railroads.



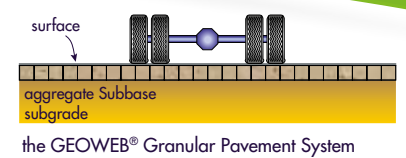
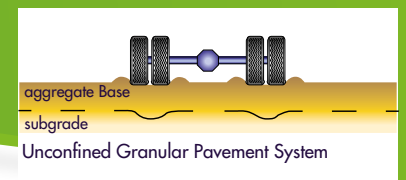
LOAD DISTRIBUTION

By distributing and bridging applied loads, the GEOWEB® TRP system reduces vertical stresses that are typically applied to the underlying soil and root zone.

The GEOWEB® system is ideally suited for tree root protection applications where weak subsoil or no-dig restrictions exist.

COST BENEFITS

The GEOWEB® TRP system is an economical solution for reducing construction vehicle impact to the tree root zone compared with other methods. Once installed, the system has minimal-to-no visibility.

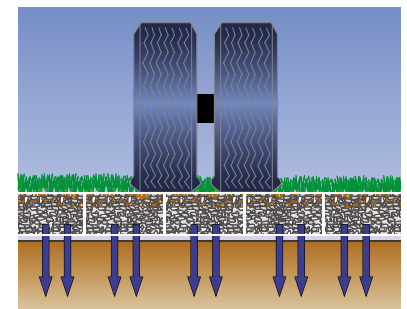


ENVIRONMENTAL BENEFITS

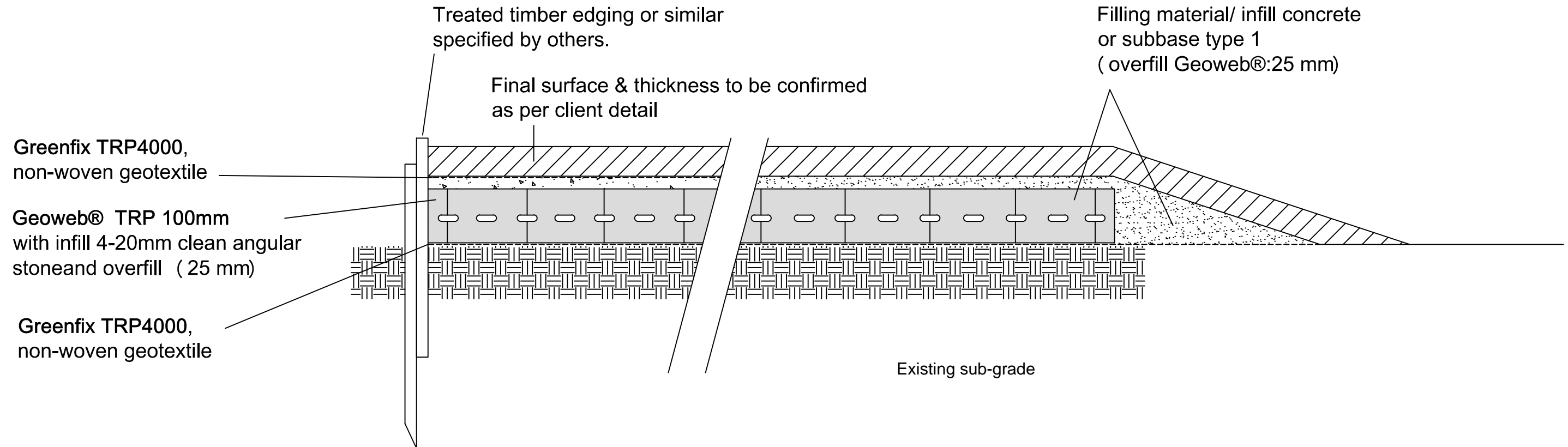
With permeable infill (topsoil/vegetation, aggregate, sand), perforated GEOWEB® cell walls offer environmental benefits:

- water infiltration
- lateral movement of air and water
- water and nutrient migration
- promotes root development

The tree root protection system can be a temporary or permanent solution.



**Standard/ Generic detail
transition ramp from existing levels**



Note: 3 or 4 cells filled with concrete or subbase type 1

Adjacent Geoweb units to be joined with Atra-keys.

Project: Geoweb® transition ramp
 Distributor: Greenfix soil stabilisation and erosion control
 Date: 12.11.2015

Not to scale



LIMITATIONS OF USE
 The Evaluation is copyrighted and based on the use of Geoweb® manufactured by Presto Products. All rights reserved. Any use of the Evaluation for any geocell product other than that manufactured by Presto Products is strictly prohibited and makes this Evaluation invalid. Presto Products assumes no liability resulting from the unauthorized use of this Evaluation. The recommendations in this Evaluation are based on the specific characteristics, structural values and specifications of Geoweb® manufactured by Presto Products.



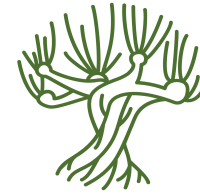
Greenfix Soil Stabilisation and Erosion Control Ltd

Tel 01608 666027 | EMail info@greenfix.co.uk | www.greenfix.co.uk

APPENDIX G

ARB SITE MONITORING FORM EXAMPLE

Arboricultural Site Monitoring Record

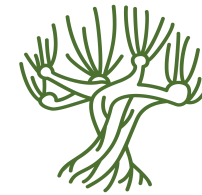


Helyg
T R E E S U R V E Y S

Site Address:
Planning Permission ref. and relevant conditions:
Appointed arb consultant details:
Owner/agent details:
Site foreman details:
Council tree officer details:
Relevant Plan References:
Summary of arb supervision required:

Relevant Plan Clips:

Arboricultural Site Monitoring Record



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T R E E S U R V E Y S

Date of visit	Details of supervision, fence checks or any other tree issues	Issues to rectify	site foreman informed (Y/N)	Date rectified	Pictures or Pic ref.