CENTRAL LONDON
TREE SURVEYS
ARBORICULTURAL CONSULTANTS
Celebrating 20 Yrs

17 Frognal, London, NW3 6AR

Arboricultural Report, Impact Assessment & Protection Method Statement

Consultant: John Crawshaw M.Arbor.A.

Survey Date: Wednesday, 28 October 2020

Report Date: Sunday, 29 November 2020

Amended: Thursday, 10 December 2020

Contents

1. Introduction

1.1. Brief

I was instructed to inspect the trees at **17 Frognal, London, NW3 6AR** and to provide an arboricultural report, impact assessment & protection method statement for the trees located within and adjacent to the site, as shown on the Tree Constraints Plan enclosed.

1.2. Qualifications and experience

I have based this report on my site observations and the provided information, and I have come to conclusions in the light of my experience and qualifications. RFS Cert Arb.
M. Arbor A

1.3. Documents and information provided

I was provided with site & proposal plans.

1.4. Scope of this report

This report is only concerned with the trees shown on the enclosed plan. Trees with a diameter of less than 75mm and shrub species have not been surveyed in line with BS5837 2012.

1.5. Limitations of use and copyright

2. Site Visit/Observations & Data Collection

2.1. Site visit

The information within this report is formulated from information within the site survey and report compiled on **Wednesday, 28 October 2020**.

2.2. Site description

The survey site comprises the gardens of the property containing trees within and adjacent properties.

2.3 Identification and location of the trees

The trees have been identified and are listed within the Tree Survey Schedule. I have plotted the locations of the trees on the plans included. All the relevant information on it is contained within this report and the provided documents. Only the significant trees are included in this report; trees with a diameter of less than 75mm (BS5837 2012) are not included unless their position was felt to be significant. All trees have been allocated a classification. The classification cascade chart can be found below.

2.4. Tree observation.

Each tree has been given a classification relevant to BS5837 2012.

CASCADE CHART FOR TREE QUALITY ASSESSMENT (from British Standard 5837:2012 "Trees in Relation to Design, demolition and Construction")				
TREES FOR REMOVAL				
Category and Definition	**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 U category trees (i.e. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning). ➢ Trees that are dead or are showing signs of significant, immediate and irreversible overall decline. ➢ Trees infected with pathogens of significance to the health and/or safety of other trees nearby), or very low quality trees suppressing adjacent trees of better quality. NOTE: Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7			DARK RED
TREES TO BE CONSIDERED FOR RETENTION				
Category and Definition	**Criteria – Subcategories**			**Identification on Plan**
	1. Mainly Arboricultural Qualities	**2. Mainly Landscape Qualities**	**3. Mainly Cultural Values, including Conservation**	
Category A Those of high quality with a estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual, or essential components of groups, or of 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
Category B Those of moderate quality with a 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 unsympathetic past management and storm damage) such that they are unlikely to be suitable for retention for beyond 40 years; or lacking the merit for Category A	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 clearly identifiable conservation or other cultural benefits.	MID BLUE
Category C Those of low quality with an estimated life expectancy of at least 10 years, or young trees with a stem diameter below 150mm.	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 very limited conservation or other cultural benefits.	GREY

2.4.1. Tree Survey Schedule

				Dia	Canopy				First	Crown							
ID	Species	H/T	Stems	mm	N	E	S	W	Branch	H/T	Age	Yrs	Cat	Observations	Recommendations	RPA (r)	RPA (a)
T1	Lime	12	S	375	3	3	3	3	3W	2.5	Mature	<10	U	Significant cavity in base and potentially unsafe. The structural integrity of Lime wood with decay can be weak and prone to failure	Remove tree	4.5	63.6
T2	Lime	12	S	400	3	3	4	3	3W	4	Mature	40+	A	Good overall condition	None	4.8	72.4
T3	Lime	12	M	500	4	4	4	4	4W	3	Mature	40+	A	Good overall condition , some decay in old pruning wounds (pollard)	Monitor condition	5	78.5
T4	Lime	12	S	350	4	3	2	3	2W	2.5	Mature	40+	B	Significant decay in base from 2 sides, tree appears stable at this time but could deteriorate quickly	Monitor decay/possible removal	4.2	55.4
T5	Sycamore	6	S	900	3	3	3	3	3S	3	Mature	30	C	Poor quality specimen. Heavily pollarded, included stems, may become weak. Significant decay in main stem	Monitor/possible removal	10.8	366.4
T6	Lilac	3	S	250	3	3	3	3	1E	1	Early Mature	30	C	Good overall condition	None	3	28.3
T7	Prunus	3	S	100	0.5	1	2	1	2W	2	Early Mature	10	C	Poor quality specimen	Monitor/possible removal	1.2	4.5
T8	Prunus	3	S	100	0.5	0.5	0.5	0.5	2S	2	Early Mature	10	C	Poor quality specimen	Monitor/possible removal	1.2	4.5
T9	Prunus	3	S	100	0.5	0.5	3	1	2S	2	Early Mature	10	C	Poor quality specimen	Monitor/possible removal	1.2	4.5
T10	Sycamore	12	S	400	2	3	4	3	3W	4	Mature	10	C	Poor quality specimen. Heavily pollarded, included stems, may become weak	Monitor/possible removal	4.8	72.4
T11	Prunus	3	S	125	1.5	1.5	1.5	1.5	3N	3	Early Mature	10	C	Poor quality specimen	Monitor/possible removal	1.5	7.1
T12	Prunus	3	S	75	2.5	2	1	1	3E	2	Early Mature	<5	C	Poor quality specimen, significant decay and split out upper canopy	Monitor/possible removal	0.9	2.5
T13	Prunus	3	S	75	1.5	1.5	1.5	1.5	3S	2	Early Mature	10	C	Poor quality specimen	Monitor/possible removal	0.9	2.5
T14	Prunus	3	S	100	0.5	1	2	1	3N	2	Early Mature	10	C	Poor quality specimen	Monitor/possible removal	1.2	4.5
T15	Prunus	3	S	75	0.5	0.5	3	1	3S	2	Early Mature	<10	C	Poor quality specimen	Monitor/possible removal	0.9	2.5
T16	Prunus	3	S	75	0.5	0.5	3	0.5	3S	2	Early Mature	<10	C	Poor quality specimen	Monitor/possible removal	0.9	2.5

2.4.2. Glossary of Terms

ID: Identification on position plan

Name: Common species name

H/T: Current tree height

Stems: Single or Multiple stems

Dia: Diameter of stem at 1.5m above ground (mm)

Canopy: Canopy measurements N,E,S & W

Crown Height: Height of lowest part of crown

First Branch: Height and direction of first branch

Age: Current age

Yrs: Approximate years of life remaining

Cat: Category of importance in line with current British Standards

Obs: Observations

Recs: Recommendations

RPA (r): Root protection area (approximate area of roots Radius of circle)

RPA (a): Root protection area (approximate area of roots Area of circle)

2.4.3. Tree Survey Methodology

Trees, tree groups and woodlands have been considered following evaluation into one of four categories (U, A, B, C) based on tree quality as outlined in British Standard 5837 (2012) which has been followed. Categorisation of trees, following the British Standard, gives an indication as to the trees' importance in relation to the site and the local landscape and also, the overall value and quality of the existing tree stock on site. This allows for informed decisions to be made concerning which trees should be removed or retained, should development occur.

For a tree to qualify under any given category it should fall within the scope of that category's definition. In the categories A, B, C which collectively deal with trees that should be a material consideration in the development process, there are three sub-categories which are intended to reflect arboricultural, landscape and cultural values respectively. Category U trees are those which would be lost in the short-term for reasons connected with their poor physiological or structural condition. They are, for this reason, not usually considered in the planning process.

In assigning trees to the A, B or C categories the presence of any serious disease or tree related hazards are taken into account. If the disease is considered fatal and / or irremediable, or likely to require sanitation for the protection of other trees it may be categorised as U, even if they are otherwise of considerable value.

Category (A) – trees whose retention is most desirable and is of high quality and value. These trees are considered to be in such a condition as to be able to make a lasting contribution (a minimum of 40 years) and may comprise:

- Trees which are particularly good examples of their species especially rare or unusual, or essential components of groups or of formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue);
- Trees, groups or woodlands which provide a definite screening or softening effect to the locality in relation to views into or out of the site, or those of particular visual importance (e.g. avenues or other arboricultural features assessed as groups); and
- Trees or groups or woodlands of significant conservation, historical, commemorative or other value (e.g. Veteran or wood-pasture trees).

Category (B) – are trees whose retention is considered desirable and are of moderate quality and value. These trees are considered to be in such a condition as to make a significant contribution (a minimum of 20 years) and may comprise:

- Trees that might be included in the high category but because of their numbers or slightly impaired condition (e.g. presence of remediable defects including unsympathetic past management and minor storm damage), are downgraded in favour of the best individuals;
- Trees present in numbers such that they form distinct landscape features and attract a higher collective rating than they would as individuals. Individually these trees are not essential components of formal or semi-formal arboricultural features, or trees situated mainly internally to the site and have little visual impact beyond the site; and
- Trees with clearly identifiable conservation or other cultural benefits.

Category (C) – are trees that could be removed to facilitate the development and are considered to be of low quality and value. These trees are in an adequate condition to

remain until new planting could be established (a minimum of ten years) or are young trees with a stem diameter below 150mm and may comprise:

- Trees not qualifying in higher categories;
- Trees present in groups or woodlands, but without this conferring on them significantly greater landscape value and or trees offering low or only temporary screening benefit; and
- Trees with very limited conservation or other cultural benefits.

Category (U) – trees for removal are those trees in such a condition that any existing value would be lost within 10 years and which should in the current context be removed for reasons of sound arboricultural management. Trees within this category are:

- 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;
- Trees that are dead or are showing signs of significant, immediate or irreversible overall decline; and
- Trees infected with pathogens of significance to the health and or/safety of other trees nearby trees or very low quality trees suppressing adjacent trees of better quality.

Species has been recorded by common name and recorded as such in the Arboricultural Data schedule. Height has been estimated in meter and stem diameters have been measured at 1.5 metres above ground level and recorded in millimetres. Crown spreads have been measured in half meters and taken to the point of greatest spread unless the crown has presented a pronounced asymmetrical form and therefore measurements have been taken for the four cardinal points. The measurements have always been considered in the following sequence, North, East, South, and West, and therefore appear as such within the Tree Survey Schedule.

In the assessment particular consideration has been given to the following when deciding the most appropriate British Standard Category and Sub-Category allocation:

a. the health, vigour and condition of each tree;
b. the presence of any structural defects in each tree and its life expectancy;
c. the size and form of each tree and its suitability within the context of the proposed scheme; and
d. the location of each tree relative to existing site features, e.g. its value as a screen or as a skyline feature.

Age class is assessed according to the age class categories referred to in BS 5837.

1. Y: Young trees up to five years of age;
2. SM: Semi-mature, trees less than 1/3 life expectancy;
3. EM: Early mature, trees 1/3 – 2/3 life expectancy;
4. M: Mature trees over 2/3 life expectancy;
5. OM: Over mature – declining or moribund trees of low vigour; and

6. V: Veteran - Characteristics have been noted where a tree exhibits certain characteristic features of veteran trees.

Major defects or diseases and relevant observations have also been recorded under Structural Condition. The assessment for structural condition has included inspection of the following defects:

1. The presence of fungal fruiting bodies around the base of the tree or on the stem, as they could possibly indicate the presence of possible internal decay;
2. Soil cracks and any heaving of the soil around the base indicating possible root plate movement;
3. Any abrupt bends in branches and limbs resulting from past pruning, as it may be an indication of internal weakness and decay;
4. Tight or weak ‘V’ shaped unions and co-dominant stems;
5. Hazard beam formations and other such biomechanical related defects (as described by Claus Mattheck, Body Language of Trees HMSO Research for Amenity Trees No. 4 1994);
6. Cavities as a result of limb losses or previous pruning;
7. Broken branches;
8. Storm damage;
9. Canker formations;
10. Loose bark;
11. Damage to roots;
12. Basal, stem or branch / limb cavities;
13. Crown die-back;
14. Abnormal foliage size and colour;
15. Any changes to the timing of normal leaf flush and leaf fall patterns; and
16. Other pathological diseases affecting any part of the tree.
17. Major defects or diseases and relevant observations have also been recorded. Dead wood has been defined as the following:
18. Twigs and small branch material up to 5cm in diameter;
19. Minor dead wood 5cm to 10cm in diameter; and
20. Major dead wood 10cm in diameter and above.

The survey was completed from ground level only, aerial inspection of trees was not undertaken. Investigations as to the internal condition of a tree have not been undertaken. Further investigations of this type can be made and have been recommended where it has been considered necessary, within the report although these investigations are beyond the scope of this report.

Evaluation of the trees condition given within this assessment applies to the date of survey and cannot be assumed to remain unchanged. It may be necessary to review these within 12 months, in accordance with sound arboricultural practice.

The individual positions of trees and groups of trees recorded in the Tree Survey Schedule. have been shown on the Tree Constraints Plan, in Appendix 2.0. The positions of trees are based on a topographical / land survey supplied by the development and client in dwg. format for the purpose of plotting the trees.

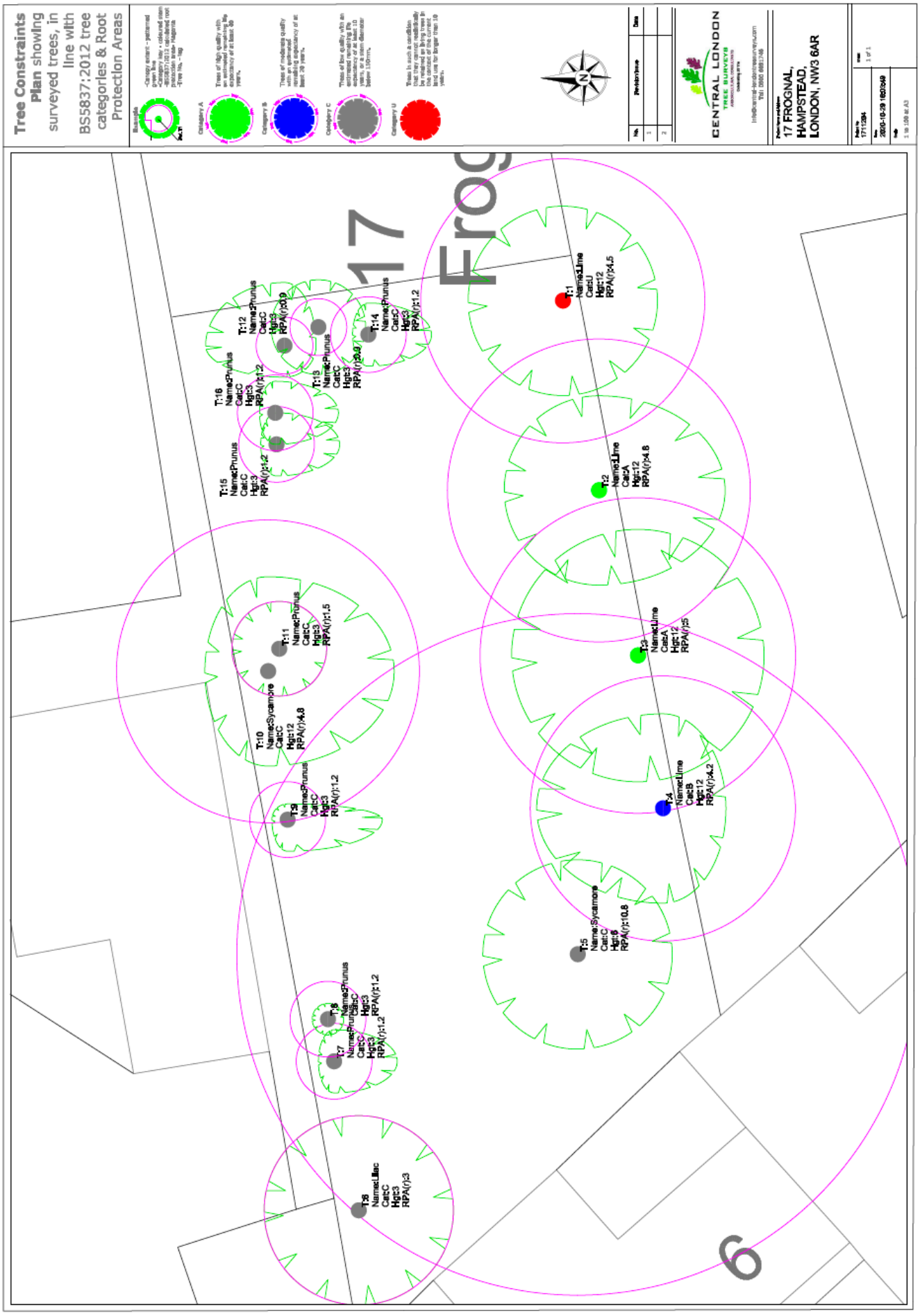
The Root Protection Areas (RPA) to be required by the individual and groups of trees are indicated by the Tree Constraints element of the above plans. The Root Protection Areas are formulated as described below.

Below ground constraints to future development is represented by the area surrounding the tree that contains sufficient rooting volume to ensure survival of the tree, which need protecting in order for the tree to be incorporated into any future scheme, without adverse harm to the tree or structural integrity of buildings. This is referred to as the RPA and is shown as a circle of a given radius.

The circle may be modified in shape to maintain a similar total area depending on the presence of surrounding obstacles. Where groups of trees have been assessed, the RPA has been shown based on the maximum sized tree in any one group and so would automatically exceed the RPA's required for many of the individual specimens within the group. A RPA is equivalent to a circle with a radius 12x the stem diameter for single stem trees and 10x the basal diameter for trees with more than one stem arising less than 1.5 meters above ground level.

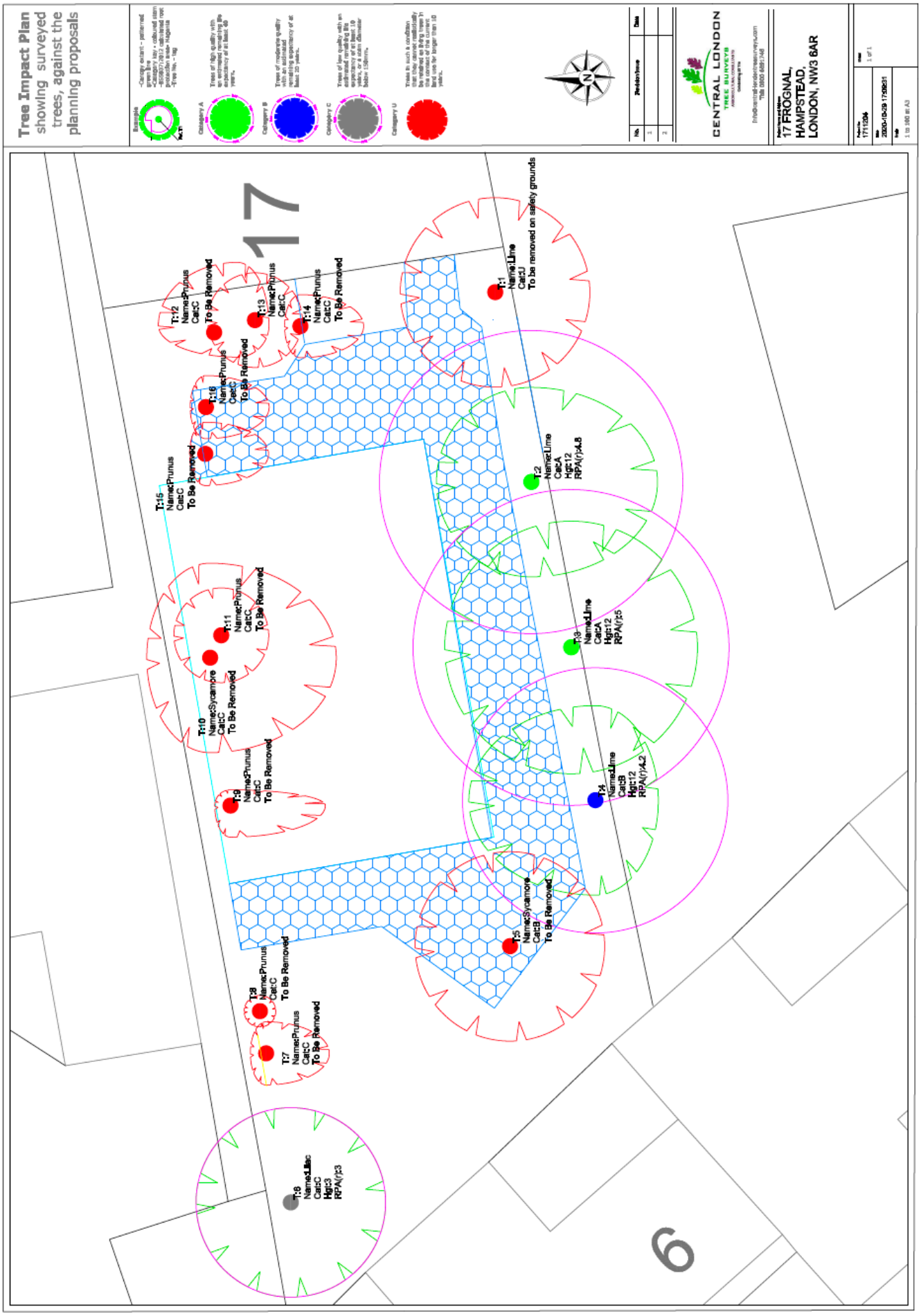
4. Tree Constraints Plan

Plan below not to scale as PDF. Please refer to original drawing for scaling.



5. Tree Impact Plan

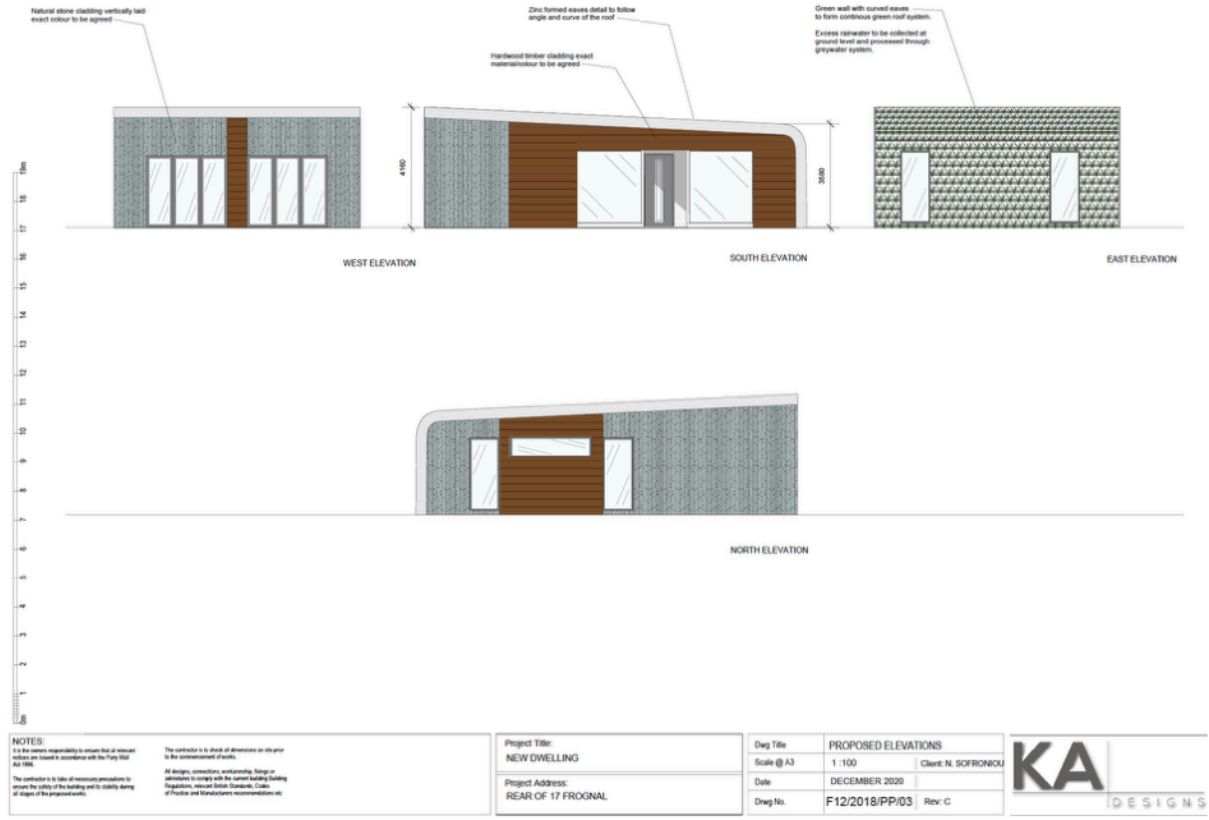
Plan below not to scale as PDF. Please refer to original drawing for scaling.

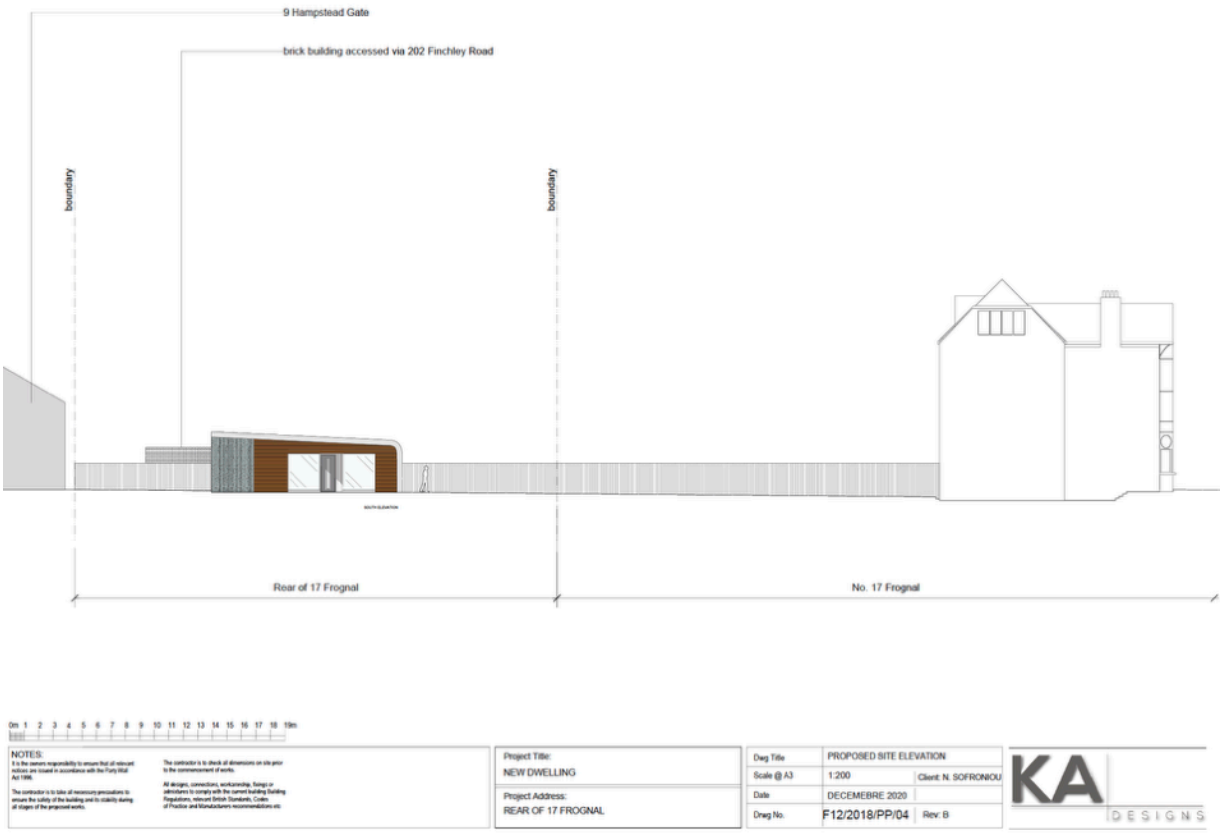


6. Arboricultural Impact Assessment

6.1 Proposals

The proposals are to construct a new dwelling as shown below and on the Tree Impact Plan (TIP).





6.2 Impact Assessment

In light of the tree constraints set against the proposals, below are the conclusions of the impact assessment upon the trees within this survey.

The proposals (to the dimensions given) have been positioned on the Tree Impact Plan to give an indication of impact to the trees.

Existing Trees

The trees within the site are a mixture of High & Low classification. The Lime trees offer good amenity value to the area. One of the Limes T1 has significant decay in the base and is potentially dangerous. This tree should be removed as soon as possible and replaced. T4 (Lime) also has decay, but at this time, appears to pose less of a danger and could be retained and managed accordingly.

The two larger Sycamores are of very poor quality, severe decay, inclusions and severe pollard management has led to poor structure, decay and limited longevity. These trees could be removed to facilitate the development and create the opportunity to replace with a variety of species to enhance visual amenity, arboricultural interest and vastly increase biodiversity and habitat value.

If left, the site would eventually lose the tree cover due to neglect and invasive species could enter and become dominant. The planting of new trees, will increase tree cover within the site for many years to come and improve the 'neglected' appearance.

Foundations

The new dwelling will be constructed upon mini piles to minimise damage to tree roots of the Category A & B trees. This method as proved highly successful on other projects and recognised as an acceptable and workable solution for establishing a structure close to trees.

Ground Levels

No changes in ground levels are envisaged within the RPA's.

Utilities

Power and water utilities will be linked into existing services by using a Moling technique to minimise ground disturbance and potential harm to trees..

Deliveries/Contractors Access

Access for contractors will be from the front of the property upon the existing hard-standing. Deliveries can be unloaded within the existing entrance to avoid potential conflict with the trees.

Proposed Hard-standing

The proposed patio will be constructed upon a 'No Dig' 3D geogrid system to spread the load over the RPA's, eliminate the requirement for excavation and provide a permeable surface where oxygen and water can be directed to the roots below.

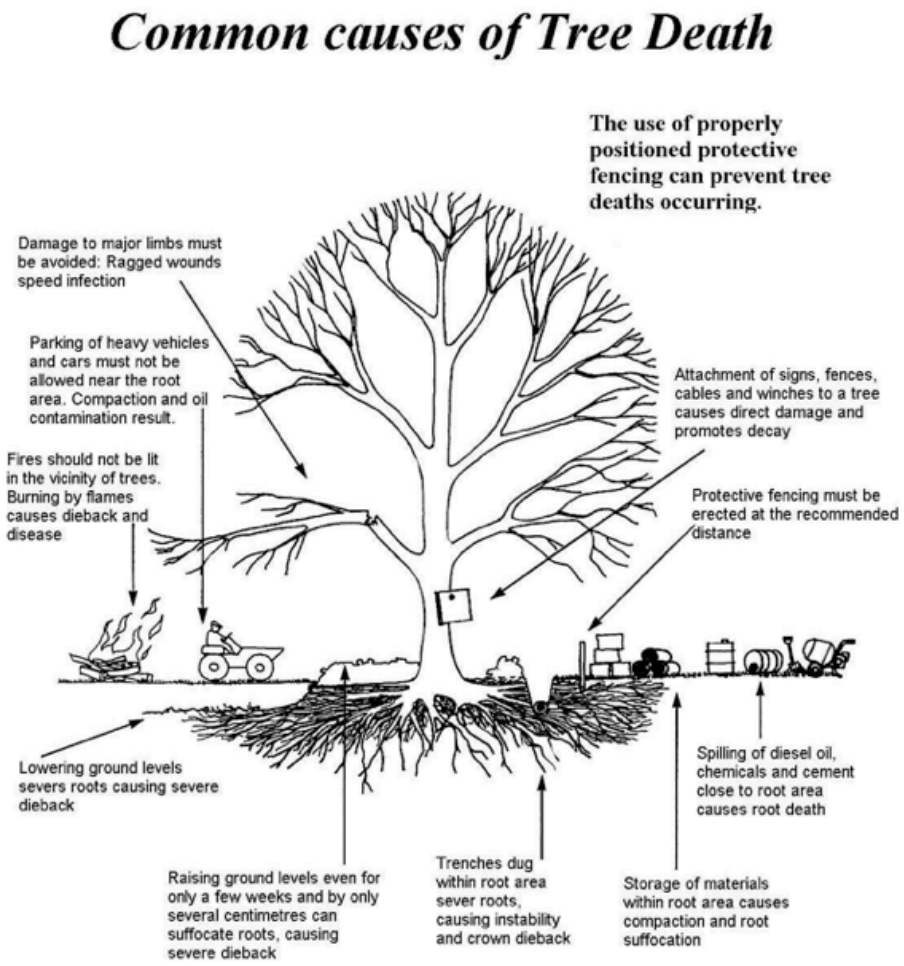
7. Arboricultural Method Statement

7.1 Overview

- 11 x Cat C tree to be removed & 1x Cat U
- All other trees to be retained and protected
- Protective fencing to create Construction Exclusion Zones
- Temporary ground protection to be used and form base for new hard-standing
- Mini pile & beam foundations
- Utilities outside RPA's
- Contractor's access via road
- Site office/welfare/within house
- Unloading of materials away from retained trees onto existing hard-standing
- No materials, mixing or washing out of tools within the RPA's

7.2 Tree Protection

With reference to the Arboricultural Report and Tree Protection Plan (TPP), particular attention should be given to the trees that are to be retained. The TPP clearly identifies the Root Protection Areas (RPA's) for the tree, which will be retained. Protection of the retained trees are paramount to the granting of planning permission, the design of the development and the future health and success of the tree.



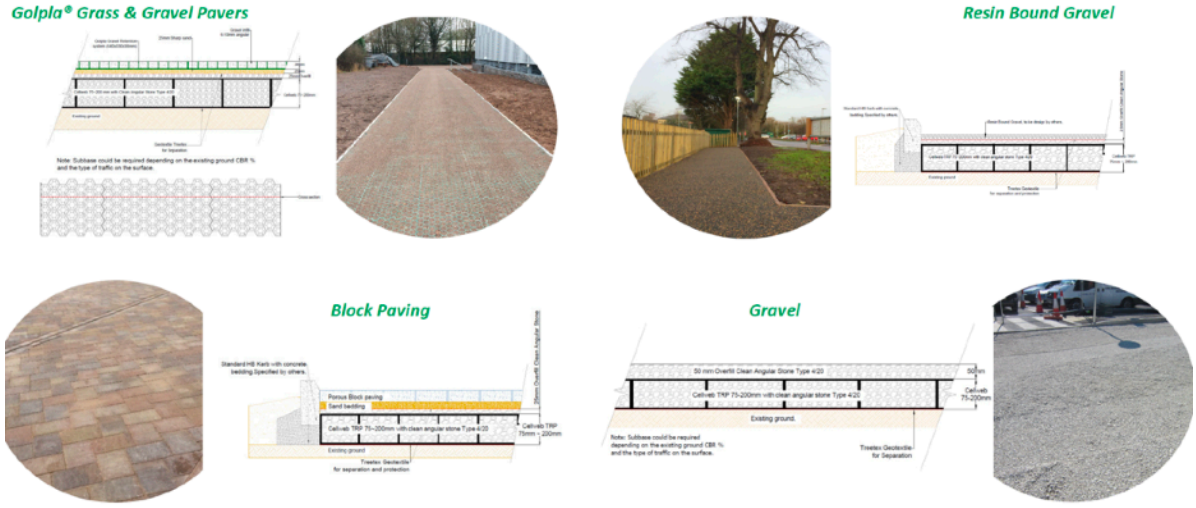
7.3 Construction Works

Ground Protection of RPA's

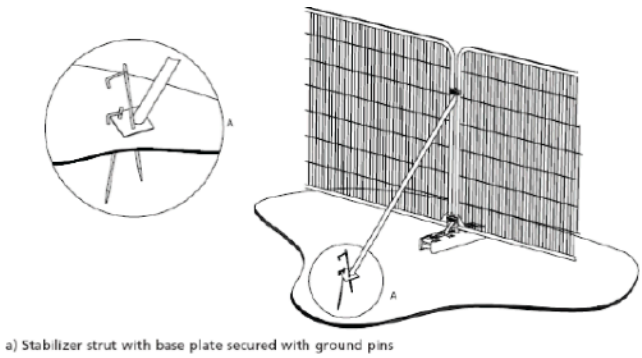
Extreme care should be taken as not to damage the roots, trunks and branches of any retained trees. It is anticipated that the works will be very close to some trees and care should be taken to maintain the protection measures contained within this report.

Temporary ground protection will be used in the form of a 3D geogrid cellular confinement system as shown below. The system will be laid at the start of the project and remain in place following construction and form the base for the new patio. This system will allow for plant and machinery to access the site over the RPA's without compacting the roots.

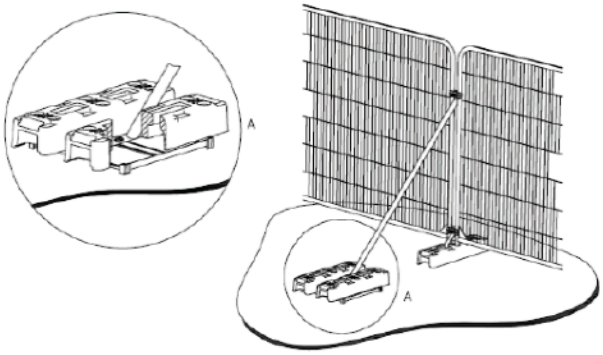
Protective fencing will also be used to create a Construction Exclusion Zone CEZ.



Fencing Detail



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Ground Levels

There will be no requirement to alter ground levels within the RPA's. The 3D Geogrid will create a new surfaces patio over the RPA's.

Foundations within RPA's

Mini piles with a floating beam will form the foundation for the whole building structure and within the RPA's. The piles will be screwed into place taking care to avoid any significant roots. The supporting beam will be positioned on the existing ground level to eliminate the requirement for excavation.

Utilities

Water and power utilities will be connected to the existing services. No excavation required within the RPA's is required. A boring system will be deployed to tunnel through the soil and eliminate any 'top down' excavation.

Deliveries/Contractors Access

Access for contractors will be from the front of the property from the roadside. Deliveries and materials will be unloaded at the roadside to ensure no damage to trees and then manually moved into the storage area away from the trees.

Concrete & Materials

Pouring of concrete, concrete mixings, concrete washings and mortar which should not be discharged within 10m of the Root Protection Area or under or within 10m of any other tree or shrub.

Accordingly the materials should not be mixed within the Root Protection Area or on an area sloping towards the tree.

On completion of the works all surplus materials are to be collected and disposed of offsite.

7.4 Tree Surgery/Pruning

No tree surgery is envisaged.

7.5 Mitigation Planting

Mitigation planting will take place following construction.

1X English Oak Extra Heavy Standard 14-16cm as per Camden decision October 2018.

1X English Oak Extra Heavy Standard 14-16cm

1 X Lime Extra Heavy Standard 14 - 16cm to replace T1

3 X Japanese Acer 1.5m height specimen & colour to be chosen

1 X each Silver Birch, Apple, Pear, Rowan, Holly, Hawthorn. Extra Heavy Standard size 14 - 16cm

All replacement trees are specified 14-16cm girth at the request of the Tree officer and do not directly reflect the guidance given by the consultant. Some of the smaller species may be difficult to source at the specified size. (Japanese acer, Rowan, Holly, Apple, Pear).

All trees will be root ball stock & supported with a suitable stake & tie.

7.5.1 Mitigation Planting

The replacement trees should be planted in the position shown on the Tree Protection Plan and should be planting in accordance with the planting specification below and BS8545.

Root balled trees can be planted at any time of year, although autumn/winter is considered most appropriate for successful integration. The planting should be undertaken within one planting season of the completed development.

The tree pit should be excavated to four times the root ball size and broken up within the base to alleviate a clay pan or glazing. The planting crate, guy support system and watering pipe should all be added as per the specification. The infill soil must be of good quality. If not from the excavation then brought in from a reputable source, which is disease and contaminant free. Biochar should be added at the appropriate mixture rate, recommended by the manufacturer.

Formative pruning should be carried out to favour strong unions, diseased or compromised branches. The finished planting should be mulched with gravel or woodchip mulch to a depth of 50mm and maintained. Mulching will help retain moisture and prevent competition from weeds.

Aftercare & Maintenance

A formal assessment of young tree health and development should be carried out annually. This assessment should include foliar appearance (i.e. lack of leaf chlorosis and/or necrosis), leaf size and leaf canopy density, extension growth and incremental girth development. Continual assessment on an ad hoc basis should be carried out throughout the year, to inform maintenance requirements.

A 3-year aftercare period is required, during which time plants shall be maintained regularly to ensure establishment. Plant condition shall be assessed annually and any plants that die or are badly misshapen by dieback, disease or damage shall be replaced at the end of each growing season (during the planting season) in the year the fault was identified. Replacement stock shall be of the same size and species as that originally specified.

Monthly maintenance visits through the growing season should include:

(a) WEEDING
Maintain an area of clean ground 1 metre diameter around each tree.

(b) STAKES, TREES AND TIES
All stakes and ties should be checked at least annually to ensure that the root system remains stable and firm in the ground, and that ties are still effective and not causing any damage to the tree. Any stakes and ties that are found to be not fit for purpose, should be adjusted, replaced or removed.

All stakes and ties should be removed as soon as the developing root system is strong enough to support the tree.

NOTE Two full growing seasons are usually long enough for this to occur.

(c) PRUNING
Remove all dead wood and diseased tissue from all planted material at the end of each growing season, and all stem growths from standard trees immediately before the

completion of the maintenance period. Prune tree crowns if necessary to encourage development of good shape.

(d) MULCH

Mulch should be maintained at a depth of 50mm and kept weed free for a five year period.

(e) WATERING

At times of prolonged dry spells (less than 30mm rain within any 4 week period) the trees should be watered. Sufficient water should be used to soak the soil but not flood or create puddling. This operation should continue twice per week if conditions persist.

Reference should also be made to the landscape planting & maintenance report by 'The Plantman' 6th December 2020.

8. Time Table & Supervision & Reporting

The Client, Site manager and Arboriculturalist will meet on site before any development activity begins to confirm the protection measures agreed and employed are functional and achieving their purpose.

The Arboriculturalist is to make monthly site visits of not more than four weeks apart. This may be more frequent at times when operations are more specifically tree related, such as ground preparation, foundation works and close proximity working to stems and limbs.

The Arboriculturalist has responsibility to liaise with the LPA's Arboriculturalist and agree any changes or revisions that may be necessary, before they are implemented. Any changes to the agreed protection measures or procedures are to be agreed in writing by the LPA, recorded and circulated to all parties as an addendum to this method statement.

Description	Stage	Frequency	Reporting	Action
Pre-commencement meeting with relevant parties	Prior to any construction phase	1 visit	Visit Log (written)	Amendments to tree protection if required in consultation with LPA
Implementation of tree protection measures	Prior to any construction phase	1 visit	Visit Log (written)	Ensure standards against Tree Protection Plan
Main construction phase	Piling Operation	1 visit	Visit Log (written)	Ensure protection measures and report any damage
Emergency call out	All phases	As required	Visit Log (written) & report to LPA	Deal with emergency tree damage/ contravention of Arboricultural Method Statement
Site 'sign off' removal of protection measures	Construction completion	1 visit	Visit Log (written)	Sign off Tree protection measures
Soft landscaping	Soft landscaping/ Tree planting	1 visit during planting	Visit Log (written)	Ensure standards, report issues

All site visits, including spot checks will be recorded in writing, noting position and condition of protection measures, any potentially damaging work practices and damage to the trees above and below ground. Photos should be included with the notes and passed to the client and the LPA within 5 working days of the visit.

Below is the supervision and monitoring schedule. Written logs will be sent to the LPA recording each visit within 5 days of each visit.

9. Contingency Plans

In the event of unforeseen incidents occurring, that may adversely affect or threaten the welfare or security of the tree, the resident Site Agent/Manager shall inform the Arboricultural Consultant at the earliest opportunity and not more than one working day following the incident.

The Arboricultural Consultant will visit the site to inspect and assess the circumstances and make any appropriate recommendations The Local Planning Authority Tree Officer will be informed by the Arboricultural Consultant of such incidents and recommendations will be submitted for approval by the Local Planning Authority, initially verbally, and then in writing

A record of any emergency incidents and works shall be maintained by the Arboricultural Consultant

Incidents which may merit such contingency plans include

- Accidental / unauthorised damage to the limbs, roots or trunk of trees
- The spillage of chemicals within or adjacent to a Root Protection Area
- The discharge of toxins / waste within or adjacent to a Root Protection Area
- The un-scheduled access over the RPA's (post break up of existing surface)

Incidents and breaches of the agreed protection measures will result in a stopping of the operation, review and remediation where necessary. In some extreme cases the whole site may be closed and re-assessed.

10. Aftercare & Monitoring

Health, vigour and future development of the root systems, where possible should be encouraged, below are recommendations for maintaining the roots ability to breath, take up water and nutrients and expand if needed.

- Tree roots should be undisturbed in the existing environment
- Avoiding and alleviating compaction is highly beneficial
- A qualified Arboriculturalist should visit the site post development and undertake a health & safety assessment of the retained and newly planted trees to determine any issues arising and to recommend an adjustment or any additional measures he deems suitable to maintain the health a viability of the trees.

11. References

British Standards: 5837: 2012 Trees in relation to design, demolition and construction.

British Standards: 8545: 2014 Trees from nursery to independence in the landscape

British Standards: 3998:2010 Tree work – Recommendations

Tree Preservation Orders - A Guide to Good Practice·

APN 1 Driveways close to trees

Diagnosis of ill health in trees - R G Sprouts and T G Winter - Forestry

Arboriculture research and Information note 12 ‘Tree Root Systems’.

12. Key to Tree Protection Plan.

Trees to be retained – Green, Blue, Grey

Root protection areas – Magenta

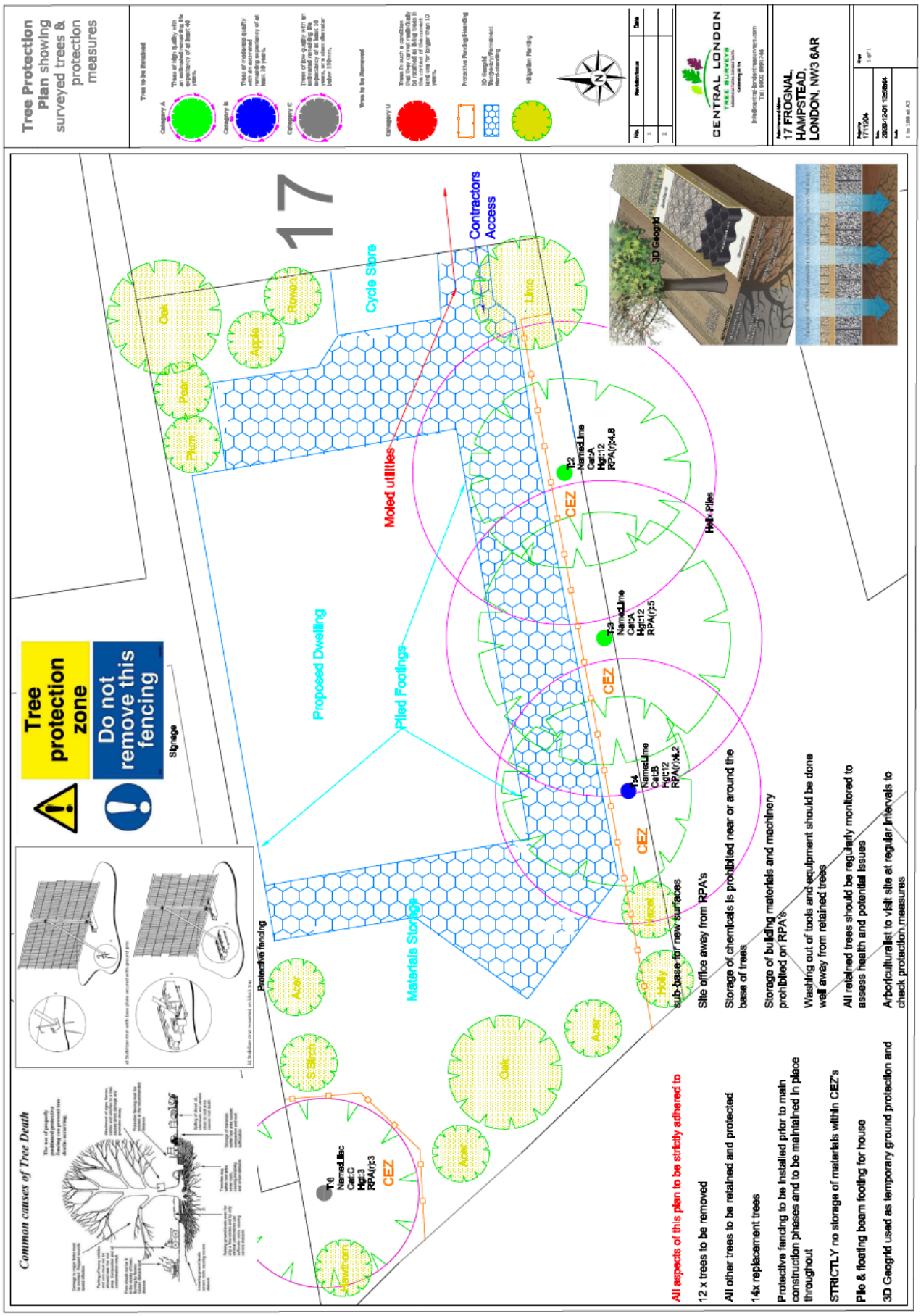
Contractors access and materials storage - Blue

3D Geogrid - Light Blue

PDF plans within this A4 report may not be to scale and should only be used for reference within the report. Scaled drawings should be taken from the original AutoCad plans.

13. Tree Protection Plan

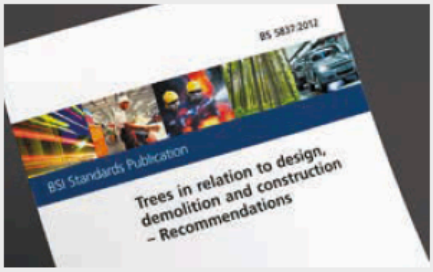
Plan below not to scale as PDF. Please refer to original drawing for scaling.



Appendix 1. List of Tree Names

Ash	*Fraxinus excelsior*
Aspen	*Populus tremula*
Atlas cedar	*Cedrus atlantica*
Austrian pine	*Pinus nigra*
Bay willow	*Salix pentandra*
Beech	*Fagus sylvatica*
Bird cherry	*Prunus padus*
Black cottonwood	*Populus trichocarpa*
Black poplar	*Populus nigra*
Black walnut	*Juglans nigra*
Box	*Buxus sempervirens*
Caucasian fir	*Abies nordmanniana*
Cedar of Lebanon	*Cedrus libani*
Coast redwood	*Sequoia sempervirens*
Common alder	*Alnus glutinosa*
Common juniper	*Juniperus communis*
Common lime	*Tilia x vulgaris*
Common silver fir	*Abies alba*
Common walnut	*Juglans regia*
Corsican pine	*Pinus nigra*
Crab apple	*Malus sylvestris*
Crack willow	*Salix fragilis*
Cricket-bat willow	*Salix alba*, var *caerulea*
Deodar cedar	*Cedrus deodara*
Douglas fir	*Pseudotsuga menziesii*
Downy birch	*Betula pubescens*
English elm	*Ulmus procera*
Eucalypts	*Eucalyptus* species
European larch	*Larix decidua*
Fig	*Ficus carica*
Field maple	*Acer campestre*
Giant fir	*Abies grandis*
Grey alder	*Alnus glutinosa*
Grey poplar	*Populus x canescens*
Hawthorn	*Crataegus monogyna*
Hazel	*Corylus avellana*
Holly	*Ilex aquifolium*
Holm oak	*Quercus ilex*
Honey Locust	*Gleditsia triacanthos*
Hornbeam	*Carpinus betulus*
Horse chestnut	*Aesculus hippocastanum*
Italian alder	*Alnus cordata*
Japanese larch	*Larix kaempferi*
Japanese zelkova	*Zelkova serrata*
Large-leaved lime	*Tilia platyphyllos*
Lawson cypress	*Chamaecyparis lawsoniana*
Lodgepole pine	*Pinus contorta*
Lombardy poplar	*Populus nigra* var. *italica*
London plane	*Platanus x hispanica*
Maritime pine	*Pinus pinaster*
Midland thorn	*Crataegus laevigata*
Monkey puzzle	*Araucaria araucana*
Monterey cypress	*Cupressus macrocarpa*
Monterey pine	*Pinus radiata*
Noble fir	*Abies procera*
Norway maple	*Acer platanoides*
Norway spruce	*Picea abies*
Oriental plane	*Platanus orientalis*
Pedunculate oak	*Quercus robur*
Red alder	*Alnus rubra*
Red oak	*Quercus rubra*
Robusta poplar	*Populus x robusta*
Rowan	*Sorbus aucuparia*
Sallow (Goat willow)	*Salix caprea*
Scots pine	*Pinus sylvestris*
Serotina poplar	*Populus serotina*
Sessile oak	*Quercus petraea*
Silver birch	*Betula pendula*
Sitka spruce	*Picea sitchensis*
Small-leaved lime	*Tilia cordata*
Smooth-leaved elm	*Ulmus carpinifolia*
Snakebark Maple	*Acer capillipes*
Southern beech	*Nothofagus antarctica*
Swamp cypress	*Taxodium distichum*
Swedish whitebeam	*Sorbus intermedia*
Sweet chestnut	*Castanea sativa*
Sycamore	*Acer pseudoplatanus*
Tree of Heaven	Ailanthus altissima
Turkey oak	*Quercus cerris*
Wellingtonia	*Sequoiadendron giganteum*
Western hemlock	*Tsuga heterophylla*
Western red cedar	*Thuja plicata*
White poplar	*Populus alba*
White willow	*Salix alba*
Whitebeam	*Sorbus aria*
Wild cherry (Gean)	*Prunus avium*
Wild service tree	*Sorbus torminalis*
Wych elm	*Ulmus glabra*
Yew	*Taxus baccata*

Appendix 2. Temporary Ground Protection

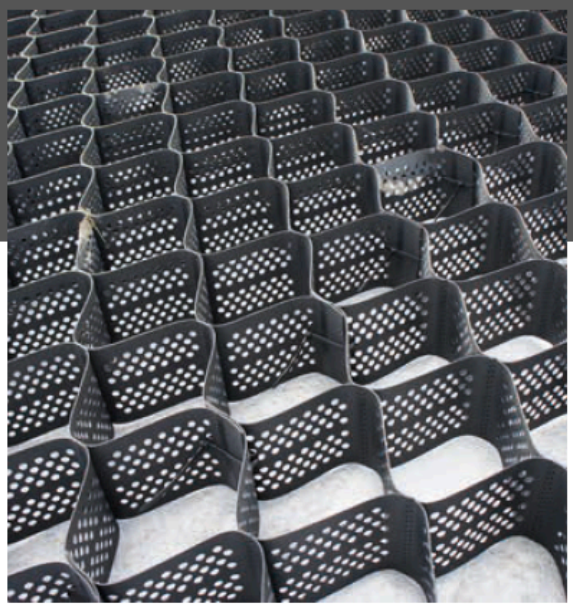


ProtectaWeb™ Tree Root Protection System is fully compliant with BS 5837:2012 section 7.4.2 Note 1 and accomplishes the following objectives:

- Offers a no-dig solution with no mechanical damage to the existing tree roots
- Provides a stable running surface for the required road and vehicle loadings
- Delivers significant reduction in the loads transferred from above to the tree roots
- Prevents harmful compaction of the soils in the root protection area
- Provides a porous, flexible structure to protect the tree's essential supply of water and oxygen
- Eliminates the risk of a potential fine for causing damage to or demise of a tree subject to a Tree Preservation Order
- Long term performance for 75 years
- Available in 50mm, 75mm, 100mm, 150mm, 200mm & 300mm depths
- CE marked product

Wrekin also offers:

- Design solutions for your scheme with full consideration of on-site conditions and loading requirements
- Seminars and training on all aspects of ProtectaWeb™
- On-site and off-site support for all phases of the build including planning, installation and project sign-off



ProtectaWeb™ TRP System being pegged out

ProtectaWeb™ TRP System being infilled with stone

ATTENTION:

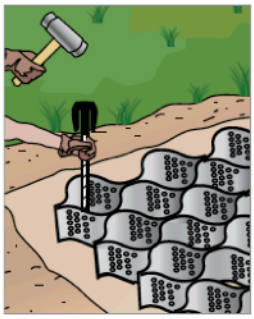
If developers or contractors are found to have cut down or damaged trees subject to TPOs they may be prosecuted and fined up to £20,000 per tree.

To avoid this, trees subject to TPOs must be managed in accordance with BS 5837:2012 (Trees in relation to construction) and Arboricultural Practice Note 12 (APN 12)

7 Hold sections open. Use Options A, B, C or D.

A T-Bars

B ATRA® anchors



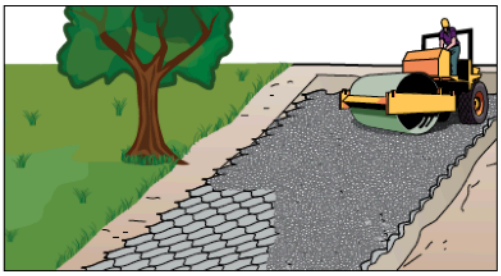
C Wood Stakes

D Infill Select Cells

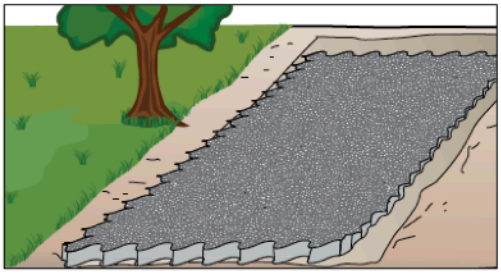
8 Infill GEOWEB® cells.

9 Spread Infill ensuring a 25 mm overfill at all times.

10 If required, use a 4t smooth, non-vibrating roller on overfilled GEOWEB® system. Refill as needed to ensure a 25 mm overfill.



11 Surface option ready to install according to specification.



Greenfix
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Geoweb infill material for Tree Root Protection

Clean Angular Stone 4-20mm

Specification for open graded infill material for Geoweb cellular confinement within tree root protection applications. The no fines material is to ensure high ratio void space which corresponds with ideal soil void ratios for tree root health.

Material to BSEN1342 or BSEN12620. Crushed gravel is not permitted.

Properties of material	Test	Value
Grading of particle size	BSEN 13242	Grading 4-20mm
Fines Content	BSEN 13242	f_4
Shape flakiness index	BSEN 13242	FI_{20}
Resistance to fragmentation	BSEN 13242	LA_{30}
Resistance to wear	BSNE 13242	Mc_{20}
Water absorption rate BSNE 1097-6:2000 clause 7	BSNE 13242	$WA_{24}2$
For typical WA>2% magnesium sulphate soundness	BSNE 13242	MS_{18}
Acid soluble sulphate content air-cooled blast furnace slag	BSNE 13242	$AS_{0.1}$
Acid soluble sulphate content non air cooled blast furnace slag	BSNE 13242	$AS_{0.2}$
Total sulphur aggregates other than air cooled blast furnace slag	BSNE 13242	<1% by mass
Total sulphur air cooled blast furnace slag	BSNE 13242	<2% by mass

Sieve Size mm	Percentage of 4-20mm passing
40	100
31.5	98 - 100
20	90 - 99
10	25 - 70
4	0 - 15
2	0 - 5
1	-

GEOWEB®

Air cooled blast furnace and steel slag should be free from Dicalcium silicate and iron disintegration in accordance with BSEN 13242:2002, 6.4.2.2 V5

Leaching of materials for blast furnace slag and other recycled materials should meet requirements of the Environmental waste acceptance criteria for inert waste when tested in accordance with BSEN 12457-3

On poor site conditions which require compaction, this should be minimum 4 passes of a smooth wheeled roller at max weight 1000kg/m width without vibration.

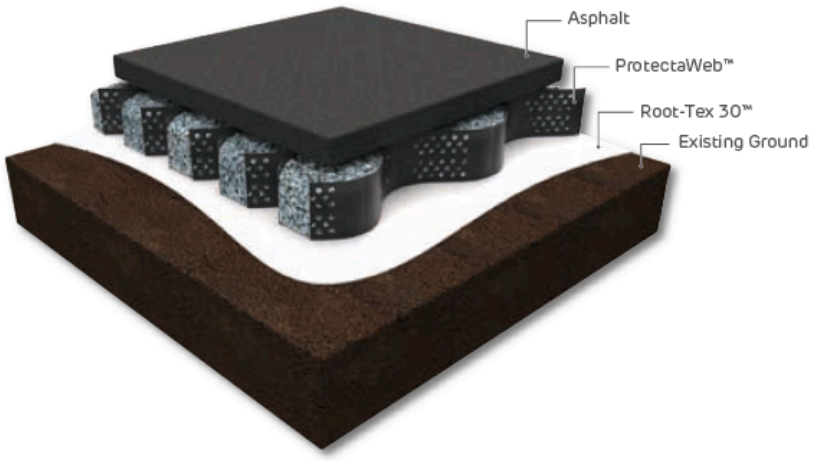
For assistance on correct 4–20mm clean angular stone infill specification, please contact Greenfix technical team.

ProtectaWeb™ surfacing options:

ProtectaWeb TRP Sytem can be surfacing with a number of different surfaces:

Typical Applications:

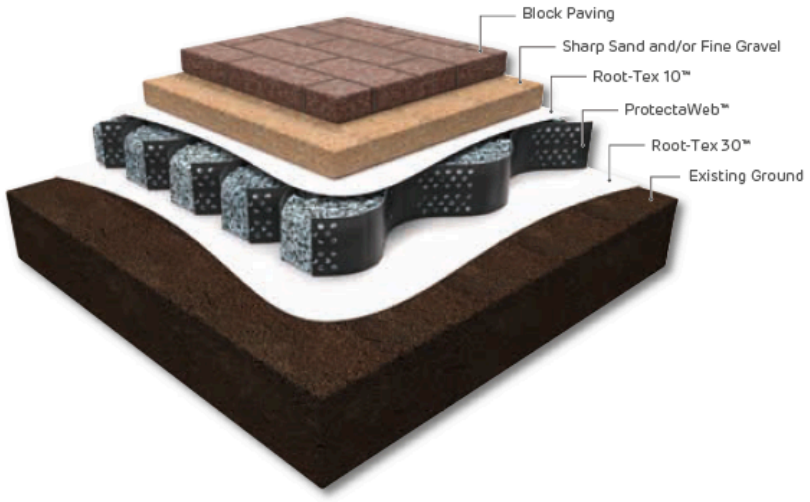
- Car park areas
- Access roads
- Driveways
- Footpaths
- Fire access route



Porous Asphalt Finish

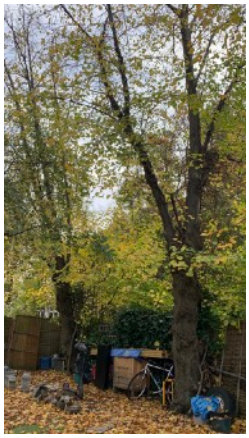
Typical Applications:

- Car park areas
- Driveways
- Footpaths
- Access roads
- Fire access route



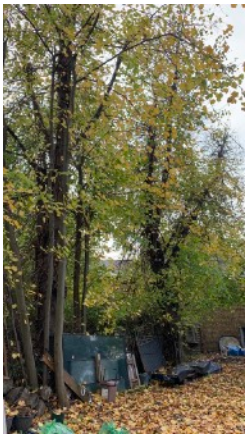
Block / Pourous Block Paving Finish

Appendix 3. Photographs



T's 1 & 2

T1 severe decay within main stem

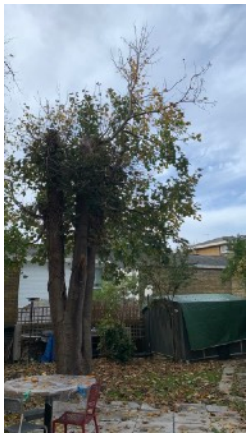


T's 3 & 4

T4 decay within main stem

T5 included stems & significant decay

T5



decay in main stem and crown

T10

T's 12 - 15

T12 bleeding & split out canopy

T13 splitting stem

T's 7 & 8

T11

Appendix 4. Caveats

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Specific - Trees

All tree inspections, unless specified, have been undertaken from ground level and using non-invasive techniques. Comments contained within the report on the condition and risk associated with any tree relate to the condition of the tree at the date and time of survey. Please note that the condition of trees is subject to change. This change may occur, but is not limited to biological and non-biological factors as well as mechanical/ physical changes to conditions in the proximity of the tree. Trees should be inspected at intervals relative to identified site risks and in accordance with relevant HSE and Central Government guidance. Central London Tree Surveys can provide further information on this matter if required.

Please note no statutory control checks have been undertaken (unless specified). Where tree surgery works have been identified these works are based on the assumption that planning is approved, no tree works should be undertaken prior to determination of this application without up to date confirmation of the Tree Preservation Order/Conservation Area Status of the vegetation. All works should be undertaken in accordance with the appropriate Duty of Care. This should include, for example, site specific risk assessments and due diligence inspections for the presence of protected species.

CENTRAL LONDON
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Celebrating 20 Yrs

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