

27 CHAPEL LANE, LETTY GREEN. SG14 2PA

BS5837 TREE SURVEY, ARBORICULTURAL IMPACT ASSESSMENT AND METHOD STATEMENT.

Proposed construction of single storey property

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1. Introduction

1.1 Contacts

Client- Ms Vivienne Naylor

Planner- Waller Planning

Architects - Bryant and Moore Architects

Arboriculturalist: Elizabeth Greenwood.

Council: East Herts Council.

1.2 Testimonials

1.2.1 I am a Chartered Landscape Architect with over 30 years of experience both in Local Government and in the private sector. My practice is registered with the Landscape Institute. I am also an arboriculturalist, holding the professional diploma in arboriculture. I am a Fellow of the Arboricultural Association.

1.3 Instruction

1.3.1 I have been appointed by Waller Planning to update the tree report on the trees within the boundaries of this site. The original survey was carried out in February 2018.

1.4 Scope

1.4.1 This report is carried out in accordance with BS5837. This document states the following with regard to scope:

'This British Standard gives recommendations and guidance on the relationship between trees and design, demolition, and construction processes.

It sets out the principles and procedures to be applied to achieve a harmonious and sustainable relationship between trees and structures.

The standard is applicable whether or not planning permission is required.' (The British Standards Institution, 2012)

1.4.2 This report is intended to be a working document to be used by the contractor and local authority to ensure the retention of the trees and provide a means of construction for the implementation of the proposed development with minimal disturbance to trees and notable vegetation.

1.4.3. The survey is to take the form of a visual assessment of trees recording their measurement, describing their age, amenity, condition and recommending work. Trees have been plotted on plan and full details of survey work are included in the appendices.

1.4.4. Limitations of this tree survey would include the lack of visibility of every tree owing to dense undergrowth and the presence of climbing plants such as ivy. There may be restrictions to the access within the site or from neighbouring land, and, in the case of trees growing on the boundary of the site only one side of the tree may be visible.

1.4.5. In the case of building within the vicinity of mature trees the owners must be made aware of their responsibility to maintain these trees in a safe condition. Their insurers should be made aware of the implications of the presence of these trees.

- 1.4.6. The report provides some background information on geology and soils; however, it is not within the remit of this commission to provide technical details of the foundations or structural design of the building which would comply with the requirements of building control.

1.5 Background

- 1.5.1. This elongated site stretches from the corner of Chapel Lane and is composed of a stable block with two narrow fields on either side. It is bordered on the northern side by the former railway, now the recreational route of the Cole Green Way. An overgrown hedge and trees form the boundary on the southern boundary with Chapel Lane.
- 1.5.2. A topographical survey has been provided by Chartered Surveyors. The ground levels within the site rise from 60.74 metres above sea level at the extreme eastern part of the site to 70.84 metres on the western boundary. There are no water features or indication of poor drainage.
- 1.5.3. Since the 2018 survey the site has been neglected. The paddocks are rough grassland formerly grazed with encroachment of self-set brambles and sapling with some suckers. Native hedges and wire fencing border the site, with some smaller trees along Chapel Lane, with the larger specimens outside the site boundary within the Cole Green Way. A short section of close boarded fence borders the site to the rear of the stables.
- 1.5.4. A stand of Leyland cypresses has been planted to the west of the entrance to the stables. There is concrete surfacing to the front of the stables, with a fenced garden between this and the road, which served as a dog's graveyard.
- 1.5.5. The trees are currently not protected by a Tree Preservation Order; they are not growing within a Conservation Area and are not protected by any other Planning Legislation. This situation may change and the client is advised to make further inquiries prior to any tree work.
- 1.5.6 Geological Description:
Bedrock Geology: Lewes Nodular and Seaford chalk formation
Superficial Deposits: Lowestoft Formation composed of glacial deposits.
- 1.5.2 Soil
- **Soilscape 9:**
Lime-rich loamy and clayey soils with impeded drainage
 - **Texture:** Clayey, some loamy.
 - **Drainage:** Slightly impeded drainage
 - **Fertility:** High
 - **Habitats:** Base-rich pastures and classic chalky boulder clay ancient woodlands; some wetter areas and lime-rich flush vegetation
 - **Landcover:** Arable some grassland
 - **Carbon:** Low
 - **Drains to:** Stream network.
 - **Water protection:** Land is drained and nitrate vulnerable; potential for rapid pollutant transport; surface capping can trigger sheet erosion of fine sediment to stream network.

1.6 Documentation

1.6.1. The following documents were provided before the commencement of this report:

Topographical survey Chartered Surveyors drawing ASC 18.031
Proposed development provided by Bryant and Moore Architects.

- 21_455_ PL01 Location Plan and block plan
- 21_455_ PL02 Proposed site plan
- 21_455_ PL03 Proposed floor plan
- 21_455_ PL04 Proposed roof plan
- 21_455_ PL05 Proposed elevations
- 21_455_ PL06 Proposed 3D Views
- 21_455_ PL07 Proposed 3D Views

1.6.2. Plans showing the details as outlined in this method statement are included in the appendix to this report (Appendices G, H, and I)

1.7 Survey

- The site was visited on 14 and 24 March 2023
- On the first visit the weather was sunny, on the second visit the conditions were overcast. On both day the temperature was 10 degree and gentle breeze
- With fair to good visibility
- Photographs were taken of the trees, which are included in Appendix A.
- The camera used to take these photographs was a Lumix camera with Leica lens.

2. Tree Survey Criteria

2.1 Outline

2.1.1. Photographs of many of the trees and full details of this tree survey are included on tree survey sheets. (Appendices B and C) The information recorded complies with BS5837:2012, and is outlined as follows: -

- The species (English names), size and position of the trees within the site.
- The majority of large shrubs or trees with stem diameter of less than 150 mm have not been surveyed. According to the British Standard Recommendations. These trees can be transplanted or replaced.
- The dimensions of the trees are the height, and the girth measured at 1.5 metre above ground level. The spread is measured at the four points of the compass, and this is represented on plan. The lowest branch on the trunk is measured from ground level and the crown height is measured from the lowest point of the foliage.
- The maturity is recorded, and details of this classification are included on the tree survey sheets. (e.g., Y = young, SM = semi-mature, EM = early mature, M = mature, OM = over-mature).
- A description of the trees' condition includes any visual defects at the time of the survey. As this survey is conducted from ground level not all defects may be visible, and pathogens may not be apparent because of the season of inspection.
- General recommendations for each tree are outlined, which may need to be reviewed once development proposals are finalized.

- Estimated remaining contribution in years in view of the existing site conditions is classified as (less than 10 years; 10 to 20 years, 20 to 40 years or more than 40 years).
- 2.1.2. Tree survey information has been added to the topographical survey plan and details have been amended for the purpose of this report. Appendix [G].
- 2.1.3. It is important to note that the survey and evaluation of trees is only relevant to site conditions at the time of survey. If there is any change in the site conditions, and especially within the root protection area the trees, the site may need to be re-surveyed, and the potential longevity of the trees re-evaluated. In the event of adverse weather conditions, the survey should be repeated or rescheduled.
- 2.1.4. Regardless of the development proposals there should be regular inspection and monitoring of trees at a frequency dependent on their condition and age. **This tree survey is only valid for a 3-year period from the date of the survey.**

2.2 Guidance

- 2.2.1. British Standard 5837:2012: 'Trees In relation to design, demolition, and construction – Recommendations'.

2.2.2 Categories:

The aim of the guidelines is to provide an assessment of the amenity values of the trees. The recommendations provide four categories in which trees should be placed for assessment purposes. These assessment categories are reproduced in Appendix C, Table 1, "Cascade Chart for Tree Quality Assessment", and simplified as:

- A. Trees of high quality with an estimated remaining life expectancy of at least 40 years
- B. Trees of moderate quality with an estimated remaining life expectancy of at least 20 years.
- C. Trees of low quality, with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter of below 150 mm
- U. Trees which have limited prognosis. 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.

These categories are subdivided into three sub-groups:

- 1. Trees of arboricultural value, good examples of their species or unusual specimens.
- 2. Mainly trees of landscape value, trees which are primarily of visual amenity.
- 3. Trees with mainly conservational value, for example veteran trees.

- 2.2.3 On site site as this is a rural area the native trees are classified predominantly as of conservation interest, as opposed to ornamentals classified purely as screen or landscape

2.2.4. Root Protection Areas:

The British Standard Recommendations 5837:2012 provide a formula for calculating the Root Protection Area (RPA) required to be protected for existing trees that area to be retained.

- For single stem trees, the RPA (see 3.7) should be calculated as an area equivalent to a circle with a radius 12 times the stem diameter. For trees with more than one stem, one of the two calculation methods below should be used. In all cases, the stem diameter(s) should be

measured in accordance with Annex C, and the RPA should be determined from Annex D. The calculated RPA for each tree should be capped to 707 square metres.

- For trees with two to five stems, the combined stem diameter should be calculated as follows:

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

- For trees with more than five stems (not illustrated in Annex C), the combined stem diameter should be calculated as follows: $\sqrt{(mean\ stem\ diameter)^2 \times number\ of\ stems}$

Root protection areas are indicated as a radius on plan. In the event of root restrictions from, for example, deep foundations or a retaining wall, topography, drainage, soil type, soil structure, or soil disturbance the approximate area is represented by a polygon, as dictated by this British Standard.

2.2.5. Protective Fencing and Root Protection:

Within development sites the British Standard recommends that trees are fenced off to ensure the root protection area is not damaged by construction works. In compliance with the British Standards, protective fencing should be erected at the edge of the root protection area. If access is required within this area, then the ground should be protected. Construction techniques using geo-web and geo-textile, in accordance with BS recommendations might be used to minimize damage to trees and enable working space for demolition or construction within the root protection area of trees.

Drainage and service runs need to be identified at this stage to ensure that if new service runs are to be excavated, they should be located outside the root protection zone of existing trees.

Building foundations can be specifically designed to reduce the impact of a building if there is a minor incursion into the root protection area of a tree.

2.2.6. Other Considerations:

In addition, the British Standard takes into account future growth of the crown of the tree, the spatial implications, and its effects on light.

Existing levels within the root protection areas of trees should be retained.

Some tree work might be required to ensure that the crowns of trees are cut back from working space and to provide access for construction vehicles.

There are adequate areas within the site to ensure that handling and storage of materials can be accommodated well outside the root protection areas.

3. Tree Survey

3.1 Summary

3.1.1 A total of 22 individual trees and eight groups of trees have been surveyed. The majority of the trees surveyed are of native origin and probably self-set. Many with ivy growth ascending the crown. Along the boundary with Chapel Lane the trees are of hedgerow origin. Larger specimens of up to 20 metres in height are present along the boundary with Cole Green Way and include some better quality specimens.

2.3.2 Trees on the boundaries of the western field were listed as one field maple (T1) with heavy

- ivy growth. On the northern side along Cole Green Way adjacent to the western paddock there is immature ash (T3) and two trees immature multi-stemmed ash (T3) and cherry (T4).
- 2.3.3. A group of Leyland cypresses (G1) have been planted on the western side of the entrance to the stables, partly to screen the bins from the road. These trees, now sixteen metres high, all are multi-stemmed with poor structure. These conifers are inappropriate ornamental trees in the rural context. On the eastern side of the entrance a line of Leyland cypresses (G2) have been topped, with 6-8 metres trunks, some of which are dead. Both groups of trees are scheduled for removal.
- 2.3.4 In front of the stables the small garden used as a dog's graveyard includes a poor-quality specimen willow (T9) and multi-stem good quality holly (T10) and elder (T11).
- 2.3.5 To the rear of the stables and growing along the boundary with Cole Green Way, are three oaks (T6, T7, and T8). They are all mature and have developed together and are all single stemmed, although the western oak (T6) has low branches close to the ground. They all have ivy ascending their crowns with their lower canopy overhanging the stable's roof. Their root protection area extends up to eight metres into the site.
- 2.3.6 Along this northern boundary and close to the site boundary there is a line of mature oaks and ash trees (T13-T19 and G3) up to 18 metres high with root protection areas of up to 7 metres radius extending into the site. Many have heavy ivy growth, with etiolated form or with crowns suppressed and overhanging the site.
- 2.3.7 Along the southern boundary along Chapel Lane the majority of vegetation consists of overgrown hedge trees. There are groups of ash, elm and field maple (G4); a group of immature ash trees (G5); holly and hawthorn (G6) and a small copse of hawthorn, elm and holly (G7). There is multi-stem field maple (T22) which has one erect stem damaged by wire; this has compromised the condition of this tree.
- 2.3.6 In this rural lane there are native hedges, which should be managed and retained to preserve the integrity of this countryside landscape. The details of the hedges are as follows.

	Hedge Species	height	Spread	Stem girth at base	RPA metres from hedge base	Management
H1	Holly, hawthorn, field maple ivy	6-8 m	2-3 metres	100 mm	Two metres	Face back, gap up and manage as a native hedge - option clip to 2-3 metres
H2	Holly, hawthorn, blackthorn, elder, elm, ivy	6-8	2-3 metres	250 mm	Three metres	Outside site- face back to boundary- reinforce boundary with holly within site boundary
H3	Holly, hawthorn, blackthorn, elder, elm, ivy	4-6 m	2-3 metres	100 mm	Two metres	Face back, gap up and manage as a native hedge - option clip to 2-3 metres remove elm gap up on northern side
H4	Holly, hawthorn, blackthorn, elder, elm, wild rose, ivy	Up to seven metres,	2-3 metres	Up to 100 mm	Two metres	Face back, gap up and manage as a native hedge - option clip to 2-3 metres

3.2 Categories

2.3.1 The British standard categorization has been reproduced in appendix C of this report. Survey has identified the following trees in each category as follows:-

Category	No. trees	Tag number	Species
A	3	T15, T16 and T19	Oaks
B	8	T1, T6, T7, T8, T10, T14, T18, and T23	Field maples, oaks, holly and group of ash, mixed native trees
C	Nine and seven groups of trees	T3, T4, T5, T13, T20, T21, , T20, T22, T24 and G1, G3, G4, G5 G6, G7and G8	Ash, cherry, willow, hawthorn, field maple and group of mixed hedging and elm and seven groups
U	3 and one group of trees	T9, T11, T17 and G2	Willow, elder, ash, and one group of Leyland cypresses
Total	23 and 8 groups of trees		

4. Arboricultural Impact Assessment

4.1 Assessment

- 4.1.1. Although several of the root protection area surrounding trees will require access for construction works, the footprint of the proposals is only within the root protection area of the ash (T13).
- 4.1.2 On the southern side of the double hedge and field maple (T23) underlies the southern section of the footprint of the building.

4.2 Mitigation

- 4.2.1. Although several of the trees will require access for construction works, the footprint of the profit is proposed to recommended that the all areas within the root protection area of tree are fenced off the allow for an average of 2 metre access round the footprint of the building. Within this area ground protection is to be laid in accordance with the BS 5837:2012
- 4.2.2 The foundation details within the RPA of the ash (T13) and field maple (T22) are to be designed to minimise impact on the rooting of these two trees.
- 4.2.3 Summary of Impact- The impact of these proposals and mitigation requirements are summarized in the following table:

No.	Species	Effect	Tree Surgery	Protective Barrier	Mitigation			
					Ground Protection	Construction for Surfacing	Foundation Design	Hand Dig
T6, T7 and T8	Oak	Within footprint of demolished stables and within RPA of construction	Yes	Yes	Yes	Yes	Yes	Yes
T10	Holly	Within RPA of construction	Yes	Yes	Yes	Yes		Yes
T15 and T16	Oak	Within RPA of construction	Yes	Yes	Yes	Yes		Yes
T13	Ash	Footprint within RPA of tree	Yes	Yes	Yes	Yes	Yes	Yes
T23	Field maple	Footprint within RPA of tree	Yes	Yes	Yes	Yes	Yes	Yes
G1 and G2	Leyland cypresses	Within RPA of construction	REMOVE					
G8	Hawthorn mix	Within RPA of construction	Yes	Yes	Yes	Yes		Yes

4.2.4. For details of ground protection further details are outlined in section 5.3.2 .

4.2.5 The incursion of the footprint of the building is analysed potential impact. The incursion of the development into the root protection area of trees and impact of overhanging branches within the development footprint are summarized by the following table:

No.	Species	RPA	Incursion into RPA	% into RPA	Impact
T13	Ash	271	41	15%	Within footprint of new building
T23	Field maple	65	6.5	10%	Within footprint of new building (if the tree is outside the client ownership and cannot be removed)

4.2.6 With careful foundation design the percentage of impact on these two trees is minimal. Further details of foundation design are outlined in section 5.4.2.

5. Arboricultural Method Statement

5.1 General

5.1.1 Issues Considered

Pre-construction works and site clearance:

- Tree protection
- Tree surgery
- Protective fencing
- Methods of ground protection construction during works
- Demolition

Construction works:

- Hand dig
- Foundation design
- Hard surfacing within the root protection area
- Location of underground services
- Contingency plans
- Site supervision

Post- Construction works:

- Removal of protective barrier etc...
- New surfacing
- Remedial works
- Landscape works.

5.2 Tree Works

5.2.1. As part of the application for planning permission the following tree surgery is outlined. All works will be carried out by a fully insured and competent tree surgeon in accordance with BS3889:2010 "Tree Work". The timing of tree surgery should also be carried out in accordance with the Wildlife and Countryside Act and in view of the nesting season of birds within the sites.

5.2.2 Management:

No	Species	Category	Recommendation
T1	Acer campestre (Field Maple)	B3	Sever Ivy. Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 m. Prune tree clear of service wires.
T3	Fraxinus excelsior (Ash)	C3	Sever Ivy. Remove major deadwood. Remove broken/damaged branches. Crown lift to 3 m. Monitor for Ash Dieback disease
T4	Prunus avium (Wild Cherry)	C3	Sever Ivy.
T5	Fraxinus excelsior (Ash)	C3	Cut ivy at base, monitor for ash dieback disease.
T6	Quercus robur (Common Oak)	B3	Remove major deadwood. Remove broken/damaged branches. Crown lift to 3 m. Prune clear of building.
T7	Quercus robur (Common Oak)	B3	Remove major deadwood. Remove broken/damaged branches. Crown lift to 3M. Prune clear of building.
T8	Quercus robur (Common Oak)	B3	Remove major deadwood. Remove broken/damaged branches. Crown lift to 3 M. Prune clear of building.

No	Species	Category	Recommendation
T9	Salix fragilis (Crack Willow)	C2	REMOVE
T10	Ilex aquifolium (Holly)	B3	Face back
T11	Sambucus nigra (Elder)	U	REMOVE
T13	Fraxinus excelsior (Ash)	C3	Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 M. Prune clear of building. Monitor for ash dieback disease
T14	Crataegus monogyna (Hawthorn)	C3	Face back over site
T15	Quercus robur (Common Oak)	A3	Sever Ivy. Carry out further inspection. Carry out aerial inspection. Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 m. Prune clear of building.
T16	Quercus robur (Common Oak)	A3	Sever Ivy. Carry out aerial inspection. Remove major deadwood. Remove broken/damaged branches. Crown lift to am.
T17	Fraxinus excelsior (Ash)	U	Remove major deadwood. Remove broken/damaged branches. Remove decayed stem
T18	Quercus robur (Common Oak)	B3	Sever Ivy. Carry out aerial inspection. Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 m.
T19	Quercus robur (Common Oak)	A3	Sever Ivy. Carry out aerial inspection. Remove major deadwood. Crown lift to 3 m. Crown lift to 5 m.
T20	Fraxinus excelsior (Ash)	C3	Consider hedge management- monitor for ash dieback disease.
T21	Crataegus monogyna (Hawthorn)	C3	Sever Ivy.
T22	Acer campestre (Field Maple)	B3	Sever Ivy. Crown lift to 3 m.
T23	Acer campestre (Field Maple)	B3	Sever Ivy. Crown lift to 3 m Manage as part of hedgeline- if under client's ownership REMOVE as close to the footprint of the building.
T24	Crataegus monogyna (Hawthorn)	C3	Manage as part of hedgeline- if under client's ownership REMOVE as close to the footprint of the building
G1	X Cupressocyparis leylandii (Leyland Cypress)	C2	Consider REMOVAL replacement with native hedge and between quality trees
G2	X Cupressocyparis leylandii (Leyland Cypress)	U	REMOVE
G3	Fraxinus excelsior (Ash)	C3	Sever Ivy. Remove major deadwood. Remove broken/damaged branches. Crown lift to monitor for ash dieback disease
G4	Fraxinus excelsior (Ash), Crataegus monogyna (Hawthorn),Acer campestre (Field Maple),Ulmus procera (English Elm)	C3	remove dead elm- considered management to restore natural hedge with singling out between tree, coppicing hedge and gapping up- layering the hedge would provide the best option. Face back and crown lift over the road. Monitor for ash dieback disease.
G5	Fraxinus excelsior (Ash)	C3	Consider hedge management

No	Species	Category	Recommendation
G6	Crataegus monogyna (Hawthorn), Ilex aquifolium (Holly), Prunus cerasifera (Cherry Plum)	C3	Consider management of hedgeline to restore metre hedge with standard native tree
G7	Ilex aquifolium (Holly), Crataegus monogyna (Hawthorn), Ulmus procera (English Elm)	C3	Consider management etc,
G8	Crataegus monogyna (Hawthorn), Ulmus procera (English Elm)	C3	Consider hedge management to restore nature hawthorn hedge and remove elm

5.3 Tree Protection

5.3.1. Protective Fencing/Protective Barrier

Details of the fencing are shown in the appendices to this report and comply with British Standard recommendations. All weather notices are to be affixed to this fencing with signage "CONSTRUCTION EXCLUSION ZONE – NO ACCESS".

5.3.2. Ground Protection

In the vicinity of the temporary unit working space will mainly be confined to existing hard surfacing. Where additional working space is required for construction within the root protection areas of retained trees, the British Standard specifies the following type of ground protection.

- a) For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geo-textile membrane;
- b) For pedestrian-operated plant up to a gross weight of 2t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geo-textile membrane;
- c) For wheeled or tracked construction traffic exceeding 2t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

5.3.3. Demolition

- a) Prior to demolition the trees and hedges to be retained should be fenced off and ground protection installed within their root protection area.
- b) For the trees along the drive the crown should be faced back to ensure there is clearance under the canopy to remove building materials
- c) All heavy machinery and demolition vehicles should be positioned within the footprint of the building.
- d) No material should be stored under the tree canopies.
- e) All hard surfacing to be removed by hand with care so as not to damage tree roots and stored outside the tree root protection areas.

- f) If temporary surfacing is required, this should be in accordance with ground protection outlined above.

5.4 Methods of Construction for Development

5.4.1. Hand dig

Hand digging will also be required for all works within root protection areas of trees, including removal of surfacing, trenches, excavation for fence post and for cultivation for soft landscape areas. All hand digging within the root protection areas of trees should be supervised by a competent arboriculturalist.

Within root protection areas all excavation should be hand dug. A trench should be hand dug near the trees to ascertain whether roots are present. If roots over 25 mm are found these should, where possible, be bridged, and surrounded by sand- roots under this dimension should be cut to a clean cut and surrounded by sand. No roots are to be left exposed but covered with damp sand or hessian. The surface level of the path may need to be adjusted to retain these roots.

If on investigation of the hand dug trench there are no roots present mechanical excavation may be possible if a banksman is supervising the excavation to ensure that if roots are unearthed, they can be protected and clean cut and surrounded by sand. Hand digging may need to be resumed to complete the excavation.

This would include exploratory excavation by hand for the foundations of the paths and new hard surfacing within the root protection area of the trees.

5.4.2. Foundation design

Methods to mitigate foundations can be designed with virtually non-invasive techniques using a mini pile and above ground beam and raft construction; specialist companies can construct these foundations and are experienced at ensuring tree protection techniques are deployed. By inserting gravel filter medium above ground and below the raft foundation some surface water ground filtration can provide moisture to the underlying tree roots.

Hand dig in area where indicated close to trees to minimize damage to tree roots. This is to ensure that large diameter structural roots are not damaged.

All pile rigs in vicinity of trees are to be positioned within the footprint of the building thus avoiding any damage to nearby trees.

5.4.3. Surfacing within the Root Protection Area

Hand digging will also be required for any excavations. The following measures should also be employed to minimise damage to tree roots.

- a) Minimizing excavation within the root protection area by removing surfacing herbage and laying a geo-textile to stabilize the ground.
- b) Infill any irregularities with 50 mm sharp sand.
- c) On this lay a geo web, depth to be specified by the supplier to accommodate the proposed weight load.
- d) This will be filled with no fine's gravel/stone 20-40mm.
- e) Lay final wearing surface on top of this base- for example permeable paving or porous tarmac.
- f) Use timber edging to avoid excessive excavation to facilitate haunching of edging.

5.4.4. Location of Underground Services

All drainage and below ground services will be designed to avoid tree protection zones. If there is no alternative but to site these within the root protection area of trees, then trenches excavation should be hand dug and comply with 'Hand dug ' as outlined in section 5.1 or the NJUG regulations.

5.4.5. Contingency Plans

If vehicular access is necessary within the root protection zone of any of the trees, in response to chemical spillage, collision or emergency access, the ground will be protected by geo-textile or boarding as outlined in the British Standard. Spillage and ground contamination will be prevented, and preparation of material carried out outside the root protection areas of tree.

5.4.6. Storage of contaminants and mixing of concrete

This must be carried out outside the root protection areas of all trees. The ground should be protected with heavy duty plastic sheeting, e.g. 1200 gauge DPM, with edges secured and raised to prevent spillage and with a raised lip along the access point.

5.4.7 Site Supervision

There will be full supervision on site from the site foreman and tree protection methods will be strictly adhered to. An arboricultural supervision schedule, if required by the local authority, is included in the appendices to this report.

5.5 Post Construction and Landscaping near Trees.

5.5.1. Removal of fencing and ground protection

On completion of works, protective fencing and the ground protection for temporary working space will be removed.

5.5.2. Remedial works and soil improvement

Exposed soils are easily compacted resulting in loss of water and gaseous exchange and leading to root deaths. To relieve ground compaction, which may have resulted from the overrun of vehicles or by storage of materials, the clay soils should be broken up to allow air to penetrate and for the soil structure to be restored.

Within the tree root protection area improve the soil structure by incorporating a compost or mulch within the topsoil, of 75-100 mm in depth. This can be spread over the surface and gently forked into the soil. If bark chip is used as a mulch NPK fertilizer should be added to counteract the nitrogen depletion of the soil. There are options for additives of mycorrhizal fungal which may also improve root function. Ground compaction will be addressed by either lightly forking over the area or by other techniques, for example,

- a) use of a soil auger, puncturing the soil throughout the root system to improve soil aeration.
- b) localized cultivation, e.g., by hand tools or air lances, involving backfilling with loose material;
- c) injecting bursts of compressed gas into the soil to alleviate compaction.

5.5.3. New planting and soft landscape

New planting within the root protection areas of trees should be carried out to avoid mechanical cultivation and for plants to be notch planted. Shrub beds are to be mulched, which, in addition to reducing weed growth, will enhance soil conditions round trees. Within

grass areas, the height of mower blades is to be set above the level of surface tree roots to avoid damage and soil level raised above surface roots with a sandy composition of topsoil

Elizabeth Greenwood C.M.L.I., F. Arbor.A
March 2023

Appendix A: Photographs



Photographs – photos taken on 14 March from the inside of the site. **Above and below left-** the northern side of the site with tree along Cole Green Way. **Above and bottom right-** the southern side along Chapel Lane





Above and below- overgrown hedging along Chapel Lane with several trees, ash, field maple and hawthorn and dead elm- with some prolific ivy growth consider management of the native hedge if under the client ownership





Above and below- trees along the boundary of Cole Green Way, with self seeded trees, several mulberry and with ivy





Above - the three oak trees (9T6, T7 and T8) which are adjacent to the entrance and stables

Below left and centre- the footpath between 25 and 27 Chapel Lane with overgrown hedge and suckers. **Below right**- the group of larger leyland cypresses (G1) on the eastern side of the entrance



Appendix B: Tree Survey Sheets

No	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Comments	Recommendation	RPA radius m	RPA sqm
T1	Acer campestre (Field Maple)	M	457	11	1	B3	3.5	4	4	5	Fair	20+	Unable to inspect stem due to undergrowth. Old hedging stock, partly layered	Sever Ivy. Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 m. Prune tree clear of service wires.	5.48	94.4
T3	Fraxinus excelsior (Ash)	M	764	17	1	C3	5.5	6	5.5	4	Fair	10+	Part of linear group. Unable to inspect stem due to Ivy. Cole Green way, erect form of trunks	Sever Ivy. Remove major deadwood. Remove broken/damaged branches. Crown lift to 3 m. Monitor for Ash Dieback disease	9.17	264
T4	Prunus avium (Wild Cherry)	M	225	11	2	C3	1.5	3.5	4	4.5	Fair	20+	Part of linear group. Leaning South. Unable to inspect stem due to Ivy.	Sever Ivy.	2.7	22.9
T5	Fraxinus excelsior (Ash)	M	225	11	4	C3	2	2.5	2.5	2.5	Fair	20+	Cole Green way, self-set sapling	Cut ivy at base, monitor for ash dieback disease.	2.7	22.9

No	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Comments	Recommendation	RPA radius m	RPA sqm
T6	Quercus robur (Common Oak)	M	685	19		B3	8.5	4.2	8	9	Good	40+	Part of linear group. Unable to inspect stem due to Ivy. Unbalanced crown shape. Cole Green Way- Group of three, low branching	Remove major deadwood. Remove broken/damaged branches. Crown lift to 3 m. Prune clear of building.	8.22	212
T7	Quercus robur (Common Oak)	M	625	19	3	B3	7.5	4.5	7.5	5.6	Good	40+	Part of linear group. Unable to inspect stem due to Ivy. Unbalanced crown shape. Cole Green Way	Remove major deadwood. Remove broken/damaged branches. Crown lift to 3M. Prune clear of building.	7.5	177
T8	Quercus robur (Common Oak)	M	750	21.5	3.5	B3	8.5	11	9	4.5	Good	40+	Part of linear group. Unable to inspect stem due to Ivy. Broken branches in crown. Unbalanced crown shape. Cole Green Way	Remove major deadwood. Remove broken/damaged branches. Crown lift to 3 M. Prune clear of building.	9	255

No	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Comments	Recommendation	RPA radius m	RPA sqm
T9	Salix x chrysocoma (weeping willow)	EM	250	1	1.5	C2	5.5	3.8	4	3.5	Fair	10+	top grafted, impaired form	REMOVE	3	28
T10	Ilex aquifolium (Holly)	M	310	1	0	B3	3.75	3.5	2.8	3	Good	40+	ivy- low branched	Face back	3.72	43.5
T11	Sambucus nigra (Elder)	M				U							poor multi-stem shrubby tree-Not re-surveyed	REMOVE		
T13	Fraxinus excelsior (Ash)	M	774	17	3	C3	7	6.3	6	7.5	Fair	20+	Stem divides below 1.5 m. Included bark present in fork. Cole Green Way	Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 M. Prune clear of building. Monitor for ash dieback disease	9.29	271
T14	Crataegus monogyna (Hawthorn)	M	300	7	1	C3	3.4	2.6	3	2.8	Fair	20+	Part of linear group. Leaning East. Unable to inspect stem due to Ivy. Stem divides below 1.5 m.	Face back over site	3.6	40.7

No	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Comments	Recommendation	RPA radius m	RPA sqm
T15	Quercus robur (Common Oak)	M	575	18	4	A3	4.8	4	4	4.6	Good	40+	Part of linear group. Unable to inspect stem due to Ivy. Lowest branch removed over the site	Sever Ivy. Carry out further inspection. Carry out aerial inspection. Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 m. Prune clear of building.	6.9	150
T16	Quercus robur (Common Oak)	M	450	18	4	A3	7.5	2.5	5.5	6.5	Good	40+	Unable to inspect stem due to Ivy. Crown distorted due to group pressure.	Sever Ivy. Carry out aerial inspection. Remove major deadwood. Remove broken/damaged branches. Crown lift to am.	5.4	91.6
T17	Fraxinus excelsior (Ash)	M	506	18	7	U	4.7	3.5	6	5	Fair	10+	Fungal brackets visible on stem. Stem divides below 1.5m.in.	Remove major deadwood. Remove broken/damaged branches. Remove decayed stem	6.07	116

No	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Comments	Recommendation	RPA radius m	RPA sqm
T18	Quercus robur (Common Oak)	M	400	11	1.5	B3	6	5.3	5	3.3	Fair	20+	Poor shape & form. Part of linear group. Stunted. Unable to inspect stem due to Ivy.	Sever Ivy. Carry out aerial inspection. Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 m.	4.8	72.4
T19	Quercus robur (Common Oak)	M	600	18.5	2	A3	6	5.5	5	3.5	Good	40+	Part of linear group. Unable to inspect stem due to Ivy.	Sever Ivy. Carry out aerial inspection. Remove major deadwood. Crown lift to 3 m. Crown lift to 5 m.	7.2	163
T20	Fraxinus excelsior (Ash)	SM	250	15	1	C3	3.5	4	4	3	Fair	20+	Part of linear group. Unable to inspect stem due to Ivy. Unable to inspect stem due to undergrowth. Overhead wire through crown- 5 multi stem trees.	Consider hedge management-monitor for ash dieback disease.	3	28.3

No	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Comments	Recommendation	RPA radius m	RPA sqm
T21	Crataegus monogyna (Hawthorn)	M	250	10.7	2	C3	3	2	2.6	2	Fair	20+	Unable to inspect stem due to Ivy.	Sever Ivy.	3	28.3
T22	Acer campestre (Field Maple)	M	425	13	3	B3	4.5	3.5	4.7	3	Good	20+	Part of linear group. Unable to inspect stem due to Ivy. Unable to inspect stem due to undergrowth.	Sever Ivy. Crown lift to 3 m.	5.1	81.7
T23	Acer campestre (Field Maple)	M	159, 185, 299, 120,1180	10	2.5	B3	3	3.5	4	4	Good	29	Part of linear group. Unable to inspect stem due to Ivy. Unable to inspect stem due to undergrowth.	Sever Ivy. Crown lift to 3 m Manage as part of hedgeline- if under client's ownership removal as close to the footprint of the building.	4	
T24	Crataegus monogyna (Hawthorn)	M	300	11	2	C3	2.5	3	2.5	2.5	Fair	20+	Part of linear group. Multiple stems at ground level.	Manage as part of hedgeline- if under client's ownership removal as close to the footprint of the building	3.6	40.7

No	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Comments	Recommendation	RPA radius m	RPA sqm
G1	X Cupressocyparis leylandii (Leyland Cypress)	M	640	16	1	C2	C2	3.5	4	5.6	Fair	20+	Part of linear group. Stem divides below 1.5 m. Line of overgrown leyland cypress- not appropriate for this location some multi-stem with tight forks.	Consider REMOVAL replacement with native hedge and between quality trees	7.68	185
G2	X Cupressocyparis leylandii (Leyland Cypress)	SM	350	7	0	U	1.75	1	3.5	1	Poor	<10	Poor shape & form. Part of linear group. Spindly. Have been lopped with trunks at 6 metres	REMOVE	4.2	55.4

No	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Comments	Recommendation	RPA radius m	RPA sqm
G3	Fraxinus excelsior (Ash)	OM	1126	18	1	C3	7.5	5.5	6	4.5	Fair	20+	Part of linear group. Stem divides below 1.5m.in. Multiple stems at ground level. Included bark present in fork. Crown distorted due to group pressure. No 3 large multi-stem tree with smaller sapling- self set along Cole Green Way several with ivy ascending the crown	Sever Ivy. Remove major deadwood. Remove broken/damaged branches. Crown lift to monitor for ash dieback disease	13.51	573

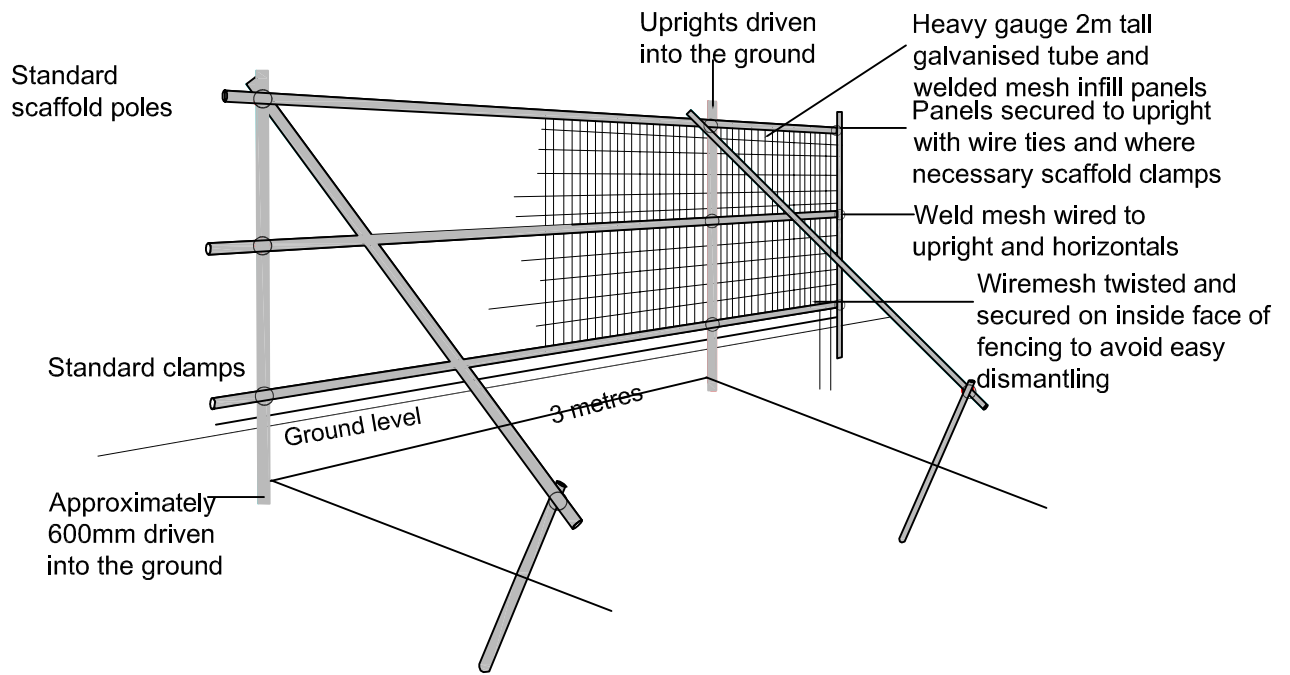
No	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Comments	Recommendation	RPA radius m	RPA sqm
G4	Fraxinus excelsior (Ash), Crataegus monogyna (Hawthorn), Acer campestre (Field Maple), Ulmus procera (English Elm)	SM	671	16	0	C3	4.5	2.5	4.5	2.5	Fair	10+	Part of linear group. Unable to inspect stem due to undergrowth. Overgrown hedging t stock with sapling trees etiolated from and hawthorn	remove dead elm- considered management to restore natural hedge with singling out between tree, coppicing hedge and gapping up- layering the hedge would provide the best option. Face back and crown lift over the road. Monitor for ash dieback disease.	8.05	204
G5	Fraxinus excelsior (Ash)	SM	250	15	1	C3	3.5	4	4	3	Fair	20+	Part of linear group. Unable to inspect stem due to Ivy. Unable to inspect stem due to undergrowth. Overhead wire through crown- 5 multi stem trees.	Consider hedge management	3	28.3

No	Species	Age	Stem girth	Height	Lowest branch	Category	North	East	South	West	Condition	Life span	Comments	Recommendation	RPA radius m	RPA sqm
G6	Crataegus monogyna (Hawthorn), Ilex aquifolium (Holly), Prunus cerasifera (Cherry Plum)	M	433	7	0	C3	2.5	2	2	2.7	Fair	20+	Part of linear group. Unable to inspect stem due to Ivy. Stem divides below 1.5 m. old hedging stock with several tree	Consider management of hedgeline to restore metre hedge with standard native tree	5.2	85
G7	Ilex aquifolium (Holly), Crataegus monogyna (Hawthorn), Ulmus procera (English Elm)	M	433	14	0	C3	5	5	6.5	5	Fair	20+	Part of linear group. Unable to inspect stem due to Ivy. Unable to inspect stem due to undergrowth.	Consider management etc,	5.2	85
G8	Crataegus monogyna (Hawthorn), Ulmus procera (English Elm)	M	433	10	0	C3	3.5	3	3.5	3	Fair	10+	Part of linear group. Unable to inspect stem due to undergrowth. Dead elm with old hedgerow hawthorns	Consider hedge management to restore nature hawthorn hedge and remove elm	5.2	85

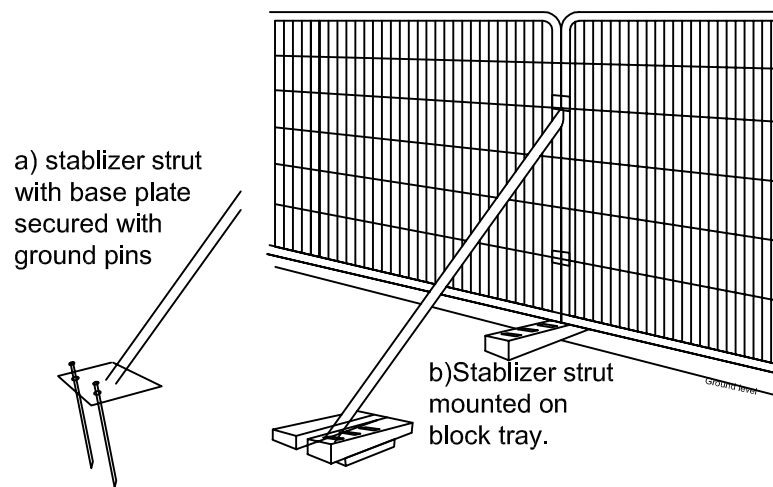
Appendix C: Copy of BS5837:2012 Table 1 “Cascade Chart for Tree Quality Assessment”

Category	Criteria			Identification on plan (RAB subject to legibility of the plan)
Category U (Formerly 'R')				
Those in such conditions 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 as that their early loss is expected due to collapse including those that will become unviable after removal of other category U trees (e.g. Where for whatever reason, the loss of companion shelter cannot be mitigated by pruning.) Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. Trees infected with pathogens of significance to the health and/or so safety p of other trees nearby, or very low quality trees suppressing adjacent trees of better quality potential conservation value which might be desirable to preserve NOTE Category U trees can have existing or			Dark red (RAB 127-000-000)
Trees to consider for retention				
	1. Mainly arboricultural qualities	2. Mainly landscape qualities	3. Mainly Conservation qualities	
Category A				
Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; those that are essential components of groups or formal or semi-formal arboricultural features. (e.g., The dominant and/or principal trees within an e avenue	Trees, groups or woodlands or particular visual importance as arboricultural and /or landscape features	Trees, group or woodlands of significant conservation , commemorative or other value (/e.g. Veteran trees or wood pasture)	Light Green (RAB 000-255-000)
Category B				
Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but downgraded because of impaired cons conditions (e.g. Presence of significant though remediable defects, including unsympathetic past management and storm damage) such as that they are unlikely to be suitable for retention beyond 40 years; or trees lacking the special quality necessary to merit category A designation	Tree present in numbers, usually growing in groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collections but situated a so as to make little visual contribution to the wider locality	Trees with materials conservation or other cultural c value	Mid blue (RAB -000-000-255)
Category C				
Trees of low quality , with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter of below 150 mm	Unremarkable trees of limited merit such 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 great collective landscape value; and/or tree offering low or only temporary/transient landscape benefits	Trees with no materials conservation or other cultural value	Grey (Rab 091-091-091)

Appendix D: Protective barrier/ fencing



**Copy of BS 5837:2012 Figure 2 (above) and Figure 3 (below)
Protective barrier, examples of above ground stabilizing
systems (for Heras type fencing) Total height 2.4metres
NOT TO SCALE**



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<p>Scheme <i>BS5837:2012</i></p>	<p>Date <i>October 2017</i></p>
<p>Title <i>Copy of Protective Barrier / Fencing</i></p> <p>Scale <i>Drawings not to scale</i></p>	<p>Drawn by <i>E.J.G</i></p> <p>Job No</p>
<p>Elizabeth Greenwood C.M.L.I., F.Arbor.A. 10 Knight Street, Sawbridgeworth, Herts, CM21 9AT. Tel 01279 722381 mobile 07746867402, email ms.ejgreenwood@gmail.com</p>	<p>Drg No <i>Appendix D</i></p>

Appendix E: Geo-web



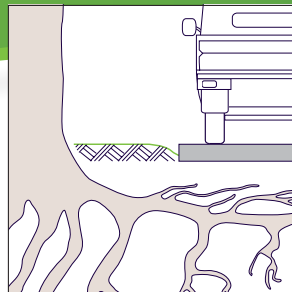
GEOSYSTEMS®



GOWEB®

TREE ROOT PROTECTION (TRP) SYSTEM

Powered by GEOSYSTEMS® technology.



defining **green** in cellular confinement

THE PROBLEM

CONSTRUCTION-RELATED TREE DAMAGE

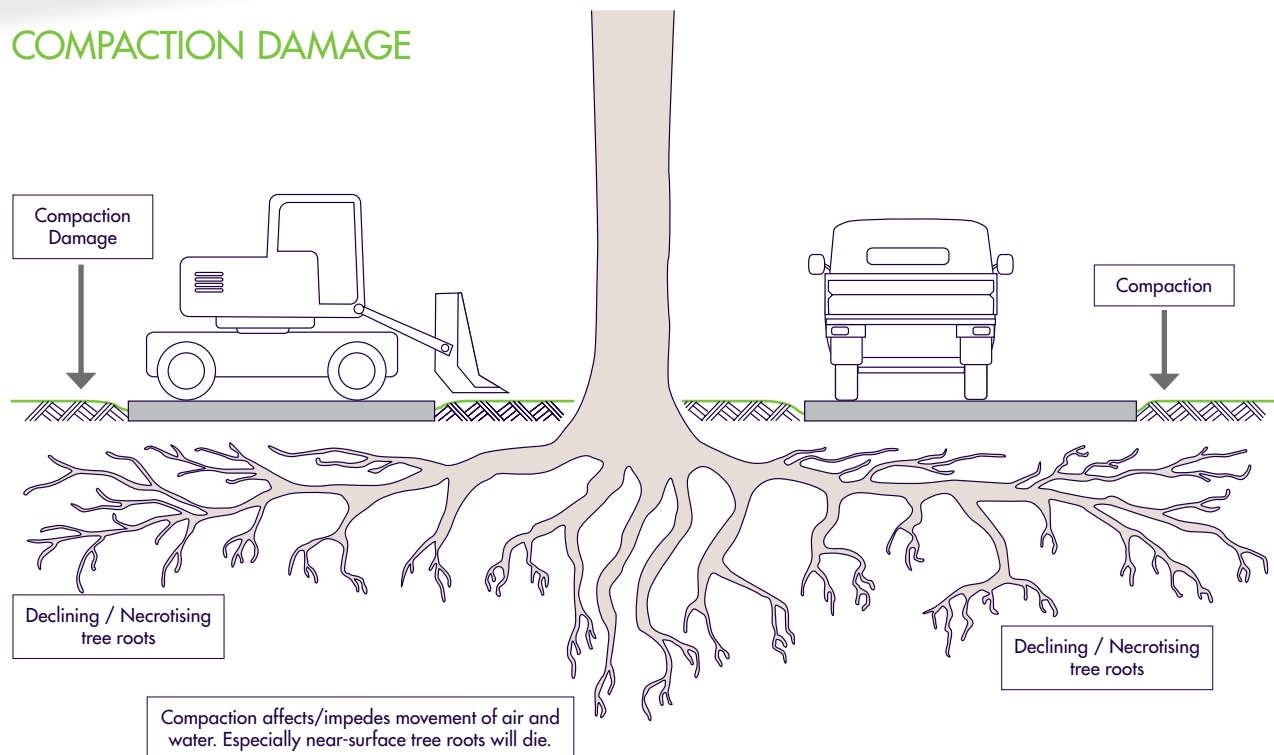
Critical Root Zone/Tree Protection Zone is the minimum area beneath a tree that must remain undisturbed to preserve a sufficient amount of root mass in order to give a tree a chance of survival.

When construction equipment and vehicles intrude a tree's Critical Root Zone, they can cause negative impacts to the soil environment including compaction of the soil, damage to near-surface roots and ultimately endanger the structural integrity of the tree. The majority of a tree's root system is contained within the top three feet of the surface, and construction excavation and compaction can damage or even destroy roots to the point where trees may not survive.

Tree Root Protection (TRP) systems should be eco-friendly as well as comply with local standards and regulations.



COMPACTION DAMAGE



THE GEOWEB® SOLUTION

TREE ROOT PROTECTION (TRP) SYSTEM

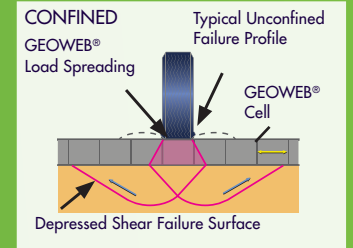
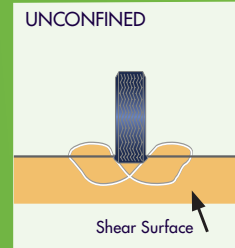


Used extensively in civil engineering construction for over 30 years, the GEOWEB® system is a three-dimensional structure that:

- 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.



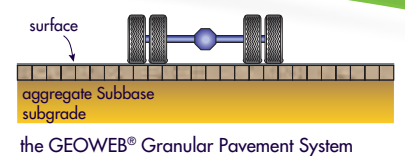
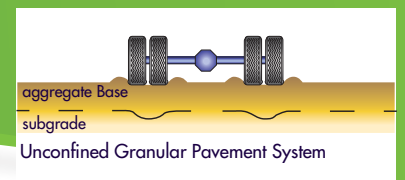
LOAD DISTRIBUTION

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.

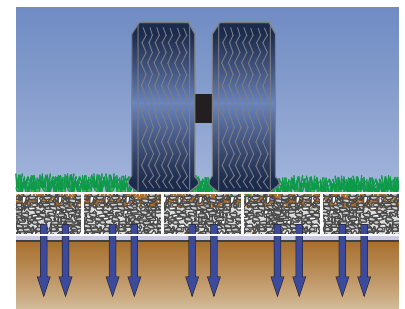


ENVIRONMENTAL BENEFITS

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.



GEOWEB®

TRP SYSTEM INSTALLATION

Step 1: Remove the upper grass and soft soils by hand or by machine if acceptable.

Step 2: Install a high-strength woven geotextile allowing adequate drainage as a separation layer between soft subgrade and GEOWEB® infill material.

Step 3: Expand GEOWEB® sections over the area to be protected and use temporary stakes or weights to hold sections open to prevent movement during infilling.

Step 4: Connect adjacent sections using ATRA® Keys. Position the sections so the slots are aligned, insert the key and turn 90 degrees locking the panels together. ATRA® Keys provide a long-term connection that is safer, quicker and stronger than staples or cable ties. In environmentally protected areas, ATRA® Keys can be used without the requirement for diesel-fueled compressors.

Step 5: For permeability, infill the fully connected GEOWEB® system with a well-graded, 25mm – 50mm granular, non-frost-susceptible quarried rock with no fines. Overfill by up to 50mm to allow for compaction.

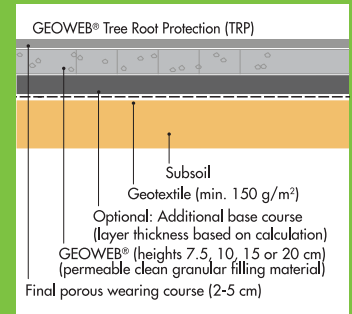
Step 6: Compact the fill material with conventional plant or non-vibratory plant when required. Fill should be maintained above the GEOWEB® system by a minimum of 10mm at all times or a permanent wearing course of blocks, porous asphalt or gravel installed.



DESIGN CONSIDERATIONS

It is important to ensure the correct GEOWEB® cell size and cell depth are specified and installed based on the anticipated pavement loads. These are calculated based on the following criteria:

- traffic type and loading
- frequency of traffic
- subgrade strength (typically CBR, Ev2, Cu or SPT values)
- infill type
- allowable settlement of the pavement



To assist you in determining the correct GEOWEB® solution for your application, Presto GEOSYSTEMS® or their network of distributors/representatives can assist with the calculation for your project. You can be confident that you will receive the most suitable and economical solution for your project.

PRESTO GEOSYSTEMS® COMMITMENT — To provide the highest quality products and solutions.

Presto GEOSYSTEMS® is committed to helping you apply the best solutions for your tree root protection needs. Our solutions-focused approach to solving problems adds value to every project. Rely on the leaders in the industry when you need a solution that is right for your application. Contact Presto GEOSYSTEMS® or our worldwide network of knowledgeable distributors/representatives for assistance.



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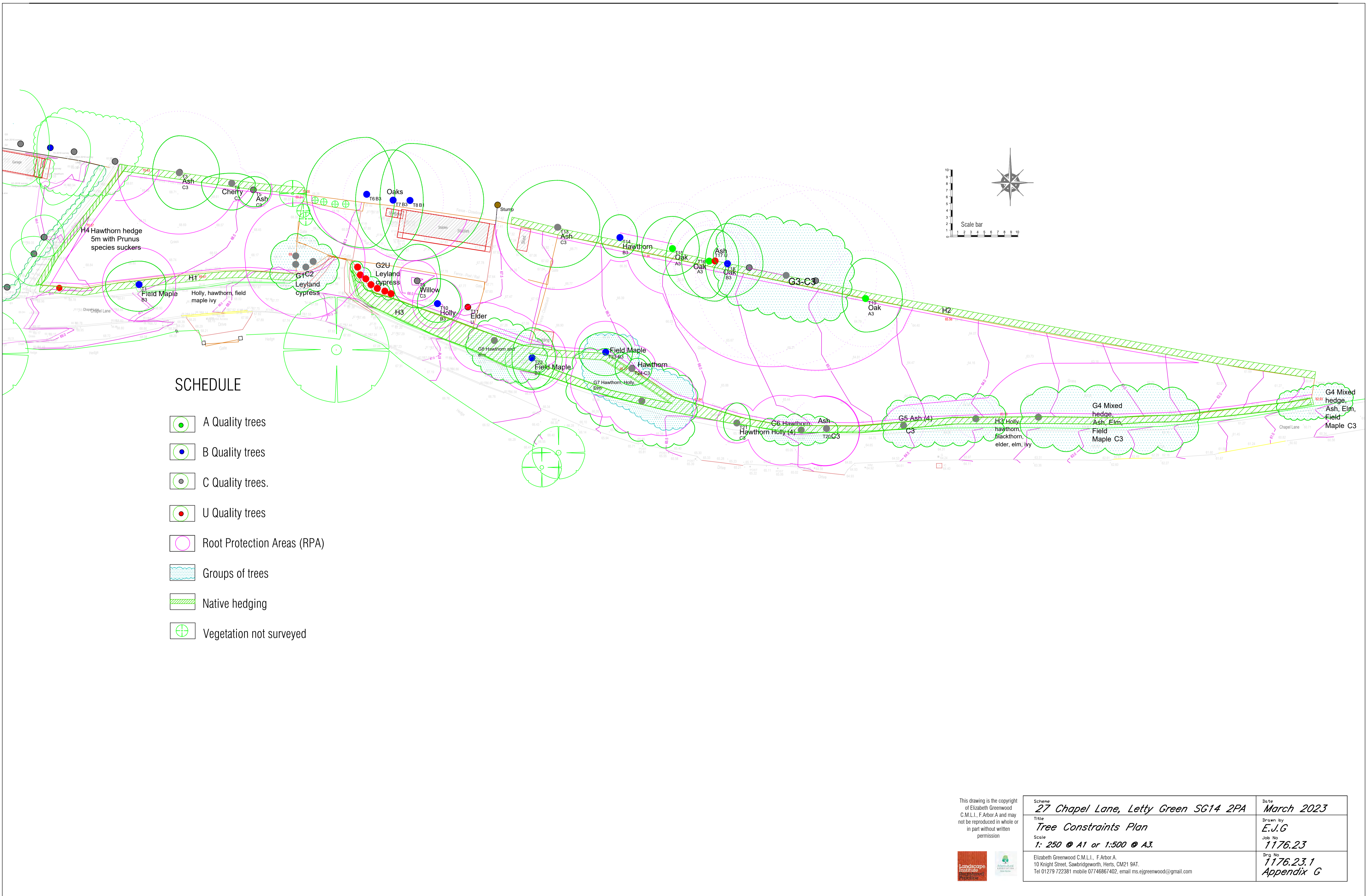
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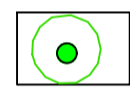
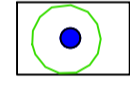
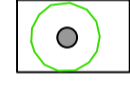
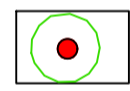
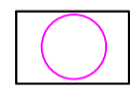
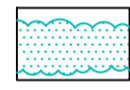
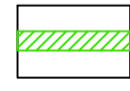
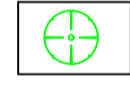
Appendix F: Indicative Arboricultural Supervision

Item	*Site Supervision Visit Number	Estimated Timing	Inspection	Date of Visit
<p>Meet site foremen and discuss works and program. Setting out site and protective fencing, ground protection- site organization.</p>	<p>Visit One</p>	<p>Prior to site clearance and demolition</p>	<p>1. Carry out tree removal and tree surgery and listed 2. Fence off all trees to be retained prior to demolition and site work 3. Provide and insert ground protection for the duration of construction works</p>	
<p>Setting out building, foundation excavation, trenches</p>		<p>Prior to construction</p>	<p>4. Carry out demolition and site clearance 5. Set up site working area</p>	
<p>Excavations/ changes of soil levels— and foundation and positioning of pile drivers’ details- inspect</p>	<p>Visit two</p>	<p>During construction</p>	<p>6. Carry out construction 7. HAND DIG for all excavations within the RPA of trees 8. For new surfacing insert ground protection as above for use of site works</p>	
<p>On completion- removal of tree protection, planting and remedial works- removal</p>		<p>Post completion</p>	<p>9. On completion of works remove protective fencing and ground protection 10. Carry out remedial works as listed prior to landscape works 11. Carry out landscape works</p>	

Appendix G: Plan 1176.23.1 Tree Constraints Plan



SCHEDULE

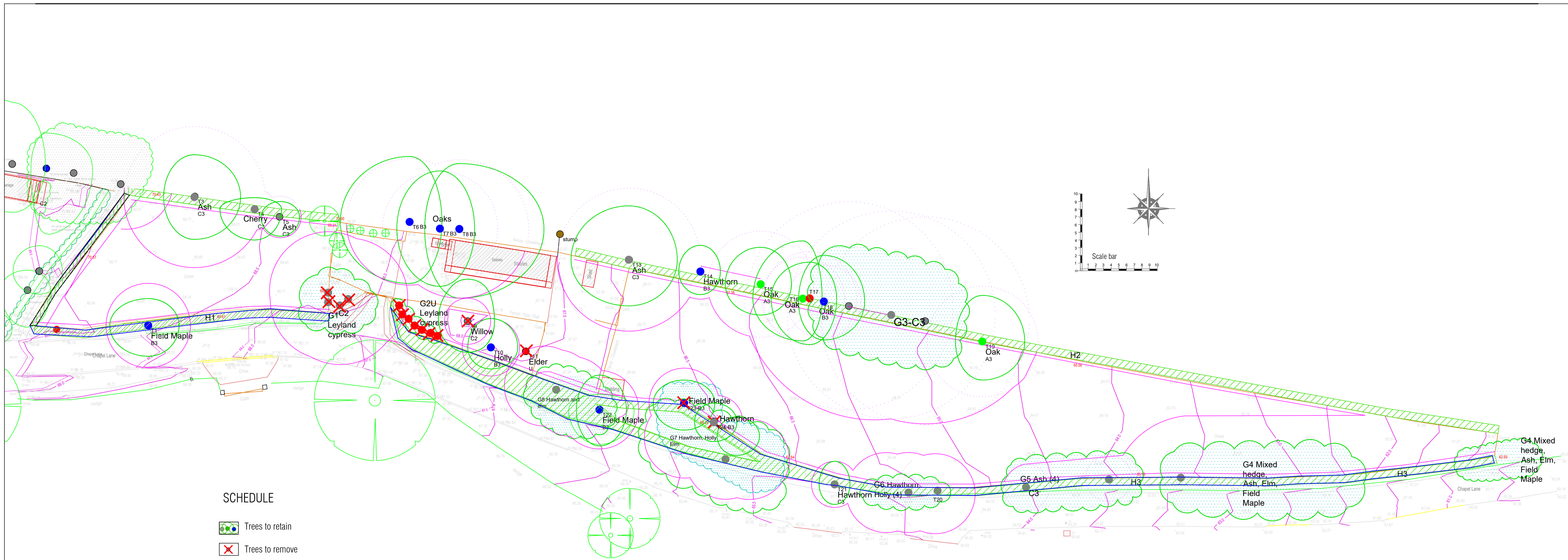
-  A Quality trees
-  B Quality trees
-  C Quality trees.
-  U Quality trees
-  Root Protection Areas (RPA)
-  Groups of trees
-  Native hedging
-  Vegetation not surveyed

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



Scheme 27 Chapel Lane, Letty Green SG14 2PA	Date March 2023
Title Tree Constraints Plan	Drawn by E.J.G
Scale 1: 250 @ A1 or 1:500 @ A3.	Job No 1176.23
Elizabeth Greenwood C.M.L.L., F.Arbor A 10 Knight Street, Sawbridgeworth, Herts, CM21 9AT. Tel 01279 722381 mobile 07746867402, email ms.ejgreenwood@gmail.com	Drwg No 1176.23.1 Appendix G



Appendix H: Plan 1176.23.2 Tree Surgery and Removal Plan



SCHEDULE

-  Trees to retain
-  Trees to remove
-  Root protection areas
-  Consider management of hedge and boundary planting

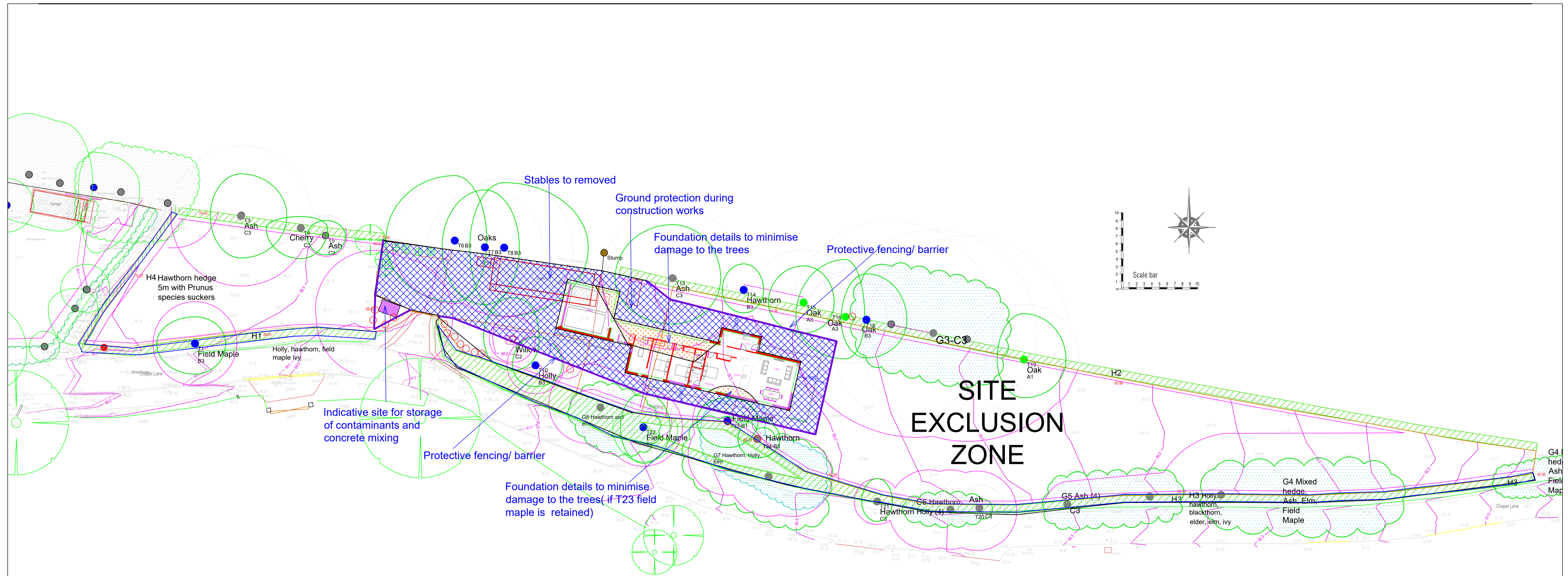
No	Species	Category	Recommendation
T1	Acer campestre (Field Maple)	B3	Sever Ivy. Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 m. Prune tree clear of service wires.
T3	Fraxinus excelsior (Ash)	C3	Sever Ivy. Remove major deadwood. Remove broken/damaged branches. Crown lift to 3 m. Monitor for Ash Dieback disease
T4	Prunus avium (Wild Cherry)	C3	Sever Ivy.
T5	Fraxinus excelsior (Ash)	C3	Cut ivy at base, monitor for ash dieback disease.
T6	Quercus robur (Common Oak)	B3	Remove major deadwood. Remove broken/damaged branches. Crown lift to 3 m. Prune clear of building.
T7	Quercus robur (Common Oak)	B3	Remove major deadwood. Remove broken/damaged branches. Crown lift to 3M. Prune clear of building.
T8	Quercus robur (Common Oak)	B3	Remove major deadwood. Remove broken/damaged branches. Crown lift to 3 M. Prune clear of building.
T9	Salix fragilis (Crack Willow)	C2	REMOVE
T10	Ilex aquifolium (Holly)	B3	Face back
T11	Sambucus nigra (Elder)	U	REMOVE
T13	Fraxinus excelsior (Ash)	C3	Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 M. Prune clear of building. Monitor for ash dieback disease
T14	Crataegus monogyna (Hawthorn)	C3	Face back over site
T15	Quercus robur (Common Oak)	A3	Sever Ivy. Carry out further inspection. Carry out aerial inspection. Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 m. Prune clear of building.
T16	Quercus robur (Common Oak)	A3	Sever Ivy. Carry out aerial inspection. Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 m.
T17	Fraxinus excelsior (Ash)	U	Remove major deadwood. Remove broken/damaged branches. Remove decayed stem
T18	Quercus robur (Common Oak)	B3	Sever Ivy. Carry out aerial inspection. Remove major deadwood. Remove broken/damaged branches. Crown lift to 5 m.
T19	Quercus robur (Common Oak)	A3	Sever Ivy. Carry out aerial inspection. Remove major deadwood. Crown lift to 3 m. Crown lift to 5 m.
T20	Fraxinus excelsior (Ash)	C3	Consider hedge management- monitor for ash dieback disease.

No	Species	Category	Recommendation
T21	Crataegus monogyna (Hawthorn)	C3	Sever Ivy.
T22	Acer campestre (Field Maple)	B3	Sever Ivy. Crown lift to 3 m.
T23	Acer campestre (Field Maple)	B3	Sever Ivy. Crown lift to 3 m Manage as part of hedgeline- if under clients ownership remove as close to the footprint of the building.
T24	Crataegus monogyna (Hawthorn)	C3	Manage as part of hedgeline- if under clients ownership REMOVE as close to the footprint of the building
G1	X Cupressocyparis leylandii (Leyland Cypress)	C2	Consider REMOVAL replacement with native hedge and between quality trees
G2	X Cupressocyparis leylandii (Leyland Cypress)	U	REMOVE
G3	Fraxinus excelsior (Ash)	C3	Sever Ivy. Remove major deadwood. Remove broken/damaged branches. Crown lift to monitor for ash dieback disease
G4	Fraxinus excelsior (Ash), Crataegus monogyna (Hawthorn), Acer campestre (Field Maple), Ulmus procera (English Elm)	C3	remove dead elm- considered management to restore natural hedge with singling out between tree, coppicing hedge and gapping up- layering the hedge would provide the best option. Face back and crown lift over the road. Monitor for ash dieback disease.
G5	Fraxinus excelsior (Ash)	C3	Consider hedge management
G6	Crataegus monogyna (Hawthorn), Ilex aquifolium (Holly), Prunus cerasifera (Cherry Plum)	C3	Consider management of hedgeline to restore metre hedge with standard native tree
G7	Ilex aquifolium (Holly), Crataegus monogyna (Hawthorn), Ulmus procera (English Elm)	C3	Consider management etc.
G8	Crataegus monogyna (Hawthorn), Ulmus procera (English Elm)	C3	Consider hedge management to restore nature hawthorn hedge and remove elm



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Elizabeth Greenwood C.M.L.L., F.Arbor A 10 Knight Street, Sawbridgeworth, Herts, CM21 9AT. Tel 01279 722381 mobile 07746867402, email ms.ejgreenwood@gmail.com			

Appendix I: Plan 1176.23.3 Tree Protection Plan



Ground Protection

In the vicinity of the temporary unit working space will mainly be confined to existing hard surfacing. Where additional working space is required for construction within the root protection areas of retained trees, the British Standard specifies the following type of ground protection.

a) For pedestrian movements only, a single thickness of scaffold boards placed either on top of a driven scaffold frame, so as to form a suspended walkway, or on top of a compression-resistant layer (e.g. 100 mm depth of woodchip), laid onto a geo-textile membrane;

b) For pedestrian-operated plant up to a gross weight of 2 t, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150 mm depth of woodchip), laid onto a geo-textile membrane;

c) For wheeled or tracked construction traffic exceeding 2 t gross weight, an alternative system (e.g. proprietary systems or pre-cast reinforced concrete slabs) to an engineering specification designed in conjunction with arboricultural advice, to accommodate the likely loading to which it will be subjected.

Hand dig

Hand digging will also be required for all works within root protection areas of trees, including removal of surfacing, trenches, excavation for fence post and for cultivation for soft landscape areas. All hand digging within the root protection areas of trees should be supervised by a competent arboriculturalist.

Within root protection areas all excavation should be hand dug. A trench should be hand dug near the trees to ascertain whether roots are present. If roots over 25 mm are found these should, where possible, be bridged, and surrounded by sand- roots under this dimension should be cut to a clean cut and surrounded by sand. No roots are to be left exposed but covered with damp sand or hessian. The surface level of the path may need to be adjusted to retain these roots.

If on investigation of the hand dug trench there are no roots present mechanical excavation may be possible if a banksman is supervising the excavation to ensure that if roots are unearthed they can be protected and clean cut and surrounded by sand. Hand digging may need to be resumed to complete the excavation.

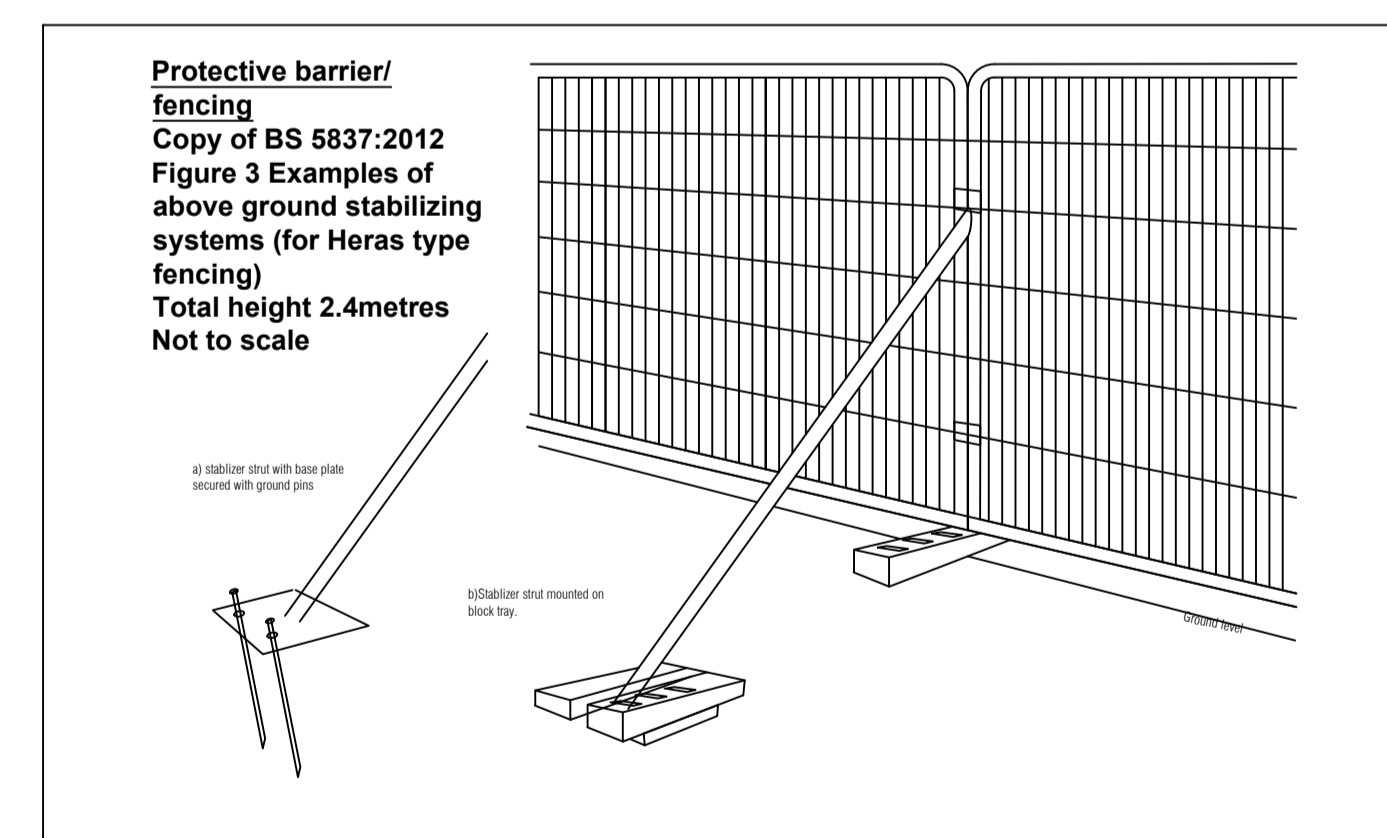
This would include exploratory excavation by hand for the foundations of the paths and new hard surfacing within the root protection area of the trees

Method of working

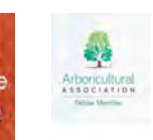
- Fencing off the trees as marked on plan with Heras style fencing in accordance with British standard.
- Lay ground protection where required ground protection
- Hand dig within RPA of trees
- Continue with site works as agreed with the LPA, within the area marked site construction area and exclude any works from the SITES EXCLUSION ZONES.
- On completion of works remove ground protection and protective fencing and carry out additional remedial works.
- Cultivated by hand for all soft landscape works within the root protection areas of trees
- Monitor the condition of trees an annual basis

SCHEDULE

- Stables
- New build
- Trees to retain
- Trees to remove
- Root protection areas
- Protective /barrier fencing
- Ground protection & new surfacing
- Hand dig- foundation design
- Concrete mixing and storage of contaminants
- Option- Management of native hedge



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