**29 Broadwater Road, Welwyn. Herts AL7 3BQ**

# PART 1 BS5837 TREE SURVEY, PART 2 INDICATIVE ARBORICULTURAL IMPACT ASSESSMENT AND METHOD STATEMENT.

**Demolition of the existing unit and proposed new residential development - updated March 2024**

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# Contents

***Summary***

*This is an updated arboricultural report, and although the trees remain in a similar condition to the previous 2019 report, the building has since been removed, with soil stripping extending into the root protection areas of the line of protected trees. Mitigation is recommended to improve the conditions of these boundary trees.*

# 1. Introduction

## 1.1 Contacts

- **Client:** Hightown Housing Association
- **Architect- McBains**
- **Arboriculturalist:** Elizabeth Greenwood.
- **Council:** Welwyn Hatfield 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 Hightown Housing Association to update the 2019 tree survey. The buildings have been demolished with greater access to the trees along the eastern boundary.

1.3.2 The proposal is for development of the site for housing, with the construction of a Horseshoe shaped blocks of 4 storey flats e with a central courtyard facing southwards.

## 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 for technical details of the foundations or structural design of the building which would comply with the requirements of building control. aware of the implications of the presence of these trees.

## 1.5 Background

1.5.1. The former existing office building occupied the front of the site with a grass verge along the road planted with specimen trees. To the rear there was formerly a car park which is bordered on the eastern side by a strip of planting and woodland. With the building now demolished, with the exception of the hole once housing the basements, the site is relatively flat and covered with material of gravel composition.

1.5.2. The topographical survey shows the ground levels are between 84 to 85 metres on a relatively flat site.

1.5.3. A wide grass verge borders the road. Soil has been stripped along this eastern boundary extending into the root protection area of some of the trees.

1.5.4. Several of the trees appear to predate the industrial development of the site which include the two crack willows. The sycamores may have been self-seeded with field maples possibly originating as hedging stock.

1.5.5. Welwyn Hatfield Council Tree Preservation Order titled 'Land adjoining car park off Peartree Lane & Broadwater Road Welwyn' number 780 and a dated 2018. The strip of planting to the rear of the car park is within the area marked G2, which is listed as 'Trees G2 Poplar, willow, lime, acers sp. maple, alder and hawthorn'. The number of trees protected is not given in this listing (See Appendix A)

1.5.6. Other trees within the site 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.

1.5.7. The site boundary along the road frontage has not been defined, and the client is advised to clarify the site boundary as the trees growing along Broadwater Road may be outside the client's ownership.

1.5.8 Geological Description:
**Bedrock Geology:** Lewes Nodular and Seaford Chalk Formation
**Superficial Deposits:** the property lies on the Kesgrave formation of sands and gravels.

1.5.9 Soil

- **Soilscape 6:**
  Freely draining slightly acid loamy soils.

- **Texture:** Loamy.
- **Drainage:** Freely draining
- **Fertility:** Low
- **Habitats:** Neutral and acid pastures and deciduous woodlands; acid communities such as bracken and gorse in the uplands
- **Carbon:** Low
- **Drains to:** Stream network.
- **Water protection:** Groundwater contamination with nitrate; siltation and nutrient enrichment of streams from soil erosion on certain of these soils

## 1.6 Documentation

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

- Topographical Survey drawing has been provided by Norman Stangroome Associates Drwg No 1263/1
- Welwyn Hatfield Council Tree Preservation Order titled 'Land adjoining car park off Peartree Lane & Broadwater Road Welwyn Garden City' number 780 (2018)
- McBains site layout

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 8 March 2024
- Clear skies, sunny 9 degrees and light breeze
- With good visibility
- Photographs were taken of the trees, which are included in Appendix A.
- The camera used to take these photographs was a Panasonic Lumix DC-TZ90 digital camera, with an 6.4-129 mm lens, and Samsung phone camera.

# 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 plan and details have been amended for the purpose of this report. Appendix [H].

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 D, 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. 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.

**2.2.4. 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.

**2.2.5. 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 13 individual trees and four groups of trees have been surveyed. Of these the five fastigiate oaks (T8-T12) planted along Broadwater Road have been categorised as ‘A’ quality trees, all early mature with the potential for 40 to 50 years life expectancy. One of these oaks (T9) is of a different cultivar to the other four with a slightly broader crown.

3.1.2 The other trees surveyed are mature, and probably date from the mid to later twentieth century. Trees along the rear of the car park are all within the area marked as TPO G2 of Tree Preservation Order 780, however as there is some ambiguity with the numbers of trees protected the client is advised to regard all the trees along this boundary as protected by this tree preservation order.

3.1.3. Of the two groups of field maples, both of 'B2' quality, G1 lies close to the site boundary with root protection areas extending into the car park surface. The other group of four trees may originate from overgrown hedging stock planted along this car park.

3.1.4 Four of the Norway maples along this section (T1, T3, T4, and T6) are also classified as 'B2' quality with prolific ivy within their crowns competing with the crown foliage. Growing as a line of trees, several of the trees have unbalanced crowns. The majority of trees have prolific ivy growth; severing ivy would reduce ivy competition with the crown of the tree and reduce the incidences if storm damage.

3.1.5 A crack willow (T5) is of 'C2' quality and is leaning against the Norway maple (T4). It has storm damage and defective branches within the crown. A further crack willow (T7) which is growing within the edge of the site boundary has been managed as a pollard.

3.1.5. Surveyed individually (formerly G2) the two trees that lie outside the site on the south eastern corner are a Norway maple (T13) with crossed stems at 1.5 metres. A sycamore is growing on the neighbouring property (T14). Both trees are protected by the tree preservation order 780 as G3.

3.1.6. A group of cherry laurels, part of the overgrown hedging stock, has been surveyed as G2, which require some management. A further group of trees include an immature multi-stem Norway maple and shrubbery marked as G4.

3.1.7. A hedge (H1) along the edge of the car park is predominantly laurel with some other native species, with crowns overhanging the edge of the site.

## 3.2 Categories

3.2.1 The British standard categorization has been reproduced in appendix C of this report. This tree survey has identified the following trees in each category as follows:

**3.2.2. Trees:**

| Category | Number of Trees | Tag Number | Species |
|---|---|---|---|
| **A** | 5 | T8, T9, T10, T11, T12 | Fastigiate oaks |
| **B** | 6 and 3 groups | T1, T3, T4, T6, T13, T14, G1, G2, G3 | Norway maples, Sycamores, and field maples |
| **C** | 2 and one group | T5, T7 and G4 | Crack willows (2), groups of sapling Norway maple and shrubs. |
| **U** | | | |
| **Total** | **13 and four groups** | | |

# 4. Arboricultural Impact Assessment

## 4.1 General

4.1. Draft proposals have been received from McBain's, reference BRW01-MCB-XX-00-DR-A-0006-S2-P1, showing a 'C' shaped 4 storey blocks of flats surrounding a central courtyard and amenity space. There is a basement car park. The building is set back and parallel to Broadwater Road, leaving a triangular wedge of open space along the eastern side and adjacent to the strip of woodland trees which forms part of the Tree Preservation Order.

4.1.2 The impact of the building on this woodland is minimal, with working space for construction lying for the most part outside the root protection areas of these trees; the exception will be the south eastern corner of the site where there is existing hard surfacing underlying a group of trees which lie outside the site boundary.

4.1.3 The buildings are up to 14 metres in height and will generate partial shade during parts of the day along this eastern boundary. This will have limited impact on the existing trees, as the species mix includes field maple and Norway maple which would be able to sustain these conditions

## 4.2 Mitigation

4.2.1. Mitigation will be in form of protection of the crown and the roots of the trees.

4.2.2. Owing to the soil stripping which has extended close to the protected trees, some additional soft landscape treatment is recommended, with gravel material removed and replacement soil inserted within the root protection areas of the trees. This is outlined in section 5.5.2.

4.2.3 Some crown management of the trees will also be required to safeguard the branches from damage by construction traffic.

# 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

Construction works:

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

Post- Construction works:

- Removal of protective barrier etc…

- 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. An application to the LPA should be submitted for works on the protected trees and for any tree works on those trees outside the site boundaries.

**5.2.2 Management:**

| No | Species | Category | Recommendations |
|---|---|---|---|
| T1 | Acer platanoides (Norway Maple) TPO 780 G2 | B2 | Cut ivy at base, re inspect, remove deadwood, crown lift to 3 metre over construction site |
| T3 | Acer platanoides (Norway Maple) TPO 780 G2 | B2 | Cut ivy at base, re inspect, remove deadwood, crown lift to 3 metre over construction site |
| T4 | Acer platanoides (Norway Maple) TPO 780 G2 | B2 | Cut ivy at base, re inspect, remove deadwood, crown lift to 3 metre over construction site |
| T5 | Salix fragilis (Crack Willow) TPO 780 G2 | C2/U | REMOVE or coppice and allow for re-growth to develop |
| T6 | Acer platanoides (Norway Maple) TPO 780 G2 | B2 | Cut ivy at base, re inspect, remove deadwood, crown lift to 3 metres over construction site |
| T7 | Salix fragilis (Crack Willow) TPO 780 G2 | C3 | Outside site boundary- recommend re-pollarding to safeguard the crown from damage by construction traffic. |
| T8 | Quercus robur fastigiate (Common Oak) | A2 | |
| T9 | Quercus robur (Common Oak) | A2 | |
| T10 | Quercus robur (Common Oak) | A2 | |
| T11 | Quercus robur (Common Oak) | A2 | |
| T12 | Quercus robur (Common Oak) | A2 | |
| T13 | Acer platanoides (Norway Maple) TPO 780 G3 | B2 | Outside site boundary |
| T14 | Acer pseudoplatanus (Sycamore) TPO 780 G3 | B2 | Outside site boundary |
| G1 | Acer campestre (Field Maple) TPO 870 G2 | B3 | On site boundary, cut ivy at base |

| No | Species | Category | Recommendations |
|---|---|---|---|
| G2 | Acer campestre (Field Maple) TPO 870 G2 | C3 | Cut ivy at base, remove dead tree- review condition |
| G3 | Prunus cerasifera (Cherry Plum) (Formerly T2) | C3 | Manage as part of boundary hedging- cut ivy at base |
| G4 | Acer platanoides (Norway Maple) | C2/U | REMOVE |
| H1 | Prunus laurocerasus (Cherry Laurel) with some native species including hawthorn | C2 | Face back along edge of boundary planting, manage at consistent height if required. |

## 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. (see appendix E). 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. (See also Appendix F)

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.

## 5.4 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 50 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. 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.

**5.4.3. 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.

**5.4.4. 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.

**5.4.5 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. (See Appendix G)

## 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**

Soil stripping has resulted in removal of surface soils within the root protection areas of the protected tree. The recommendations are as following within the root protection area of the protected tree.

- Remove hard surface by hand, or by machine parked outside the RPA scraping the hard surface material back- with the aid of a banks man to ensure that root is not exposed.
- Carry out decompaction of the exposed soils- 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.
- 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.

**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**
**Updated arboricultural survey March 2024**

# Appendix A: Extract from **Welwyn Hatfield Council Tree Preservation Order titled 'Land adjoining car park off Peartree Lane & Broadwater Road Welwyn' 780 (2018)**

**Town and Country Planning (Tree Preservation) (England) Regulations 2012**

# TREE PRESERVATION ORDER

## Town and Country Planning Act 1990
## Land at :- Land adjoining car park off Peartree Lane & Broadwater Road Welwyn Garden City
## 780 (2018)

The **Welwyn Hatfield Borough Council**, in exercise of the powers conferred on them by section 198, of the Town and Country Planning Act 1990 make the following Order—

### Citation

**1**. This Order may be cited as the **780 (2018)**

### Interpretation

**2**. (1) In this Order "the authority" means the **Welwyn Hatfield Borough Council**
(2) In this Order any reference to a numbered section is a reference to the section so numbered in the Town and Country Planning Act 1990 and any reference to a numbered regulation is a reference to the regulation so numbered in the Town and Country Planning (Tree Preservation)(England) Regulations 2012.

### Effect

**3.**—(1) Subject to article 4, this Order takes effect provisionally on the date on which it is made.
(2) Without prejudice to subsection (7) of section 198 (power to make tree preservation orders) or subsection (1) of section 200 (tree preservation orders: Forestry Commissioners) and, subject to the exceptions in regulation 14, no person shall—

(a) cut down, top, lop, uproot, wilfully damage, or wilfully destroy; or
(b) cause or permit the cutting down, topping, lopping, wilful damage or wilful destruction of, any tree specified in the Schedule to this Order except with the written consent of the authority in accordance with regulations 16 and 17, or of the Secretary of State in accordance with regulation 23, and, where such consent is given subject to conditions, in accordance with those conditions.

### Application to trees to be planted pursuant to a condition

**4.** In relation to any tree identified in the first column of the Schedule by the letter "C", being a tree to be planted pursuant to a condition imposed under paragraph (a) of section 197 (planning permission to include appropriate provision for preservation and planting of trees), this Order takes effect as from the time when the tree is planted.

**Dated this 26th day of February 2018**

Signed on behalf of the **Welwyn Hatfield Borough Council**

Authorised by the Council to sign in that behalf

**CONFIRMATION OF ORDER**

This Order was confirmed by **Welwyn Hatfield Borough Council** without modification on the 15th day of June 2018

Signed on behalf of the **Welwyn Hatfield Borough Council**

Authorised by the Council to sign in that behalf

**FIRST SCHEDULE**
Article 3

**SPECIFICATION OF TREES**

**TREES SPECIFIED INDIVIDUALLY**
**(as circled in black on the plan)**

**TREES SPECIFIED BY REFERENCE TO AN AREA**
**(within the dotted black line on the plan)**

**GROUP OF TREES**
**(within broken black line on the plan)**

| Reference on map | Tree Count | Description |
|---|---|---|
| G1 | | Lime |
| G1 | | London Plane |
| G1 | | Birch |
| G1 | | Pine |
| G1 | | Horse Chestnut |
| G1 | | Whitebeam |
| G2 | | Poplar |
| G2 | | Willow |
| G2 | | Lime |
| G2 | | Acer sp. [Maple] |
| G2 | | Alder |
| G2 | | Hawthorn |
| G3 | | Poplar |
| G3 | | Sycamore |
| G3 | | Hawthorn |
| G4 | | Sycamore |
| G4 | | Hornbeam |
| G4 | | Ash |
| G4 | | Willow |
| G4 | | Hawthorn |
| G4 | | Horse Chestnut |
| G4 | | Lime |
| G4 | | Beech |

**WOODLANDS**
**(within the continuous black line on the plan)**


WELWYN HATFIELD

Council Offices, The Campus
Welwyn Garden City, Herts, AL8 6AE

| | | |
|---|---|---|
| Title: Land adjoining car park off Peartree Lane & Broadwater Road Welwyn Garden City | | Scale: 1:1500 |
| | | Date: 23-02-2018 |
| Project: TPO 780 (2018) | Drawing Number: | Drawn: |

# Appendix B: Photographs

**Above**- the Norway maple, and crack willows along the eastern boundary.
**Below left**- the group of field maples (G1). **Below centre** - ground stripping within the RPA of protected trees. **Bottom** pollarded willow (T7)


**Above left**- a group of field maples (G2) and two Norway maples (T1 and T3). Above right- the willow (T5) leaning on the Norway maple (T4) **Below left**- the Norway maple (T13) and sycamore (T14) **Below centre and right** - the fastigiate oaks (T8-T12)



**Above** - the line of fastigiate oaks (T8-T12) along the road

# Appendix C: Tree Survey Sheets

| No | Species | Age | Stem girth | Height | Lowest branch | Category | North | East | south | west | condition | life space | Comments | Recommendations | RPA radius (m) | RPA sqm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T1 | Acer platanoides (Norway Maple) TPO 780 G2 | M | 450 | 15.8 | 2.5 | B2 | 6 | 4.5 | 5.8 | 5.6 | Fair | 20+ | damage to west crown, Ground disturbance within RPA | Cut ivy at base, re inspect, remove deadwood, crown lift to metre over construction site | 5.4 | 91.62 |
| T3 | Acer platanoides (Norway Maple) TPO 780 G2 | M | 400 | 15.75 | 3.5 | B2 | 3.4 | 4 | 3.2 | 2.7 | Fair | 20+ | prolific ivy, limited access, suppressed crown, soil stripped within root protection | Cut ivy at base, re inspect, remove deadwood, crown lift to metre over construction site | 4.8 | 72.39 |
| T4 | Acer platanoides (Norway Maple) TPO 780 G2 | M | 350 | 10 | 2 | B2 | 2.8 | 3.5 | 3.5 | 3.7 | Fair | 20+ | Part of linear group. Ivy on tree. Unable to inspect stem due to Ivy. Outside site, Ground disturbance within RPA | Cut ivy at base, re inspect, remove deadwood, crown lift to metre over construction site | 4.2 | 55.42 |

| No | Species | Age | Stem girth | Height | Lowest branch | Category | North | East | south | west | condition | life space | Comments | Recommendations | RPA radius (m) | RPA sqm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T5 | Salix fragilis (Crack Willow) TPO 780 G2 | M | 500 | 14.5 | 2 | C2/U | 4 | 3 | 3.5 | 6 | Fair | 10+ | Outside site boundary- Part of linear group. Pollard. Ivy on tree. Unable to inspect stem due to Ivy. Broken branches in crown. Leaning south west, pollarded at 4 metres, outside site- Ground disturbance within RPA | REMOVE or coppice and allow for re-growth to develop | 6 | 113.1 |
| T6 | Acer platanoides (Norway Maple) TPO 780 G2 | M | 474 | 13 | 3 | B2 | 5.5 | 5 | 4.8 | 4.5 | Fair | 20+ | Part of linear group. Unable to inspect stem due to Ivy. Unable to inspect stem due to undergrowth. Outside site. sites clearance within rpa | Cut ivy at base, re inspect, remove deadwood, crown lift to metres over construction site | 5.69 | 101.7 |

| No | Species | Age | Stem girth | Height | Lowest branch | Category | North | East | south | west | condition | life space | Comments | Recommendations | RPA radius (m) | RPA sqm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T7 | Salix fragilis (Crack Willow) TPO 780 G2 | OM | 700 | 12 | 1.5 | C3 | 5.2 | 5.5 | 6.5 | 5.5 | Fair | 10+ | Outside site boundary- Part of linear group. Pollard. Ivy on tree. Unable to inspect stem due to Ivy. Unable to inspect stem due to undergrowth. Outside site boundary- Ground disturbance within RPA | Arrange for tree to be re-pollarded to safeguards crown from damage by construction traffic. | 8.4 | 221.7 |
| T8 | Quercus robur fastigiate (Common Oak) | M | 370 | 14 | 0.75 | A2 | 1.7 | 1.7 | 1.7 | 1.7 | Good | 40+ | Part of linear group. Outside site boundary | | 4.44 | 61.94 |
| T9 | Quercus robur (Common Oak) | M | 350 | 13.5 | 1.2 | A2 | 2.2 | 2.2 | 2.2 | 2.2 | Good | 40+ | Part of linear group. Different fastigiate cultivar | | 4.2 | 55.42 |
| T10 | Quercus robur (Common Oak) | M | 300 | 14.5 | | A2 | 1.4 | 1.4 | 1.4 | 1.4 | Good | 40+ | Part of linear group. | | 3.6 | 40.72 |
| T11 | Quercus robur (Common Oak) | M | 290 | 14.75 | 1 | A2 | 1.3 | 1.3 | 1.3 | 1.3 | Good | 40+ | Part of linear group. | | 3.48 | 38.05 |
| T12 | Quercus robur (Common Oak) | M | 240 | 10 | | A2 | 1 | 1 | 1 | 1 | Good | 40+ | Part of linear group. | | 2.88 | 26.06 |

| No | Species | Age | Stem girth | Height | Lowest branch | Category | North | East | south | west | condition | life space | Comments | Recommendations | RPA radius (m) | RPA sqm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| T13 | Acer platanoides (Norway Maple) TPO 780 G3 | M | 616 | 16 | 2 | B2 | 7.2 | 7 | 5.5 | 7 | Good | 20+ | outside site. crossed trunks at metres street light thin east canopy. | Outside site boundary | 7.39 | 171.6 |
| T14 | Acer pseudoplatanus (Sycamore) TPO 780 G3 | M | 400 | 14.5 | 2.5 | B2 | 5 | 2 | 4.5 | 7.2 | Good | 20+ | Outside sites. one sided | Outside site boundary | 4.8 | 72.39 |
| G1 | Acer campestre (Field Maple) TPO 870 G2 | M | 451 | 11 | 2 | B3 | 3.4 | 3.4 | 3 | 3.5 | Good | 40+ | Not accessible, camera and streetlight in north crown, hedge stock, 3 stems | On site boundary, cut ivy at base | 5.41 | 91.96 |
| G2 | Acer campestre (Field Maple) TPO 870 G2 | M | 308 | 10 | 2.5 | C3 | 3.3 | 4 | 1.5 | 3.2 | Fair | 20+ | Ivy ascending the trunks-ground stripped up to base of trunk, dead trees at south of group | Cut ivy at base, remove dead tree-review condition | 3.7 | 43.01 |

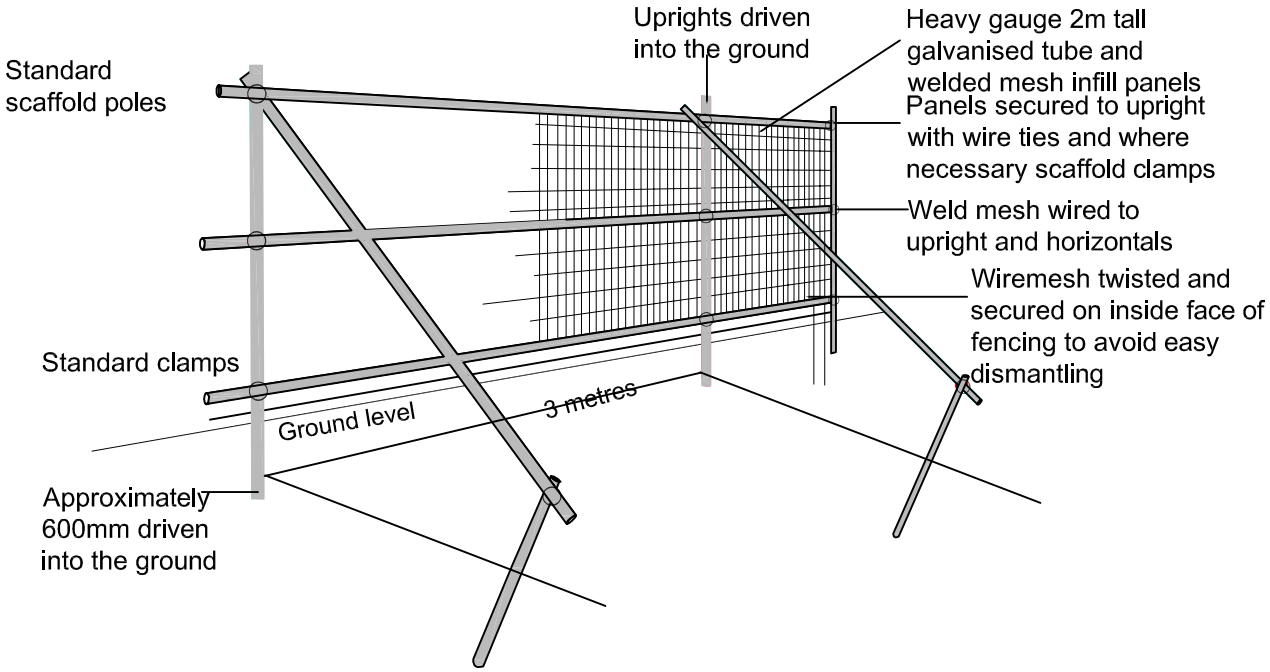
| No | Species | Age | Stem girth | Height | Lowest branch | Category | North | East | south | west | condition | life space | Comments | Recommendations | RPA radius (m) | RPA sqm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G3 | Prunus cerasifera (Cherry Plum) (Formerly T2) | M | 354 | 7 | 0 | C3 | 3.7 | 2 | 3.7 | 3.2 | Fair | 20+ | Part of linear group. Unable to inspect stem due to Ivy. Unable to inspect stem due to undergrowth. Crown distorted due to group pressure. Group 6 trees originally marked as hedging stock rubble in base clearance up to trunks varied condition | Manage as part of boundary hedging- cut ivy at base | 4.25 | 56.75 |
| G4 | Acer platanoides (Norway Maple) | SM | 177 | 13 | 0.5 | C2/U | 2.5 | 3 | 3.4 | 2.5 | Fair | 10+ | Part of linear group. Ivy on tree. Stem divides at ground level. | REMOVE | 2.12 | 14.12 |

| No | Species | Age | Stem girth | Height | Lowest branch | Category | North | East | south | west | condition | life space | Comments | Recommendations | RPA radius (m) | RPA sqm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H1 | Prunus laurocerasus (Cherry Laurel) Prunus laurocerasus (Cherry Laurel) with some native species including hawthorn | M | 217 | 6(0) | 0 | C2 | 2.5 | 2.5 | 2.5 | 2.7 | Fair | 20+ | site clearance within 2 metres, self-set forsythia in group | Face back along edge of boundary planting, manage at consistent height if required. | 2.6 Linear | |

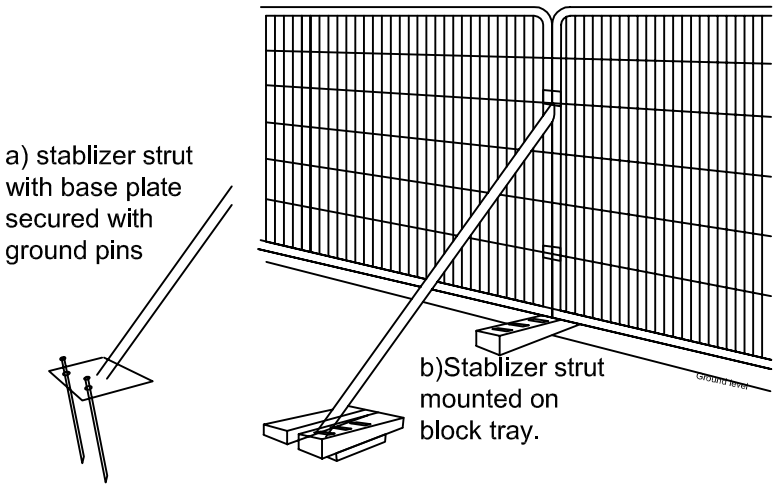
# Appendix D: Copy of BS5837:2012 Table 1 "Cascade Chart for Tree Quality Assessment"

| Category | Criteria | | | Identification on plan (RAB subject to legibility of the plan) |
|---|---|---|---|---|
| **Category U (Formerly 'R')** | | | | |
| Those in such 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 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 NOTE Category U trees can have existing or potential conservation value which might be desirable to preserve | | | 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 E: Protective Barrier and 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**






Landscape Institute Registered Practice

Arboricultural Association

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

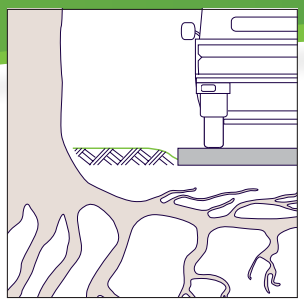
# Appendix F: Geo-Web Details

GEOSYSTEMS®

# GEOWEB®

## TREE ROOT PROTECTION (TRP) SYSTEM

Powered by GEOSYSTEMS® technology.



defining **green** in cellular confinement

# THE PROBLEM

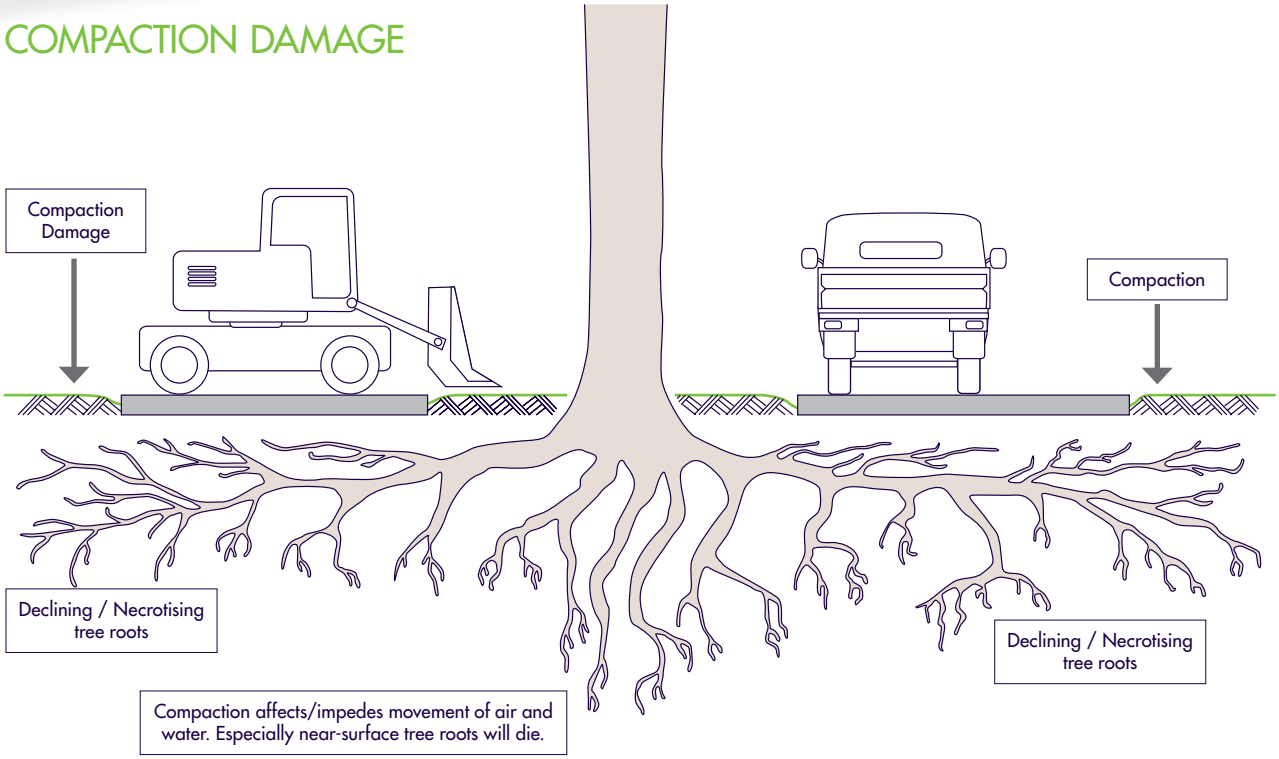
## CONSTRUCTION-RELATED TREE DAMAGE

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

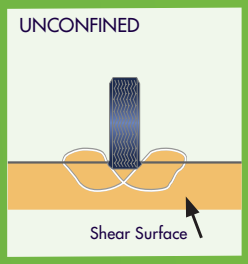
## TREE ROOT PROTECTION (TRP) SYSTEM

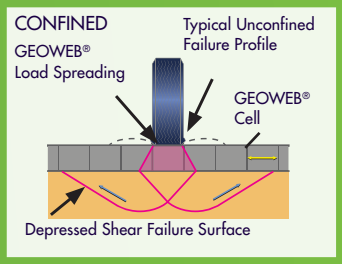
Used extensively in civil engineering construction for over 30 years, the GEOWEB® system is a three-dimensional structure that:

- 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.

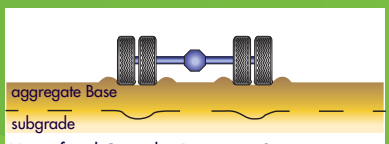


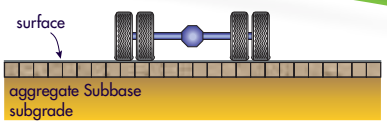

## LOAD DISTRIBUTION

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.



Unconfined Granular Pavement System



the GEOWEB® Granular Pavement System

## COST BENEFITS

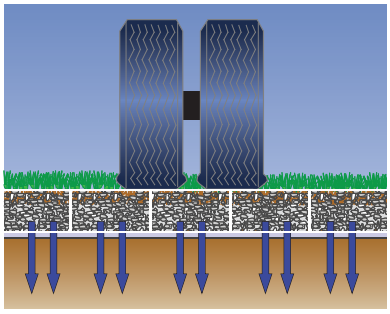
The GEOWEB® TRP system is an economical solution for reducing construction vehicle impact to the tree root zone compared with other methods. Once installed, the system has minimal-to-no visibility.

## 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.

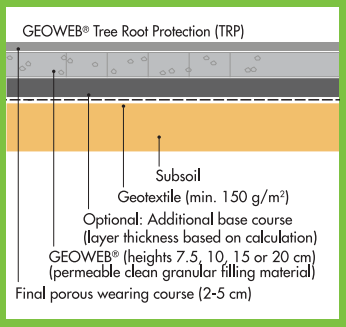
Step 5: For permeability, infill the fully connected GEOWEB® system with a well-graded, 25mm – 50mm granular, non-frost-susceptible quarried rock with no fines. Overfill by up to 50mm to allow for compaction.

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.


**PRESTO GEOSYSTEMS®**
P.O. Box 2399
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Appleton, Wisconsin 54912-2399, USA

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www.prestogeo.com


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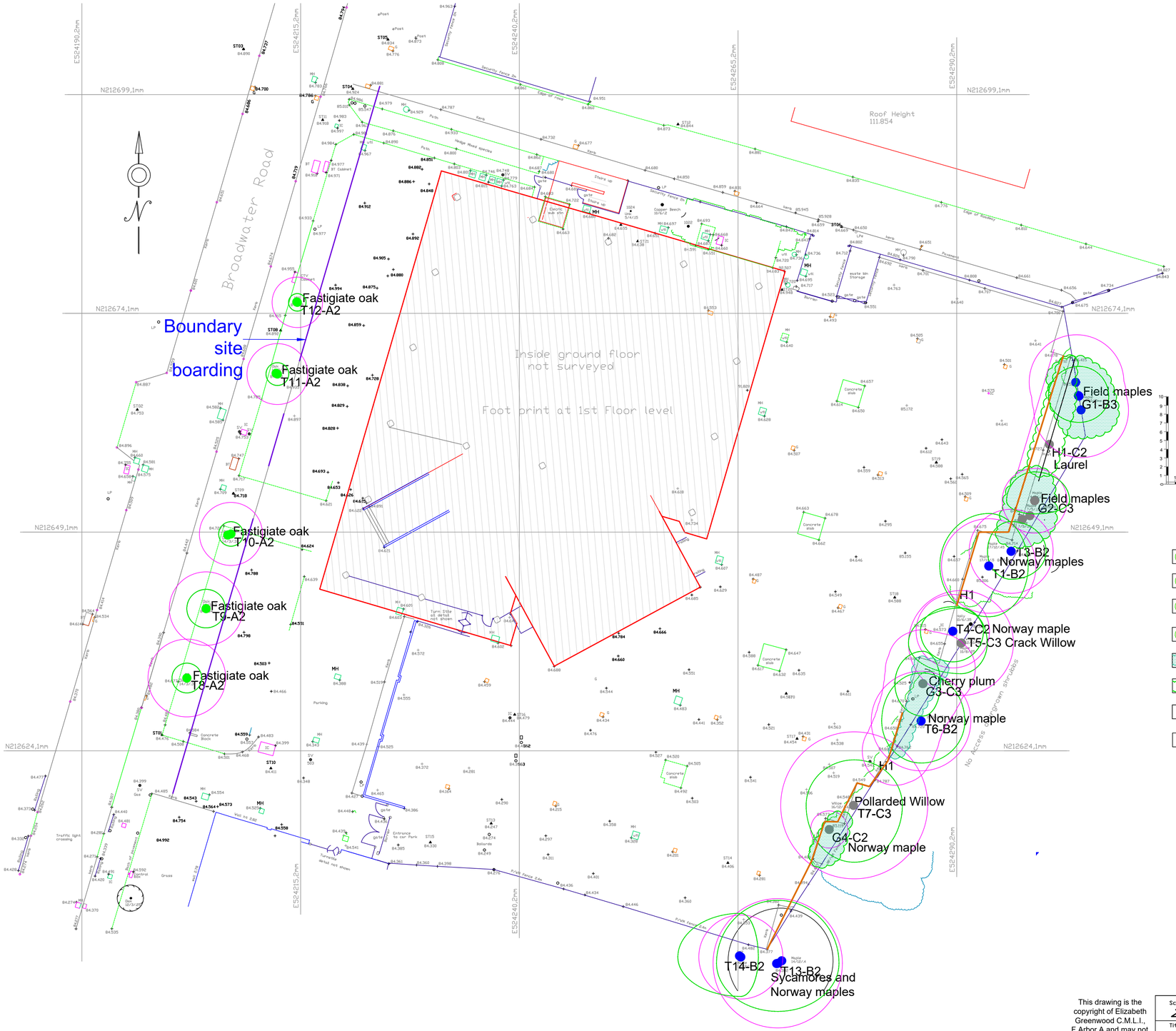
AP-7417

# Appendix G: Indicative Arboricultural Supervision

| Item | *Site Supervision Visit Number | Estimated Timing | Inspection | Date of Visit |
|---|---|---|---|---|
| Meet site foremen and discuss works and program.<br>Setting out site and protective fencing, ground protection- site organization. | Visit one | Prior to site clearance and demolition | Fencing off the trees as marked on plan with Heras style fencing in accordance with British Standard 5837- exclude any works from these area and mark as SITES EXCLUSION ZONES<br><br>Provide and insert ground protection for the duration of construction works; option use existing tarmac surfacing.<br><br>Carry out remedial soil improvements with the RPA of trees | |
| Setting out building, foundation excavation, trenches | Visit two | Prior to construction | Set up site working area. | |
| Excavations/ changes of soil levels— and foundation and positioning of pile drivers' details- inspect | Visit three | During construction | Carry out construction.<br><br>Hand dig within RPA of trees -For new drain runs and unavoidable excavation within the RPA HAND DIG<br><br>For new surfacing insert ground protection as above for use of site works<br>. | |
| On completion- removal of tree protection, planting, and remedial works- removal | Visit four | Post completion | On completion of works remove ground protection and protective fencing and carry out additional remedial works.<br><br>Carry out landscape works- Cultivate by hand for all soft landscape works within the root protection areas of trees.<br><br>Monitor the condition of trees an annual basis. | |

# Appendix H: Plan 1227.24.1 Tree Constraints Plan




Scale bar 1 2 3 4 5 6 7 8 9 10

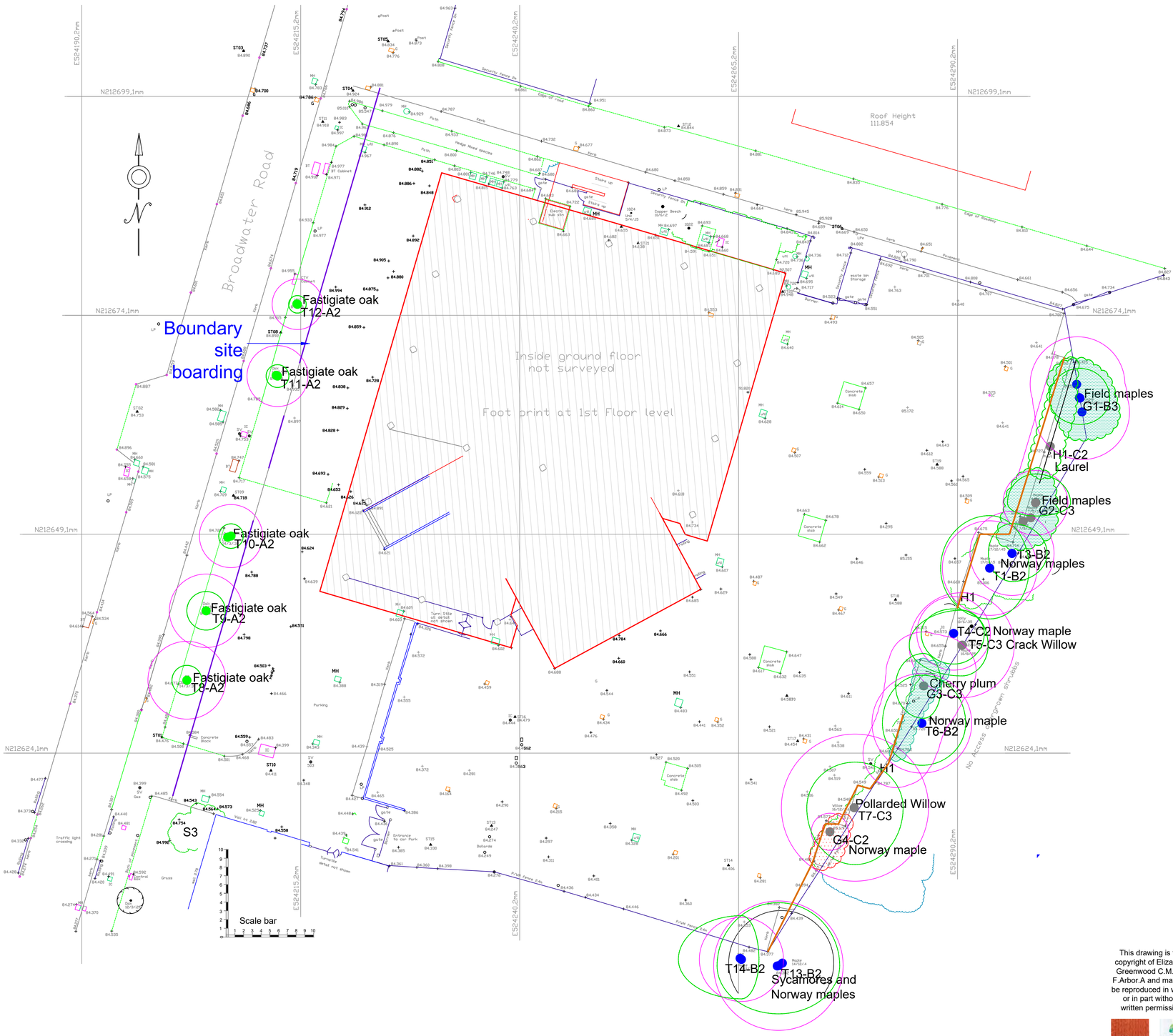
## SCHEDULE

- A Quality trees
- B Quality trees
- C Quality trees.
- U Quality trees
- Groups of trees
- Hedges
- Root Protection Areas (RPA)
- Indicative extent of soil stripping



| | |
|---|---|
| Scheme: 29 Broadwater Road, Welwyn | Date: March 2024 |
| Title: Tree Constraints Plan | Drawn by: E.J.G |
| Scale: 1:250 @ A1 and 1:500 @ A3 | Job No: 1227.20 |
| 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 | Drg No: 1227.20.1 Appendix H |

# Appendix I: Plan 1227.24.2 Tree Surgery and Removal Plan




| No | Species | Category | Recommendations |
|---|---|---|---|
| T1 | Acer platanoides (Norway Maple) TPO 780 G2 | B2 | Cut ivy at base, re inspect, remove deadwood, crown lift to 3 metre over construction site |
| T3 | Acer platanoides (Norway Maple)TPO 780 G2 | B2 | Cut ivy at base, re inspect, remove deadwood, crown lift to 3 metre over construction site |
| T4 | Acer platanoides (Norway Maple)TPO 780 G2 | B2 | Cut ivy at base, re inspect, remove deadwood, crown lift to 3 metre over construction site |
| T5 | Salix fragilis (Crack Willow)TPO 780 G2 | C2/U | REMOVE or coppice and allow for re-growth to develop |
| T6 | Acer platanoides (Norway Maple)TPO 780 G2 | B2 | Cut ivy at base, re inspect, remove deadwood, crown lift to 3 metres over construction site |
| T7 | Salix fragilis (Crack Willow)TPO 780 G2 | C3 | Outside site boundary- recommend re-pollarding to safeguard the crown from damage by construction |
| T8 | Quercus robur fastigiate (Common Oak) | A2 | |
| T9 | Quercus robur (Common Oak) | A2 | |
| T10 | Quercus robur (Common Oak) | A2 | |
| T11 | Quercus robur (Common Oak) | A2 | |
| T12 | Quercus robur (Common Oak) | A2 | |
| T13 | Acer platanoides (Norway Maple) TPO 780 G3 | B2 | Outside site boundary |
| T14 | Acer pseudoplatanus (Sycamore) TPO 780 G3 | B2 | Outside site boundary |
| G1 | Acer campestre (Field Maple) TPO 870 G2 | B3 | On site boundary, cut ivy at base |
| G2 | Acer campestre (Field Maple) TPO 870 G2 | C3 | Cut ivy at base, remove dead tree- review condition |
| G3 | Prunus cerasifera (Cherry Plum) (Formerly T2) | C3 | Manage as part of boundary hedging- cut ivy at base |
| G4 | Acer platanoides (Norway Maple) | C2/U | REMOVE |
| H1 | Prunus laurocerasus (Cherry Laurel) | C2 | Face back along edge of boundary planting, manage at |

## SCHEDULE

- Trees to retain
- Groups of trees to retain
- Hedges
- Trees to remove
- Groups of trees to remove
- Root Protection Areas (RPA)



| | |
|---|---|
| Scheme: 29 Broadwater Road, Welwyn | Date: March 2024 |
| Title: Tree Surgery and Removal Plan | Drawn by: E.J.G |
| Scale: 1:250 @ A1 and 1:500 @ A3 | Job No: 1227.20 |
| 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 | Drg No: 1227.20.2 Appendix 1 |

# Appendix J: Plan Plan 1227.24.3 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

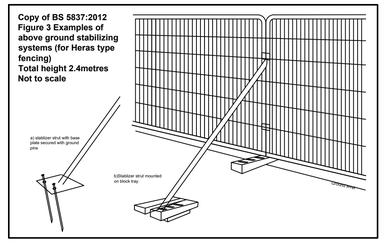
**Remedial works and soil improvement**

Soil stripping has resulted in removal of surface soils within the root protection areas of the protected tree. The recommendations are as following within the root protection area of the protected tree.

- Remove hard surface by hand, or by machine parked outside the RPA scraping the hard surface material back- with the aid of a banks man to ensure that root is not exposed.
- Carry out decompaction of the exposed soils- 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.
- 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.

**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
- Carry out remedial work within the RPA of trees as marked
- 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

- Proposed layout
- Trees to retain
- Groups of trees to remove
- Root protection areas
- Protective /barrier fencing
- Existing site boarding
- Ground protection & new surfacing
- Extent of soil stripping
- Remedial ground works within RPA
- Concrete mixing and storage of contaminants



| | |
|---|---|
| Scheme: 29 Broadwater Road, Welwyn | Date: March 2024 |
| Title: Tree CProtection Plan | Drawn by: E.J.G |
| Scale: 1:250 @ A1 and 1:500 @ A3 | Job No: 1227.20 |
| 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 | Drg No: 1227.20.3 Appendix J |

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