Tree Survey, Arboricultural Implications Assessment and Method Statement

Land to the rear of The Cherry Tree, 261 Lower Luton Road, Wheatampstead, AL4 8HW

Report produced by:		Produced for:	
Greenleaf Planning Ltd White House Cottage Knapton Green North Walsham Norfolk, NR28 0RU		Francis Caldwell Aragon Land and Planning Ltd. The Old Coalhouse 28a Rosamond Road BEDFORD Beds MK40 3SS	
Tel/ 01263 722199 -07914 130493		Tel/ 01234 331973	
greenleafplanning@gmail.com		francis@aragonland.co.uk	
Author:	Date:	Reviewed by:	Date:
James Hodson	01.02.2024	Cherece Snook	03.02.2024

TABLE OF CONTENTS

Appendices

1.0 SUMMARY

1.1 Greenleaf Planning were commissioned by Welland Design and Build Ltd to undertake a tree survey and arboricultural assessment at land to the rear of The Cherry Tree, 261 Lower Luton Road, Wheatampstead, AL4 8HW. Outline planning consent was granted in August 2024 for the construction of nine shared ownership dwellings. A planning condition (No.5) is attached to the planning consent 5/23/2024.

Condition No.5: Full details of tree works including a tree survey of existing trees on site, an arboricultural impact statement, a tree constraints plan, a tree retention plan and method statement to cover the protection of trees during demolition and construction phases based on guidelines set out in BS5837 shall be submitted as part of application(s) for reserved matters approval as required by Condition 2. Thereafter the development shall be carried out in accordance with these approved details. Reason: To ensure satisfactory landscape treatment of the site in the interests of visual amenity. To comply with Policy 74 of the St. Albans District Local Plan Review 1994.

Table-1 Planning condition

1.2 Greenleaf Ltd were instructed to assess the trees within impacting distance of the proposed works (T1-T14- G1-G3) which are plotted on the tree survey plan (Appendix C), in accordance with the principles of BS 5837: 2012 'Trees in Relation to Design, Demolition and Construction'. The aim of the assessment is to survey the trees that may be affected by the proposed clearance, ground works, access, driveways, parking/turning areas, new dwellings, gardens and services. The aim of this survey is to provide a preliminary consideration of the arboricultural implications of the development and provide information to assist with the layout and design considering the sites arboricultural constraints.

1.3 The assessment addresses the likely impact of the proposed access, parking, buildings, construction and service trenches etc. and provides recommendations where necessary for the protection of trees during construction work based on BS: 5837. An OS plan was provided, and a topographic survey completed which has been used as the basis for the Tree Constraints Plan (TCP) and Arboricultural Implications Assessment (AIA). An existing and proposed site layout plan was also provided (Appendix A). The ultimate purpose of this report is to identify the quantity and quality of the tree stock, contribution to public amenity and the constraints particular trees may offer to the site in terms of the proposed construction works.

1.4 Fourteen trees and three tree groups are noted. Of these, 2 are A grade, 6 trees are B grade specimens, 6 are grade C specimens and the three tree groups G1-G3 are also grade C specimens. The A grade tree T4 is a mature oak tree in good condition located on the south boundary and T14 is a fine and shapely oak tree that is prominently located to the north boundary with the access with much of its root zone encompassed by the tarmac car park. The 6 Cat B trees T7, T8, T10-T13 are oak, field maple and hawthorn and are outgrown hedgerow specimens to the north and south boundaries, in good condition and health and will greatly enhance the development and afford it an immediate mature setting and screening

1.5 The proposed scheme necessitates removal of the three C grade tree groups. G1 comprises 4 Leyland Cypress trees forming the east boundary with the garden of No.261. G2 comprises a group of approximately 13 small, introduced specimens of mixed native species. G3 comprises a row of approximately 10 holly trees. The tree losses will have no immediate impact on the prevailing landscape. The layout is informed by RPAs so that incursions only affect a small area of the RPA of tree T14. Approximately 286m^2 or 40% of the trees RPA is located within the proposed development, however 224m^2 or 30% of this is existing tarmac car park and footprint of buildings. The additional incursion is 73m^2 or 10% of its RPA that is well below the 20% threshold as advised in BS 5837 and this is further mitigated by gains in RPA where existing sealed surfaces are reinstated or changed to unsealed surfaces. The proposed new access also extends into the RPA's of tree T12 by 37m^2 or 32% of its RPA and T13 by 26m^2 or 36% of its RPA, the RPAs will be protected with a no-dig surface. The AMS is therefore produced with a focus on the protection and ground reinstatement of these key tree specimens as detailed above.

2.0 SITE DESCRIPTION

2.1 The application site forms a plot of land to the rear of No.261 Lower Luton Road and is primarily laid to grassland but with a large tarmac driveway and car park through the north section of the site. Beyond the car park are some buildings including a shed, garage and store. The site is located within the village and civil parish of Wheatampstead in the Hertfordshire District. The site is accessed off Lower Luton Road to the north site boundary.

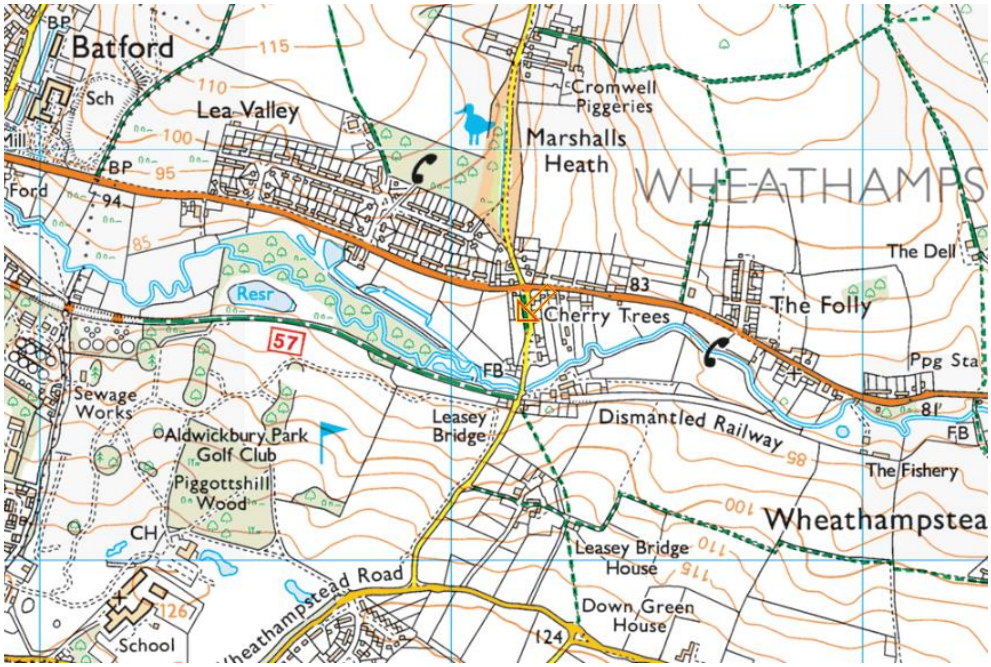


Figure 1- Site Location Map

Figure 2. Aerial View of Site– Google Earth- 2021

3.0 TREE SURVEY METHOD

3.1 There are 14 trees, and three groups of trees located within the red line boundary of the application site. These contain a mixture of mostly mature and semi-mature specimens including hazel, oak, hawthorn, field maple, cypress and holly. The survey included all trees with an RPA within or close to the proposed working areas. These trees have been plotted onto the plan to show location, trunk diameter, RPA and canopy spread.

3.2 The trees were assessed in December 2024 and their details are in the attached schedule (**Appendix B**). The schedule gives the survey findings in tabular form, which conforms to the BS 5837:2012 Standard, **Appendix B** gives a full explanation of the headings.

3.3 The details recorded during the survey have been collected independently of the development proposals and the categorisation of the quality and amenity value of the trees is made on purely arboricultural grounds. The trees indicated on the site survey plan provided (**Appendix C**) have been visually inspected and assessed from ground level only and no aerial inspection has been made, nor has any decay detection equipment been used.

3.4 The trees have been detailed in the tree survey schedule to include identification number, which corresponds to the position on the site, species (English name), an estimated height, a north, south, east west measurement of the canopy spread where uneven or an average spread, an assessment of the tree's maturity, a measured trunk diameter at 1.5m above ground, the tree's condition, a quality grading in accordance with the guidance set out in BS 5837:2012 and some comments where relevant.

3.5 Included at **Appendix D** is a section of the BS 5837: 2012 standard that refers to the tree survey grading system at **Table 1**. For clarity, the grading system is summarised as follows:

- U grade – trees for removal (effective for less than 10 years)
- A grade – trees of high quality and value, effective for more than 40 years
- B grade – trees of moderate quality and value, effective for more than 20 years
- C grade – trees of low quality and value, effective for 10 years

4.0 TREE CONSTRAINTS DISCUSSION

4.1 The proposed development has above ground constraints with group G1 a group of 4 Cat C Cypress trees and which are located within the parking spaces of Plot 1 and are therefore to be removed. There are similar constraints with G2 containing a range of relatively young Category C specimens and which have been planted around the edge of a concrete bowl structure in a semi-circle. These trees are early mature specimens, and their location conflicts with plots 7 & 8 and are therefore marked for removal. In addition, these trees also have below ground constraints with their RPAs significantly encroached by the proposed new dwellings. Finally, there are above ground canopy constraints with a line of holly trees G3 on the north boundary which extend across the access road and are therefore also marked for removal.

4.2 It can also be seen that there are below ground constraints with the following trees.

- T11, Cat B Hawthorn- 5m^2 or 15% of its RPA encroached by the footpath to the green open space provision at the south end of the site.
- T12, Cat B Field Maple- by 37m^2 or 32% of its RPA encroached by the access road.
- T13, Cat B Field Maple- by 26m^2 or 36% of its RPA encroached by the access road.
- T14, Cat A Oak- 286m^2 or 40% of the trees RPA is located within the proposed development, however 224m^2 or 30% of this is existing tarmac car park and footprint of buildings. The additional incursion is 73m^2 or 10% of its RPA. It is of note that much of this area is already part of the tarmac car park and buildings and so it is unlikely to be impacted further.

4.3 It is envisaged all of the remaining trees can be retained and maintained without impacting on tree health and/or residential amenity of the occupiers of the dwellings. The influence the trees will have on the layout of the development is set out in the context of the Tree Constraints Plan which forms **Appendix C**. The AutoCAD plan provided has been used as the basis for the TCP and Tree Protection Plan TPP.

4.4 **Appendix C** shows the position of the trees by a circle coloured according to the quality assessment category (as detailed in **Appendix B**). Canopy spread is shown as a hatched green circle and the RPA as a dark green circle (Category A), blue circle (Category B) and grey circle (Category C). The plan deals with constraints the trees may place on the development in two areas as follows:

- Below Ground Constraints

The Root Protection Areas (RPA) for the trees is shown as a coloured circle according to its category grading. The RPA will be used to fix the boundaries of any temporary fencing needed to protect the trees during construction forming the Construction Exclusion Zone (CEZ).

- Above Ground Constraints

The branch spread of the trees has been shown by a hatched green line and gives an indication of the shadows created by trees around mid-day in the summer. This is recommended in BS:5837 but actual shade patterns vary throughout the year.

5.0 GENERAL ARBORICULTURAL CONSIDERATIONS

5.1

- The proposed development has above ground constraints with groups G1, G2 and G3, all of which are Category C specimens of limited arboricultural and landscape value, either due to being non-native species (G1), young garden planted specimens (G2) and self-set multi-stem specimens (G3).

- It can also be seen that there are notable below ground constraints with trees T11, T12, T13 & T14 where their RPAs are crossed by the proposed footpath and new shared access road. These trees can be retained and suitably protected with the use of a no-dig cellular confinement system such as 'Cell-web' or 'Gridforce'. Further details regarding this construction methodology are provided in the AMS.

- Tree protective fencing would be required as shown in the Tree Protection Plan (TPP) to protect the retained trees within the proposed construction area. Trakmats may also be required for any groundworks within the RPA of retained trees, but outside of the no-dig area and as detailed in the arboricultural method statement.

5.2 Within the RPA it is usually not permissible to:

- Carry out ground excavations without seeking appropriate advice.
- Make any ground level changes without seeking appropriate advice.
- Store building materials or machinery
- Dispose of waste materials and liquids.
- Site a bonfire or erect a site hut
- Use trees as anchor points for mechanical equipment or cables.

5.3 Where the retention of single trees of Category A or B significantly affects development of the site, the LPA may consider removal and replacement to be a viable option. In such an event all trees should be maintained for three years after planting including keeping plants weed free, checking and maintaining guards and supports and replacing any failures that occur with stock of the same size and quality.

6.0 LEGAL STATUS

6.1 The proposed location for the new dwellings are not within a Conservation Area and therefore prior notice will not be required from the LPA before any arboricultural or construction works commence.

7.0 LIMITATIONS

7.1 All trees likely to be impacted by the proposed construction works have been subject to a detailed inspection and their potential conflicts with the outline proposals addressed in this AIA. In the view of an independent arboricultural consultant all reasonable concerns arising from the consultant's assessment can been satisfied to the fullest standard.

7.2 The objective assessment has resulted in the recommendations for tree protection and mitigation should the scheme be progressed. This report includes a preliminary AIA, AMS and a TPP, in order to cement BS:5837's guidelines, the retention and protection of good quality trees (Category A & B) and the recommendations of this AIA.

7.3 No assessment of the soils or wood tissue has been sent for laboratory analysis unless specifically stated. Our assessments are based on professional experience and expert observation at the time of the inspection. No liability can be assumed to rest with Greenleaf Ltd should conditions alter after our inspections.

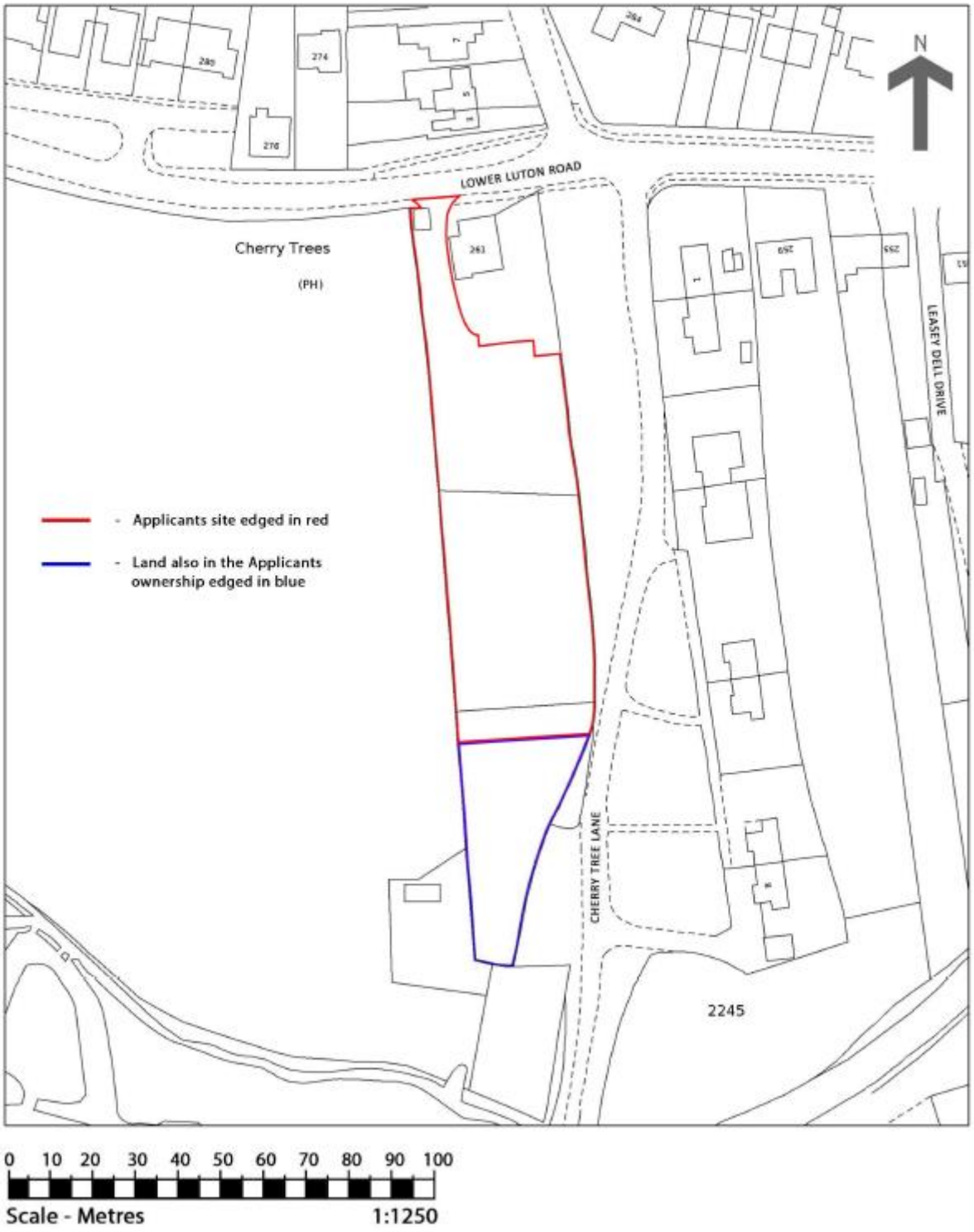
7.4 Prior to the implementation of any works, we strongly recommend that the Local Authority be consulted to obtain any necessary consent. We must be informed immediately of any alterations to plans or site features upon which we have based our assessments and or advice. This may affect the report and or any recommendations.

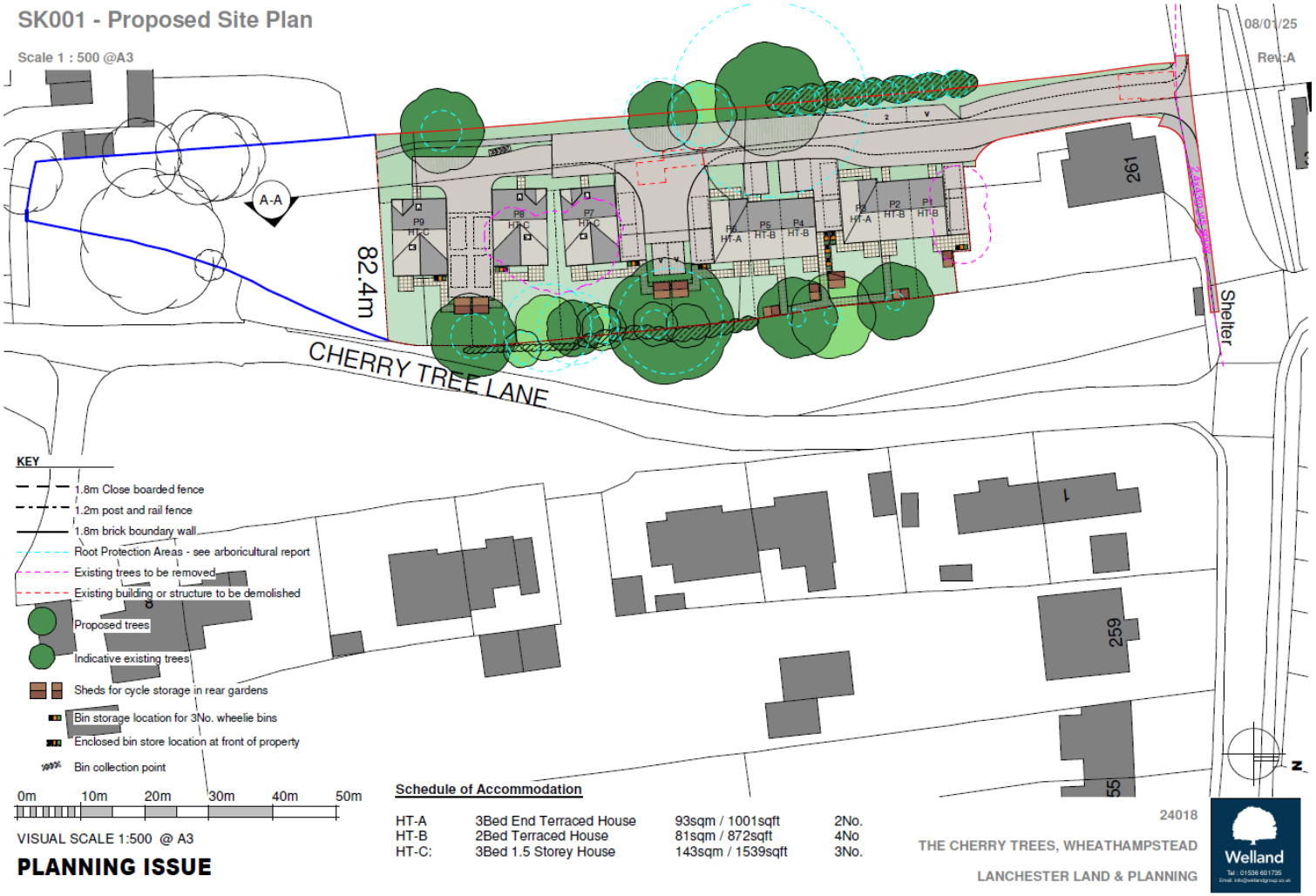
7.5 We recommend that your trees should be inspected regularly by professionals as part of prudent tree management programme. This report has been prepared for the sole use and benefit of the client. Any liability of Greenleaf Ltd shall not be extended to any third party. No part of this report is to be reproduced without prior authorisation.

APPENDIX A

Site Location Plan
A4 @ 1:250

Land to the Rear of The Cherry Tree,
261 Lower Luton Road, Wheathampstead, AL4 8HW





Proposed Site Layout Plan

10	Greenleaf Ltd- Preliminary Arboricultural Implications Assessment including Tree Survey Data, a Tree Constraints Plan as Prescribed in BS 5837:2012 “Trees in Relation to Design, Demolition and Construction”.

Proposed Landscaping

11	Greenleaf Ltd- Preliminary Arboricultural Implications Assessment including Tree Survey Data, a Tree Constraints Plan as Prescribed in BS 5837:2012 “Trees in Relation to Design, Demolition and Construction”.

APPENDIX B- Tree Survey Schedule

Tree No	Species	Circumfrence mm	Ht (m)	Diameter DBH (mm)	Canopy Radius Average (m)	Clearance height from ground to canopy (m)	RPA radius (m)	Rpa m²	Condition- Good, Fair, Poor	CaT- A,B, C	Remaining Contribution	AGE- LM,M, SM, EM, Y	Notes
T1	Hazel	450	12	143	6	From ground	1.4	6	Fair	C	40+	M	Multi stem x 6
T2	Hazel	450	12	143	6.6	From ground	1.4	6	Fair	C	40+	M	Multi stem x 7 Creeping ivy
T3	Hazel	450	12	143	6.4	From ground	1.4	6	Fair	C	20-40	M	Multi stem x8 Creeping ivy
T4	Oak	2600	18	828	9.2	3	8.3	215	Fair	A	20-40	LM	Needs arborial work
T5	Hawthorn	700	10	223	2.8	2.5	2.2	16	Fair	C	40+	M	Multi stem x4 Creeping ivy
T6	Hawthorn	580	10	185	3	3	2.2	15	Fair	C	40+	M	Creeping ivy
T7	Oak	1500	12	477	5.8	3	5.7	103	Fair	A	40+	M	Creeping ivy
T8	Field maple	1800	18	573	7.2	3	6.9	149	Good	A	40+	M	
T9	Field maple	800	10	255	4.1	1	2.5	20	Fair	C	40+	S/M	Multi stem x 6
T10	Field maple	1100	14	350	5.6	2	3.5	39	Fair	B	40+	M	Multi stem x 3
T11	Hawthorn	1000	7	318	4.1	1.5	3.2	32	Fair	B	40+	M	Multi stem x 2 Creeping ivy
T12	Field maple	1900	14	605	6.4	2.8	6.0	115	Fair	B	40+	M	Multi stem x 3 Creeping ivy
T13	Field maple	1500	14	477	6.2	2.5	4.8	72	Fair	B	40+	M	Multi stem x 3 Creeping ivy
T14	Oak	4000	20	1273	8.1	2.5	15.3	733	Good	A	40+	M	
G1	Cypress	700	13	223	4.5	From ground	2.2	16	Good	C	20-40	S/M	Multi stem
G2	Elm,Silver birch,Poplar,Elm, Field maple, Hazel	700	13	223	4.8	2	2.2	16	Good	C	40+	E/M	
G3	Holly	600	12	223	4.5	From ground	2.1	15	Good	C	40+	E/M	

Greenleaf Ltd- Preliminary Arboricultural Implications Assessment including Tree Survey Data, a Tree Constraints Plan as Prescribed in BS 5837:2012 “Trees in Relation to Design, Demolition and Construction”.

Categories

Below is an explanation of the categories used in the attached Tree Survey.

No Identifies the tree on the drawing.

Species Common names are given to aid understanding for the wider audience.

BS 5837 Main Category Using this assessment (BS 5837:2012, Table 1), trees can be divided into one of the following simplified categories, and are differentiated by cross-hatching and by colour on the attached drawing:

Category A - Those of high quality with an estimated remaining life expectancy of at least 40 years;

Category B - Those of moderate quality with an estimated remaining life expectancy of at least 40 years;

Category C - Those of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm;

Category U - Those trees in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.

BS 5837 Sub Category Table 1 of BS 5837:2012 also requires a sub category to be applied to the A, B, C, and U assessments. This allows for a further understanding of the determining classification as follows:

Sub Category 1 - Mainly arboricultural qualities;

Sub Category 2 - Mainly landscape qualities;

Sub Category 3 - Mainly cultural values, including conservation .

Please note that a specimen or landscape feature may fulfil the requirements of more than one Sub Category.

DBH (mm) Diameter of main stem in millimetres at 1.5 metres from ground level. Where the tree is a multi-stem, the diameter is calculated in accordance with item 4.6.1 of BS 5837:2012.

Age Recorded as one of seven categories:

Y Young. Recently planted or establishing tree that could be transplanted without specialist equipment, i.e. less than 150 mm DBH.

S/M Semi-mature. An established tree, but one which has not reached its prospective ultimate height.

E/M Early-mature. A tree that is reaching its ultimate potential height, whose growth rate is slowing down but if healthy, will still increase in stem diameter and crown spread.

M Mature. A mature specimen with limited potential for any significant increase in size, even if healthy.

O/M Over-mature. A senescent or moribund specimen with a limited safe useful life expectancy. Possibly also containing sufficient structural defects with attendant safety and/or duty of care implications.

V Veteran. An over-mature specimen, usually of high value due to either its age, size and/or ecological significance

D Dead.

Height	Recorded in metres, measured from the base of the tree.
Crown Base	Recorded in metres, the distance from ground and aspect of the lowest branch material.
Lowest Branch	Recorded in metres, the distance from ground and aspect of the emergence point of the lowest significant branch.
Life Expectancy	Relates to the prospective life expectancy of the tree and is given as 4 categories: 1 = 40 years+; 2 = 20 years+; 3 = 10 years+; 4 = less than 10 years.
Crown Spread	Indicates the radius of the crown from the base of the tree in each of the northern, eastern, southern and western aspects.
Minimum Distance	This is a distance equal to 12 times the diameter of the tree measured at 1.5 metres above ground level for single stemmed trees and 12 times the average diameter of the tree measured at 1.5 metres above ground level tree for multi stemmed specimens. (BS 5837:2012, section 4.6).
RPA	This is the Root Protection Area, measured in square metres and defined in BS5837:2012 as "a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority". The RPA is shown on the drawing.. Ideally this is an area around the tree that must be kept clear of construction, level changes of construction operations. Some methods of construction can be carried out within the RPA of a retained tree but only if approved by the Local Planning Authority's tree officer.
Water Demand	This gives the water demand of the species of tree when mature, as given in the NHBC Standards Chapter 4.2 "Building Near Trees".
Visual Amenity	Concerns the planning and landscape contribution to the development site made by the tree, hedge or tree group, in terms of its amenity value and prominence on the skyline along with functional criteria such as the screening value, shelter provision and wildlife significance. The usual definitions are as follows: Low — An inconsequential landscape feature. Moderate — Of some note within the immediate vicinity, but not significant in the wider context. High — Item of high visual importance.
Problems/ Comments	May include general comments about growth characteristic, how it is affected by other trees and any previous surgery work; also, specific problems such as deadwood, pests, diseases, broken limbs, etc.
Work Required (TS)	Identifies the necessary tree work to mitigate anticipated problems and deal with existing problems identified in the "Problems/comments" category.
Work Required (AIA)	Identifies the tree work specifically necessary to allow a proposed development to proceed.

Priority	This gives a priority rating to each tree allowing the client to prioritise necessary tree works identified within the Tree Survey. **1** Urgent – works required immediately; **2** Works required within 6 months; **3** Works required within 1 year; **4** Re-inspect in 12 months, **0** Remedial works as part of implementation of planning consent.

TREE SURVEY SCHEDULE

Age Class Definition

P Recently planted trees & saplings; not fully established. (Generally capable of being transplanted or easily replaced.)

Y Young: Establishing; usually with good vigour, but as yet of limited significance in the landscape.

EM Early-Mature; established; normally vigorous & increasing in height. Of increasing landscape significance.

M Mature; Fully established trees around the middle half of their usual life-expectancy; generally retaining good vigour and achieving full height but their crowns still spreading.

LM Late-mature: Fully established trees, retaining moderate vigour but with growth slowing.

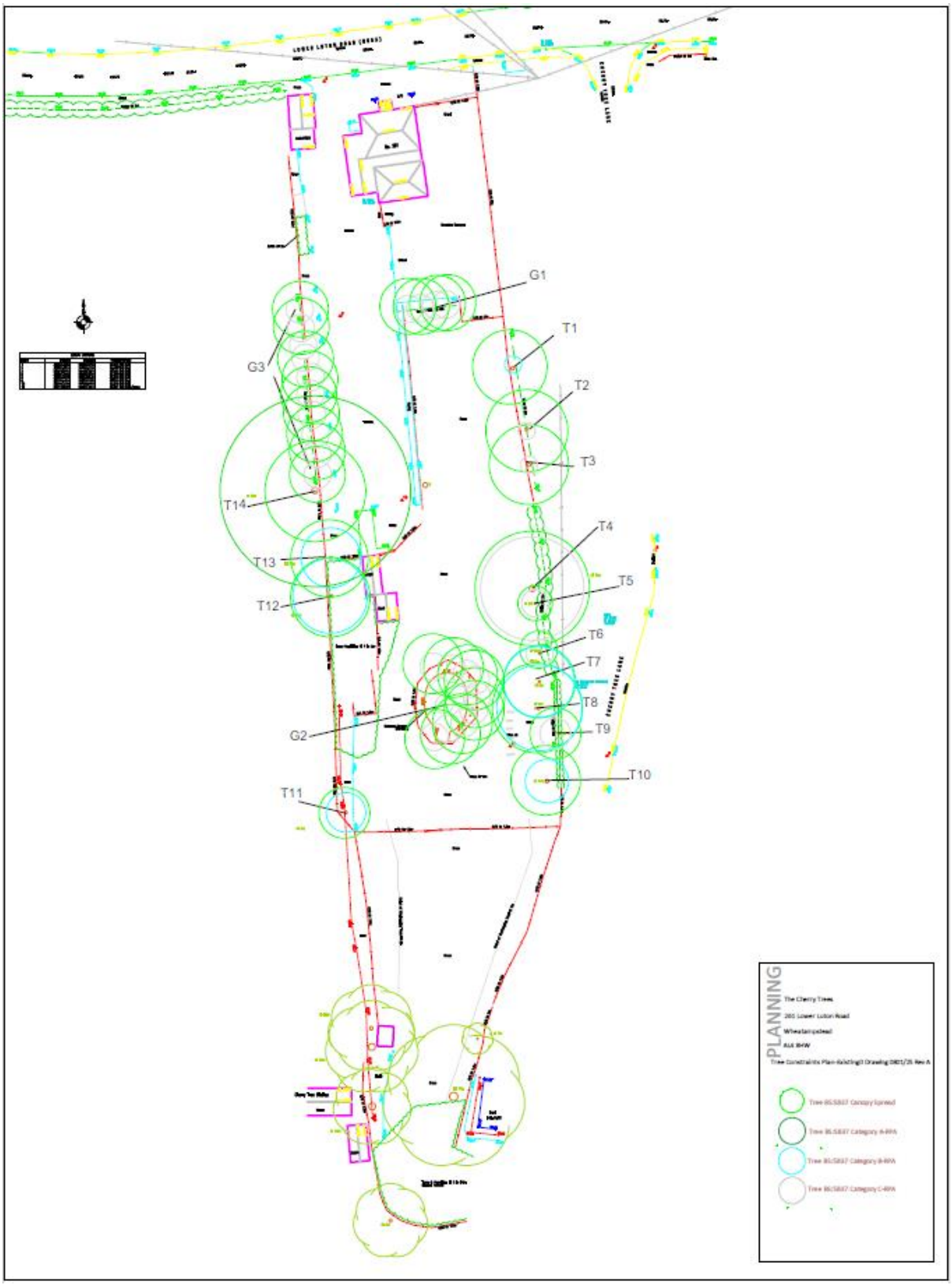
O Old: Fully mature trees in last quarter of their usual life-expectancy; vigour declining.

A Ancient: Very old; low vigour; liable to decline. May include important Veteran Trees

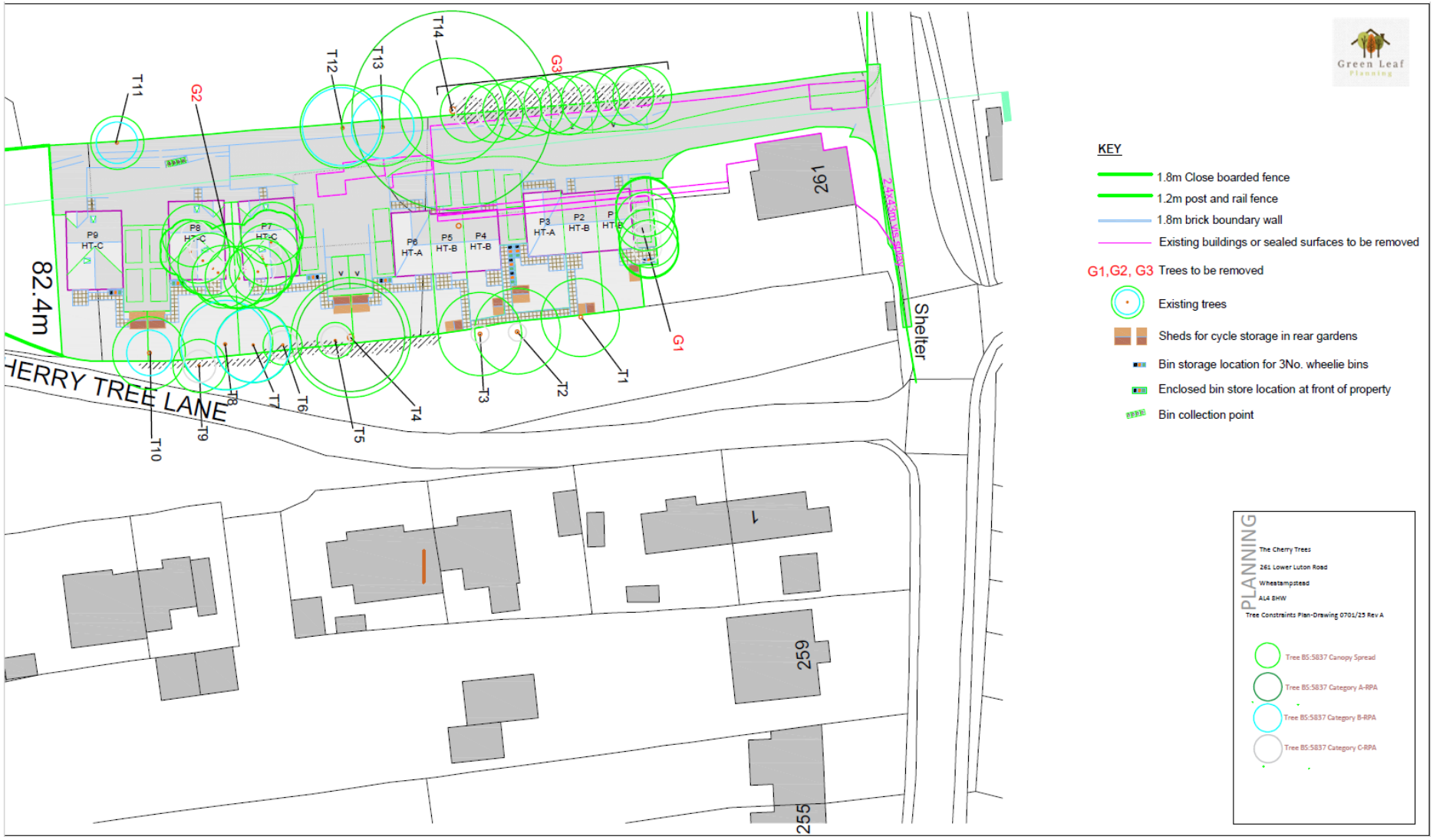
BS 5837:2012 Terms and Definitions

Access Facilitation Pruning	One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.
Arboricultural Method Statement	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
Arboriculturist	Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
Competent Person	Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached. *NOTE - a competent person is expected to be able to advise on the best means by which the recommendations of this British Standard may be implemented.*
Construction	Site-based operations with the potential to affect existing trees.
Construction Exclusion Zone	Area based on the root protection area from which access is prohibited for the duration of a project.
Root Protection Area (RPA)	Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority.
Service	Any above or below ground structure or apparatus required for utility provision. **NOTE** - examples include drainage, gas supplies, ground source heat pumps, CCTV and satellite communications.
Stem	Principal above ground structural component(s) of a tree that supports its branches.
Structure	Manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.
Tree Protection Plan	Scale drawing, informed by descriptive text where necessary, based upon the finalized proposals, showing trees for retention and illustrating the tree and landscape protection measures.
Veteran Tree	Tree that, by recognized criteria, shows features of biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species concerned. **NOTE** - these characteristics might typically include a large girth, signs of crown retrenchment and hollowing of the stem.

APPENDIX C



Tree Survey Plan- Existing



Tree Constraints Plan- Proposed

6	Greenleaf Ltd- Preliminary Arboricultural Implications Assessment including Tree Survey Data, a Tree Constraints Plan as Prescribed in BS 5837:2012 “Trees in Relation to Design, Demolition and Construction”.

APPENDIX D

BS5837:2012 Table 1 – Cascade chart for tree quality assessment

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see [BS5837:2012] 4.5.7.*			
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)	
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value	
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value	

FLAC Note

The original contents of the column *Identification on plan* have been replaced by FLAC in the version above; spot colours to RGB codes given in BS5837:2012 Table 2

APPENDIX E

TABLE OF CONTENTS

Appendices

1. **Introduction**

1.1 This method statement has been prepared for submission to St Albans City and District Council for the construction of 9 dwellings with associated shared access, parking and garden curtilages.

1.2 This document sets out the methodology for all proposed works that have the potential to affect any trees within the proposed working areas. Compliance with this method statement will be a requirement of all relevant contracts associated with the development proposals.

1.3 Copies of this method statement will be made available for inspection on site and will be forwarded to all contractors actively participating in the development works.

2. **Site Supervision and Reporting**

2.1 For the duration of the development a qualified arboriculturist will be appointed by the developer to supervise all arboricultural aspects of the works. The supervising arboriculturist must be approved by the local planning authority (LPA) at the commencement of works.

2.2 The supervising arboriculturist will be the point of contact between the developer and the LPA. Their primary responsibility will be to ensure that all arboricultural conditions of the planning permission are implemented and to advise on any further issues that arise during the development process.

2.3 In addition to the above, the supervising arboriculturist will also be responsible for:

- Induction of all contracting staff and raising of personnel awareness over the arboricultural implications of the development.
- Identification of individual responsibilities and key personnel within the workforce.
- Timing and methods of site visiting and record keeping, including updates.
- Procedures for dealing with variations and incidents.
- Procedures for reporting to the LPA over all arboricultural issues.

3. **Programme of Works**

3.1 All excavation, root pruning, formative pruning and any other arboricultural works approved as part of the development consent will be carried out prior to any other site works.

3.2 Measures for the protection of retained trees will be implemented on completion of the above tree works as detailed below (Section 4). All fencing erected for protection of trees will be maintained for the entire duration of construction works.

3.3 On completion of the development, the protective fencing will only be removed with the consent of the LPA to permit completion of the scheme. Note that permission for any additional tree works not included in the original development consent will need to be obtained through application to the LPA.

4**. Removal of existing hard surfaces and buildings within the RPA of Tree T14**

4.1 The two existing buildings to be removed (garage and shed) extends into the RPA of T14 by approximately 25m^2 as previously detailed and the existing tarmac car park area extends over the RPA of T14 by 187m^2.

4.2 Removal of finings and sub-soil layer beneath the car park surface will be undertaken to a depth of no more than 100mm and will be undertaken with microlite machinery or jack-hammer. Removal of the tarmac surface should start as close to the tree base as possible and work outwards so that any machinery is still positioned on the hard surfaces. Once the tarmac area is broken up and cleared no plant machinery to be permitted within the RPA of T14 unless from 'Trakmats' as specified in Appendix A.

4.3 Similarly the demolition of the buildings should ideally be undertaken from the existing hard surfaces and avoid any plant machinery entering any grass areas within the RPA. The demolition materials to be cleared towards the car park and not stored near the tree or within its RPA. Prior to any ground works or strip of tarmac, turf and topsoil the appointed arborist will be present to supervise works and ensure the maximum depth of initial excavation is no more than 100mm.

4.4 The turf and top-soil as well as any demolition materials will be immediately removed from site or moved to a location outside of the RPAs of any retained trees. No reduction in levels of the underlying soil surface will occur outside of the pre-defined area of excavation and demolition.

4.5 The underlying soil within the RPA may be levelled by the addition of good quality top soil to BS 3882: 1984. Hand tools only will be used for any levelling works; this work will not disturb the underlying soil. Should any roots over 25mm diameter be present within the 100mm excavation area their severance and/or removal will only be carried out under arboricultural supervision and with the approval of the Local Planning Authority. Any exposed tree roots within the areas of excavation will be cleaned, cut and trimmed to allow quicker recovery and re-growth of the root system. See Appendix B for further information.

4.6 Any exposed tree roots encountered during excavation works of 25mm diameter or less may be cleanly cut with sharp handsaw or secateurs under the supervision of the Project Arboriculturist.

5. **Construction of hard surfaces within RPA's – Trees T11, T12, T13 & T14**

5.1 The following methodology shall be applied when constructing hard surfaces within RPA's:

• Grass or other vegetation will be close cut/mown and all arisings removed by hand.

• All arisings will be wheel barrowed out of the RPAs.

• No excavation shall be carried out, other than as strictly necessary to accommodate the cross-over and the paved link between cross-over and the 'No-Dig' surfaces.

• Any depressions will be filled in with sharp sand.

• Geo-textile membrane will be laid out over the area where the proposed no-dig surfacing will be constructed within the RPA.

• Cellular confinement system will be laid over the geo-textile membrane e.g. 'Geo-web' or'Geo-Cell' cellular confinement matting. See Appendix B.

• The cells will be hand filled with granular material that allows air and water flow such as10mm washed gravel chippings (no fines) (working from the edge of the RPA towards the tree).

• Lay permeable surface over filled cells and construct timber edging to retain the surface.

• Bank up the edging with topsoil, which can be grass seeded in spring/autumn. This will form a gentle slope from the edging to the surrounding ground level. The area of 'no dig' construction is identified on the accompanying tree protection plan drawing in Appendix F.

6**. Installation of underground services**

6.1 The location of new underground services is not established. It is important that the routes are informed by the RPAs of retained trees so that it is avoided or only peripherally encroached upon. Where this is applied, little impact will result on tree roots. Where RPA incursion is unavoidable, a suitable methodology for installation will be required that may include a trenchless technique.

6.2 If excavations to accommodate services within RPA have become necessary, advice must be obtained from the Project Arborist in order to agree measures to minimise root disturbance, e.g., by ensuring drainage routes are aligned radially to tree stems.

6.3 Refer also to National Joint Utilities Group NJUG Volume 4 2007 'Guidelines for the planning and installation and maintenance of utility apparatus in proximity to trees' (NJUG - http://www.njug.org.uk)

6.4 Excavation to accommodate services within RPAs will not be allowed prior to agreement of positioning and methodology of installation has been agreed with the Local Authority Arboricultural Officer.

7. **Works to Existing Trees**

7.1 All proposed tree removals and tree works as detailed in Table 2 3 will be implemented in accordance with the approved plans and details. Works will be carried out to the current arboricultural industry best practice and at a minimum in accordance with 'BS 3998:2010 - Recommendations for Tree Work'.

7.2 Written notice shall be given to the LPA prior to carrying out the approved tree works and any operations that present a particular risk to trees (e.g. excavation or plant machinery within or close to trees).

7.3 Any additional tree works identified as being necessary during the course of the development will only be carried out with the consent of the LPA.

7.4 These trees are outside of a Conservation Area and are not protected by either individual or group Tree Preservation Orders.

Tree Number and Species	Proposed Works	Timing
G1- Cypress x 4	Fell trees at ground level and remove to existing hard surface such as the car park	Prior to ground work and construction commencing. Ideally outside the bird nesting season March-August
G2- x mixed species x 12	Fell trees at ground level and remove to existing hard surface such as the car park. At this time the concrete basin to be broken up and removed to existing hard surface such as the car park	Prior to ground work and construction commencing. Ideally outside the bird nesting season March-August
G3- Holly x 10	Fell at ground level and remove to car park areas to be chipped, burnt or removed from site.	Prior to ground work and construction commencing. Ideally outside the bird nesting season March-August
T4, T7, T8	Remove aerial deadwood. Crown work to remedy previous historic work and reduce canopy spread to increase clearance from plots 6-8	Prior to construction works commencing.

Table 2- Tree Works

8. Securing of Tree Structure and Root Protection Areas (RPA)

8.1 Before the commencement of any works on site (other than any preliminary tree works as detailed above) protective fencing will be erected.

8.2 The Tree Protection Plan (TPP) in Appendix F shows the position of the Tree Protection Fencing (TPF). This fencing comprises of one type as detailed below. Vertical banners should be erected and ground protection installed before any materials or machinery are brought onto site and before any demolition, development or stripping of soil commences.

8.3 Once erected, barriers and ground protection will be regarded as sacrosanct, and will not be removed or altered without prior agreement of an arborist and approval of the local planning authority.

8.4 Barriers must be fit for the purpose of excluding constructive activity, and appropriate to the degree and proximity of work taking place around the retained tree. On all sites, special attention should be paid to ensuring that barriers remain rigid and complete.

8.5 In most cases, barriers should consist of a scaffold framework in accordance with Figure 1 comprising a vertical and horizontal framework, well braced to resist impacts, with vertical tubes spaced at a maximum interval of 3m. Onto this, weld mesh panels should be securely fixed with wire or scaffold clamps. Weld mesh panels on rubber or concrete feet are not resistant to impact and should not be used. Due to the small scale of the proposed works sturdy 'Heras' fencing may also be acceptable for the tree protective fencing.

8.6 Should any alternative method of barrier construction be proposed, consultation with the developer's arborist will be obtained to clarify the efficacy of the revised design prior to informing the local planning authority and obtaining their consent.

8.7 Once the exclusion zones have been protected by barriers and/or ground protection, demolition, ground works and construction can commence. All weather notices should be fixed to the barriers with the words: 'Construction exclusion zone – Keep out' or similar. All-weather notices will be displayed on the protective fencing identifying them as tree protection measures (example notice in Appendix A).

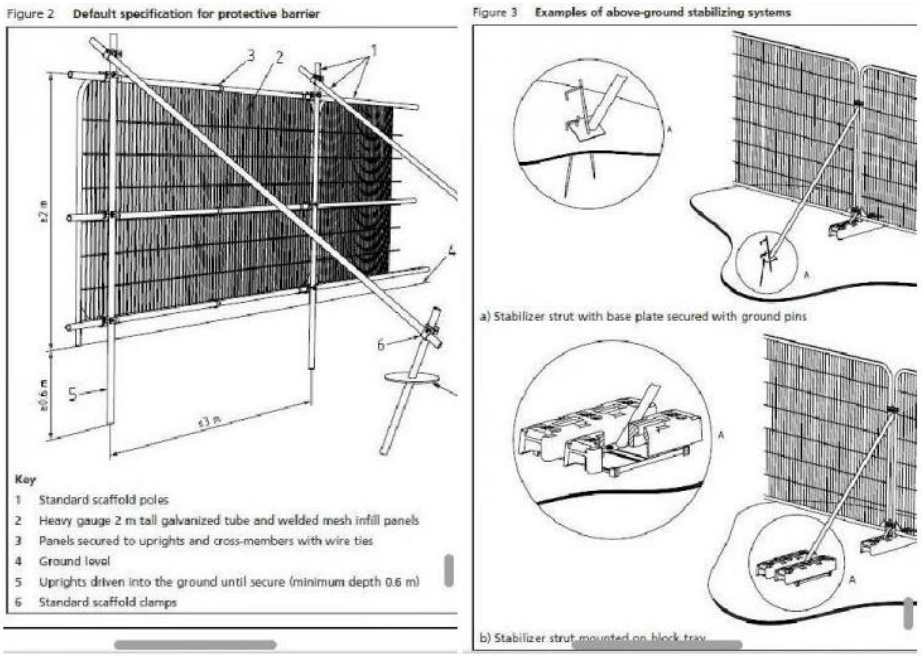


Figure 1- Specification for tree protective fencing

8.8 Other than works detailed within this method statement or approved in writing by the LPA, no works (including any vehicular movements, storage or dumping of materials, stripping of soil) will take place within the exclusion zones defined by the protective fencing. This is to reduce to a minimum compaction of the root systems.

9. **Works within the RPA and ground protection measures**

9.1 No excavation works will be undertaken within the Root Protection Areas of any trees other than for the removal and clearance of existing hard surfaces and installation of no-dig surfaces within the RPAs of trees T11, T12, T13 and T14 as shown in Appendix F.

9.2 Excavation works will be kept to a minimum where close to the edges or within the plotted Root Protection Areas (RPA) and will be undertaken with the use of 'Microlite Excavator' or similar to avoid the use of heavy plant machinery which may otherwise cause unwanted ground compaction within the RPA. Any excavated soil will be stored outside of the RPA and removed off-site on completion.

9.3 In the event that any root systems are encountered within the excavation areas they will be cleaned and pruned by a suitably qualified arboriculturalist following the methodology in Appendix B.

10. **General Precautions**

10.1 No materials that are likely to have an adverse effect on tree health such as oil, bitumen or cement will be stored or discharged within the RPA.

10.2 Allowance will be made for any slope of the ground to ensure that damaging materials such as concrete washings, mortar or diesel oil is prevented from running towards trees. Protective sheeting must be used in and around any areas of concrete mixing to protect the soil in the event of spillage.

10.3 No fires will be lit in a position where their flames can extend to within 5 meters of the foliage, branches or trunk of any tree that is to be retained.

10.4 Notice boards, telephone cables or other services will not be attached to any part of the trees to be retained.

Appendix A

Tree protection area and Protective fencing sign

Appendix B

GRASSFORM GROUP

Ground Protection and turf care specialists

01277 353 686

View My Basket

0 items

HOME | ABOUT US | PRODUCTS | SERVICES | SOLUTIONS | NEWS & MEDIA | CLIENTS | CONTACT US

GROUND PROTECTION

- TuffTrak
- Trakmats
- Euromats
- PortaPath
- Connector Sets

GROUND REINFORCEMENT

- Geogrid Premium
- Geogrid Delineation Markers
- GRB
- GRB Delineation Markers
- Need Help? - Chat now
- TurfProtecta Mesh
- GrassCarpet
- U Pins

PVC / RUBBERISED

Home › Products › Ground Protection › Trakmats

Search...

Trakmats

Trakmats, Ground Protection Mats

Suitable for heavy vehicles. Weight bearing is subject to ground conditions, not suitable for 8 wheelers or vehicles alike – please see Tufftrak; Construction Sites, Car Parks, Embankment Stabilisation and more.

Hire Product | Buy Product

Price per board per day: £1.20 inc VAT

Minimum hire: 7 days.
Minimum quantity 10 mats
Cleaning charges apply

Enquire about hiring this product

We are now offering Trakmats, which are aimed at a variety of industries and applications. Their unique self cleaning gripped surface is aimed at dispelling mud but will still give grip to vehicles or pedestrians as they cross the mat.

GROUNDTRAX
Ground Protection and Reinforcement

08456 800008
info@groundtrax.com

» Home | » About Us | » Products | » Solutions | » Latest News | » Contact

GROUNDMATZ

GroundMatz temporary roadway protection panels are a quick and affordable solution. With a unique anti-slip traction pattern and pleasing green colour, our panels will help prevent expensive damage and reinstatement costs to grassed or sensitive outside areas.

Our GroundMatz trackway panels are used daily throughout the UK across a wide range of industries including civil engineering, landscaping, golf course and sports field maintenance, holiday home parks, heritage and archaeological sites and a multitude of other applications. This enables more efficient and safer working conditions whilst at the same time promoting a more professional image to clients and customers.

We keep stock of temporary trackway panels for purchase and hire ready for immediate dispatch or collection, and can deliver using our own transport, nationwide pallet delivery companies or if your prefer, your own transport.

For more information on GroundMatz – contact us on 08456 800008.

» Hire GroundMatz | » Purchase GroundMatz | » Features | » Specifications | » Downloads

Hire GroundMatz

Our anti slip traction panels are available for temporary road hire at a rate of £1.00 per panel per day (subject to a minimum charge of £10.00 per panel) and a minimum order value of £250.00 excluding delivery charges.

Panels sent out are securely strapped to a timber pallet or steel stillage. A nationwide delivery service is available either via our own transport or the pallet delivery network, with each pallet holding a maximum of 30 panels and weighing approximately 1100 kg. It is the Hirer's responsibility to to provide suitable pallet-lifting machinery.

Ground Protection, Root Pruning and No-Dig Construction

Ground Protection-

If any plant machinery is required within the RPA's of trees within the CEZ, then Trakmats or similar ground protection mats must be used to prevent unwanted ground compaction within the RPA's of the trees. These can be secured using steel pegs and should remain in place until the access drive is completed.

Root Pruning

Source: Root Pruning Kelby Fite, PhD, Plant & Environmental Science & E. Thomas Smiley, PhD, Urban Forestry

Root pruning is the process of cutting roots prior to mechanical excavation near a tree. Root pruning may be necessary to minimize damage to the tree's root system during construction or in preparation for large tree transplanting. Improper root pruning and root damage from excavation can cause great harm to a tree which may affect tree health and/or structural stability. A tree risk assessment should be performed prior to cutting any roots and alternative techniques, such as boring under the roots, should be considered.

Root Pruning Methods

When pruning roots, there are guidelines regarding size: roots less than one inch (2.5 cm) in diameter can easily be cut with hand tools while cutting roots greater than three inches (7.5cm) in diameter should be avoided whenever possible. There are three general methods of root pruning in the one- to three-inch diameter range:

- Air/Water/Hand Excavation and Pruning- Excavating roots requires the use of the AirSpade®, hydro excavation or hand tools. This exposure allows the arborist to evaluate the best places to cut, preferably beyond sinker roots or junctions. Roots can be cut most cleanly with a sharp saw or lopper. Exposed fine roots that are to be preserved may be covered with burlap and sprayed with water, or they can be sprayed with a hydrated, fine, water-holding gel to prevent desiccation.

- Root-cutting Machinery- A root pruner, such as the Dosko or Vermeer Root Pruner, is faster than the previous method (Figure 1). These tools have teeth similar to a stump grinder and provide relatively clean root cuts. However, this method does not allow for the arborist to evaluate the exact location of the pruning cuts and will, likewise, be indiscriminate.

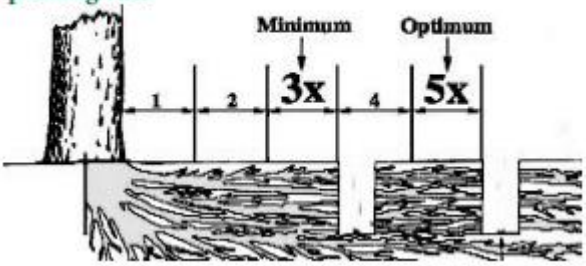
- Trencher or Excavator- A chain trencher or excavator is one of the worst ways to prune roots because they often lift surface roots out of the soil until they break and leave other roots crushed or torn. After using a trencher, it is better to prune the damaged ends by hand than to leave them untreated. Sometimes, due to site constraints, trenchers are the only option due to their flexibility.

Root Cut Placement

The further from the trunk that root cutting occurs, the better, but generally root cuts made outside a normal dripline of a tree rarely cause permanent tree damage. The preferred minimum distance from the trunk to the closest root cut is 5 to 6 times the DBH.

For example, with a 12-inch (30 cm) diameter tree, the root cut distance should be 60 to 72 inches (5 to 6 feet, 1.5 to 1.8 m). At this distance, there should be minimal impact on the health or stability of most tree species with proper aftercare. For root cuts on only one side of a tree, the root cut distance can be somewhat closer to the trunk than cuts on more than one side. The preferred minimum distance in this case is three times the DBH. For example, with a 12-inch (30 cm) diameter tree, the distance would be 36 inches (3 feet, 0.9m) (Figure 2). This distance is too close if there is pavement over the other side of the root system, if the tree has root decay, is leaning or has other indications of root disturbance. These trees also need proper aftercare to reduce the risk of health problems. Figure 2: General guidelines for locating root pruning cuts In all cases, consider variables such as tree species, age, tree health, and soil characteristics (including the presence of underground root obstructions) when determining location of root pruning. Cuts made closer to the trunk may dramatically compromise stability and health and should be avoided.

Figure 2: General guidelines for locating root pruning cuts



Plant Health Care Before and After Root Pruning

Tree health and soil moisture should be monitored frequently following root pruning. Root pruning should not be done immediately prior to or during a drought period unless the tree will have adequate irrigation. Irrigation should be applied prior to and after root pruning if there is not adequate rainfall. Monitor for secondary pests and apply protective treatments to susceptible trees for lethal invaders such as borers. Fertilizer and soil amendments should be applied according to soil or foliar nutrient analysis test results. Root Invigoration should be performed to promote root regeneration and a better environment for remaining roots. At a minimum, mulch should be applied to reduce soil moisture loss and promote root growth.

No-Dig Construction- Footpath within RPS of T11 and access within RPA of T12, T13 & T14

The proposed construction methodology for the footpath through the RPA of tree T11 and access through the RPA of trees T12-T14 will be no-dig as marked on the TPP. The construction will require 100mm of base stone beneath a geotextile laid on the ground, over which Terram Geocell, Cell-web, Grid-Force or similar is laid and stone spread. The type of stone must be a no fines stone that is free draining. If gravel is used as the final finished permeable surface, then the blocks should be backfilled with 38mm of 10mm single size (no fines stone) to the top of the grid. The total finished construction depth should be 150-200mm.

Schedule of works:

- Area of footpath and access to be marked out with sufficient room along edges for works.
- Once marked out the tree protective fencing is to be erected in accordance with the tree protection plan in Figure 1.
- A shallow scrape to a depth of no more than 50mm of the surface material will be undertaken using hand tools only. Some re-profiling of the ground outside of the RPA may be required to raise levels to meet the top level of the cell-web.
- Any exposed tree roots which are exposed during ground works will be cleaned, cut and trimmed by hand to allow quicker recovery and re-growth of the root system. Root pruning is a very specialized operation that should only be undertaken with the support and supervision of an arboriculturalist or tree surgeon. Severance of root stems greater than 25mm diameter should be avoided where possible. Pruning of buttress or other major roots can make the tree unstable. Severance of more than 30% of a tree's root system is quite likely to cause slow dieback and eventual death of a mature tree.
- No plant machinery is to be permitted within the construction exclusion zone (CEZ) beyond the fence line.
- All spoil from to be removed off-site
- Supply and lay construction grade geotextile should site conditions warrant its inclusion.
- Lay edging to new cell-web edges
- No compacted or crushed materials to be laid within the RPA. A 3d cellular grid mesh confinement system will be used to form the sub-base. The cells will be filled with clean angular stones to retain permeability over the roots and minimise compaction. A permeable membrane will be laid under the Cellweb Tree Root Protection System (TRP) as detailed below.
- Clear all site of debris and rubble on completion and make good.
- Any drainage requirements, access cover fittings, kerbs, edgings, or other sundries are additional to the specification given above

Cellweb® TRP

Tree Root Protection

Cellweb® TRP is a 3D cellular confinement tree root protection system. The system provides a 'no dig' solution for the construction of new hard surfaces within root protection areas (RPAs). Cellweb® TRP has been designed and independently tested to comply with recommendations made in Arboricultural Practice Note 12 and BS 5837 2012 – Trees in relation to design, demolition and construction.

Cellweb® TRP Key Functions

Cellweb® is a 'no dig' solution which is constructed directly on the existing ground surface. This eliminates the requirement for excavation, preventing root severance.

Cellweb® is a completely porous system allowing continued water permeation and gas exchange between the rooting environment and atmosphere.

Cellweb® spreads point loads, minimising increases in soil compaction within the rooting environment. This maintains an open graded soil structure allowing continued root growth, water, gas and nutrient migration.

The Cellweb® TRP system comprises the following three components

Treetex™ Geotextile. Following minimal ground preparation the Treetex™ is laid onto the existing ground and top soil. This acts as a separation layer, separating the system above from the soil and rooting environment below. Treetex™ performs as a hydrocarbon pollution control measure in accordance with BS5837, holding 1.7lt of oil per square meter.

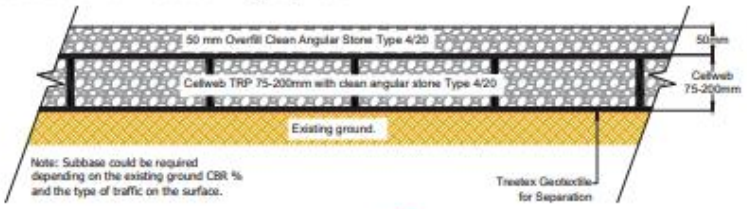
Cellweb® 3D Cellular Confinement. The Cellweb® is installed on top of the Treetex™ layer. This is fixed to the ground using ten steel J pins per panel. The panels can be cut to the required shape and adjoining panels can be connected using heavy duty staples or cell ties.

4-20mm Clean Angular Stone. The expanded Cellweb® is infilled with a 4-20mm clean angular stone. The confined angular stone locks together to produce a rigid stone mattress, while maintaining air pockets for continued water permeation and gas exchange. The low fines content of the stone prevents the Treetex™ layer from becoming blocked over time.

Which depth of Cellweb® TRP?

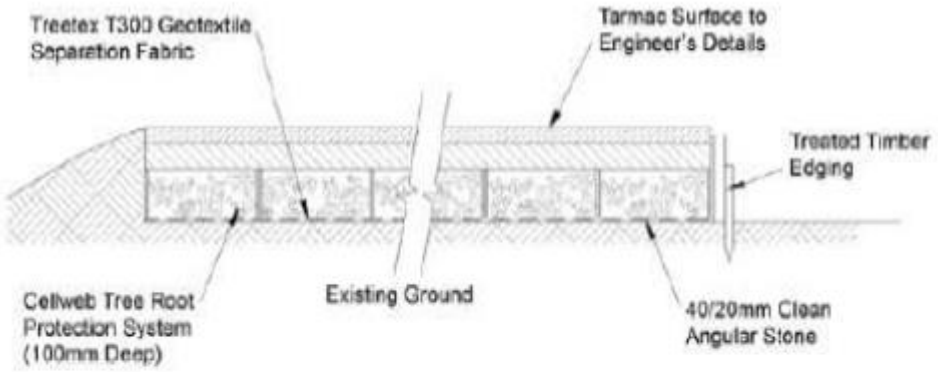
The Cellweb® System is provided in four different depths; 200mm, 150mm, 100mm and 75mm. The depth required is determined by the proposed traffic loadings and the site ground conditions. Geosynthetics in house engineering department can provide a free site specific technical recommendation. For free technical and engineering support please contact Geosynthetics Ltd 01455 617139 or the full installation guide can be found on our website www.geosyn.co.uk.

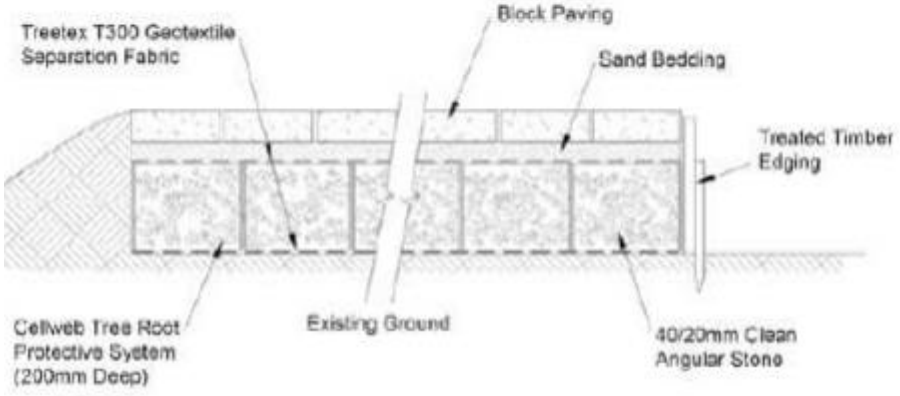
Indicative Cellweb with overfill



Web: www.geosyn.co.uk | Tel: 01455 617139
Fax: 01455 617140 | Email: Sales@geosyn.co.uk

Geosynthetics
Engineered Solutions


Treetex T300 Geotextile
Separation Fabric
Tarmac Surface to
Engineer's Details
Treated Timber
Edging
Cellweb Tree Root
Protection System
(100mm Deep)
Existing Ground
40/20mm Clean
Angular Stone


Block Paving
Treetex T300 Geotextile
Separation Fabric
Sand Bedding
Treated Timber
Edging
Cellweb Tree Root
Protective System
(200mm Deep)
Existing Ground
40/20mm Clean
Angular Stone

Appendix C

Annex B (informative)

Trees and the planning system

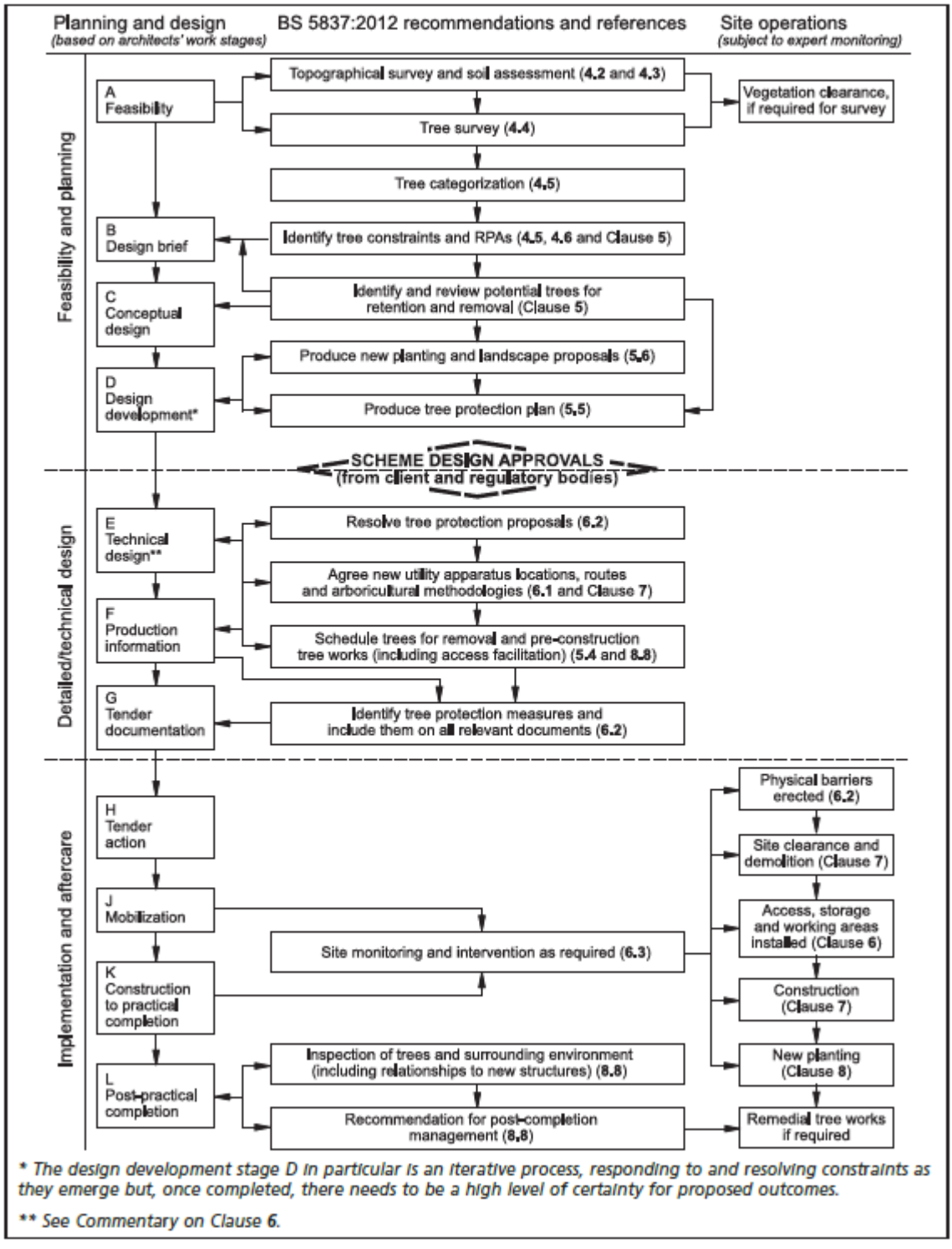
Under the UK planning system, local authorities have a statutory duty to consider the protection and planting of trees when granting planning permission for proposed development. The potential effect of development on trees, whether statutorily protected (e.g. by a tree preservation order or by their inclusion within a conservation area) or not, is a material consideration that is taken into account in dealing with planning applications. Where trees are statutorily protected, it is important to contact the local planning authority and follow the appropriate procedures before undertaking any works that might affect the protected trees.

The nature and level of detail of information required to enable a local planning authority to properly consider the implications and effects of development proposals varies between stages and in relation to what is proposed. Table B.1 provides advice to both developers and local authorities on an appropriate amount of information. The term "minimum detail" is intended to reflect information that local authorities are expected to seek, whilst the term "additional information" identifies further details that might reasonably be sought, especially where any construction is proposed within the RPA.

Table B.1 **Delivery of tree-related information into the planning system**

Stage of process	Minimum detail	Additional information
Pre-application	Tree survey	Tree retention/removal plan (draft)
Planning application	Tree survey (in the absence of pre-application discussions)	Existing and proposed finished levels
	Tree retention/removal plan (finalized)	Tree protection plan
	Retained trees and RPAs shown on proposed layout	Arboricultural method statement – heads of terms
	Strategic hard and soft landscape design, including species and location of new tree planting	Details for all special engineering within the RPA and other relevant construction details
	Arboricultural impact assessment	
Reserved matters/ planning conditions	Alignment of utility apparatus (including drainage), where outside the RPA or where installed using a trenchless method	Arboricultural site monitoring schedule
	Dimensioned tree protection plan	Tree and landscape management plan
	Arboricultural method statement – detailed	Post-construction remedial works
	Schedule of works to retained trees, e.g. access facilitation pruning	Landscape maintenance schedule
	Detailed hard and soft landscape design	

Figure 1 **The design and construction process and tree care**



** The design development stage D in particular is an iterative process, responding to and resolving constraints as they emerge but, once completed, there needs to be a high level of certainty for proposed outcomes.*

*** See Commentary on Clause 6.*

Appendix D- Development Notes

BS5837: 2012 states:

In order to avoid disturbances to the physical protection forming the construction exclusion zone once it is installed, it is essential to consider, make allowances for and plan all construction operations which will be undertaken in the vicinity of the trees, in particular:

a) Site construction access;
b) The intensity and nature of the construction activity;
c) Contractor's car parking;
d) Phasing of construction works;
e) The space needed for all foundation excavations and construction works;
f) The availability of special construction techniques;
g) The location and space needed for all service runs including foul and surface water drains, land drains, soakaways, gas, oil, water, electricity, telephone, television or other communication cables;
h) All changes in ground level, including the location of retaining walls, steps and making adequate allowance for foundations of such walls and backfilling's;
i) Spaces for cranes, plant, scaffolding and access during works;
j) Space for site huts, temporary latrines (including their drainage) and other temporary structures; k) The type and extent of landscape works which will be needed within the protected areas and the effects these will have on the root system;
l) Space for storing (whether temporary or long-term) materials, spoil and fuel and the mixing of cement and concrete;
m) The effects of slope on the movement of potentially harmful liquid spillages towards or into protected areas.

Appendix E- BS 5837: 2005 - Types of hard surfaces and their suitability in proximity to trees

General

If a hard surface is proposed above the granular material, a permeable and gas-porous finished surface (wearing course) should be installed. In some situations, consideration should be given to constructing the final surface prior to the main building works, so as to provide protection for the roots at subsequent stages. However, it may be desirable to protect the final surface from drainage with a temporary covering.

Washed gravel

Washed gravel retains its porosity unless excessively consolidated and is particularly useful where changes of level occur or an irregular shape is needed around the stem of a tree. Gravel is easily renewed or topped up. Although weeds may become established, they can be controlled by chemical or mechanical means. However, gravel is rarely suitable for use where there is vehicle or pedestrian traffic for example, in residential areas. Materials with a high fines content, such as binding gravels or hoggin, should not be used due to their almost impermeable texture when consolidated.

Paving slabs and block pavers

Paving slabs and block pavers are available with built in infiltration spaces between the slabs or blocks. These are ideal, though they should be laid dry-jointed on a sharp sand foundation to allow air and moisture to penetrate to the rooting area.

In situ concrete

As in situ concrete forms an impermeable surface, falls and openings should be provided for water and air to enter the soil. This can be achieved by forming 50mm diameter holes in the construction of a slab at regular spacing's of 300-600mm (as determined by an engineer) and back-filling the resulting holes with no-fines gravel or aggregate. A high standard of material and workmanship is needed if frost damaged and excessive wear are to be avoided.

Bitumen paving

Bitumen paving can consist of porous or impermeable material. As the interstices in unsealed tar paving will eventually become blocked by silt, all such paving should be laid following the same principles as those for impermeable surfaces. Its use within the RPA should, therefore, be restricted to the following parameters: new impermeable surfacing within the RPA should be restricted to a maximum width of 3m and situated tangentially to one side of a tree only, or confined to an area no greater than 20% of the RPA whichever is smaller.

Edge supports

The excavation needed for the placement of kerbs, edgings and their associated foundations and haunching's can damage tree roots. Within the RPA, this should be avoided either by the use of alternative methods of edge support or by not using supports at all. For example, where kerbing is required for light structures, such as footpaths, peg and board edging may be acceptable. For more substantial structures, such as estate roads, railway sleepers may be acceptable, retained in place with track pins or road pins.

Appendix F

Tree Protection Plan -TPP