



## ARBORICULTURAL IMPACT ASSESSMENT REPORT

BS 5837:2012 'Trees in relation to design, demolition and construction - Recommendations'

# Report

SITE  
Land between 42 & 44 Ongar Road, Abridge  
CLIENT  
Landiplomacy Ltd

**Philippa Roberts**  
FdSc, MArborA

**DATE: 24<sup>th</sup> May 2021**  
**OUR REF: RA 201**



## Executive summary

This report is submitted in connection with a planning application for two residential properties at land between 42 & 44 Ongar Road, Abridge. All information is provided in accordance with the British Standard BS 5837: 2012 '*Trees in relation to demolition, design and construction – recommendations*'.

The proposed development requires the removal of one group of low-quality trees and one tree unsuitable for long-term retention, due to poor health. All other trees will be retained and will be protected during construction. All proposed demolition and construction is beyond the crown spread and root protection areas of trees to be retained.

Provided the recommendations made within this report are followed, the proposed development should not adversely affect trees to be retained, and therefore should be acceptable to the Local Planning Authority from an arboricultural point of view.

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## Contents

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Heading number	Detail	Page number
1	Introduction and background	4
2	Statement of instructions and issues addressed	4
3	The site	5
4	The trees	5
5	The proposal	5
6	Arboricultural Impact Assessment	5
7	Conclusions	8
8	Recommendations	9

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## Appendices

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1	Tree survey sheets	10
2	Tree survey plan RA 201 TSP	14
3	Tree protection plan RA 201 TPP	16
4	Tree surgery schedule	18
5	Tree protection specification	20
6	Draft method statements incorporating site supervision	25
7	Tree related legislation affecting the site and relevant local policies	28
8	Statement of methodology and reference material	31
9	Caveats & Exclusions	33
10	Glossary	35

**1. Introduction:**

- 1.1. This report accompanies a planning application made by Landiplomacy Ltd to Epping Forest District Council, for two residential properties at land between 42 & 44 Ongar Road, Abridge.
- 1.2. This report details tree condition, the impact of the proposal on, and from, the existing trees and the measures taken to protect trees to be retained. It also includes tree surgery recommendations.
- 1.3. The survey has resulted in a layout as shown in the tree protection plan at Appendix 3. Where technical terms are used, explanations are provided within the glossary.

**2. Statement of instructions and the issues addressed:**

- 2.1. Roberts Arboriculture Limited have been instructed by Landiplomacy Ltd, to:-
  - 2.1.1. Carry out a tree survey in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*';
  - 2.1.2. Analyse the proposals and the impact on trees to be retained;
  - 2.1.3. Produce a tree protection plan, showing the location of the tree protection fencing in accordance with BS 5837 and a specification for the protection of the existing trees;
  - 2.1.4. Provide a tree surgery schedule which includes work to facilitate construction, based on the layout, and works to trees, due to their condition or previous management;
  - 2.1.5. Provide an arboricultural method statements in as much detail as is practical at this stage.

### **3. The site:**

- 3.1. This site is located on the eastern aspect of Ongar Road, opposite Abridge Village Hall. It is bounded by Ongar Road to the north-west and no.44 Ongar Road to the north-east, further residential garden space to the south-east and no. 42 Ongar Road to the south-west. There is an existing access point and parking area off Ongar Road. The remainder of the site is predominantly lawn with some large outbuildings.
- 3.2. Site soils: An assessment of soils on-site was carried out by a desktop analysis using the National Soil Resources Institute website which identified the soils as likely to be 'slowly permeable, seasonally wet, slightly acid but base-rich loamy and clayey soils'. This is a guide only and detailed on-site soil analysis should be undertaken by the project engineer to inform the foundation design.

### **4. The trees:**

- 4.1. Generally: There are three individual trees and two groups of trees which form the subject of this report, two of which are located offsite. Full details are found in the survey sheets at appendix 1 and their location on the tree survey plan RA 201 TSP at appendix 2.
- 4.2. Legislation: No on-line details in respect to the legal status of trees is available on the Epping Forest District Council website. Therefore, a more formal enquiry will need to be made to the council to determine the legal status of trees within the site.

### **5. The Proposal**

- 5.1. The proposal is for the construction of two residential properties, with off street parking.

### **6. Arboricultural impact assessment:**

- 6.1. Summary of the impact on trees: Development can adversely impact trees; either through removal to facilitate development; future pressure to prune or remove, through poor layout design/consideration; or from a future decline in health or structural condition, through a lack of suitable protection during development.

- 6.2. Tree roots can be asphyxiated and die if the rooting zone becomes compacted and soil structure damaged, which can easily occur, particularly on clay soils, even with the passage of light vehicles. At the design stage, disturbance within the RPA should be avoided. If unavoidable (which may need demonstrating), consideration must be given to any construction activity such as demolition, including removal of existing hard surfaces, changing soil levels and the provision of services where within RPAs, as well as new surfaces and structures.
- 6.3. At the planning stage, any works proposed with RPAs must be shown to be achievable with minimal impact on retained trees. Areas should be identified where a detailed Arboricultural Method Statement will be required post planning consent.
- 6.4. Construction of hard surfaces and other construction may be acceptable within RPAs providing specialist methods of design and construction are used. This can result in the use of minimal or no-dig methods which result in higher finished levels which must be allowed for during design, due to the effect on access thresholds and structure heights etc. The ability of trees to tolerate some disturbance depends on individual circumstances including prevailing site conditions, tree species, age and condition.
- 6.5. Building lines, ideally, should be at least 2m outside of the RPA to allow for scaffolding and other construction issues, and to allow for service runs and paths around the edge of buildings. Trees are long-lived organisms which take a long time to mature and if considered at an early stage can complement and increase the value of a development.

#### 6.6. Arboricultural Impact Assessment

It is proposed to remove one group of low-quality trees and one tree, which is unsuitable for long-term retention due to poor health.

#### 6.7. *Comments on specific trees and the arboricultural impact*

##### 6.7.1. **G1, linear group of cypress**

A linear group of trees, presumably planted to screen the site from Ongar Road. No formal management has been carried out to maintain the screening density of the lower growth, although it has been pruned back to prevent encroachment onto the parking area.



Photo 1 – G1, linear group of cypress, looking west towards Ongar Road

Arboricultural impact assessment: The trees are to be removed to allow the existing access to be widened.

#### 6.7.2. T3, offsite silver birch

An offsite tree located close to the site boundary. The tree has been crown reduced which has detracted from its amenity value, but appears to be in reasonable health and condition.



Photo 2 – T3, offsite silver birch, looking south

Arboricultural impact assessment: There should be no impact to this tree.



**6.7.3. T4, offsite locust tree & G5, 2 x onsite cypress**

The offsite locust tree is heavily ivy clad, to the point where it will be significantly impacting the tree's photosynthetic potential. The two onsite cypresses are unremarkable trees of average form and condition.



Photo 3 – T4, locust trees (centre) & G5, 2 x cypress (left and right), looking south

Arboricultural impact assessment: There should be no impact to these trees

**7. Conclusions:**

- 7.1. Only one group of low-quality trees is proposed to be removed to facilitate the development. One further tree is proposed to be removed due to poor condition.
- 7.2. All demolition and construction works are located outside the crown spreads and RPAs of trees to be retained.



## 8. Recommendations:

- 8.1. That a copy of this report is kept on site, including a colour copy of the tree protection plan. The arboricultural documents will be part of site induction by the main contractor to all sub-contractors.
- 8.2. That the foundation design takes into account trees to be retained, trees to be removed and trees to be planted.
- 8.3. That there are no ground level changes within the area shown on the plan by tree protection fencing.
- 8.4. That the line of the underground services should be ideally located outside of Root Protection Areas. However, as a precaution the final service plan should be assessed by an arboriculturist. If it is unavoidable that services are to be located in RPAs, then a method statement must be produced.
- 8.5. That the landscaping scheme includes a mix of trees from a cross section of species to ensure biosecurity against host specific pests and diseases. The trees must be planted and maintained in accordance with BS 8545:2014 *Trees: from nursery to independence in the landscape – Recommendations*.
- 8.6. That no tree works take place until consent is granted.
- 8.7. That the tree protection fencing is installed before machinery enters the site and remains in place until the soft landscaping stage.
- 8.8. That the locations of any exploratory, intrusive investigation for contamination are assessed by the arboricultural consultant, including ground remediation methodology near trees.
- 8.9. That the drainage strategy detailing on and/or offsite drainage works, including SuDS, is reviewed by the arboricultural consultant to ensure minimum impact on trees to be retained, and is mindful of new trees to be planted.

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## Appendix 1

### Tree survey sheets

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### Explanation of the tree survey sheets

The tree survey has been carried out in accordance with BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations'. Below is an annotation of the abbreviations in the sheet and their meanings.

1	2	3	4	5	6	7	8	9	10	11	12	13	14			
Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m)	RPA (m²)	Comments	Recommendations

#### 1 Tree

**T** - Tree, **G** - Group of trees, **H** - Hedge and **S** -shrub mass

#### 2 Species - Botanical name and (Common name)

#### 3 Age

**NP** – Newly planted, **Y** – Young - an establishing tree that could be easily transplanted

**SM** - Semi-mature - an established tree still to reach its ultimate height and spread with considerable growth potential.

**EM** – Early mature – a tree reaching its ultimate height and whose growth is slowing, however it will still increase considerably in stem diameter and crown spread.

**M** – Mature – a tree with limited potential for further significant increase in size, although likely to have a considerable safe useful life expectancy

**OM** – Over-mature – of an age where the mature size of the tree can no longer be maintained, and adaptive growth strategies such as retrenchment (growing down) are commencing. These strategies should not be confused with senescence or a moribund condition, as a good life expectancy can remain.

**V** – Veteran/Ancient – either a tree older than typical for the species, or a tree showing signs of age, and of great ecological, cultural or aesthetic value.

#### 4 Dia (mm)

Diameter of the stem in millimetres at 1.5m above ground level for single stemmed tree or in accordance with Annex C of BS 5837 for multi-stemmed trees or trees with low forks or irregular stems.

#### 5 Stems

Number of stems. Multi-stemmed is m/s

#### 6 Height (Crown height)

Height in metres from the ground to the top of the crown

(Crown height) – height of canopy above ground level

#### 7 NSEW

The crown spread from the trunk to the tips of the crown at the four cardinal points

#### 8 Cond

Physiological condition. Good, fair, poor or dead

#### 9 Life Exp

Estimated remaining contribution in years; <10, 10+, 20+ and 40+.

#### 10 BS Cat

Category in accordance with Table 1 and section 4.5 of BS

**U** – unsuitable for retention. Existing condition is such that they cannot be realistically retained as living trees in the context of the current land use for longer than 10 years. Note, category U trees can have existing or potential conservation value which might be desirable to preserve.

**A** – high quality and value (non-fiscal) with at least 40 years remaining life expectancy

**B** – moderate quality and value with at least 40 years remaining life expectancy

**C** – low quality and value with at least 10 years remaining life expectancy, or young trees with a stem diameter below 150mm

A, B and C category trees are additionally graded into: 1 – mainly arboricultural values, 2 – mainly landscape values and 3 – mainly cultural values including conservation

#### 11 RPR (m)

RPR – Root protection area radius (m)

#### 12 RPA – Root protection area (m<sup>2</sup>)

#### 13 Comments

Detailed comments about the tree

#### 14 Preliminary recommendations

Recommendations based on the tree's conditions and its current surroundings.

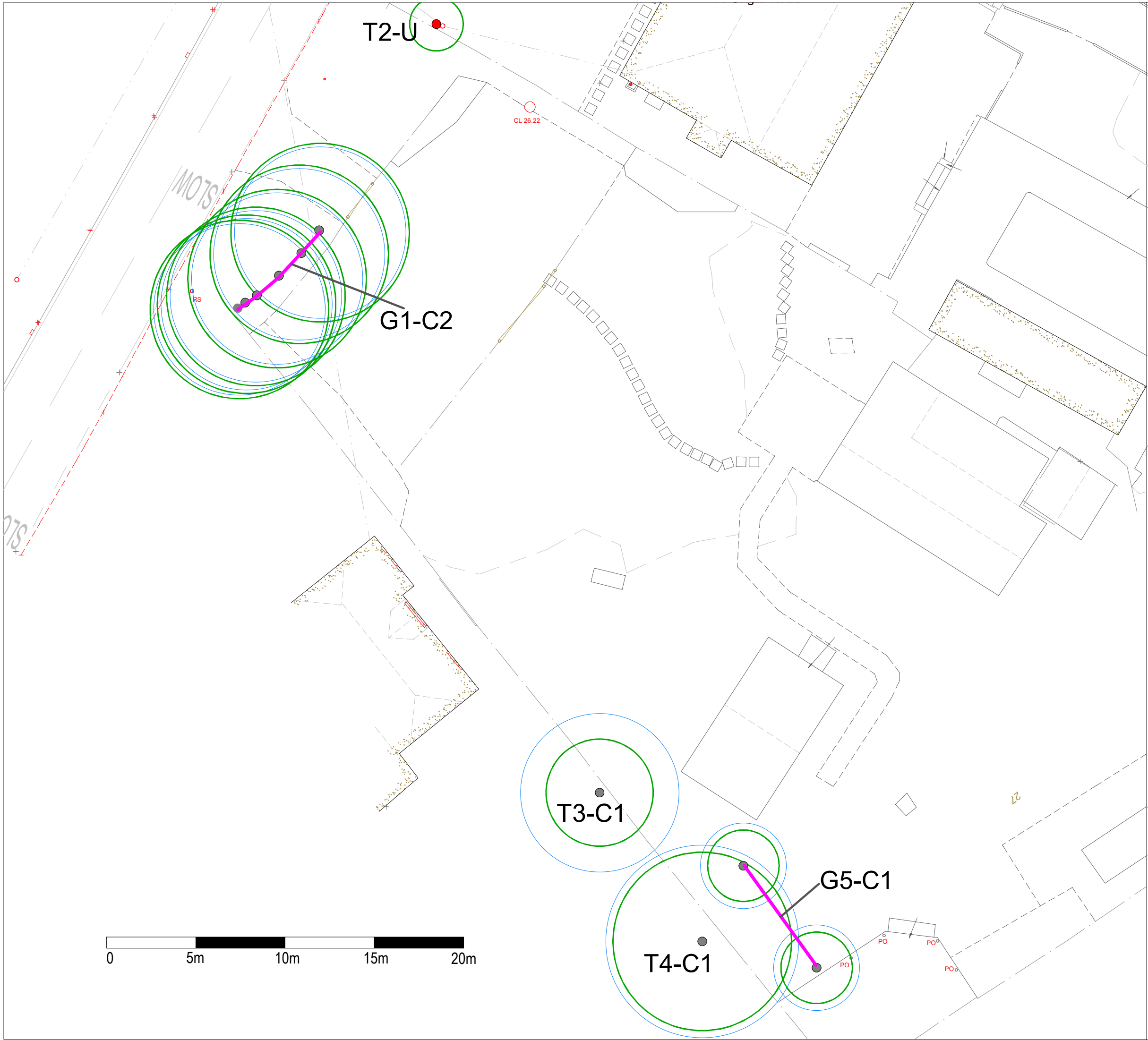
Tree Number	Botanical Name (Common name)	Age	Dia (mm)	Stems	Height (crown height)	N	E	S	W	Cond	Life Exp	BS Cat	RPR (m)	RPA (m <sup>2</sup> )	Comments	Recommendations
G1	X Cupressocyparis leylandii (Leyland Cypress)	EM	400	1	15(0.5)	5	5	5	5	Fair	20+	C2	4.8	72.39	Linear group of cypress, presumably planted to screen the road. No formal management has been carried out to form a hedge, although the lower crown has been pruned back to reduce encroachment onto parking area. Trees have been planted very close together, dbh of central trees is greatly reduced compared to the end trees, average DBH has been taken for the group.	
T2	Ulmus procera (English Elm)	SM	130	1	7(4)	2	2	2	1.5	Poor	<10	U	1.56	7.65	Declining elm located very close to power line.	
T3	Betula pendula (Silver Birch)	EM	370	1	6(2)	3	3	3	3	Fair	20+	C1	4.44	61.94	Off site tree which has been crown reduced. No major defects, average form and condition.	
T4	Robinia pseudoacacia (Locust Tree)	EM	450	1	9(3)	5	5	5	5	Poor	10+	C1	5.4	91.62	Offsite heavily ivy clad tree. Density of ivy makes identification difficult and is clearly impacting the health of the tree, through light competition.	
G5	X Cupressocyparis leylandii (Leyland Cypress)	SM	200	1	6(3)	2	2	2	2	Fair	10+	C1	2.4	18.1	Group of two onsite cypress trees. Tree to the west is slightly larger, average dbh taken for both trees.	

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## Appendix 2

### Tree survey plan RA 201 TSP

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Category A - high quality and value

Category B - moderate quality and value

Category C - low quality and value

Category U - unsuitable for retention

Crown spread

RPA - root protection area as defined by Table 2 BS 5837:2012

Group of Trees

Notes

1. Contractors to check all dimensions on site

2. Discrepancies must be reported to the Arboricultural Consultant before proceeding

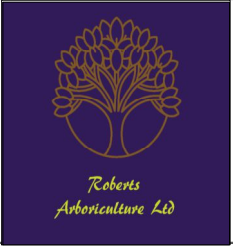
3. The original of this drawing was produced in colour, a monochrome copy should not be relied upon.

4. It is the responsibility of the contractor to ensure necessary consents for tree works are in place

Rev :

Description :

Authorized :



Client

Landiplomacy Ltd

Site Address

Land between 42 & 44 Ongar Road, Abridge

Drawing Title

Tree Survey Plan


Date

10.02.2021

Revision

-

Orientation



Drawing Number

RA 201 TSP

Drawn

PJR

Scale

1:200 @ A3



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## Appendix 3

### Tree protection plan RA 201 TPP

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Category A - high quality and value

Category B - moderate quality and value

Category C - low quality and value

Category U - unsuitable for retention

Crown spread of tree to be retained

RPA - root protection area as defined by Table 2 BS 5837:2012

Group of trees to be retained


Tree to be removed

Group of trees to be removed

Tree protection fencing

- Notes
1. Contractors to check all dimensions on site
  2. Discrepancies must be reported to the Arboricultural Consultant before proceeding
  3. The original of this drawing was produced in colour, a monochrome copy should not be relied upon.
  4. It is the responsibility of the contractor to ensure necessary consents for tree works are in place


Rev :	Description :	Authorized :
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Roberts  
Arboriculture Ltd

Client  
Landplomacy Ltd

Site Address  
Land between 42 & 44 Ongar Road, Abridge

Drawing Title Tree Protection Plan	Orientation 	Drawn PJR
Date 24.05.2021	Drawing Number RA 201 TPP	Scale 1:250 @ A3
Revision C		

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## Appendix 4

### Tree surgery schedule

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### Tree surgery schedule

All works to be carried out in accordance with BS 3998:2010 'Tree works – Recommendations'. All pruning cuts to be made at suitable growing points in the line with the principles of 'natural target pruning'. An ecological check is required by a competent person prior to tree works being carried. Works should not take place until planning permission is granted and all pre-commencement conditions are discharged.

Tree no.		Species	Proposed works	Reason
<b>G</b>	1	Cypress	Remove	Conflicts with proposed widening of access
<b>T</b>	2	Elm	Remove	Poor condition

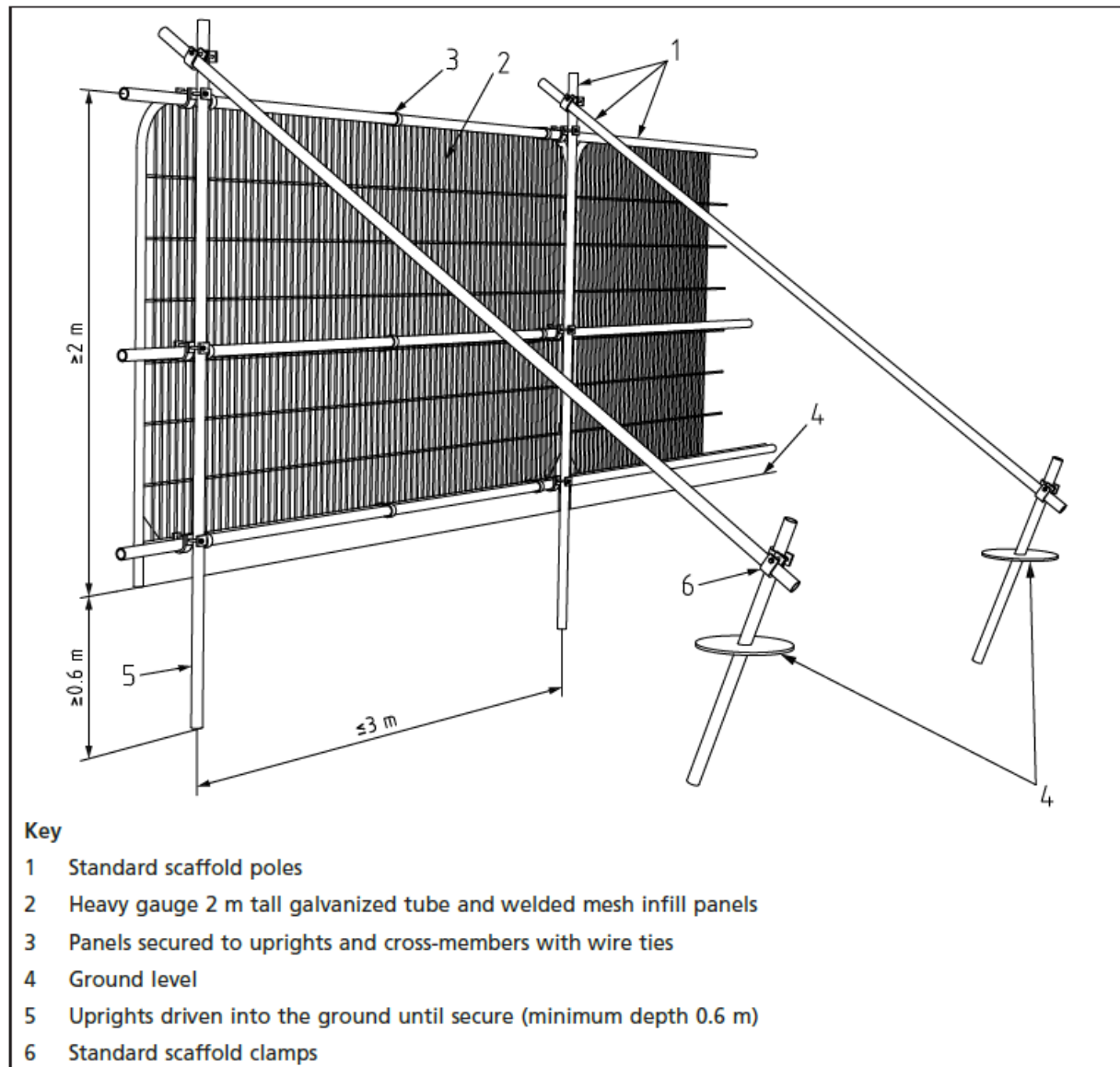
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## Appendix 5

### Tree protection specification

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Figure 2 Default specification for protective barrier



Tree protection fencing specification from BS 5837:2012 Figure 2

Section 6.2.2 of BS 5837.

Barriers should be fit for purpose of excluding construction activity and appropriate to the degree and proximity of work taking place around the retained trees(s). Barriers should be maintained to ensure that they remain rigid and complete.

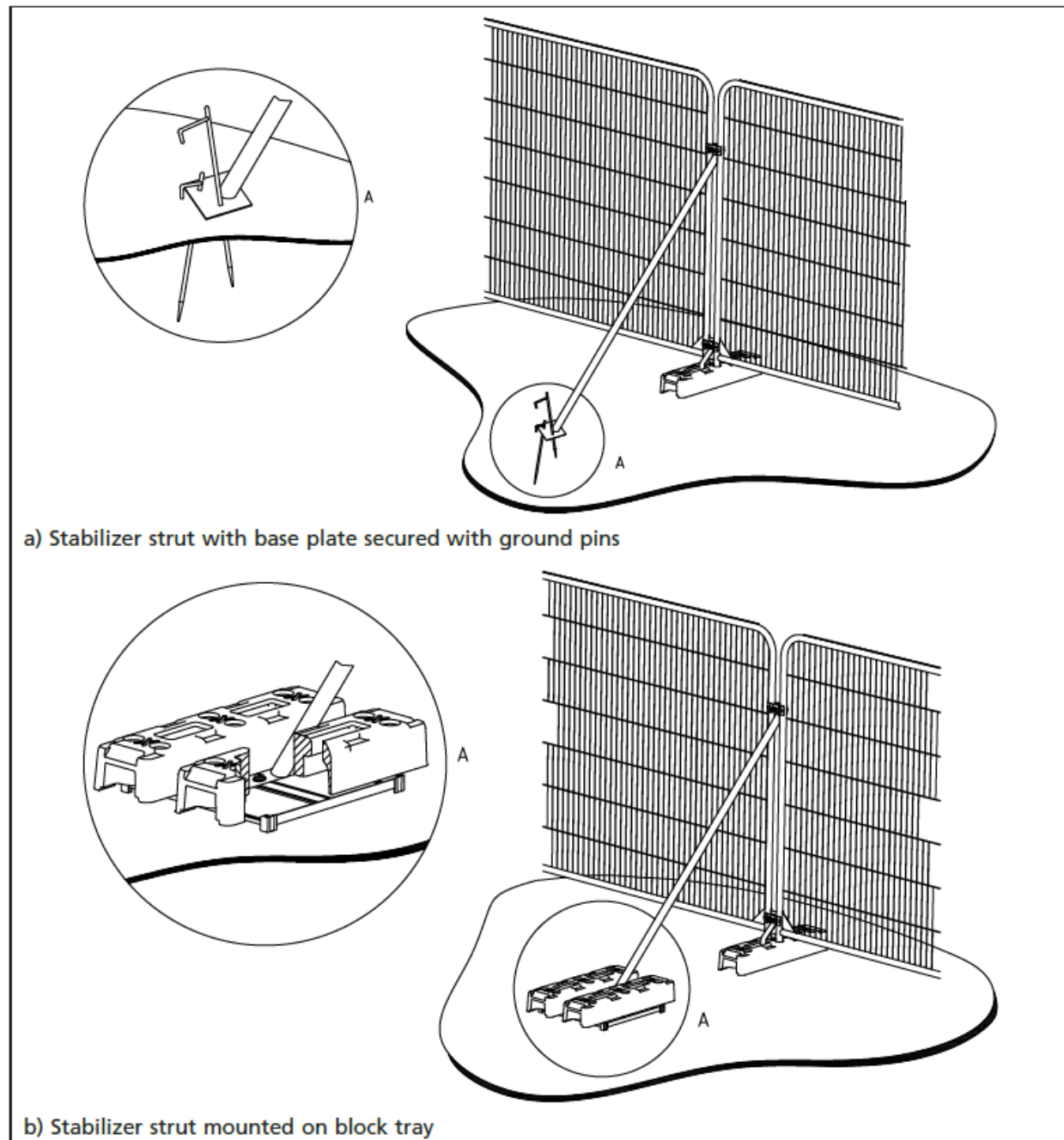
The default specification is shown above at Figure 2. Care should be taken when locating the vertical poles to avoid underground services and structural roots. Where it is not possible to drive a pole into the ground, for example on hard surfacing, figure 3 overleaf, applies.

The location for the tree protection fencing is shown on the tree protection plan delineated by a black dashed line. The location of the fencing is out the outer edge of the root protection area and the dimensions from fixed points are shown on the drawings. All weather signs should be affixed to the barriers, no more than 12m apart.

## BRITISH STANDARD

BS 5837:2012

Figure 3 Examples of above-ground stabilizing systems





Suggested site warning sign format



### **Ground protection during demolition and construction**

Where working space 'temporary access' is needed within the root protection area during works, fencing should be set back the minimum amount to achieve the required room. If there is existing hard surfacing in this area, it should remain during the works as ground protection. The suitability of this surfacing for ground protection, and whether it needs to be reinforced to bear the weight of machinery, should be assessed by an engineer and discussed with an arboriculturist.

Where the set back of the fencing exposes unmade ground, the ground must be protected before any works take place on site. This is to prevent root damage and soil compaction.

The ground protection might comprise of one of the following: (section 6.2.3.3 of BS 5837)

- 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. 100mm depth of woodchip), laid onto a geotextile membrane;
- B) For pedestrian-operated plant up to a gross weight of 2 tonnes, proprietary, inter-linked ground protection boards placed on top of a compression-resistant layer (e.g. 150mm depth of woodchip), laid onto a geotextile membrane;
- C) For wheeled or tracked construction traffic exceeding 2 tonnes 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.

The location for ground protection is shown on the tree protection plan by coloured hatching, identified in the key.

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## Appendix 6

### Draft arboricultural method statement

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**Tree works:**

Recommendations for tree works can be found in the tree surgery schedule in Appendix 4. All works shall be in accordance with BS 3998:2010 '*Tree work. Recommendations*'. The use of a competent and insured tree surgery contractor is necessary to comply with this. The main contractor and tree surgery contractor must ensure that any necessary consents have been received from the local authority and that no protected species are harmed whilst carrying out site clearance or tree surgery works. Within root protection areas, stumps, shrubs and other vegetation must be removed by hand or using stump grinding machinery to minimize root damage of retained trees. Where poisoning of stumps is specified, this must be carried out by competent operatives. Only chemicals approved for this purpose and used in accordance with the manufacturer's instructions will be used.

The following information must be sought:

- Current employers, public and product liability insurance
- Waste carriers Licence
- Qualification and experience of key personnel, including relevant NPTC certificates
- COSHH assessment
- Tool and task based risk assessment, including a Working at Height Risk Assessment
- Site specific risk assessment
- Emergency procedure plan
- Method Statement

A list of suitable tree surgeons is found at: <http://www.trees.org.uk/find-a-professional/Directory-of-Tree-Surgeons>

Bio security measures are important and found at <https://www.forestry.gov.uk/biosecurity>

**Fires:** Fires on site should be avoided if possible. If unavoidable, they should be situated far enough so that there is no risk of damage to the trees, taking into consideration the wind direction.

**Site and fuel storage, cement mixing and washing points:** All site storage areas, cement mixing and washing points for equipment and vehicles and fuel storage areas should be outside root protection areas unless otherwise agreed with the Local Planning Authority. No discharge of potential contaminants should occur within 10m of a retained tree stem or where there is a risk of run off into Root Protection Areas.

**Temporary buildings for site use:** Site cabins, trailers and other temporary buildings can sometimes be used in root protection area if consent is agreed by the local planning authority. This can be very useful if there is a robust existing hard surfacing in place. The method for installing the buildings, and assessment of whether ground protection is needed is to be agreed with the Arboriculturist and specified prior to installation.

**Protection of tree canopies:** Piling rigs and cranes are often used close to trees. Work must be carefully planned so that there is sufficient room to avoid hitting the canopy during transportation or operation. Arboricultural supervision may be required, however it is the responsibility of the contractor to assess and plan the work. Any access facilitation pruning required is detailed in the tree surgery schedule.

**New landscaping:** Within the root protection areas of trees to be retained, the preparation of soil for planting and turfing will be carried out by hand. Cultivation will be kept to a minimum and new topsoil must not exceed 100mm in depth within 1m of the stem. Top soil and other materials will be transported by wheelbarrow on running boards when working near trees.

#### **Arboricultural site supervision**

##### *An initial site meeting:*

Before works have started, but after the tree surgery and tree protection measures are in place. At this meeting the site manager, contractor, arboricultural consultant should discuss methodology and the tree protection measures will be examined.

After each site supervision, a short report will be sent to the contractor, client and local authority as a record of compliance.

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## Appendix 7

### Tree related legislation affecting the site

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### **Tree preservation orders**

The Town and Country Planning (Tree Preservation) (England) Regulations 2012.

Enquiries will need to be made with Epping Forest District Council to ascertain whether there are tree preservation orders affecting the site.

### **Conservation Area:**

Enquiries will need to be made with Epping Forest District Council to ascertain whether the site is located within a designated conservation area.

### **Ecological considerations**

The Wildlife and Countryside Act 1981, as amended, The Conservation of Habitats and Species Regulations 2010 and the Countryside and Rights of Way Act 2000, provide statutory protection to species of flora and fauna including birds, bats and other species that are associated with trees.

### **Occupiers Liability Act 1957 and 1984**

The Occupiers Liability Act (1957 and 1984) places a duty of care to ensure that no reasonably foreseeable harm takes place due to tree defects. Therefore, this report includes recommendations within the tree tables for work required for safety reasons. 'Common sense risk management of tree (National Tree Safety Group 2012)' states that *'The owner of the land on which a tree stands, together with any party who has control over the tree's management, owes a duty of care at Common Law to all people who might be injured by the tree. The duty of care is to take reasonable care to avoid acts or omissions that cause a reasonably foreseeable risk of injury to persons or property'*.



**Common law** enables pruning back to the boundary line providing the work is reasonable. Other restrictions, such as tree preservation orders/conservation areas still apply.

The owner of a tree is not obliged to trim their trees or hedges to prevent them from crossing over a boundary. Whilst the tree owner is not obliged to cut back the branches, the person whose property is overhung has the right to cut back the branches to the boundary providing there are no planning or legal restrictions on the trees such as Tree Protection Orders or if they are located in a church yard, in which case suitable consent must be obtained. Such pruning works must be undertaken to a suitable standard and must not cause significant damage to the tree, whereby it dies or becomes unstable.

The resulting debris remains the property of the tree owner, and therefore permission should be sought before it is disposed. In the interests of good neighbourly relations, we would encourage neighbours to discuss their intentions with each other before carrying out such works, providing the work is reasonable and that the trees are not subject to TPO or Conservation Area protection.

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## Appendix 8

### Statement of methodology and reference material

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## **Statement of methodology**

Review of architects' plans

Site visit made by Philippa Roberts on 9<sup>th</sup> February 2021.

Tree survey using Visual Tree Assessment carried out in accordance with BS 5837:2012 '*Trees in relation to design, demolition and construction – Recommendations*'. All investigations were from ground level only and binoculars were used when necessary. All trees with a trunk diameter of 75mm or above were surveyed. Obvious hedges and shrub masses were identified where appropriate. Information collected is in accordance with recommendations in subsection 4.4.2.5 of BS and include species, height, diameter, branch spread, crown clearance, age class, physiological condition, structural condition and remaining contribution. Each tree was then allocated one of four categories (U, A, B or C).

## **Received material**

Topographical Survey – drawing no. 300701PLS-01, by Survey Solutions

Site Plan- proposed – drawing no. 210315-TCT-101, by CBA Chartered Architect

## **Reviewed text**

BSI. BS 3998:2010 *Tree Work-Recommendations*.

BSI. BS 5837:2012 *Trees in relation to design, demolition and construction – Recommendations*

R.G.Strouts and T.G.Winter 'Diagnosis of ill-health in trees' TSO 1994

C. Mattheck 'The body language of trees' 2015

National Soil Resources Institute website

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## Appendix 9

### Caveats & Exclusions

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### Specific report caveats

1. At the time of writing this report, the protected tree status is unknown. Therefore, further enquiries will need to be made with Epping Forest District Council before any works to trees take place.
2. No internal diagnostic equipment was used other than a sounding mallet and probe and all inspections were from ground level only, with the aid of binoculars where necessary.
3. The survey is concerned solely with arboricultural issues.
4. Any changes in ground level, or excavations near to tree roots not discussed within this report may change the stability and condition of the trees and a further examination would be required.
5. As trees are a dynamic living organism this report is only valid for a period of 12 months, in respect to their health and condition.
6. Only the trees listed in this report have been examined.
7. The measurement of off-site trees has been estimated, except any crown which overhangs into the site, which is measured. Where the crown of an on-site tree overhangs the boundary, the crown spread in this direction is also likely to be estimated.
8. The base and trunk of the off-site trees could not be examined, and therefore a full assessment of the trees condition could not be made.
9. Dense ivy and undergrowth prevent a full condition survey being carried out. The vegetation may be hiding structural defects.
10. The tree information is from the time of the survey. Some pests, diseases and fungi only appear seasonally, therefore it is possible not all issues that may affect the health of the trees could be observed.

This report has been prepared by Roberts Arboriculture Limited exclusively for its client under the terms of its contract with its client (incorporating Roberts Arboriculture Limited's Terms and Conditions). To the extent permitted under applicable law (and save as set out in its contract with its client), Roberts Arboriculture Limited excludes all liability (whether in contract or in tort, in negligence, for breach of statutory duty or otherwise) to its client and any third parties in respect of loss and/or damage relating to the use of, and/or reliance on, this report or any of its content. This report and its content are copyright of Roberts Arboriculture Limited and may not be distributed or copied (whether in full or in part) without the author's prior written permission.

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## Appendix 10

### Glossary

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<b>Abscission</b>	<b>The shedding of a leaf or other short-lived part of a woody plant, involving the formation of a corky layer across its base.</b>
<b>Access facilitation pruning</b>	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 for operations on site.
<b>Adaptive growth</b>	In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium. (This helps to maintain a uniform distribution of mechanical stress).
<b>Adventitious</b>	Describing shoots which develop neither from terminal nor axillary buds (see also Epicormic and dormant bud) or roots which form other than through primary development.
<b>Apical dominance</b>	The hormone-induced regulation of the development of a tree or a branch, whereby the apical shoot(s) grows more than the laterals.
<b>Arboriculture</b>	Formerly all aspects of the culture of trees, especially for forestry. Latterly, the art and science of cultivating and managing trees as groups and individuals, primarily for amenity and other non-forestry purpose.
<b>Backfill medium</b>	Material used for refilling an excavated planting hole.
<b>Bacteria</b>	Microscopic single celled organisms, including many species that break down dead organic matter, together with others that can cause disease in other organisms.
<b>Bark</b>	A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, thus including the phloem, cortex and periderm.
<b>Biodiversity</b>	The variability among all living organisms of an ecological complex.
<b>Biomechanical</b>	Pertaining to the mechanical functions and properties of living organisms, such as trees.
<b>Body language</b>	In trees, the outward display of growth responses and/or deformation in response to mechanical stresses.
<b>Canker</b>	A lesion in which bark and cambium have been killed, sometimes exposing the wood and often showing a swollen appearance owing to the encircling growth of new tissues.
<b>Cambium</b>	Layers of meristematic cells in the cells peripheral to the phloem that give rise to bark.
<b>Canopy</b>	The topmost layer of twigs and foliage in a tree.
<b>Co-dominant</b>	In trees, a similarity between two or more stems or branches with regard to their size and their position within the canopy.
<b>Column</b>	In the wood or phloem of a tree, an axially elongated zone of tissue that is distinguished from the surrounding tissue; e.g. Live versus dead or decayed versus non-decayed.
<b>Construction exclusion zone</b>	An area based on the root protection area from which access is prohibited for the duration of the project.
<b>Crown</b>	In arboriculture, the main foliage-bearing portion of a tree.
<b>Crown lifting</b>	The removal or shortening of the branches that form the lower part of the crown of a tree.
<b>Crown reduction</b>	Pruning in order to reduce the size of the crown of a tree.



<b>Crown thinning</b>	Pruning inside the crown of a tree in order to reduce its density.
<b>Defect</b>	In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.
<b>Desiccation</b>	The state of extreme dryness, the drying out of roots.
<b>Dieback</b>	The death of part of a plant, usually starting from a distal point and often progressing proximally in stages.
<b>Epicormic</b>	Pertaining to shoots or roots which are initiated on mature woody stems; shoots can form in this way from dormant buds or they can be adventitious.
<b>Failure</b>	In connection with tree hazards, a partial or total fracture within woody tissues or loss of cohesion between roots and soil.
<b>Foreseeable</b>	In hazard assessment, pertaining to failure and associated injury of damage which are predictable on the basis of evidence from a tree and its surroundings.
<b>Hazard</b>	A thing, a process or a potential event that has the potential to cause harm.
<b>Heartwood</b>	The dead or predominantly dead central wood of various tree species whose outer living wood, sapwood, has a finite and pre-determined lifespan.
<b>Included bark</b>	Bark of adjacent parts of a tree (usually forked stems, acutely joined branches or basal flutes) which is in face-to-face contact; i.e. without a woody connection. Such a structure lacks inherent strength but is in many instances strongly reinforced by a surrounding 'shell' of wood.
<b>Mulch</b>	Material laid down over the rooting area of a tree or other plant to help conserve moisture, suppress weeds and encourage a beneficial microflora.
<b>Mycorrhizal</b>	Pertaining to an intimate symbiotic association between plant roots and specialised fungi.
<b>Necrosis</b>	The death of specific areas of living tissue owing to some adverse factor.
<b>Occlusion</b>	The process whereby a wound in a tree is progressively closed by the formation of new wood and bark around it.
<b>Pathogen</b>	A micro-organism that causes disease in another organism.
<b>Phloem</b>	Conductive tissue of trees and other plants, via which dissolved sugars are translocated from the foliage to tissues where they are needed for growth or for storage. In trees, phloem makes up the innermost layer of the living bark.
<b>Probability</b>	A statistical measure of the chance that a particular event (e.g. a specific failure of a tree or specific kind of harm to persons or property) might occur.
<b>Risks</b>	The likelihood of the potential harm from a particular hazard becoming actual harm.
<b>Root protection area</b>	A layout 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. BS 5837:2012 <i>'Trees in relation to design, demolition and construction – Recommendations'</i> .

<b>Rootplate</b>	The central part of the root system of a tree, consisting of the large-diameter main roots and a dense mass of smaller roots and soil.
<b>Sapwood</b>	The living xylem of a wood part, which either loses viability gradually over a number of years or decades or becomes converted in to a distinct, largely dead heartwood.
<b>SULE</b>	Safe useful life expectancy of a tree (Barrell)
<b>Stress</b>	In plant physiology, a condition under which one or more physiological functions are not operation within their optimum range, for example owing to lack of water, inadequate nutrition or extremes of temperature.
<b>Targets</b>	In tree hazard assessment, persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it.
<b>Tree Preservation Order</b>	In Great Britain, an order made by a local authority, whereby the authority's consent is generally required for the cutting down, topping or lopping of specified trees.
<b>Tree protection plan</b>	Scale drawing, informed by descriptive text where necessary, based upon the finalized proposal, showing trees for retention and illustrating the tree and landscape protection measures.
<b>Utility</b>	An undertaker by statute that has a legal right to provide customer services (e.g. communication, electricity, gas and water).
<b>Vigour</b>	In tree assessment, an overall measure of the rate of shoot production, shoot extension or diameter growth.
<b>Vitality</b>	In tree assessment, an overall appraisal of physiological and biomechanical processes, in which high vitality equates with near-optimal function.
<b>Visual Tree Assessment (VTA)</b>	In addition to the literal meaning, a system expounded by Matlack and Breloer (1995) to aid the diagnosis of potential defects through visual signs and the application of mechanical criteria.
<b>Wound</b>	Injury caused to a tree by a physical force.
<b>Xylem</b>	Plant tissue with the special function of translocated water and dissolved mineral nutrients.



## ARBORICULTURAL IMPACT ASSESSMENT REPORT

BS 5837:2012 'Trees in relation to design, demolition and construction. Recommendations'

### SITE

Land between 42 & 44 Ongar Road, Abridge

### CLIENT

Landiplomacy Ltd

**Philippa Roberts**

FdSc, MArborA

**DATE: 24<sup>th</sup> May 2021**

**OUR REF: RA 201**