

102 Kirkby Road, Sutton-in-Ashfield,
Nottingham. NG17 1GH
Telephone/Fax (01623) 512899
Mobile 07973 520080 or 07813 186010



**FOREST FARM
TREE SERVICES**
— EST 1990 —

**Arboricultural Survey with reference to BS 5837:2012
Trees in Relation to Construction**

**For Land to the rear of
21 Peterborough Road
Crowland
Cambridgeshire
PE6 0BB**

Prepared for: Mr T Speechley

Report prepared on 9th September 2014

By Andrew Binks, Forest Farm Tree Services. 102, Kirkby Road, Sutton in Ashfield,
Nottingham.

Signed
Andrew Binks BSc (Hons) Arboriculture

Contents

Arboricultural Survey

Introduction.....	3
Site Details.....	3
Survey Details.....	4
Measurements.....	4
Condition Evaluation.....	4
Retention Category.....	4
Discussion.....	6
Conclusions.....	7

Arboricultural Method Statement

Introduction.....	9
Pre Development Preparation.....	11
Foundations within the RPA.....	11
Post Construction.....	12
Changes in Ground Level.....	12
Demolition in Proximity to an RPA.....	12
Foundations within the RPA.....	13
Appendix 1: Tree Survey and Details.....	14
Appendix 2: Proposed Site Layout Plan.....	15
Appendix 3: BS5837:2012 Fencing.....	16
Appendix 4: Glossary	19

1 Introduction

1.1 Purpose of the Report

1.1.1 We have been asked to provide a tree survey in order to identify those trees on the site which are suitable for retention, and to determine the root protection areas.

1.1.2 The report has also been prepared to ensure that any retained trees can be adequately protected during any phase of development. This will cover any significant tree in the vicinity of the development, including those on neighbouring land.

1.2 Details and Scope of the Report

1.2.1 This report follows the guidelines set out within BS 5837:2012 Trees in Relation to Construction.

1.2.2 Preliminary arboricultural management recommendations have been given where applicable.

1.2.3 Only trees on, and in the immediate vicinity of the site have been included.

2 Site Details

2.1 The site is currently an open field amounting to approximately 1.4 acres. which is regularly maintained. To the north, east and south are residential areas, while to the west is a sports field. A proposal has been prepared to provide several new dwellings with associated access roads, driveways and garages.

2.2 There are several trees in the curtilage of the site containing a variety of ages and species. They are located towards the boundaries, predominantly the north and western boundaries. The tree survey has been prepared as an aid to the planning process.

2.3 A site visit was carried out on 25th June 2014, weather at time of survey: clear and calm.

3 Survey Details

3.1 Measurements

3.1.1 Height

All heights were estimated

3.1.2 Diameter

The diameter was measured at 1.5m unless stated otherwise. The diameter is referred to as **DBH** (Diameter at Breast Height) in the tree descriptions in appendix 1.

3.1.3 Crown Spread

Due to the location of the trees on the boundary and in close proximity to one another it has been impossible to measure all the distances. In these circumstances, some of the crown spreads have been guestimated.

3.2 Condition Evaluation

3.2.1 Age

Tree age has been categorised as Young, Semi-mature, Mature or Over-mature

3.2.2 Physiological Condition

This relates to the overall health and vitality of a tree (the presence of disease, fungi etc.) and has been given a Good, Fair or Poor rating (G, F or P).

3.2.3 Life Expectancy

The criteria set out within Table 1 of BS 5837:2012 outlines, minimum 40yrs, minimum 20yrs, minimum 10yrs and less than 10yrs for the four categories within the table.

3.3 Retention Category

The retention category is as per Table 1 (Appendix 4). Four categories are defined as follows:

- Category **A** Those of high quality and value, with an estimated remaining life expectancy of at least 40 years.
- Category **B** Those of moderate quality and value, with a remaining life expectancy of at least 20 years.
- Category **C** Those of low quality and value (Usually not retained where they would provided a significant constraint on development), or young trees with a diameter of 150mm or less. A remaining life expectancy of at least 10 years.
- Category **U** Those in a condition where any value would be lost within 10 years e.g. dead/dying/defective (normally removed, although they can present/hold conservation/wildlife value which in the right situation can be preserved)

Each category is then sub-divided into **1)** Arboricultural values; **2)** Landscape values; and **3)** Cultural Values.

- 3.4** In order to prevent damage to the retained trees and their rooting zones (RPAs) it is important that protective fencing is erected around each tree or group of trees prior to construction work being commenced. This is something that can be adequately secured by way of standard planning condition. This area is known as the **construction exclusion zone** and is based on the **Root Protection Area (RPA)** and should be considered a **complete** exclusion zone, including the storage of machines, materials etc. The RPA is the area surrounding the tree that contains sufficient rooting volume to ensure the survival of the tree. The diameter of the stem is used to calculate the RPA.

4 Discussion

- 4.1** In all, 46 individual trees have been included in the survey, 16 of which have been categorised as B. The remainder are C, U or have not been classified as they are out of the development area. There are no trees located internally to the site allowing for the proposed development to retain of all trees; however it is recommended that the category U trees be removed due to compromised condition of the individuals.
- 4.2** The tree information is included in Appendix 1 and trees are identified on the existing site plan attached at Appendix 2. The majority of the trees are within the semi-mature/mature age range and comprise of Horse chestnut, Sycamore, Prunus spp, Walnut and Willow amongst others. Recommendations for arboricultural works have been made within the tree survey (Appendix 1) where applicable.
- 4.3** Trees to the southern boundary are mainly newly planted individuals, with the exception of T36 – a semi-mature Birch, and therefore do not have large root protection areas that would pose a constraint on development.
- 4.4** The majority of the B category trees are located within the group of mature Horse Chestnuts along the western boundary, these trees make up a significant feature on the local landscape. Some remedial works have been recommended to this group within the tree survey. There are some areas of decay requiring further investigation and long lateral limbs supporting a significant amount of weight have been recommended for reduction works.
- 4.5** There is to be minor infringement to the edge of the RPA of T1 & T27 for the construction outer walls for 1 dwelling alongside each tree. The amount of infringement, together with the resilient nature of the species involved it is deemed unnecessary to utilise specialist building techniques. It is however stressed that the remainder of the RPA be protected from damage from access to carry out the works. It will be necessary to install a temporary ground layer designed to prevent compaction in these areas.
- 4.6** Due to the overall size of the site and the location of trees towards the boundaries, it has been possible to set out the development with minimal potential impact to, and without the direct need to remove any, trees on the site.

5 Conclusions

- 5.1 The site is an open field with a number of mature and semi-mature trees located towards the boundaries. A proposal to provide circa 13 new dwellings has been prepared in outline without the need for tree removal. Category U trees have been recommended for removal within the tree report.
- 5.2 Minor infringement into the RPA of T1 & T27 is not deemed excessive enough to warrant specialist building techniques, based on the species involved. Ground protection measures must be taken to prevent damage to the RPA through access to carryout works.
- 5.3 There is no further ingress into any other RPA for any construction. It is important the protection measures as detailed in the method statement section of this report are followed to prevent any damage to trees and their RPAs as the construction takes place.
- 5.4 The **RPAs** and their radius has been included within the tree survey table, this information has been plotted on the site plan as an aid to the dwellings location.
- 5.5 It is recommended that some lower quality trees, category U, are not retained as part of a development. There are no Tree Preservation Orders covering the trees and the site is not within the Crowland Conservation Area, therefore Local Authority Permission is not required before any works are undertaken.

102 Kirkby Road, Sutton-in-Ashfield,
Nottingham. NG17 1GH
Telephone/Fax (01623) 512899
Mobile 07973 520080 or 07813 186010



**FOREST FARM
TREE SERVICES**
— EST 1990 —

**Arboricultural Method Statement with reference to BS
5837:2012 Trees in Relation to Construction**

**For: Land to the rear of 21 Peterborough Road
Crowland
Cambridgeshire
PE6 0BB**

Prepared for: Mr T Speechley

1 Introduction

1.1 Instructions Received: We have been instructed by Mr T Speechley to produce a Method Statement for the site in association with the proposed development.

1.2 Reason for the Method Statement: This Method Statement has been prepared to ensure that retained trees present on the site are protected during construction using the current systems for good practice.

A plan of the existing site is attached to Appendix 2

1.3 The Proposed Development: An outline application proposal to construct circa new dwellings has been prepared. Tree protection measures will be required to prevent any adverse effects to retained trees.

2 Pre-development Preparation

Tree Works

- 2.1 The first works that should be carried out on the site are arboricultural works that have been highlighted in the tree survey (appendix 1) or are required for development (including both pruning and tree removals) and have been agreed through the planning process. Any tree works that are required, both through recommendations in the tree report and though necessitated for the development should only be carried out by an appropriately qualified, experienced, equipped and insured arborist (treework contractor). The works should be carried out in line with current industry best practice and at a very minimum to the standards detailed in BS3998:2010 'Tree Work - Recommendations'. The contractor is obliged to produce a written method statement on being awarded the contract and before any on site works are undertaken.

Tree Protection

- 2.2 In order to prevent damage to the retained trees and their rooting zones (RPAs) it is important that protective fencing and/or ground protection is erected around each tree or group of trees. This area is known as the **construction exclusion zone** and is based on the **Root Protection Area (RPA)** and should be considered a **complete** exclusion zone, including the storage of machines, materials etc. The RPA is defined as the area surrounding the tree that contains sufficient rooting volume to ensure the survival of the tree. The diameter of the stem is used to calculate the RPA, the RPA is shown on the **Tree Constraints Plan (TCP)**, and is attached at Appendix 2.
- 2.3 It is important that the erection of protective fencing is carried out **before** any development work is commenced or machines are brought on site.
- 2.4 For open grown trees it is no longer acceptable to offset the distance of the RPA by up to **20%** as in BS5837:2005 for construction (foundations), specialist building techniques will have to be sought. A no dig hard surface may be laid up to a 20% maximum, but this dependant on species which is to be advised by an Arboriculturalist. Open grown describes a tree whose tree root development is not hindered in any direction, for example by the presence of a physical barrier such as a wall or road.
- 2.5 Within BS 5837:2012 the correct methods for constructing tree protective fencing/barriers are set out. It should be fit for the purpose and appropriate to the degree and proximity of work taking place around the tree/s. During

the entire construction period the fencing should be retained in its original position, entirety and rigidity. The default specification for a protective barrier and their above ground stabilisation are contained in Appendix 4.

- 2.6 The barriers are recommended to consist of a scaffold framework, vertical and horizontal, the vertical tubes to be spaced at a maximum of 3m apart and braced to resist impacts. Attached to this should be weldmesh panels secured with wire or scaffold clips (see figure 1, a larger image is included in Appendix 4). It is acceptable to use temporary site cabins as part of the protective barrier. The barrier may differ from the one shown, however it must be firmly staked, and it is advisable that the final design is agreed, before construction, with the local tree officer to avoid unnecessary delays.
- 2.7 In certain situations it may be agreed that access into the RPA can be permitted, for example when construction is close to the edge of the RPA, and access for construction and scaffolding is required (see figure 2, a larger image is attached at Appendix 4). In this situation adequate ground protection should be provided. Scaffold boards on top of a compressible layer laid on geotextile or supported by a scaffold may be acceptable. For greater loads and tracked or wheeled vehicles the design of the protection must be produced by an engineer.

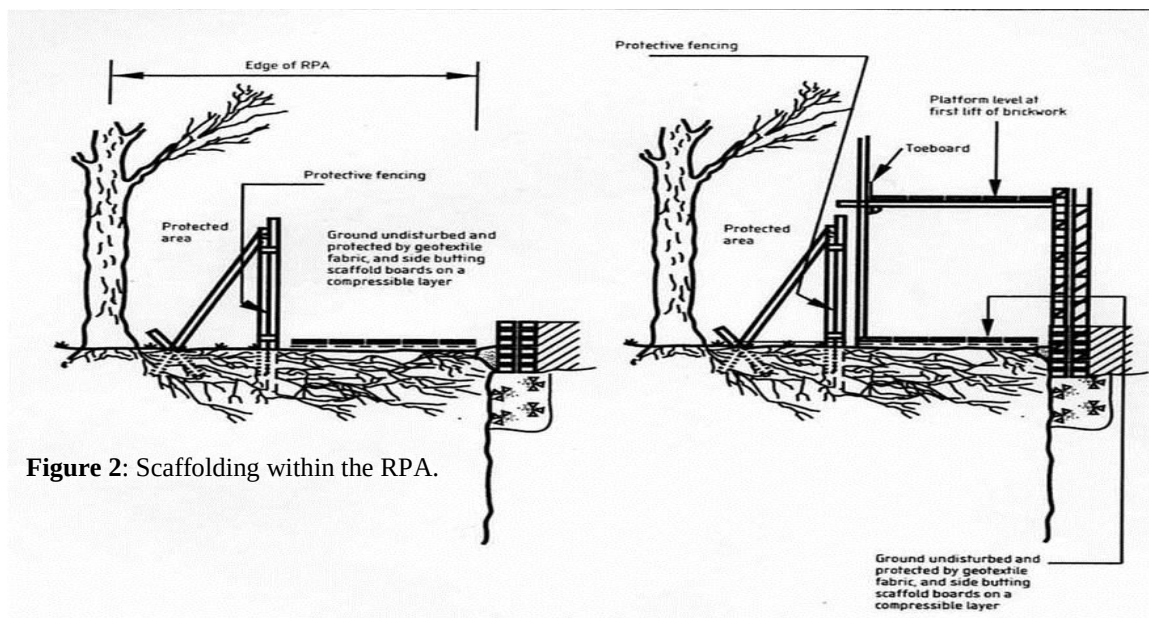


Figure 2: Scaffolding within the RPA.

- 2.8 All barriers must have affixed to them all weather notices stating **“Construction Exclusion Zone – KEEP OUT”**.

2.9 Other factors such as:

- Passage and operation of wide or tall loads, boom, jibs etc
- Location of site fires
- Discarding and storage of potential soil contaminants (e.g. concrete mixings, diesel etc.) making allowances for the slope of the ground.
- Location of notice boards, service cables (not attached to trees)

All need to be considered, with Arboricultural advice.

3 Changes in Ground Level

- 3.1** Both raising and lowering the soil level can have detrimental effects on a trees health. The majority of the roots are found within the top 600mm of soil.
- 3.2 Lowering levels,** will remove/damage/destroy the fine roots essential for maintaining growth, in severe circumstances can affect the stability of the individual tree. This is especially the case when mechanical methods are used.
- 3.3 Raising levels,** can also dramatically impact tree health, gaseous exchange between the roots and the atmosphere needs to be maintained.

4 Demolition in the Proximity of an RPA

- 4.1** It is important that recognised ingress and egress routes are established away from the RPA of any retained tree, if this is unavoidable then adequate ground protection must be provided to avoid localised compaction. This could be retention of existing hard surface, scaffold boards on top of a compressible material, however for heavy loads the structure may have to be designed by an engineer.
- 4.2** Removal of Hard Surfacing within the RPA should be done with the aim of preserving the roots below. Only the hard surfacing should be removed and not the soil structure beneath. Hand held tools or appropriate machinery may be required, any reinstatement should only be down to the previous levels.

5 Foundations within the RPA

- 5.1** Any foundation within the RPA should avoid the use of traditional strip footings as this can cause major root damage. Instead a system of piles and beams should be used to suspend a base above the existing ground level. This will allow the retention of the top soil, and maintain the rooting area of the tree.
- 5.2** The air space should be ventilated to allow gaseous exchange and an irrigation system incorporated into the design to re-direct rain water onto the covered area, the foundation design will need to be designed with this in mind to mitigate on any effects to the foundations this may have.
- 5.3** The foundation design should incorporate the smallest practical pile diameter to reduce potential impact on the retained trees. This will also limit the size of the machine required to install the piles. A pile foundation only needs to be use within the RPA.
- 5.4** Protection measures need to be taken to avoid compaction to the surface during installation; this may have to be designed by an engineer.

Appendix 1: Tree Survey and Details

Client: Ian Beasley Associates		BS5837:2012 Tree Survey										Forest Farm Tree Services			
Project: Crowland												102 Kirkby Road			
Survey Date: 11/08/2014												Sutton in Ashfield			
Surveyor: Andrew Binks												Nottinghamshire			
												NG17 1GH			
												Phone: 01623 512899			
												Mobile: 07791147003			
Tree and Tag No Species	Hght (m)	Stems		Crown		Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations		Cat ERC			
		No	Ø (mm)	Spread (m)	Clear (m)					Survey Comment					
Pear										Estimated Measurements					
Pear <i>Pyrus Unknown</i>	6	1	300	N	2.5	1.5	SM	A: 40.7 R: 3.59	C: S: B:						
Plum										Estimated Measurements					
Prunus <i>Prunus Unknown</i>	6	1	300	N	2.5	1.5	SM	A: 40.7 R: 3.59	C: S: B:						
Plum 2										Estimated Measurements					
Prunus <i>Prunus Unknown</i>	6	1	300	N	2.5	1.5	SM	A: 40.7 R: 3.59	C: S: B:						
Plum 3										Estimated Measurements					
Prunus <i>Prunus Unknown</i>	6	1	300	N	2.5	1.5	SM	A: 40.7 R: 3.59	C: S: B:						
T1										Estimated Measurements					
Sycamore <i>Acer pseudoplatanus</i>	16	1	506	N	5	1.5	SM	A: 115.8 R: 6.07	Fair	C: Fair S: Fair B: Fair	No action :: Unspecified Previously topped at 1.75m with inclusion 20+ years ago.	C			
Age Classifications:	N	Newly planted	EM	Early Mature		Condition:	C	Crown		Stems:	Ø	Diameter			
	Y	Young	M	Mature			S	Stem			(Eq)	Equivalent stem diameter using BS5837:2012 definition			
	SM	Semi-mature	OM	Over Mature			B	Basal area							

Tree and Tag No Species	Hght (m)	Stems		Crown		Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations		Cat ERC
		No	Ø (mm)	Spread (m)	Clear (m)					Survey Comment		
T2											Estimated Measurements	
Common Walnut <i>Juglans regia</i>	13	1	376	N	4.5	1.25	SM	A: 64 R: 4.51		C: S: B:	Some long lateral limbs, one has failed - now removed. Otherwise typical.	
T3											Estimated Measurements	
Sycamore <i>Acer pseudoplatanus</i>	17	1	551	N	5	1.5	SM	A: 137.4 R: 6.61		C: Fair S: Fair B: Fair	Some included unions, otherwise typical.	
T4											Estimated Measurements	
Common Walnut <i>Juglans regia</i>	12	1	380	N	4	1	SM	A: 65.3 R: 4.55	Fair	C: Fair S: Poor B: Fair	No action :: Unspecified Extensive bark necrosis.	
T5											Estimated Measurements	
Sycamore <i>Acer pseudoplatanus</i>	18	1	410	N	4	2	SM	A: 76.1 R: 4.92	Fair	C: Fair S: Ivy B: Fair	Ivy prevents full inspection, one sided due to proximity of others.	
T6											Estimated Measurements	
Sycamore <i>Acer pseudoplatanus</i>	15	1	590	N	3		M	A: 157.5 R: 7.08	Fair	C: Poor S: Ivy B: Fair	Ivy :: Sever/remove ivy Ivy prevents full inspection, structure suggests it has been topped in the past, unable to determine the quality of the re-growth attachments.	
T7											Estimated Measurements	
Common Horse Chestnut <i>Aesculus hippocastanum</i>	15	1	560	N E S W	4 10 3 3	1	M	A: 141.9 R: 6.72	Fair	C: Poor S: Ivy B: Fair	Ivy :: Sever/remove ivy Crown growth suppressed to the north and east, unable to determine full condition of stem due to Ivy, and possible pruning wound at 2m	
Age Classifications:	N Y SM	Newly planted Young Semi-mature	EM M OM	Early Mature Mature Over Mature			Condition:	C S B	Crown Stem Basal area	Stems:	Ø (Eq)	Diameter Equivalent stem diameter using BS5837:2012 definition

Tree and Tag No Species		Hght (m)	Stems		Crown		Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations		Cat ERC
			No	Ø (mm)	Spread (m)	Clear (m)					Survey Comment		
T8												Estimated Measurements	
Sycamore <i>Acer pseudoplatanus</i>		19	1	420	N	4	4	SM	A: 79.8 R: 5.03	Fair	C: Good S: Ivy B: Good	Ivy :: Sever/remove ivy	B >40 yrs
T9												Estimated Measurements	
Sycamore <i>Acer pseudoplatanus</i>		12	1	390	N	3	3	SM	A: 68.8 R: 4.67	Fair	C: Fair S: Poor B: Fair	Fell :: Fell to ground level Previously topped with poor attachments	U 10 to 20 yrs
T10												Estimated Measurements	
Sycamore <i>Acer pseudoplatanus</i>		14	1	500	N	3	3	SM	A: 113.1 R: 6	Fair	C: Poor S: Ivy B: Fair	Fell :: Fell to ground level As T9.	U
T11												Estimated Measurements	
Common Walnut <i>Juglans regia</i>		7	1	400	N E S W	2.5 5 4 1.5	1	M	A: 72.4 R: 4.8	Fair	C: Poor S: Poor B: Poor	Fell :: Fell and remove stump(s) Strong lean with extensive decay in the main stem makes it unsuitable for retention in a new development.	U <10 yrs
T12												Estimated Measurements	
Common Hawthorn <i>Crataegus monogyna</i>		6	1	350	N	2		M	A: 55.4 R: 4.19	Fair	C: Fair S: Fair B: Fair	Coppice :: To 0.5m stumps Heavy lean over neighbouring properties.	C 10 to 20 yrs
T13												Estimated Measurements	
Sycamore <i>Acer pseudoplatanus</i>		13	1	300	N	4	1	SM	A: 40.7 R: 3.59	Fair	C: Fair S: Ivy B: Fair	Fell :: Fell to ground level Suppressed be neighbouring trees.	U 10 to 20 yrs
Age Classifications:		N Y SM	Newly planted Young Semi-mature	EM M OM	Early Mature Mature Over Mature	Condition:		C S B	Crown Stem Basal area	Stems:		Ø (Eq)	Diameter Equivalent stem diameter using BS5837:2012 definition

Tree and Tag No Species		Hght (m)	Stems		Crown		Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations		Cat ERC
			No	Ø (mm)	Spread (m)	Clear (m)					Survey Comment		
T14												Estimated Measurements	
Common Walnut <i>Juglans regia</i>		14	1	340	N	1	2.5	SM	A: 52.3 R: 4.08	Fair	C: Fair S: Poor B: Fair	Fell :: Fell to ground level	U <10 yrs
					S	1						Growth is mainly to the west due to proximity of other, cavity and decay at 5m in the main stem make it unsuitable for long term retention.	
T15												Estimated Measurements	
Common Horse Chestnut <i>Aesculus hippocastanum</i>		21	1	387	N	3	1.5	SM	A: 67.8 R: 4.64	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified	B 20 to 40 yrs
					E	6						Growth suppressed by T17	
					S	3							
					W	6							
T16												Estimated Measurements	
Common Horse Chestnut <i>Aesculus hippocastanum</i>		21	1	656	N	3	1.5	M	A: 194.7 R: 7.87	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified	B 20 to 40 yrs
					E	6						Typical example, retain as group	
					S	3							
					W	6							
T17												Estimated Measurements	
Common Horse Chestnut <i>Aesculus hippocastanum</i>		21	1	800	N	3	1.5	M	A: 289.6 R: 9.6	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified	B 20 to 40 yrs
					E	6						Typical example, retain as group	
					S	3							
					W	6							
T18												Estimated Measurements	
Common Horse Chestnut <i>Aesculus hippocastanum</i>		21	1	937	N	3	1.5	M	A: 397.2 R: 11.24	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified	B 20 to 40 yrs
					E	6						Stem in upper crown heavily weighted to the east	
					S	3							
					W	6							
T19												Estimated Measurements	
Common Horse Chestnut <i>Aesculus hippocastanum</i>		21	1	877	N	3	1.5	M	A: 348 R: 10.52	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified	B 20 to 40 yrs
					E	6						Long laterals to the west.	
					S	3							
					W	6							
Age Classifications:		N Y SM	Newly planted Young Semi-mature	EM M OM	Early Mature Mature Over Mature	Condition:		C S B	Crown Stem Basal area	Stems:		Ø (Eq)	Diameter Equivalent stem diameter using BS5837:2012 definition

Tree and Tag No Species		Hght (m)	Stems		Crown		Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations		Cat ERC
			No	Ø (mm)	Spread (m)	Clear (m)					Survey Comment		
T20											Estimated Measurements		
Common Horse Chestnut <i>Aesculus hippocastanum</i>		6	1	400	N E S W	3 6 3 6	1.5	M	A: 72.4 R: 4.8	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified No apical leader, can be retained as part of the group, main limbs both reach the ground.	B 20 to 40 yrs
T21											Estimated Measurements		
Common Horse Chestnut <i>Aesculus hippocastanum</i>		21	1	890	N E S W	3 6 3 6	1.5	M	A: 358.4 R: 10.68	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified Large limbs supporting significant weight to the east.	B 20 to 40 yrs
T22											Estimated Measurements		
Common Horse Chestnut <i>Aesculus hippocastanum</i>		21	1	580	N E S W	3 6 3 6	1.5	M	A: 152.2 R: 6.96	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified Weighted to west	B 20 to 40 yrs
T23											Estimated Measurements		
Common Horse Chestnut <i>Aesculus hippocastanum</i>		21	1	775	N E S W	3 6 3 6	1.5	M	A: 271.8 R: 9.3	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified Cavity e side 2m other wounds throughout.	B 20 to 40 yrs
T24											Estimated Measurements		
Common Horse Chestnut <i>Aesculus hippocastanum</i>		21	1	600	N E S W	3 6 3 6	1.5	M	A: 162.9 R: 7.2	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified Failure wounds 4 & 8m with decay full extension not known.	B 20 to 40 yrs
T25											Estimated Measurements		
Common Horse Chestnut <i>Aesculus hippocastanum</i>		21	1	730	N E S W	3 6 3 6	1.5	M	A: 241.1 R: 8.76	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified Typical example of the species, long lateral limbs to the west.	B 20 to 40 yrs
Age Classifications:		N Y SM	Newly planted Young Semi-mature	EM M OM	Early Mature Mature Over Mature	Condition:		C S B	Crown Stem Basal area	Stems:		Ø (Eq)	Diameter Equivalent stem diameter using BS5837:2012 definition

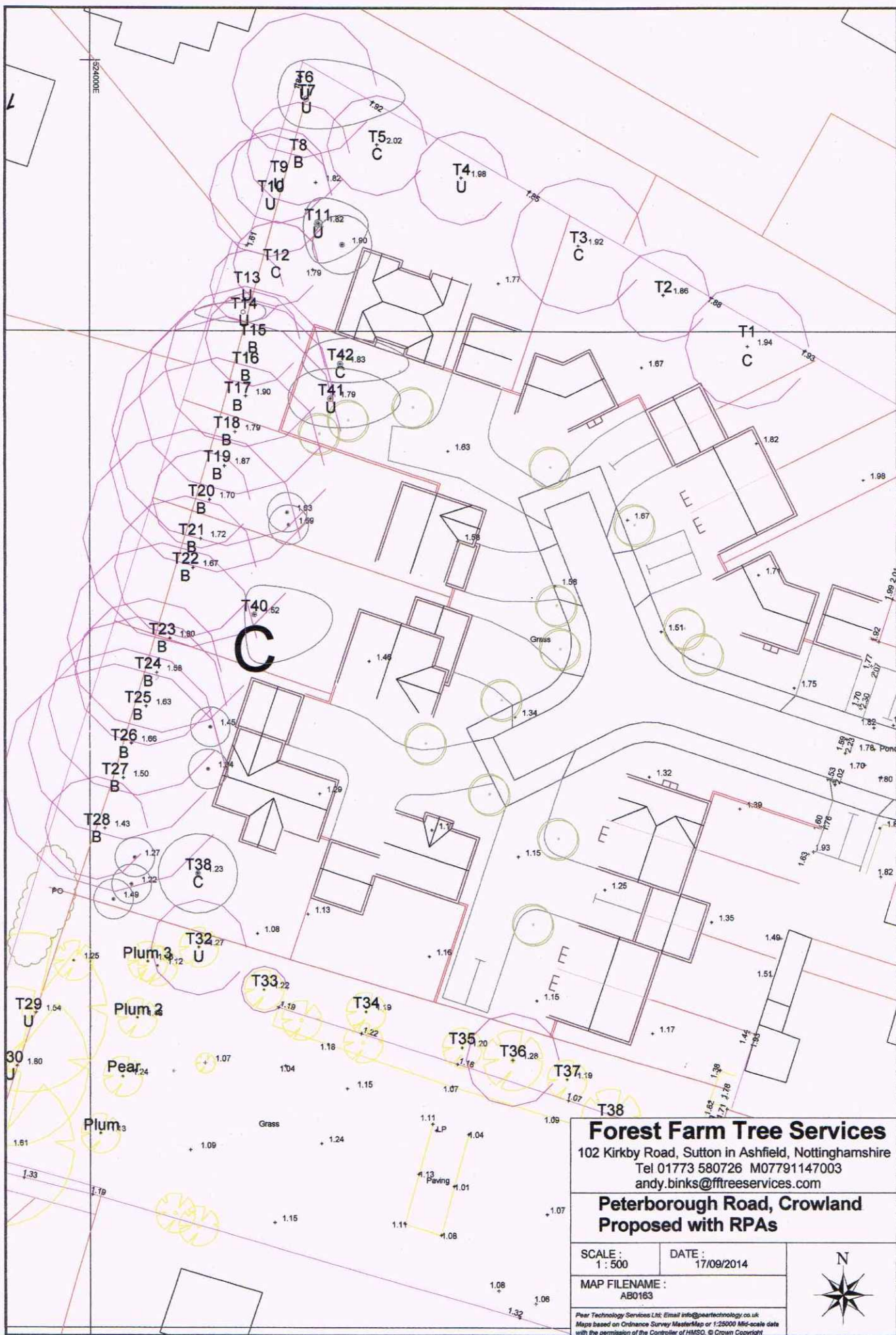
Tree and Tag No Species	Hght (m)	Stems		Crown		Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations		Cat ERC
		No	Ø (mm)	Spread (m)	Clear (m)					Survey Comment		
T26											Estimated Measurements	
Common Horse Chestnut <i>Aesculus hippocastanum</i>	21	1	780	N E S W	3 6 3 6	1.5	M	A: 275.3 R: 9.36	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified Typical example.	B 20 to 40 yrs
T27											Estimated Measurements	
Common Horse Chestnut <i>Aesculus hippocastanum</i>	21	1	930	N E S W	3 6 3 6	1.5	M	A: 391.3 R: 11.16	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified Heartwood exposed on the main stem, heartwood is sound at this time, otherwise typical.	B 20 to 40 yrs
T28											Estimated Measurements	
Common Walnut <i>Juglans regia</i>	21	1	420	N E S W	3 6 3 6	1.5	SM	A: 79.8 R: 5.03	Fair	C: Fair S: Fair B: Fair	See comments :: Unspecified Suppressed by above, maintain as a group.	B 20 to 40 yrs
T29											Estimated Measurements	
Crack Willow <i>Salix fragilis</i>	21	1	1000	N	8	1.75	M	A: 452.4 R: 12		C: Fair S: Ivy B: Fair	Heavily Ivy covered	U <10 yrs
T30											Estimated Measurements	
Crack Willow <i>Salix fragilis</i>	20	1	1100	N	11	2	M	A: 547.5 R: 13.2	Fair	C: Poor S: Ivy B: Fair		U <10 yrs
T31											Estimated Measurements	
Common Horse Chestnut <i>Aesculus hippocastanum</i>	21	1	1050	N	10	1	M	A: 498.8 R: 12.6	Fair	C: Fair S: Fair B: Fair		B 20 to 40 yrs
Age Classifications:	N Y SM	Newly planted Young Semi-mature	EM M OM	Early Mature Mature Over Mature			Condition:	C S B	Crown Stem Basal area	Stems:	Ø (Eq)	Diameter Equivalent stem diameter using BS5837:2012 definition

Tree and Tag No Species	Hght (m)	Stems		Crown		Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations			Cat ERC
		No	Ø (mm)	Spread (m)	Clear (m)					Survey Comment			
T32												Estimated Measurements	
Apple <i>Malus Unknown</i>	4	1	390	N	2	1.5	M	A: 68.8 R: 4.67	Fair	C: Poor S: Poor B: Fair			U <10 yrs
T33												Estimated Measurements	
Plum <i>Prunus Domestica</i>	4	1	190	N	1	1	SM	A: 16.3 R: 2.27		C: S: B:			
T34												Estimated Measurements	
Common Pear <i>Pyrus communis</i>	3	1	120	N	1	1	Y	A: 6.5 R: 1.43		C: S: B:			
T35												Estimated Measurements	
Apple <i>Malus Unknown</i>	3.75	1	110	N	1	1	Y	A: 5.5 R: 1.32		C: S: B:			
T36												Estimated Measurements	
Apple <i>Malus Unknown</i>	4	1	380	N	1	1	M	A: 65.3 R: 4.55		C: S: B:			
T37												Estimated Measurements	
Apple <i>Malus Unknown</i>	4	1	110	N	1	1	Y	A: 5.5 R: 1.32		C: S: B:			
Age Classifications:	N Y SM	Newly planted Young Semi-mature	EM M OM	Early Mature Mature Over Mature			Condition:	C S B	Crown Stem Basal area	Stems:	Ø (Eq)	Diameter Equivalent stem diameter using BS5837:2012 definition	

Tree and Tag No Species	Hght (m)	Stems		Crown		Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations		Cat ERC
		No	Ø (mm)	Spread (m)	Clear (m)					Survey Comment		
T38											Estimated Measurements	
Silver Birch <i>Betula pendula</i>	17	1	320	N	1	1	SM	A: 46.3 R: 3.83		C: S: B:		
T39											Estimated Measurements	
Common Horse Chestnut <i>Aesculus hippocastanum</i>	16	1	400	N	4	1.75	SM	A: 72.4 R: 4.8	Fair	C: Fair S: Fair B: Fair	No action :: Unspecified Some bark lesions, otherwise typical.	C 20 to 40 yrs
T40											Estimated Measurements	
Common Oak <i>Quercus robur</i>	17	1	496	N E S W	3 8 5 1		SM	A: 111.3 R: 5.95	Fair	C: Fair S: Fair B: Fair	Distinctive lean due to proximity of others.	C >40 yrs
T41											Estimated Measurements	
Common Walnut <i>Juglans regia</i>	16	1	600	N E S	3 7 3	2.5	M	A: 162.9 R: 7.2	Fair	C: Fair S: Poor B: Fair	Fell :: Fell and remove stump(s) Extensive decay low in the main stem.	U <10 yrs
T42											Estimated Measurements	
Common Walnut <i>Juglans regia</i>	17	1	550	N E S	2.5 7 2	2	M	A: 136.9 R: 6.6	Fair	C: Fair S: Ivy B: Fair	Ivy :: Sever/remove ivy	C 10 to 20 yrs
Age Classifications:	N Y SM	Newly planted Young Semi-mature	EM M OM	Early Mature Mature Over Mature			Condition:	C S B	Crown Stem Basal area	Stems:	Ø (Eq)	Diameter Equivalent stem diameter using BS5837:2012 definition

Appendix 2: Proposed Site Plan

The **RPA** and its radius has been included within the tree survey table, this information has been plotted on the site plan



Forest Farm Tree Services
 102 Kirkby Road, Sutton in Ashfield, Nottinghamshire
 Tel 01773 580726 M07791147003
 andy.binks@fftreeservices.com

**Peterborough Road, Crowland
 Proposed with RPAs**

SCALE :
 1 : 500

DATE :
 17/09/2014

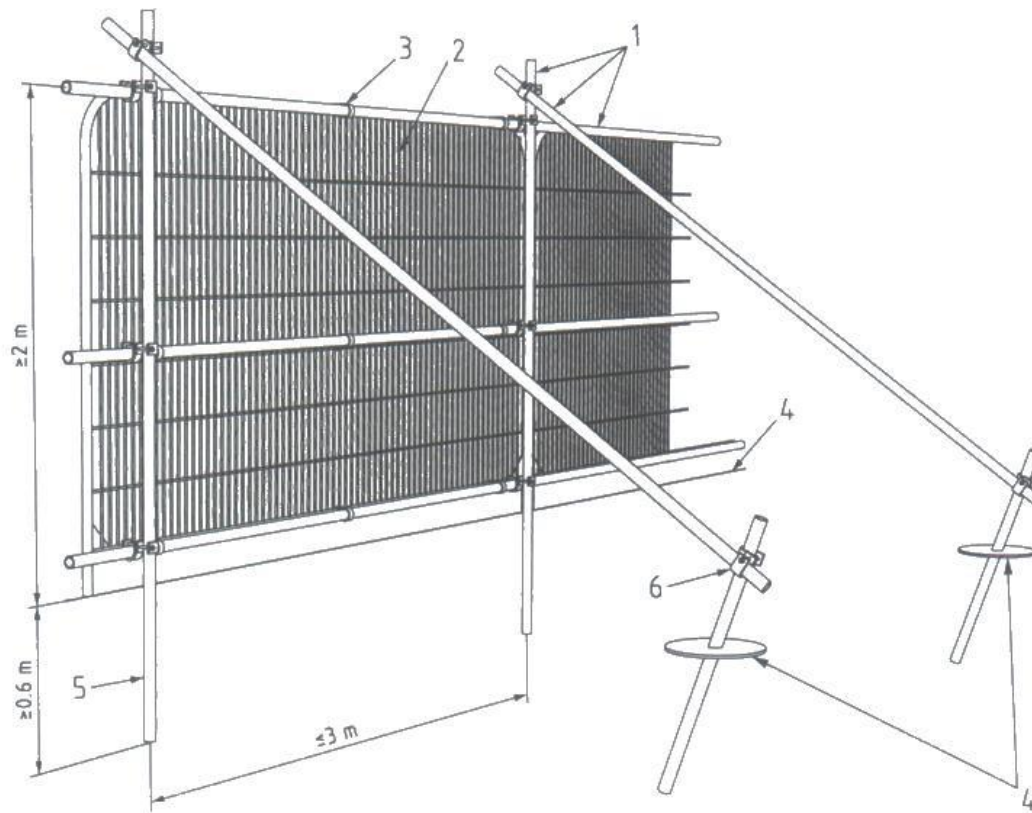
MAP FILENAME :
 AB0163

Peer Technology Services Ltd; Email info@peartechtechnology.co.uk
 Maps based on Ordnance Survey MasterMap or 1:25000 MfS-scale data
 with the permission of the Controller of HMSO. © Crown Copyright



Appendix 3: BS 5837:2012 Protective Barriers

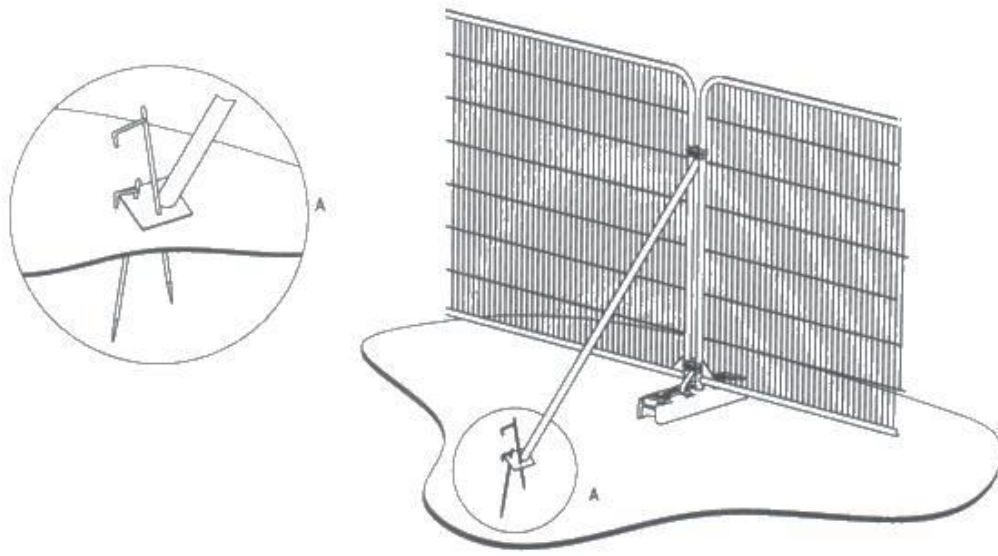
Figure 2 Default specification for protective barrier



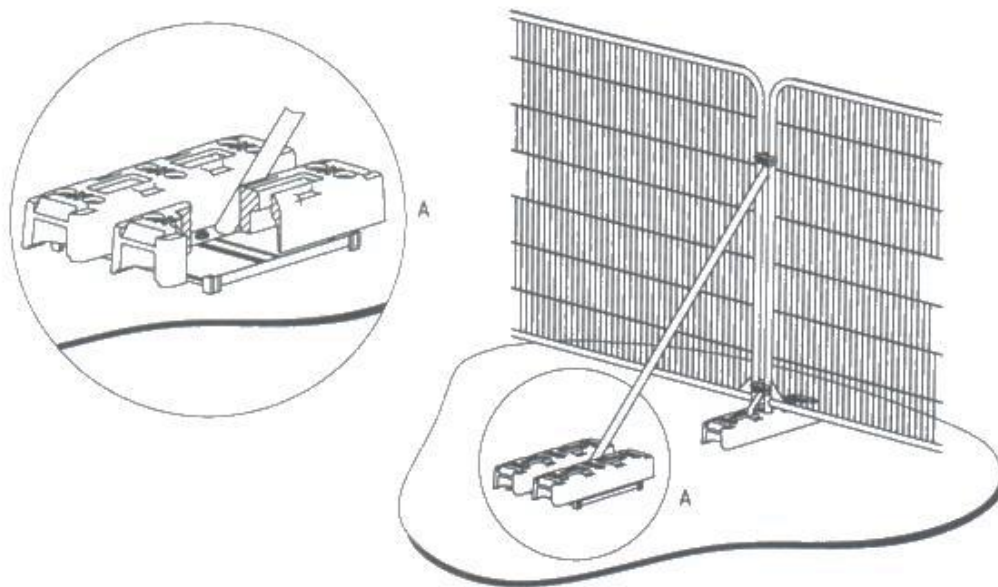
Key

- 1 Standard scaffold poles
- 2 Heavy gauge 2 m tall galvanized tube and welded mesh infill panels
- 3 Panels secured to uprights and cross-members with wire ties
- 4 Ground level
- 5 Uprights driven into the ground until secure (minimum depth 0.6 m)
- 6 Standard scaffold clamps

Figure 3 Examples of above-ground stabilizing systems



a) Stabilizer strut with base plate secured with ground pins



b) Stabilizer strut mounted on block tray

Appendix 4 Glossary

Glossary of Terms

Coppice: To remove tree and cut stump low to the ground, done to promote regrowth, not effective on all species.



Dieback, as exhibited on Ash

Daldinia concentrica: Fungi of low significance that develops on dead/dying areas of wood, found most commonly on Ash trees.

Deadwood: branches that are dead, but still remain within the crown.

Dieback: used to describe the gradual death of branch/tree from the edges inwards.

Epicormic: reactive shot growth produced by the tree when growing under stressed conditions.

Fluting: an area of reduced sap flow resulting in a dip on the surface of the bark.

Ganoderma spp: Significant wood decay fungi.

Hazard beam: when a long curved branch is forced to straighten, as the underside of the curve is longer than the

topside it has no option other than to buckle.

Included bark: two (or more) stems developing in close proximity, as a result do not form connective tissue, thus can be prone to failure, also known as **weak forks, inclusion, included union.**

Occlusion: the reaction growth of specialised tissue that grows around and eventually over a wound, also known as wound wood or reaction wood.

Pollard: the practice of cutting trees low, to the stem (traditionally 2-4m) to promote aggressive re-growth, previously done as form of woodland management.

Ribbing: the line that is left when the occluded sides of a wound meet.

Scaffold: a large significant/primary limb within the crown.

Ustulina deusta: particularly dangerous decay fungi. The brittle fracture associated with this fungi often occurs without warning (Lonsdale, 2001). Most commonly found at the base of the tree and in root buttresses.



Included bark/union on an Oak tree.