



Land West of Selsfield Road, Ardingly

Tree Survey Report

22nd May 2020



Client	Charterhouse Strategic Land Ltd.
Job name	Land West of Selsfield Road, Ardingly
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	Name	Position	Date
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1 Introduction

1.1 Site Description

The site comprises the southern part of the South of England Showground, located to the west of Selsfield Road, in the northern part of Ardingly, in the County of West Sussex at approximate postcode RH17 6TH.

The site, which is estimated to be around 3.4 hectares in size, is centred on Ordnance Survey (OS) TQ 344 298 and is dominated by amenity grassland, along with gravel paths, ruderal vegetation, boundary hedgerows and scattered trees.

The land surrounding the site is rural in character, containing residential properties, roads, amenity grassland, agricultural fields, hedgerows, scattered trees and woodland.

There are no Tree Preservation Orders (TPOs) on the site and the site is not within a Conservation Area (CA).

1.2 Proposed Works

It is understood that the proposed works are the subject of a planning application to Mid Sussex District Council, the Local Planning Authority (LPA), for the development of the site for residential use, with associated access, infrastructure and landscaping.

1.3 Aims of Study

To inform a planning application, GreenLink Ecology Ltd. has been commissioned to undertake a tree survey of the site, in accordance with British Standard (BS) 5837:2012 "*Trees in Relation to Design, Demolition and Construction - Recommendations*".

The aim of this report is to present the results of the survey, including a Tree Survey Schedule (TSS), an Arboricultural Implications Assessment (AIA) and an Arboricultural Method Statement (AMS). A Tree Protection Plan (TPP) has also been produced, which accompanies this report as a separate drawing.

This report in no way constitutes a health and safety survey report. Where concerns for tree health and safety exist, the necessary and appropriate tree inspections should be carried out.

2 Methodology

The trees were inspected from ground level by experienced arboricultural consultant Neil Taylor on 29th October 2019 and measurements taken in accordance with the recommendations set out in the BS 5837:2012. Canopy spreads were measured and plotted to the four compass points. Where direct access was not possible measurements have been estimated. The surveyed trees are colour coded on the accompanying tree survey drawing according to their relevant BS category.

The tree data collected is used to enable the current canopy spread of the surveyed trees and the Root Protection Area (RPA) to be plotted on the accompanying TCP. The RPA is defined by the formula in paragraph 4.6 from the BS 5837:2012 and may be refined by taking into account current on-site constraints to root activity such as buildings, earthworks and hard paving. This forms part of the design process for the proposed development.

3 Results

3.1 Tree Character Groups

The detailed results of the tree survey are provided in the TSS (Appendix 1). In summary, the trees within the survey area vary considerably in terms of condition and amenity value within the context of the local area. The trees can be divided into three distinct character groups as follows:

1. The first character group includes the large mature trees found growing across the site. The majority of the trees in this character group are in a good condition and provide a significant level of amenity to the wider landscape.
2. The second character group includes the medium-sized, middle-aged trees found growing across the site. The majority of the trees in this character group are in a good condition and provide a degree of amenity in the context of the local area.
3. The third character group includes the smaller, young trees found growing across the site. The majority of these trees are in a good condition but due to their size provide limited amenity in the context of the local area.

4 Arboricultural Implications Assessment (AIA)

4.1 Methodology

The AIA uses the information obtained in the tree survey to identify areas where the proposed construction may be at odds with accepted standards, in terms of a tree's requirements for space in which to maintain existing roots and shoots, and space for future growth.

The quality and relative importance of each tree is illustrated as a coloured polygon. The colour used relates to the BS categories as follows: A - green, B - blue, C - grey and U - red (see accompanying drawing ref: 19_1496_TPP_NT). In general, the design process will try to retain A and B category trees. Proposed construction will therefore normally be excluded from the RPA of A and B category trees. Red trees are discounted as they are recommended for removal.

Details of the trees surveyed are given in the TSS (Appendix 1). The juxtaposition of the proposed development in relation to existing tree locations are shown on the accompanying TPP drawing, ref: 19_1496_TPP_NT.

The AIA considers existing site conditions and the effect that they may have on the development of the surveyed trees root systems. Hard structures such as building and paved roads and paths can influence the root activity of trees by reducing the availability of both moisture and nutrients.

4.2 Assessment

Refer to the accompanying TPP drawing, ref: 19_1496_TPP_NT, for the relationship between the proposed development and the trees within/adjacent to the site.

The following trees will be removed to enable the proposed development:

- T21 - to enable the construction of an access road
- T22 - to enable the construction of an access road
- T34 - to enable the construction of an access road
- T70 - to enable the construction of an access road
- T71 - to enable the construction of an access road
- T72 - to enable the construction of an access road
- T73 - to enable the construction of an access road
- G2 - to enable the construction of an access road

All trees to be removed are in within the 'C' category either due to ailing physiological condition or because they are young and easily replaced.

The following tree will be affected by the construction of an access road within the RPA:

- T74

Due to the reduction in levels required to meet up with the existing access road, a 'no dig' type construction in this area is not feasible. Furthermore, the percentage incursion into the RPA is less than 3% which is deemed acceptable. In order to minimise the impact on the tree, excavations to enable the installation of the access road will be carried out in accordance with the methodology outlined in section 5.3 below.

5 Arboricultural Method Statement (AMS)

5.1 Methodology

The AMS provides the means by which retained trees can be protected throughout development.

The excavation of foundations for hard surfaces on sites where trees are present may result in root damage and removal. Where root loss is likely to occur it is important that a method of construction that minimises the impact on tree roots is used.

5.2 Demolition within the RPA of Retained Trees

There will be no demolition within the RPA of a retained tree.

5.3 Construction within the RPA of Retained Trees

Excavations for the access road that are on the edge of the RPA of T74 will be carried out by hand under the supervision of an arboricultural consultant. Any roots encountered will be pruned back to the edge of the excavation with sharp secateurs.

There will be no construction within the RPA of a retained tree and there will be no materials or spoil stored within the RPA of a retained tree.

In order to avoid damage to the retained trees, the tree surgery work identified in the accompanying TSS will be carried out prior to the occupation of the site by the building contractor. The work will be carried out in accordance with BS 3998:2010 *"Recommendations for Tree Work"*.

5.4 Services

The proposed locations of service runs is not known at this stage but are likely to be located outside the RPA of the trees on and adjacent to the site. Where it is not possible to achieve this, the section of service run which passes within the RPA of a tree will be hand dug in accordance with 'broken trenches' described in NJUG 4 Section 4, an extract of which can be found in Appendix 2. This will ensure that tree roots are not damaged during the installation of the service. All root pruning will be agreed beforehand with the arboricultural consultant in consultation with the LPA Tree Officer. All root pruning will be in accordance with current best working practice. All routes for overhead services will aim to avoid the trees. Where this is unavoidable any tree work will be agreed prior to commencement with the LPA Tree Officer.

If the conditions are suitable on site and there is sufficient space, underground services may cross the RPA if a low impact method is used. Such low impact methods include: moleing, directional drilling and thrust boring. It is important that all entry and exit pits remain outside of the RPA and the services are installed at a sufficient depth (at least 600mm) so as to avoid the tree rooting system.

5.5 Tree Protection

All trees that are to be retained on the site will be protected by the use of a tree protection barrier erected in the location shown on the accompanying TPP, drawing ref: 19_1496_TPP_NT. The fence will consist of "Heras" type panels or similar braced at appropriate intervals and secured to keep in place. The tree protection barrier will be erected prior to the occupation of the site by the building contractor and will only be removed once the construction phase is complete.

Where specified on the accompanying TPP drawing, reference 19_1496_TPP_NT, the ground between the tree protection barrier and the new building will be protected by geotextile fabric

and side butting scaffold boards or thick plywood fit for purpose, on a compressible layer (e.g. 100mm layer of woodchip over a geotextile membrane). A single thickness of boarding will provide sufficient protection for pedestrian load. The boarding will be left in place until the building works are complete.

5.6 Site Monitoring and Supervision

The process of reporting to the client and LPA Tree Officer will be by emailing the checklist form at Appendix 3. Site monitoring is to be at a frequency agreed and approved by the LPA. It will involve a site visit by the arboricultural consultant at selected intervals to ensure that the appropriate tree protection measures, as detailed in the approved drawings and method statements, are continually adhered to.

5.7 Enhancement Measures

The development of the site provides an opportunity to plant new native species of tree as part of a landscape strategy for the site. This will increase the species diversity and age range of trees within the local area.

6 Conclusions

GreenLink Ecology Ltd. was commissioned to carry out a tree survey at the site. The results of the survey indicate that the trees within the survey area vary considerably in terms of condition and amenity value in the context of the local area.

A total of seven individual trees and one group of trees will be removed to facilitate the proposed development. Through the specified tree protection measures and construction techniques, it will be possible to minimise the impact of the proposed development on the retained trees.

Overall, there are no known over-riding arboricultural constraints which would prevent the proposed development from going ahead, subject to the recommendations made within this report being correctly implemented.

7 Disclaimer

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This report has been prepared for the exclusive use of the commissioning client and associates. Unless otherwise agreed in writing by GreenLink Ecology Ltd., no other party may use, make use of or rely on the contents of the report.


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Any recommendation, opinion or finding stated in this report is based on circumstances and facts as they existed at the time that GreenLink Ecology Ltd. performed the work.


Nothing in this report constitutes legal opinion. If legal opinion is required the advice of a qualified legal professional should be secured.


8 Appendices


Appendix 1: Tree Survey Schedule


Project:	Land at Selsfield Road, Ardingly							BS 5837 2012 Trees in relation to design, construction and demolition- recommendations			Surveyed by		NAT				
Ref:	19_1496_TSS_NT										Weather		Overcast				
Date:	29.10.19										Tagged		No				
Client:	Charterhouse Strategic Land Ltd																
				Canopy Spread													
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category		
T1	oak (Quercus robur)	18	1070	7	6	5	5	1	1.5	M	Good - street tree	Good	None	40+	A2		
T2	oak (Quercus robur)	12	1030	8	9	8	9	1	2	M	Good	Good	None	40+	A2		
T3	oak (Quercus robur)	7	430	6	5	4	5	1	2	MA	Good - off site	Good	None	40+	B2		
T4	red oak (Quercus rubra)	8	360	7	4	5	3	1	2	MA	Good - off site	Good	None	40+	B2		
T5	cherry plum (Prunus ceracifera)	6	250	4	4	4	3	1	2	MA	Good - off site	Good	None	40+	C1		
T6	oak (Quercus robur)	7	320	4	2	6	5	1	1.5	MA	Good - off site	Good	None	40+	B2		
T7	oak (Quercus robur)	7	410	6	6	5	2	1	2	MA	Good - off site	Good	None	40+	B2		
T8	field maple (Acer campestre)	5	300	4	4	4	4	1	2	MA	Good - off site	Good	None	40+	C1		
T9	oak (Quercus robur)	7	380	6	5	5	6	1	2	MA	Good - off site. Ivy	stem obscured by ivy	N/A off site	40+	B2		
T10	oak (Quercus robur)	8	400	5	6	5	6	1	1.5	MA	Good - off site. Ivy	stem obscured by ivy	N/A off site	40+	B2		
T11	oak (Quercus robur)	14	680	7	8	6	7	1	2	MA	Good - off site	Good	None	40+	A2		
T12	oak (Quercus robur)	6	200	3	3	4	3	1	2	Y	Good - off site	Good	None	40+	C1		
T13	ash (Fraxinus excelsior)	9	320	4	4	4	5	1	2	MA	Good - off site	Good	None	40+	C1		
T14	oak (Quercus robur)	12	660	8	5	9	12	1	2	M	Good - off site	Good	None	40+	A2		


Project:	Land at Selsfield Road, Ardingly							BS 5837 2012 Trees in relation to design, construction and demolition- recommendations	Surveyed by		NAT				
Ref:	19 1496 TSS NT								Weather		Overcast				
Date:	29.10.19								Tagged		No				
Client:	Charterhouse Strategic Land Ltd														
				Canopy Spread											
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category
T15	oak (Quercus robur)	4	170	4	3	2	3	1	2	Y	Fair - suppressed	Good	None	40+	C1
T16	oak (Quercus robur)	14	880	7	6	7	9	1	3	M	Good - off site	Good	None	40+	A2
T17	oak (Quercus robur)	6	130	2	2	3	2	1	1.5	Y	Good	Good	None	40+	C1
T18	oak (Quercus robur)	7	160	3	3	3	4	1	2	Y	Good	Good	None	40+	C1
T19	ash (Fraxinus excelsior)	11	670	7	6	7	7	1	0	M	Good - off site	Fair - broken branch overhanging site	Remove broken branch	20-40	B2
T20	oak (Quercus robur)	12	580	7	5	6	7	1	4	MA	Fair - thinning crown	Good	None	20-40	B2
T21	elder (Sambucus nigra)	4	250	2	2	2	2	Multi	0	MA	Good	Good	None	20-40	C1
T22	oak (Quercus robur)	4	130	2	2	3	2	1	0	Y	Good	Good	None	40+	C1
T23	goat willow (Salix alba)	6	600	5	5	6	5	Multi	1	MA	Good	Fair - multi stem	None	10-20	C1
T24	goat willow (Salix alba)	5	500	6	6	1	4	Multi	0	MA	Fair - suppressed	Fair - crown bias to north	None	10-20	C1
T25	oak (Quercus robur)	4	170	2	3	2	3	1	1	Y	Good	Good	None	40+	C1
T26	beech (Fagus sylvatica)	9	500	6	4	5	5	1	1	MA	Good - off site	Good	None	40+	B2
T27	Caucasian lime (Tilia x euchlora)	11	580	7	6	6	6	1	2	MA	Good - off site	Good	None	40+	B2
T28	sweet chestnut (Castania sativa)	5	160	2	2	3	4	1	1.5	Y	Good - off site	Good	None	40+	C1


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				Canopy Spread											
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category
T29	oak (Quercus robur)	6	250	4	3	4	3	1	2	Y	Good - off site	Good	None	40+	C1
T30	field maple (Acer campestre)	8	310	3	4	3	4	1	2	MA	Good - off site	Good	None	40+	B2
T31	sycamore (Acer pseudoplatanus)	10	540	6	4	5	6	1	2	MA	Good - off site	Good	None	40+	B2
T32	sycamore (Acer pseudoplatanus)	12	610	6	8	3	2	1	3	MA	Good - off site. Ivy	Fair - one sided crown	N/A off site	20-40	C1
T33	sycamore (Acer pseudoplatanus)	10	500	5	6	5	6	1	2	MA	Good - off site	Good	None	40+	B2
T34	goat willow (Salix alba)	6	500	4	9	3	5	Multi	0	MA	Good	Fair - multi stem, some failed stems	None	10-20	C1
T35	sweet chestnut (Castania sativa)	5	200	4	4	4	4	1	2	Y	Good - off site	Good	None	40+	C1
T36	elm (Ulmus sp.)	12	500	5	5	5	4	1	3	MA	Good - off site	Good	None	20-40	B2
T37	sycamore (Acer pseudoplatanus)	9	260	5	4	5	4	1	3	MA	Good - off site	Good	None	40+	B2
T38	oak (Quercus robur)	11	680	6	7	7	7	1	2	M	Good - off site	Good	None	40+	B2
T39	blue cedar (Cedrus atlantica 'Glauca')	13	940	4	5	8	9	1	2	M	Good - off site	Fair - decaying wound on stem	None	20-40	B2
T40	sycamore (Acer pseudoplatanus)	11	510	6	5	3	5	1	2	MA	Good	Good	None	40+	B2
T41	oak (Quercus robur)	9	320	5	5	5	5	1	2	MA	Good	Good	None	40+	B2


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Client:	Charterhouse Strategic Land Ltd														
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Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category
T42	Norway maple (Acer platanoides)	7	280	2	4	5	4	1	2	MA	Good	Good	None	40+	C1
T43	Norway maple (Acer platanoides)	7	280	3	3	2	3	1	2	MA	Good	Good	None	40+	C1
T44	Norway maple (Acer platanoides)	4	90	0	1	2	2	1	2	Y	Fair - suppressed	Good	None	10-20	C1
T45	Norway maple (Acer platanoides)	7	300	1	4	4	4	1	2	MA	Good	Good	None	20-40	C1
T46	Norway maple (Acer platanoides)	7	260	3	4	4	0	1	3	MA	Good	Fair - one sided crown	None	20-40	C1
T47	Norway maple (Acer platanoides)	9	400	2	3	4	4	1	1.5	MA	Good	Fair - one sided crown	None	20-40	C1
T48	oak (Quercus robur)	10	470	4	6	7	7	1	3	MA	Good	Good	None	40+	B2
T49	Norway maple (Acer platanoides)	7	250	4	4	3	3	1	2	MA	Good	Good	None	20-40	C1
T50	red oak (Quercus rubra)	10	440	6	7	4	8	1	3	MA	Good	Good	None	40+	B2
T51	oak (Quercus robur)	6	320	4	5	4	5	1	2	MA	Good	Good	None	40+	B2
T52	oak (Quercus robur)	9	300	3	4	3	4	1	1	MA	Good	Good	None	40+	B2
T53	Norway maple (Acer platanoides)	7	370	3	5	5	5	1	2	MA	Good	Good	None	40+	B2
T54	Norway maple (Acer platanoides)	7	300	3	5	2	3	1	3	MA	Good	Good	None	40+	C1


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Client:	Charterhouse Strategic Land Ltd														
				Canopy Spread											
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category
T55	red oak (Quercus rubra)	9	460	3	7	3	6	1	3	MA	Good	Fair - stem divides at 2m, minor fisuring at union	None	20-40	B2
T56	Norway maple (Acer platanoides)	7	260	2	2	1	2	1	2	Y	Good	Good	None	40+	C1
T57	Norway maple (Acer platanoides)	7	280	3	4	3	2	1	2	MA	Good	Good	None	20-40	C1
T58	Norway maple (Acer platanoides)	6	300	2	4	4	3	1	3	MA	Good	Good	None	40+	B2
T59	red oak (Quercus rubra)	10	520	2	7	6	8	1	3	MA	Good	Good	None	40+	B2
T60	oak (Quercus robur)	9	450	3	5	3	6	1	3	MA	Good	Good	None	40+	B2
T61	Norway maple (Acer platanoides)	8	440	3	7	1	1	1	4	MA	Fair - suppressed	Fair - one sided crown	None	10-20	C1
T62	Norway maple (Acer platanoides)	8	450	5	4	1	4	1	2	MA	Fair - suppressed	Fair - one sided crown	None	10-20	C1
T63	apple (Malus sp.)	3	90	1	1	1	1	1	1	Y	Good	Good	None	40+	C1
T64	common lime (Tilia x europaea)	6	320	3	3	3	3	1	2	MA	Good	Good	None	40+	C1
T65	common lime (Tilia x europaea)	6	330	3	3	3	2	1	1.5	MA	Good	Good	None	40+	C1
T66	Norway maple (Acer platanoides)	6	300	3	4	2	3	1	3	MA	Good	Good	None	40+	C1
T67	field maple (Acer campestre)	4	240	2	3	2	4	1	2	MA	Good	Good	None	40+	C1


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Date:	29.10.19								Tagged		No				
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				Canopy Spread											
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category
T68	apple (Malus sp.)	4	200	2	3	2	3	1	1.5	MA	Good	Good	None	40+	C1
T69	Norway maple (Acer platanoides)	6	340	4	4	4	4	1	2	MA	Good	Fair - weak unions within crown	None	10-20	C1
T70	silver birch (Betula pendula)	7	390	4	5	5	3	1	0	MA	Good	Fair - wounds on buttresses	None	10-20	C1
T71	cherry (Prunus sp.)	6	320	3	4	4	4	1	2	MA	Good	Good	None	20-40	C1
T72	cherry (Prunus sp.)	6	310	3	4	4	4	1	2	MA	Good	Good	None	20-40	C1
T73	field maple (Acer campestre)	5	200	3	3	3	3	1	2	MA	Good	Good	None	40+	C1
T74	sycamore (Acer pseudoplatanus)	7	410	4	4	4	4	1	2	MA	Good	Good	None	40+	B2
T75	sycamore (Acer pseudoplatanus)	6	330	4	4	4	4	1	2	MA	Good	Good	None	40+	B2
T76	cherry (Prunus sp.)	5	290	3	4	3	4	1	2	MA	Good	Good	None	20-40	C1
T77	apple (Malus sp.)	4	180	1	3	2	3	1	1.5	MA	Good	Good	None	10-20	C1
T78	cherry (Prunus sp.)	5	330	4	4	4	4	1	2	MA	Good	Good	None	40+	B2
T79	Norway maple (Acer platanoides)	5	220	3	3	3	3	1	3	MA	Good	Good	None	40+	C1
T80	apple (Malus sp.)	4	100	1	1	2	1	1	1	Y	Good	Good	None	40+	C1
T81	Norway maple (Acer platanoides)	5	250	3	4	3	3	1	2	MA	Good	Good	None	40+	C1
T82	Norway maple (Acer platanoides)	5	200	3	3	3	3	1	2	MA	Good	Good	None	40+	C1


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Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category
T83	silver birch (Betula pendula)	7	360	4	3	4	3	1	2	MA	Good	Good	None	40+	B2
T84	Norway maple (Acer platanoides)	5	200	3	3	2	2	1	2	MA	Good	Good	None	40+	C1
T85	sycamore (Acer pseudoplatanus)	6	320	3	4	4	4	1	2	MA	Good	Good	None	40+	B2
T86	field maple (Acer campestre)	4	180	1	2	1	2	1	1.5	MA	Good	Good	None	40+	C1
T87	Norway maple (Acer platanoides)	5	308	2	3	3	3	3	2	MA	Good	Fair - triple stem	None	20-40	C1
T88	whitebeam (Sorbus aria)	4	190	1	3	1	1	1	2	MA	Fair - poor form	Good	None	10-20	C1
T89	apple (Malus sp.)	4	160	1	2	3	2	1	2	MA	Good	Fair - decay on stem	None	10-20	C1
T90	cherry (Prunus sp.)	6	380	3	4	3	3	1	1.5	MA	Good	Good	None	20-40	C1
T91	cherry (Prunus sp.)	4	360	2	3	3	3	1	2	MA	Good	Fair - decay on stem	None	10-20	C1
T92	apple (Malus sp.)	4	156	1	3	2	2	2	1.5	MA	Good	Fair - twin stem	None	10-20	C1
T93	cherry (Prunus sp.)	5	130	1	2	2	1	1	2	Y	Good	Good	None	40+	C1
T94	field maple (Acer campestre)	5	200	2	3	3	2	1	2	MA	Good	Fair - decay on stem	None	10-20	C1
T95	cherry (Prunus sp.)	6	460	4	4	4	4	1	2	MA	Good	Good	None	40+	B2

Project:	Land at Selsfield Road, Ardingly								BS 5837 2012 Trees in relation to design, construction and demolition- recommendations			Surveyed by		NAT				
Ref:	19_1496 TSS NT											Weather		Overcast				
Date:	29.10.19											Tagged		No				
Client:	Charterhouse Strategic Land Ltd																	
				Canopy Spread														
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category			
T96	cherry (Prunus sp.)	3	50	2	1	1	2	1	2	Y	Good	Good	None	40+	C1			
T97	cherry (Prunus sp.)	4	240	2	2	2	3	1	2	MA	Good	Good	None	40+	C1			
T98	Swedish whitebeam (Sorbus intermedia)	5	460	3	4	3	4	1	2	M	Good	Good	None	20-40	B2			
T99	Norway maple (Acer platanoides)	6	380	3	3	3	3	1	2	MA	Good	Good	None	40+	B2			
T100	Swedish whitebeam (Sorbus intermedia)	5	410	3	3	3	3	1	2	M	Good	Good	None	20-40	B2			
T101	field maple (Acer campestre)	4	250	2	3	3	3	1	2	MA	Good	Good	None	40+	C1			
T102	sycamore (Acer pseudoplatanus)	8	400	3	4	4	4	1	2	MA	Good	Good	None	40+	B2			
T103	sycamore (Acer pseudoplatanus)	6	300	3	3	4	3	1	1.5	MA	Good	Good	None	40+	B2			
T104	whitebeam (Sorbus aria)	5	180	2	3	3	2	1	2	Y	Good	Fair - decay at base	None	20-40	C1			
T105	field maple (Acer campestre)	5	200	2	4	3	3	1	2	MA	Good	Good	None	40+	C1			
T106	Norway maple (Acer platanoides)	7	370	3	4	4	3	1	2	MA	Good	Good	None	40+	B2			

Project:	Land at Selsfield Road, Ardingly							BS 5837 2012 Trees in relation to design, construction and demolition- recommendations	Surveyed by		NAT				
Ref:	19 1496 TSS NT								Weather		Overcast				
Date:	29.10.19								Tagged		No				
Client:	Charterhouse Strategic Land Ltd														
				Canopy Spread											
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category
T107	Swedish whitebeam (Sorbus intermedia)	6	310	3	3	3	3	1	2	MA	Good	Good	None	40+	B2
T108	field maple (Acer campestre)	5	290	2	4	3	3	1	2	MA	Good	Good	None	40+	B2
T109	Swedish whitebeam (Sorbus intermedia)	6	440	3	3	3	3	1	2	MA	Good	Good	None	20-40	B2
T110	field maple (Acer campestre)	5	210	3	3	3	2	1	2	MA	Good	Fair - decay on stem	None	20-40	C1
T111	common lime (Tilia x europaea)	8	390	3	3	4	4	1	1	MA	Good	Good	None	40+	B2
T112	goat willow (Salix alba)	6	500	3	5	4	4	Multi	0	MA	Good	Fair - multi stem	None	10-20	C1
T113	cherry (Prunus sp.)	4	100	2	2	3	2	1	2	Y	Good	Good	None	40+	C1
T114	field maple (Acer campestre)	6	270	3	4	3	3	1	1	MA	Good	Good	None	40+	B2
T115	Norway maple (Acer platanoides)	6	410	3	3	4	3	1	2	MA	Good	Good	None	40+	B2
T116	Norway maple (Acer platanoides)	5	313	3	4	4	3	3	2	MA	Fair - bleeding lesions on stem	Fair - triple stem	None	10-20	C1
T117	rowan (Sorbus aucuparia)	5	190	1	3	2	1	1	2	MA	Good	Fair - historic root failure, appears to have stabilised	None	10-20	C1
T118	Norway maple (Acer platanoides)	6	380	3	4	3	3	1	2	MA	Good	Good	None	40+	B2

Project:	Land at Selsfield Road, Ardingly								BS 5837 2012 Trees in relation to design, construction and demolition- recommendations		Surveyed by	NAT				
Ref:	19 1496 TSS NT										Weather	Overcast				
Date:	29.10.19										Tagged	No				
Client:	Charterhouse Strategic Land Ltd															
				Canopy Spread												
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category	
T119	field maple (Acer campestre)	4	200	3	3	3	3	1	0	MA	Good	Good	None	20-40	C1	
T120	field maple (Acer campestre)	5	258	3	3	3	2	4	0	MA	Good	Fair - multi stem	None	20-40	C1	
T121	cherry (Prunus sp.)	5	310	3	4	4	4	1	2	MA	Good	Good	None	40+	B2	
T122	Swedish whitebeam (Sorbus intermedia)	5	430	3	4	3	3	1	2	MA	Good	Good	None	40+	B2	
T123	cherry (Prunus sp.)	6	320	4	4	4	4	1	2	MA	Good	Good	None	40+	B2	
T124	cherry (Prunus sp.)	4	100	1	2	3	3	1	1.5	Y	Good	Good	None	40+	C1	
T125	cherry (Prunus sp.)	5	150	2	2	2	1	1	2	Y	Good	Good	None	40+	C1	
T126	cherry (Prunus sp.)	5	310	3	4	4	3	1	2	MA	Good	Good	None	40+	B2	
T127	sycamore (Acer pseudoplatanus)	6	310	3	4	3	3	1	2	MA	Good	Good	None	40+	B2	
T128	cherry (Prunus sp.)	7	380	4	4	5	4	1	2	MA	Good	Good	None	40+	B2	
T129	Swedish whitebeam (Sorbus intermedia)	6	410	3	4	4	4	1	2	MA	Good	Good	None	40+	B2	
T130	field maple (Acer campestre)	5	350	3	4	4	4	1	2	MA	Good	Good	None	40+	B2	

Project:	Land at Selsfield Road, Ardingly							BS 5837 2012 Trees in relation to design, construction and demolition- recommendations	Surveyed by		NAT				
Ref:	19 1496 TSS NT								Weather		Overcast				
Date:	29.10.19								Tagged		No				
Client:	Charterhouse Strategic Land Ltd														
				Canopy Spread											
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category
T131	grey poplar (Populus canescens)	12	360	3	3	3	3	1	2	MA	Good - ivy	stem obscured by ivy	Sever ivy	40+	B2
T132	grey poplar (Populus canescens)	7	100	1	1	2	1	1	1	Y	Good	Good	None	40+	C1
T133	Swedish whitebeam (Sorbus intermedia)	5	420	4	3	3	3	1	2	MA	Good	Good	None	40+	B2
T134	Norway maple (Acer platanoides)	6	325	3	3	3	3	3	2	MA	Good	Fair - triple stem	None	20-40	C1
T135	Norway maple (Acer platanoides)	6	310	3	3	3	3	1	2	MA	Good	Good	None	40+	B2
G1	sycamore, cherry, lime	Up to 12	Varied						MA	Good - boundary group. Average DBH 350mm	Good	None	40+	B2	
G2	sycamore, ash	Up to 5	Varied						Y	Good - self sown group	Good	None	40+	C1	
H1	hawthorn, ash, beech, sycamore, elder, yew	Up to 1.5	Varied						MA	Good - boundary hedge	Good	None	20-40	C1	
H2	blackthorn, sycamore, goat willow	Up to 3	Varied						MA	Good - intermittent boundary hedge	Good	None	20-40	C1	
H3	beech, holly, laurel	Up to 1.5	Varied						MA	Good - boundary hedge	Good	None	20-40	C1	

Project:	Land at Selsfield Road, Ardingly							BS 5837 2012 Trees in relation to design, construction and demolition- recommendations			Surveyed by		NAT				
Ref:	19_1496_TSS_NT										Weather		Overcast				
Date:	29.10.19										Tagged		No				
Client:	Charterhouse Strategic Land Ltd																
				Canopy Spread													
Tree No.	Species	Height (m)	DBH (mm)	N	E	S	W	Stems	Height of crown clearance	Age class	Physiological condition problems/comments	Structural condition	Preliminary management recommendations	Estimated remaining contribution years	BS category		
H4	hawthorn, beech	Up to 1.5	Varied								MA	Good - boundary hedge	Good	None	20-40	C1	

Appendix 2: Section 4, extracted from NJUG 4

4. HOW TO AVOID DAMAGE TO TREES

This section gives general guidance on methods of work to minimise damage to trees. The local authority (or for privately owned trees, the owner or their agent), should be consulted at an early stage prior to the commencement of any works. This will reduce the potential for future conflict between trees and apparatus.

4.1 Below Ground

Wherever trees are present, precautions should be taken to minimise damage to their root systems. As the shape of the root system is unpredictable, there should be control and supervision of any works, particularly if this involves excavating through the surface 600mm, where the majority of roots develop.

4.1.1 Fine Roots

Fine roots are vulnerable to desiccation once they are exposed to the air. Larger roots have a bark layer which provides some protection against desiccation and temperature change. The greatest risk to these roots occurs when there are rapid fluctuations in air temperature around them e.g. frost and extremes of heat. It is therefore important to protect exposed roots where a trench is to be left open overnight where there is a risk of frost. In winter, before leaving the site at the end of the day, the exposed roots should be wrapped with dry sacking. This sacking must be removed before the trench is backfilled.

4.1.2 Precautions

The precautions referred to in this section are applicable to any excavations or other works occurring within the Prohibited or Precautionary Zones as illustrated in Figure 1 – 'Tree Protection Zone'.

4.1.3 Realignment

Whenever possible apparatus should always be diverted or re-aligned outside the Prohibited or Precautionary Zones. Under no circumstances can machinery be used to excavate open trenches within the Prohibited Zone.

The appropriate method of working within the Precautionary Zone should be determined in consultation with the local authority (or for privately owned trees the owner or their agent) and may depend on the following circumstances;

- the scope of the works (e.g. one-off repair or part of an extensive operation)
- degree of urgency (e.g. for restoration of supplies)
- knowledge of location of other apparatus
- soil conditions
- age, condition, quality and life expectancy of the tree

Where works are required for the laying or maintenance of any apparatus within the Prohibited or Precautionary Zones there are various techniques available to minimise damage.

Acceptable techniques in order of preference are;

a) Trenchless

Wherever possible trenchless techniques should be used. The launch and reception pits should be located outside the Prohibited or Precautionary Zones. In order to avoid damage to roots by percussive boring techniques it is recommended that the depth of run should be below 600mm. Techniques involving external lubrication of the equipment with materials other than water (e.g. oil, bentonite, etc.) must not be used when working within the Prohibited Zone. Lubricating materials other than water may be used within the Precautionary Zone following consultation and by agreement.

b) Broken Trench - Hand-dug

This technique combines hand dug trench sections with trenchless techniques if excavation is unavoidable. Excavation should be limited to where there is clear access around and below the roots. The trench is excavated by hand with precautions taken as for continuous trenching as in (c) below. Open sections of the trench should only be long enough to allow access for linking to the next section. The length of sections will be determined by local conditions, especially soil texture and cohesiveness, as well as the practical needs for access. In all cases the open sections should be kept as short as possible and outside of the Prohibited Zone.

c) Continuous Trench - Hand-dug

The use of this method must be considered only as a last resort if works are to be undertaken by agreement within the Prohibited Zone. The objective being to retain as many undamaged roots as possible.

Hand digging within the Prohibited or Precautionary zones must be undertaken with great care requiring closer supervision than normal operations.

After careful removal of the hard surface material digging must proceed with hand tools. Clumps of roots less than 25mm in diameter (including fibrous roots) should be retained in situ without damage. Throughout the excavation works great care should be taken to protect the bark around the roots.

All roots greater than 25mm diameter should be preserved and worked around. These roots must not be severed without first consulting the owner of the tree or the local authority tree officer / arboriculturist. If after consultation severance is unavoidable, roots must be cut back using a sharp tool to leave the smallest wound.

4.1.5 Backfilling

- Any reinstatement of street works in the United Kingdom must comply with the relevant national legislation (see: **Volume 6 – 'Legislation and Bibliography'**). In England this relates to the requirements of the code of practice – 'Specification for the Reinstatement of Openings in Highways' approved under the New Roads and Street Works Act 1991. Without prejudice to the requirements relating to the specification of materials and the standards of workmanship, backfilling should be carefully carried out to avoid direct damage to roots and excessive compaction of the soil around them.
- The backfill should, where possible, include the placement of an inert granular material mixed with top soil or sharp sand (not builder's sand) around the roots. This should allow the soil to be compacted for resurfacing without damage to the roots securing a local aerated zone enabling the root to survive in the longer term.
- Backfilling outside the constructed highway limits should be carried out using the excavated soil. This should not be compacted but lightly "tamped" and usually left slightly proud of the surrounding surface to allow natural settlement. Other materials should not be incorporated into the backfill.

4.1.6 Additional Precautions near Trees

- Movement of heavy mechanical plant (excavators etc.) must not be undertaken within the Prohibited Zone and should be avoided within the Precautionary Zone, except on existing hard surfaces, in order to prevent unnecessary compaction of the soil. This is particularly important on soils with a high proportion of clay. Spoil or material must not be stored within the Prohibited Zone and should be avoided within the Precautionary Zone.
- Where it is absolutely necessary to use mechanical plant within the Precautionary Zone care should be taken to avoid impact damage to the trunk and branches. A tree must not be used as an end-stop for paving slabs or other materials nor for security chaining of mechanical plant. If the trunk or branches of a tree are damaged in any way advice should be sought from the local authority tree officer / arboriculturist.

See TABLE 1 –‘Prevention of Damage to Trees Below Ground’ below for summary details regarding causes and types of damage to trees and the implications of the damage and the necessary precautions to be taken to avoid damage.

TABLE 1 - Prevention of Damage to Trees Below Ground

Causes of Damage	Type of Damage	Implications to Tree	Precautions
Trenching, mechanical digging etc.	Root severance	<ul style="list-style-type: none"> • The tree may fall over • Death of the root beyond the point of damage • Potential risk of infection of the tree <p>The larger the root the greater the impact on the tree.</p>	Hand excavate only within the Precautionary Zone. Work carefully around roots. Do not cut roots over 25mm in diameter without referring to the local authority tree officer. For roots less than 25mm in diameter use a sharp tool and make a clean cut leaving as small a wound as possible.
Trenching, mechanical digging, top soil surface removal etc.	Root bark damage	<ul style="list-style-type: none"> • The tree may fall over • If the damage circles the root it will cause the death of the root beyond that point • Potential risk of infection of the tree <p>The larger the root the greater the impact on the tree.</p>	Do not use mechanical machinery to strip the top soil within the Precautionary Zone. Hand excavate only within the Precautionary Zone. Work carefully around roots. Do not cut roots over 25mm in diameter without referring to the local authority tree officer. For roots less than 25mm use a sharp tool and make a clean cut leaving as small a wound as possible.
Vehicle movement and plant use. Material storage within the precautionary area.	Soil compaction & water saturation	Restricts or prevents passage of gaseous diffusion through soil, the roots are asphyxiated and killed affecting the whole tree.	Prevent all vehicle movement, plant use or material storage within the Precautionary Zone.
Top-soil scouring, excavation or banking up.	Alterations in soil level causing compaction or exposure of roots.	Lowering levels strips out the mass of roots over a wide area. Raising soil levels asphyxiates roots and has the same effect as soil compaction.	Avoid altering or disturbing soil levels within the Precautionary Zone.
Use of herbicides.	Poisoning of the tree via root absorption	<ul style="list-style-type: none"> • Death of the whole tree • Death of individual branches <p>Damage to leaves and shoots.</p>	The selection and application of herbicides must be undertaken by a competent person in accordance with COSHH regulations.
Spillage of oils or other materials.	Contamination of soil	Toxic and asphyxiation effects of chemicals, oils, building materials (cement, plaster, additives etc.) on the root system can kill the tree.	Never store oils, chemicals or building materials within the Precautionary Zone or within the branch spread of a tree, which ever is the greater.
Placement or replacement of underground apparatus.	Various	Death of all or part of the tree.	Effective planning and liaison with local authority tree officer, taking into consideration the position of trees, and their future growth potential and management

4.2 Above Ground

4.2.1 Damage by Pruning

Trees (including shrubs and hedges) can be damaged by inappropriate or excessive pruning. Reference should be made to the Energy Networks Association (ENA) document "Engineering Technical Report 136 Vegetation Management near Electricity Equipment – Principles of Good Practice" (see section 8 – 'Other Useful Publications') or appropriate company specific documentation for guidance on pruning.

See TABLE 2 – 'Prevention of Damage to Trees Above Ground' below for summary details regarding causes and types of damage to trees and the implications of the damage and the necessary precautions to be taken to avoid damage.

TABLE 2 - Prevention of Damage to Trees Above Ground

Causes of Damage	Type of Damage	Implications for the Tree	Precautions
Impact by vehicle or plant Physical attachment of signs or hoardings to the trunk Storage of materials at base of tree Rubbing by winch or pulling cables	Bark bruising, bark removal, damage to the wood, damage to buttress roots, abrasion to trunk	Wounding with the potential for infection ultimately resulting in death of all or part of the tree. Structural failure of the tree	Surround the trunk with protective free-standing barrier. Exclude vehicles, plant or material storage from the Precautionary Zone. Ensure sufficient clearance of cables or ropes.
Impact by vehicle or plant Rubbing by overhead cables	Bark damage to branches, breakage and splitting of branches, abrasion to branches	Structural failure of the branch. Wounding or loss of a branch with the potential for infection ultimately resulting in death of all or part of the branch or tree.	Exclude vehicles, plant or material storage from the Precautionary Zone. Ensure sufficient clearance of cables or ropes. All pruning should be carried out in accordance with BS3998 (<i>prune affected branches to give appropriate clearance from cables</i>)
Inappropriate siting of overhead apparatus, such as CCTV, lighting fixtures and communications masts and dishes.	Inappropriate pruning, unnecessary tree removal	Severely pruning tree to acquire line of sight signal for communications dish etc.	Effective planning and liaison with local authority tree officer / arboriculturist, taking into consideration the position of trees, and their future growth potential and management.
Lack of forethought in design and location of apparatus and services entries on new developments	Complete tree removal	The tree is removed unnecessarily	Agree the location and installation of services at the design stage. Consideration should be given to the creation of dedicated service routes wherever possible.
Use of herbicides	Poisoning of the tree via absorption through bark, leaves and shoots	Death of the whole tree, death of individual branches, damage to leaves and shoots	The selection and application of herbicides must be undertaken by a competent person in accordance with COSHH regulations.

Appendix 3: Programme of Site Monitoring

Land West of Selsfield Road, Ardingly
Site Monitoring Form

To be completed by the arboricultural consultant and emailed to the client and tree officer at the completion of each operation.

Arboricultural Consultant.....

Client.....

Project Manager.....

Tree Officer.....

(The above to be filled in with names and contact numbers)

OPERATION	TIMING	DATE	COMMENTS
Pre-commencement meeting or contact with project/site manager.	Before any works or pre-works on site, including storage of materials		
Spot check of tree protection measures	Before works commence on site		
Supervision of excavations within RPA of T74	During ground works		
Completion of development	Once all construction activity has been completed		