

Heckington Fen Solar Park

EN010123

Appendix 6.3 – Arboricultural Impact Assessment, Tree Survey, and Tree Protection Plan

Applicant: Ecotricity (Heck Fen Solar) Limited

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APPENDIX 6.3: ARBORICULTURAL IMPACT ASSESSMENT, TREE SURVEY AND TREE PROTECTION PLAN

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ARBORICULTURAL
CONSULTANTS



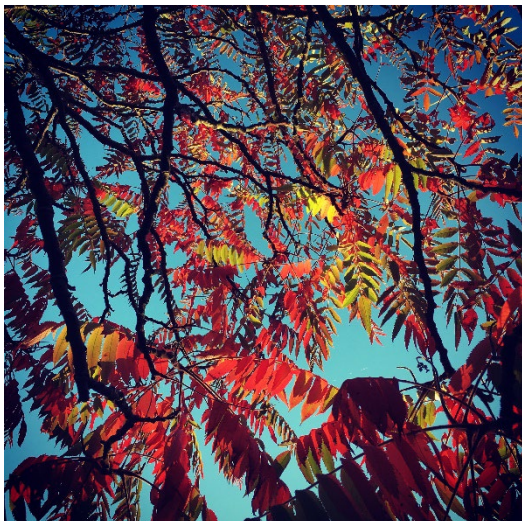
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ARBORICULTURAL SURVEY, IMPACT ASSESSMENT AND PROTECTION PLAN

Relating to:

HECKINGTON FEN ENERGY PARK



At:

HECKINGTON FEN, BOSTON,
LINCOLNSHIRE

Instructed by:

ECOTRICITY (HECK FEN SOLAR) LIMITED

MHP ref: 22045 HECKINGTON FEN SOLAR FARM_TS AIA TPP_V4

CONTENTS:

1 INTRODUCTION 1
 2 GENERAL 3
 3 THE SITE..... 6
 4 FINDINGS..... 8
 5 TREE CONSTRAINTS..... 9
 6 ARBORICULTURAL IMPACT ASSESSMENT (AIA) AND TREE PROTECTION PLAN..... 11
 7 CONCLUSION 15
 APPENDIX 1 – TREE SURVEY SCHEDULE
 APPENDIX 2 – ARBORICULTURAL IMPACT ASSESSMENT AND TREE PROTECTION PLAN

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EXECUTIVE SUMMARY

Background

- An application for planning permission is to be submitted for the construction, operation (including maintenance), and decommissioning of a ground mounted solar photovoltaic (PV) electricity generation and energy storage facility (hereafter referred to as “the Energy Park”), cable route to, and above and below ground works at, the National Grid Bicker Fen Substation (hereafter referred to as “the site” (inclusive of Energy Park)) on land at Six Hundreds Farm, Six Hundreds Drove, East Heckington, Sleaford, Lincolnshire.
- The Energy Park extends to 524ha which includes a section of the “Cable Route Corridor”. The Cable Route Corridor encompasses the “Off-Site Grid Connection” at the National Grid Bicker Fen Substation, providing a total area of 644ha.
- To assist determination of the application by Secretary of State and Examining Authority, I am instructed to prepare an arboricultural assessment of the proposals in accordance with BS5837:2012 ‘Trees in relation to design, demolition and construction - recommendations’.
- I visited the site to survey the trees, assess and evaluate the impacts of the proposals on the trees and set out suitable tree protection measures.

Key points

- The key arboricultural features associated with the site are:
 - Intermittent hedgerows, typically alongside dykes at field edges.
 - Discrete areas of scrub, possibly naturally regenerated, in areas of less intensive farm management.
 - Occasional small and medium-sized areas of early-mature mixed species plantation woodland.
 - Sporadic larger trees, generally associated with dwellings or established in unmanaged land at field boundaries and hedge/dyke intersections.

- These trees are not protected by virtue of being located within a conservation area and/or being subject to a Tree Preservation Order (TPO). However, restrictions limiting timber volume extraction do apply.
- There are minimal hedgerow removals associated with the proposals and any negative effects are greatly outweighed by the cumulative positive impacts of proposed new hedgerow planting.
- A section of moderate quality plantation woodland must be removed to enable expansion of the southern boundary of the Bicker Fen substation for the AIS technology solutions. This will not have a significant adverse effect on public visual amenity in my view.
- More generally, construction works do have potential to directly and/or indirectly damage retained trees and hedges. These impacts can be effectively mitigated by use of fit for purpose tree protection barriers.
- My arboricultural impact assessment with associated tree protection details show that the proposals are feasible from an arboricultural perspective for the following key reasons:
 - Tree removals are limited to an area of early mature woodland to the south of the Bicker Fen substation. These tree removals will not cause significant harm to public visual amenity and are mitigated by new planting
 - No other mature trees shall be removed to enable the construction of the proposals – however a worst-case assessment is assessed should trees or hedgerows be removed, as the final grid connection route is not determined, and a wider corridor is included.
 - Tree protection measures can be put in place to ensure that construction works do not result in damage to the retained trees.
 - New tree and hedgerow planting shall be established to enhance the energy park site.

1 INTRODUCTION

1.1 Introduction

1.1.1 My name is Matt Reid. I am a Chartered Arboriculturist and Registered Consultant of the Arboricultural Association and the Institute of Chartered Foresters. I hold the Level 6 Diploma in Arboriculture (ABC Awards) as well as other technical and trade level qualifications. I am also a Professional Member of the Arboricultural Association.

1.1.2 I have worked in the arboricultural industry since 1999. My initial trade and professional experience comprised six years as an arboricultural contractor and climbing arborist. Following this I spent seven years as a local government tree officer. Since 2012 I have worked in private practice as an arboricultural consultant specialising in planning related matters and tree risk management.

1.2 Background

1.2.1 A Development Consent Order for planning permission is to be submitted for a new energy park with associated infrastructure on land at Heckington Fen, near Boston, Lincolnshire; hereafter referred to as 'the site'.

1.3 Site details

1.3.1 For location purposes, the site can be located using the following nearby postcode LN4 4AJ and the grid reference TF 19935 45447.

1.3.2 The site is split between Local Planning Authorities North Kesteven District Council (NKDC) and Boston Borough Council (BBC).

1.4 Instruction and scope

1.4.1 I am instructed by Ecotricity (Heck Fen Solar) Limited to visit the site and to carry out an assessment of arboricultural features in accordance with British Standards (BS) 5837:2012 'Trees in Relation to Design Demolition and Construction – Recommendations'.

1.4.2 I am to prepare the following information in relation to the proposals:

- General site information relating to soil conditions, statutory tree protection and any other relevant designations.
- General site information relating to site characteristics.
- A schedule of tree survey findings.
- General design advice relating to tree constraints.
- An assessment of arboricultural impacts associated with the proposals.
- Provision of suitable details to achieve effective retention of existing trees.
- My opinion regarding the arboricultural feasibility of the proposals.

2 GENERAL

2.1 Methodology

2.1.1 My methodology is as follows:

- Desk-based check to determine presence of statutory tree protection and/or other designations.
- Site visits to gather relevant information and tree survey data in line with BS5837:2012.
- Present information in report format to address my instruction.

2.2 Referenced documents and other information

2.2.1 In preparation of relevant drawings, MHP has referred to the following :

- Ecotricity. Indicative Solar Park Layout. Ref 6945_T0044_05. Dated November 2022.
- Ref: 6945_1061_01_DCO_EXTENT_SOLAR_PARK. File date 23.11.2022.
- Ref: 6945_1064_01_Indicative Grid Route. File date 08.12.2022.
- Ref: TK_DCO_REDLINE-CONVERSION-LINE. File date 03.12.2022.
- Ecotricity Pegasus Group. Extent of Plantation clearance at Bicker Fen National Grid Substation. Figure 3.8. Ref P20-2370_96. Dated 22.05.2023
- 'Extra land for Substation at Bicker Fen – Summary note by Dr Simon Pickering dated 9th May 2023.

2.2.2 Other externally sourced information is referenced as footnotes to the text.

2.3 Statutory tree protection and other designations

2.3.1 I have carried out desk-based tree-related constraints checks in relation to the site.

These are outlined in *Table 1*.

Statutory tree protection and other designations		
	General summary information	Relevant to site?
Conservation Area ¹	<ul style="list-style-type: none"> All trees with a trunk diameter greater than 75mm at 1.5m height are protected in the same way as for TPO (see below). Six weeks' notice must be given to the Local Planning Authority (LPA) prior to carrying out any tree works so that possible requirement for TPO can be assessed. 	No
Tree Preservation Order (TPO) ²	<ul style="list-style-type: none"> It is an offence to cut down, uproot, top or lop, wilfully damage or wilfully destroy relevant trees or woodlands. Formal permission must be applied for (and granted) by the LPA before carrying out tree works. Penalties of up to £20K (Magistrates Court) or unlimited fine (Crown Court). 	No
Timber volume	<ul style="list-style-type: none"> Forestry Act 1967 limits felling of volumes of timber in any calendar quarter to 5 cubic metres (m³) unless a Felling Licence has been issued by the Forestry Commission. Any felling beyond this threshold may result in prosecution and/or issue of a Restocking Notice 	Yes
Ancient woodland ³	<ul style="list-style-type: none"> Ancient Woodland is broadly defined as land that has been continuously wooded since 1600AD. It is irreplaceable habitat and is afforded a high level of protection by the National Planning Policy Framework (NPPF). 	No
Ancient/veteran trees ⁴	<ul style="list-style-type: none"> Broadly defined as trees that are old for their species that have biodiversity, cultural and heritage value. Like ancient woodland such trees are irreplaceable habitats and are afforded a high level of protection by the National Planning Policy Framework (NPPF). 	None recorded

Table 1- statutory tree protection and other designations.

2.4 Limitations

- 2.4.1 In some instances, I have been unable to access or clearly observe the trunks of trees. Where this is the case, I have done my best to accurately estimate dimensions and tree condition.
- 2.4.2 Trees are living organisms and self-supporting dynamic structures. Their physiological and structural condition can change rapidly in response to a wide range of biotic/abiotic factors. As such, the findings and recommendations of my tree survey are limited to 24 months from the date of my site visit (23.05.2022).
- 2.4.3 Due to lack of topographical information in relation to the offsite cable route, the locations of arboricultural features are approximated in relation to fixed features on

¹ Email communication from Boston Borough Council Thu 15/12/2022 12:00 & [Map of Tree Preservation Orders and conservation areas | North Kesteven District Council \(n-kesteven.gov.uk\)](#) Accessed 25.01.2023

² Email communication from Boston Borough Council Thu 15/12/2022 12:00 & [Map of Tree Preservation Orders and conservation areas | North Kesteven District Council \(n-kesteven.gov.uk\)](#) Accessed 25.01.2023

³ <https://magic.defra.gov.uk/magicmap.aspx> Accessed 04.01.2023.

⁴ <https://ati.woodlandtrust.org.uk/> Accessed 04.01.2023.

site.

2.5 Wildlife informative

- 2.5.1 Tree works should not be carried out until a reasonably detailed inspection of relevant trees has been carried out to determine if bat roosts and/or bird nests are present.
- 2.5.2 It is a criminal offence to intentionally damage/destroy the nest of any wild bird while it is in use or being built. Similarly it is an offence to intentionally/recklessly disturb roosting bats or to damage or destroy a bat roost.
- 2.5.3 The Arboricultural Association publishes useful advice in relation to trees and nesting birds⁵.
- 2.5.4 Helpful advice with regards to bats and tree work is published by the UK Government⁶, the Arboricultural Association⁷ and The Bat Conservation Trust⁸.

⁵ <https://www.trees.org.uk/Help-Advice/Public/When-is-the-bird-nest-season>

⁶ <https://www.gov.uk/guidance/bats-protection-surveys-and-licences>

⁷ <https://www.trees.org.uk/Help-Advice/Public/Bats-and-trees-Who-does-what-where>

⁸ <https://www.bats.org.uk/about-bats/where-do-bats-live/bat-roosts/roosts-in-trees>

3 THE SITE

3.1 Site description

- 3.1.1 The site of the proposed energy park is presently in agricultural use and consists of a series of arable fields. These are enclosed by a series of dykes and intermittent hedgerows and accessed via a network of agricultural tracks.
- 3.1.2 To the north, east and west the application site is bordered by similar agricultural land. To the south lies the A17 Sleaford to Boston road, with arable farmland beyond.
- 3.1.3 The grid connection for the new proposed energy park is located approximately 9km away from the northern boundary of the site. The new grid connection will join into the existing substation at Bicker Fen but will require an extension into land to the immediate south. As part of the proposals an interconnecting cable must be installed through the agricultural land lying in-between.
- 3.1.4 There is an area of early mature plantation woodland located to the south of the Bicker Fen substation.
- 3.1.5 The general topography is level and flat and enables extensive views in all directions.

3.2 Soil

- 3.2.1 The underlying geology⁹ relating to the site is derived from three bands of Jurassic mudstone. From north to south, these are Ampthill Clay Formation – Mudstone, West Walton Formation - Mudstone and siltstone. Oxford Clay Formation - Mudstone. Sedimentary bedrock.
- 3.2.2 Soil characteristics¹⁰ are moderately fertile and consist of :
- Soilscape 21:
Loamy and clayey soils of coastal flats with naturally high groundwater

⁹ [Geology of Britain viewer | British Geological Survey \(BGS\)](#) Accessed 04.01.2023.

¹⁰ [Soilscales soil types viewer - National Soil Resources Institute. Cranfield University \(landis.org.uk\)](#) Accessed 04.01.2023.

- **Soilscape 18:**
Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils

4 FINDINGS

4.1 Site visit

4.1.1 MHP visited the site on 23rd, 24th and 25th of May 2022 to carry out the tree survey.

4.1.2 Ecotricity Ecologist Dr Simon Pickering visited site on 4th May 2023 to evaluate the species mix and health of the early mature woodland to the south of the Bicker Fen substation. His Phase 1 Assessment of Plantation Woodland is submitted separately (document reference Appendix 8.13).

4.2 Tree survey

4.2.1 Tree survey findings are set out within the survey schedule with explanatory key at **Appendix 1**.

4.3 Key arboricultural features

4.3.1 Key arboricultural features associated with the application area are limited to:

- Intermittent hedgerows, typically alongside dykes at field edges.
- Discrete areas of scrub, possibly naturally regenerated, in areas of less intensive farm management.
- Occasional small and medium-sized areas of early-mature mixed species plantation woodland.
- Sporadic larger trees, generally associated with dwellings or established in unmanaged land at field boundaries and hedge/dyke intersections.

5 TREE CONSTRAINTS

5.1 General

5.1.1 Normally, high and/or moderate quality 'Key Trees' are prioritised for retention and form the main constraints to development.

5.1.2 The potential for harm to be caused 'Key Trees' by new development is an important consideration as part of the planning decision-making process. Tree constraints exist both below and above the ground.

5.2 Below ground tree constraints

Root Protection Areas (RPAs)

5.2.1 Add default description of RPAs

Potential causes of damage

5.2.2 Effective tree retention requires that the 'invisible' parts of the tree beneath the ground are not harmed. Tree roots can be damaged by:

- Root severance – for example, by ground works or excavations for services/foundations.
- Soil compaction – for example by passage of heavy plant or repeated pedestrian access.
- Contamination by spilled materials – for example by cement mixing, diesel spills.

5.3 Above Ground Constraints

Overbearing effect

5.3.1 Retained trees can cause overbearing or dominating effects as they continue to grow near occupied dwellings. For example:

- Increased size and dominance giving rise to perceived risk of harm caused by tree failure in stormy conditions.
- Excessive shading.

- Branch spread dominating gardens or contacting with structures,
- Seasonal nuisance such as leaf loss or mess associated with aphid honeydew.

5.3.2 If not adequately considered, above ground constraints can lead to incremental pressure to fell or heavily prune retained protected trees.

Potential causes of damage

5.3.3 As well as the above, the above ground parts of trees can be damaged in several ways:

- Impact damage and wounding through contact with construction site plant.
- Inappropriate pruning.
- Other factors, for example, heat damage caused by bonfires.

6 ARBORICULTURAL IMPACT ASSESSMENT (AIA) AND TREE PROTECTION PLAN

6.1 AIA plan

6.1.1 A combined arboricultural impact assessment and tree protection plan is at **Appendix 2**. It shows the tree survey and constraints information in relation to the proposed layout and confirms that there will be a negligible impact on surveyed key trees as a result of implementation of the proposals.

The energy park

6.1.2 Within the main body of the proposed energy park, the layout of panels and infrastructure has been designed to sit within the existing fields and network of agricultural access tracks. This means that no existing trees or hedges will be removed.

6.1.3 The implementation of the proposals will require extensive logistics and therefore engineering and construction activities have potential to spread and result in impact-type damage to arboricultural features. These impacts can be effectively mitigated however by erecting protection barriers on site prior to the commencement of any works on site. This is addressed by the outline CEMP (document reference 7.7). I anticipate that this requirement can be reasonably secured by means of a suitably worded pre-commencement planning condition.

The offsite cable route

6.1.4 The offsite cable route has been designed to avoid existing arboricultural features wherever possible.

6.1.5 Despite this, at the point where the cable intersects with the railway line and the 'South Forty Foot Drain' (to the west of Swineshead Bridge) there is clearly potentially need for some removals: H11 (category C) and G32 (category B). However, these arboricultural constraints can be effectively avoided by directionally drilling beneath the area.

6.1.6 Hedge removal may be required on the northernmost, west/east orientated section of H22 (category C). This hedge is a low-quality feature that can be justifiably temporarily removed to enable the cable installation and then subsequently reinstated by means of replacement planting. In my opinion, the hedge is not significant enough

to act as material constraint to development and as such, removal and replacement is a viable management option.

- 6.1.7 There is also very limited potential for the cabling operations to affect the RPAs of the trees making up G38 (category C) and G39 (category B). The use of temporary tree protection around G39 has been agreed with the applicant and therefore any impact for construction of the cable route near G39 has been mitigated'.
- 6.1.8 T1 (category B) and G2 (category C) are listed as potentially to be removed, however this is considered a worst case scenario. This is because the cable route corridor in this location is wide and is likely they will be avoided. However, should they be removed, there will be some visual impact associated with loss of the moderate quality 16m high Lombardy poplar (T1), but no obvious impact associated with the loss of G2; which only consists of four low-quality trees. In this scenario, there would be a commitment to plant suitable replacements. This should consist of the native species *Populus tremula* (aspen) in place of the more incongruous upright form of the existing Lombardy poplar.
- 6.1.9 H15 (category C) is a hedgerow remnant which comprises hawthorn and contains a significant proportion of gaps. It sits within a ditch close to an area of archaeological interest. The cable route corridor is wide in this area to facilitate movement of the cable following detailed design of the final cable route. Should H15 need to be removed a replacement hawthorn hedge can be planted. In my view, within a relatively short period of time of five to ten years the established new plants will effectively mitigate insubstantial harm caused to the low-quality hedgerow.
- 6.1.10 A small section of W5 (category B) sits within the Order Limits at Bicker Fen Substation. This area could be removed to facilitate the grid connection, however it could alternatively be directionally drilled or avoided altogether. In my view the area can easily be avoided. However, should removal be required, a commensurate area of new tree planting shall be established. The mix and density of replacement tree species shall proportionately match those in the remainder of the W5.
- 6.1.11 The expansion of the southern boundary of Bicker Fen substation means that the western half of mixed species plantation woodland W7 must be removed. This woodland is relatively young in age and was planted for landscape mitigation as part

of 2005/2006 construction of the substation. Generally, the condition of individual trees within the group is unremarkable (roe deer damage and ash dieback) and therefore the value of the group is collective. Although the plantation is visible from a public road to the south, the contribution made by the woodland to public visual amenity is generally low in my opinion; this is because the road is only effectively used for the purpose of substation access. As such, it is my view that the impact of the tree removals from W7 is not significant.

6.1.12 Notwithstanding the above, in response to feedback from the Forestry Commission, compensatory tree planting and additional hedge planting along the northern boundary of the site has been added (ES ref: Fig 6.2 'Landscaping Strategy Plan'). I am advised that this equates to an additional 0.42ha of woodland tree planting and 55 no. of small-scale hedgerow trees to the scheme to offset the loss of 0.4ha woodland at Bicker Fen Substation.

6.1.13 To the south of W7 there is a series early mature oak trees that are growing as a linear group immediately to the north of the access road. These trees shall not be removed as part of the proposals and their roots and canopies can be effectively protected during construction to ensure their long-term retention. Exact details of tree protection can be provided when the finalised design emerges.

6.1.14 In a wider context I also note that the proposals will be subject to substantial ecological and landscape mitigation enhancement. In this context, I am confident that any new tree planting, as deemed necessary in the outline LEMP (document ref 7.8 PINS ref APP-239) as part of this process will, as it establishes and matures, result in an incrementally positive arboricultural outcome.

6.2 Tree Protection Plan

6.2.1 The Tree Protection element of the plan demonstrates how retained trees can be effectively retained as part of the construction of the proposals.

6.2.2 Protection on and adjacent to the solar park shall be achieved by a combination of temporary tree protection barriers (as specified on the plan) and the erection of the permanent site perimeter fencing *prior to the commencement of any other works on*

site.

Tree protection in relation to the cabling route can be erected locally and prior to work being carried out in each specific area. In my opinion, this fit-for-purpose approach will achieve effective tree protection in relation to the proposals overall.

7 CONCLUSION

7.1 Conclusion

7.1.1 I conclude that the development proposals for the new energy park and associated cable route are feasible from an arboricultural perspective for the following key reasons:

- Tree removals are limited to an area of early mature woodland to the immediate south of the Bicker Fen substation. These tree removals will not cause significant harm to public visual amenity.
- Tree protection measures can be put in place to ensure that construction works do not result in damage to the retained trees.
- New hedgerow planting shall be established to enhance the developed site.

APPENDIX 1 – TREE SURVEY SCHEDULE

TREES

Ref	Common name	Height (m)	Est	Stem dia (mm)	Est	N	Est	E	Est	S	Est	W	Est	Estimated canopy height (m)	Life stage	Special status	General observations & management recommendations	Struct. cond.	Phys. cond.	ULE	Quality grading	RPA radius (m)	RPA area (m2)	TPO
T1	Lombardy poplar	16	#	400	#	3	#	3	#	3	#	3	#	1	M	None	Typical for species and age.	Fair	Good	20+	B1	5	72	None
T2	Sycamore	9	-	400	#	3	-	4	-	3	-	4	-	1	M	None	Multi-stemmed tree on N bank of ditch.	Fair	Good	20+	B1	5	72	None
T3	Ash	12	-	750	#	8	-	6	-	5	-	4	-	3	M	None	Leader lost @ 10m, cavities & deadwood in upper canopy, early onset of ash dieback symptoms, main limbs reduced in past, owl nesting box present.	Fair	Fair	10+	C3	9	254	None
T4	Ash	15	-	950	#	6	-	6	-	7	-	7	-	3	OM	None	In decline. Significant dieback, deadwood, and cavities on main limbs in upper canopy. Innonotus hispidus fruiting body on main scaffold limb. Habitat value.	Fair	Poor	10+	C3	11	408	None
T5	Hawthorn	3	-	200	#	2	-	2	-	2	-	2	-	0	EM	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T6	Hawthorn	3	-	200	#	2	-	2	-	2	-	2	-	0	EM	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T7	Hawthorn	4	-	250	#	2	-	2	-	2	-	2	-	0	EM	None	Small field edge tree.	Fair	Good	10+	C1	3	28	None
T8	Hawthorn	2	-	200	#	2	-	2	-	2	-	2	-	0	EM	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T9	Hawthorn	3	-	200	#	2	-	2	-	2	-	2	-	0	EM	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T10	Hawthorn	2	-	200	#	2	-	2	-	2	-	2	-	0	EM	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T11	Hawthorn	2	-	150	#	1	-	1	-	1	-	1	-	0	EM	None	Small field edge tree.	Fair	Fair	10+	C1	2	10	None
T12	Hawthorn	2	-	150	#	2	-	2	-	2	-	2	-	0	EM	None	Small field edge tree.	Fair	Fair	10+	C1	2	10	None
T13	Hawthorn	3	-	200	#	2	-	1	-	2	-	1	-	0	EM	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T14	Hawthorn	3	-	200	#	3	-	2	-	3	-	2	-	0	M	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T15	Hawthorn	3	-	200	#	3	-	1	-	2	-	2	-	0	M	None	Small field edge tree.	Fair	Fair	10+	C1	2	18	None
T16	Hawthorn	2	-	150	#	1	-	1	-	1	-	1	-	0	SM	None	Small field edge tree.	Fair	Fair	10+	C1	2	10	None
T17	Hawthorn	3	-	200	#	2	-	3	-	2	-	3	-	0	M	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T18	Hawthorn	3	-	200	#	2	-	3	-	2	-	2	-	0	M	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T19	Hawthorn	4	-	200	#	2	-	2	-	2	-	3	-	0	M	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T20	Hawthorn	3	-	200	#	2	-	3	-	2	-	3	-	0	M	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T21	Hawthorn	3	-	200	#	2	-	3	-	2	-	3	-	0	M	None	Small field edge tree.	Fair	Good	10+	C1	2	18	None
T22	Ash	17	#	1000	#	8	-	8	-	8	-	6	-	2	M	None	Multiple leaders from base. large basal cavity. ash dieback not evident.	Fair	Good	20+	B1	12	452	None
T23	Field maple	4	-	250	#	3	-	2	-	4	-	2	-	1	EM	None	Small field edge tree.	Fair	Good	10+	C1	3	28	None
T24	Hawthorn	3	-	150	#	2	-	3	-	2	-	3	-	0	M	None	Small field edge tree.	Fair	Good	10+	C1	2	10	None

Ref	Common name	Height (m)	Est	Stem dia (mm)	Est	N	Est	E	Est	S	Est	W	Est	Estimated canopy height (m)	Life stage	Special status	General observations & management recommendations	Struct. cond.	Phys. cond.	ULE	Quality grading	RPA radius (m)	RPA area (m2)	TPO
T25	Goat willow	6	-	200	#	3	-	4	-	3	-	4	-	1	M	None	Multi-stemmed growing in base of ditch.	Fair	Good	10+	C1	2	18	None
T26	Goat willow	6	-	200	#	3	-	4	-	3	-	4	-	1	M	None	Multi-stemmed growing in base of ditch.	Fair	Good	10+	C1	2	18	None
T27	Goat willow	5	-	150	#	2	-	3	-	2	-	3	-	1	EM	None	Multi-stemmed growing in base of ditch.	Fair	Good	10+	C1	2	10	None
T28	Elm	6	-	150	#	3	-	3	-	3	-	3	-	1	EM	None	Multi-stemmed, affected by Dutch elm disease.	Poor	Poor	<10	U	2	10	None
T29	Elm	5	-	150	#	3	-	3	-	3	-	3	-	1	EM	None	Multi-stemmed.	Fair	Good	10+	C1	2	10	None
T30	Ash	4	-	100	#	2	-	2	-	2	-	2	-	0	SM	None	Multi-stemmed.	Fair	Good	10+	C1	1	5	None
T31	Goat Willow	8	-	200	#	4		5		4		5		1	M	None	Multi-stemmed.	Fair	Good	10+	C1	2	18	None
T32	Ash	14	-	300	#	4		4		4		4		2	M	None	Significant dead wood, advanced stages of ash dieback.	Poor	Poor	<10	U	4	41	None
T33	Ash	14	-	600	#	4		4		4		5		1	M	None	Multi-stemmed, early onset of ash dieback evident.	Fair	Fair	10+	C1	7	163	None
T34	Ash	14	-	650	#	5		5		5		5		1	M	None	Multi-stemmed, early onset of ash dieback evident.	Fair	Fair	10+	C1	8	191	None
T35	Ash	16	-	700	#	5		5		5		4		1	M	None	Multi- Stemmed. Significant dead wood, advanced stages of ash dieback.	Poor	Poor	<10	U	8	222	None
T36	Hawthorn	3	-	150	#	2		2		2		2		1	EM	None	Small field edge tree.	Fair	Good	10+	C1	2	10	None
T37	Ash	14	-	500	#	5		5		5		5		1	M	None	Multi-stemmed, early onset of ash dieback evident.	Fair	Fair	10+	C1	6	113	None
T38	Hawthorn	3	-	150	#	3		2		3		2		0	EM	None	Small field edge tree.	Fair	Good	10+	C1	2	10	None
T39	Horse Chestnut	6	-	200	#	3	#	3	#	3	#	3	#	2	EM	None	Just off site, typical for age and species	Good	Good	20+	B1	2	18	None
T40	Horse Chestnut	8	-	250	#	3	#	3	#	3	#	3	#	2	EM	None	Just off site, typical for age and species	Good	Good	20+	B1	3	28	None
T41	Horse Chestnut	10	-	300	#	4	#	4	#	4	#	4	#	2	EM	None	Just off site, typical for age and species	Good	Good	20+	B1	4	41	None
T42	Horse Chestnut	9	-	250	#	4	#	4	#	3	#	3	#	2	EM	None	Just off site, typical for age and species	Good	Good	20+	B1	3	28	None
T43	Horse Chestnut	9	-	250	#	3	#	3	#	3	#	3	#	2	EM	None	Just off site, typical for age and species	Good	Good	20+	B1	3	28	None
T44	Horse Chestnut	9	-	250	#	4	#	4	#	4	#	4	#	2	EM	None	Just off site, typical for age and species	Good	Good	20+	B1	3	28	None
T45	Ash	10	#	300	#	5	#	5	#	5	#	5	#	3	M	None	Early onset of ash dieback evident.	Fair	Fair	10+	C1	4	41	None
T46	Ash	8	#	200	#	3	#	3	#	3	#	3	#	1	EM	None	Early onset of ash dieback evident.	Fair	Fair	10+	C1	2	18	None
T47	Ash	11	#	400	#	4	#	4	#	6	#	4	#	2	M	None	Ivy clad, canopy bias to S.	Fair	Fair	10+	C1	5	72	None
T48	Ash	11	#	400	#	4	#	4	#	4	#	4	#	2	M	None	Ivy clad, Ash dieback evident.	Fair	Fair	10+	C1	5	72	None
T49	Common ash	16	#	600	#	7	#	7	#	7	#	6	#	4	M	None	Standalone landscape feature tree. No symptoms of ash dieback.	Fair	Good	20+	B1	7	163	None
T50	Horse chestnut	18	#	700	#	6	#	10	#	7	#	5	#	2	M	None	Standalone prominent tree.	Fair	Fair	20+	B1	8	222	None
T51	Ash	8	#	350	#	4.5	#	4	#	4	#	4	#	1	EM	None	Reasonable tree, no ash dieback symptoms.	Fair	Good	20+	B1	4	55	None
T52	Silver birch	9	#	250	#	3	#	3	#	3.5	#	3.5	#	1	EM	None	Twin stemmed @1.5m	Good	Good	20+	B1	3	28	None

Ref	Common name	Height (m)	Est	Stem dia (mm)	Est	N	Est	E	Est	S	Est	W	Est	Estimated canopy height (m)	Life stage	Special status	General observations & management recommendations	Struct. cond.	Phys. cond.	ULE	Quality grading	RPA radius (m)	RPA area (m2)	TPO
T53	Ash	12	#	250	#	4	#	4	#	4	#	5.5	#	1	EM	None	Reasonable condition.	Good	Fair	10+	C1	3	28	None
T54	Silver birch	7	#	100	#	3	#	2.5	#	3	#	2.5	#	1	EM	None	Typical for species and age.	Good	Good	10+	C1	1	5	None
T55	Sycamore	7	#	350	#	3.5	#	4	#	4	#	4	#	1	EM	None	Typical for species and age.	Fair	Good	10+	C1	4	55	None
T56	Horse chestnut	6	#	200	#	3	#	3.5	#	3	#	3.5	#	2	EM	None	Typical for species and age.	Fair	Good	10+	C1	2	18	None
T57	Horse chestnut	7	#	300	#	4.5	#	4	#	4	#	4	#	1	EM	None	Typical for species and age.	Fair	Good	10+	C1	4	41	None
T58	Horse chestnut	7	#	300	#	4	#	4	#	4.5	#	4.5	#	1	EM	None	Typical for species and age.	Fair	Good	10+	C1	4	41	None
T59	Horse chestnut	5	#	200	#	3	#	2.5	#	2.5	#	3	#	1	EM	None	Twin leaders from base.	Good	Good	10+	C1	2	18	None
T60	Ash	15	#	500	#	8	#	8	#	7	#	8	#	2	M	None	Typical for species and age.	Fair	Good	20+	B1	6	113	None
T61	Ash	16	#	650	#	7	#	6	#	5	#	6	#	3	M	None	Twin leaders from base. otherwise no significant defects.	Fair	Good	20+	B1	8	191	None

GROUPS

Ref	Common names of woody species present	Estimated average trunk diameter at 1.5m (mm)	Estimated minimum & maximum heights (m)	Estimated average height (m)	Estimated average canopy height (m)	Life stage	Special status	General observations & management recommendations	Struct. cond.	Phys. cond.	ULE	Quality grading	RPA radius from canopy edge (m)	TPO
G1	10no Elm	200	5 & 5	5	0	M	None	Group of multi-stemmed trees from base, some with symptoms of DED.	Fair	Fair	10+	C2	As shown on plan	None
G2	4no Goat willow	200	5 & 4	5	1	M	None	Group of multi-stemmed trees from base.	Fair	Fair	10+	C2	As shown on plan	None
G3	2no Hawthorn	200	4 & 4	4	0	M	None	Small field edge trees, typical for age and species.	Fair	Fair	10+	C2	As shown on plan	None
G4	4no Hawthorn	200	5 & 4	4	1	M	None	Small field edge trees, typical for age and species.	Fair	Fair	10+	C2	As shown on plan	None
G5	3no Hawthorn	200	5 & 4	4	0	M	None	Small field edge trees, typical for age and species.	Fair	Fair	10+	C2	As shown on plan	None
G6	Sycamore, oak, ash, apple, cherry, hawthorn, elder	300	15 & 4	10	1	M	None	Approx 30no trees + understorey in garden area of disused cottage.	Fair	Fair	20+	B2	As shown on plan	None
G7	3no Hawthorn	150	4 & 3	3	0	M	None	Small field edge trees, typical for age and species.	Fair	Good	10+	C2	As shown on plan	None
G8	2no Goat willow	200	4 & 3	4	1	EM	None	Multi-stemmed, growing in ditch base.	Fair	Good	10+	C2	As shown on plan	None
G9	6no Elm	200	7 & 2	5	1	EM	None	Multi-stemmed. Growing on bank, several trees affected by Dutch elm disease.	Fair	Poor	<10	U	As shown on plan	None
G10	4no Goat willow	150	4 & 3	4	1	SM	None	Multi-stemmed, growing in ditch base.	Fair	Good	10+	C2	As shown on plan	None
G11	3no Goat willow	200	6 & 2	4	1	M	None	Multi-stemmed, growing in ditch base.	Fair	Good	10+	C2	As shown on plan	None

Ref	Common names of woody species present	Estimated average trunk diameter at 1.5m (mm)	Estimated minimum & maximum heights (m)	Estimated average height (m)	Estimated average canopy height (m)	Life stage	Special status	General observations & management recommendations	Struct. cond.	Phys. cond.	ULE	Quality grading	RPA radius from canopy edge (m)	TPO
G12	7no Goat willow	200	7 & 2	4	1	M	None	Multi-stemmed, growing in ditch base.	Fair	Good	10+	C2	As shown on plan	None
G13	5no Goat willow	200	6 & 2	4	1	M	None	Multi-stemmed, growing in ditch base.	Fair	Good	10+	C2	As shown on plan	None
G14	3no Goat willow	250	10 & 8	9	1	OM	None	Multi-stemmed, growing in ditch base.	Fair	Good	10+	C2	As shown on plan	None
G15	26no Ash, 9no Sycamore, 3no Oak, 1no lime, 1no cherry, 1no Field maple	300	15 & 8	10	1	EM	None	Linear group adjacent to farm track. Ash displaying symptoms of ash dieback.	Fair	Fair	10+	C2	As shown on plan	None
G16	6no Goat willow	150	7 & 5	6	1	M	None	Multi-stemmed, growing on bank edge.	Fair	Good	10+	C2	As shown on plan	None
G17	2no Ash	650	16 & 14	15	1	M	None	Multi-stemmed, early onset of ash dieback evident.	Fair	Fair	10+	C2	As shown on plan	None
G18	4no Ash	300	12 & 11	12	1	M	None	Multi-stemmed, early onset of ash dieback evident.	Fair	Fair	10+	C2	As shown on plan	None
G19	1no Hawthorn, 4no Ash	200	14 & 11	13	1	M	None	Multi-stemmed, early onset of ash dieback evident.	Fair	Fair	10+	C2	As shown on plan	None
G20	15 no Ash, 2no Goat willow	250	14 & 10	12	1	M	None	Multi-stemmed, early onset of ash dieback evident.	Fair	Fair	10+	C2	As shown on plan	None
G21	12no Ash	300	14 & 12	14	1	M	None	Multi-stemmed, early onset of ash dieback evident.	Fair	Fair	10+	C2	As shown on plan	None
G22	2no Elm	200	5 & 4	5	1	EM	None	Multi-stemmed.	Fair	Good	10+	C2	As shown on plan	None
G23	3no Elm, 1no hawthorn	200	5 & 4	5	1	EM	None	Small field edge trees, typical for age and species.	Fair	Good	>10	C2	As shown on plan	None
G24	2no Goat willow	200	5 & 4	5	1	M	None	Multi-stemmed, growing in ditch base.	Fair	Good	>10	C2	As shown on plan	None
G25	22no Lombardy poplar	400	20 & 12	15	1	M	None	Linear group, typical for age and species.	Fair	Good	>20	B2	As shown on plan	None
G26	Hawthorn	200	5 & 4	5	1	M	None	Growing along ditch.	Fair	Good	>10	C2	As shown on plan	None
G27	Sycamore, horse chestnut	350	12	12	1	EM	None	Two trees. Cohesive form.	Good	Good	>20	B2	As shown on plan	None
G28	Oak, lime	450	12 & 8	10	1	EM	None	Linear group either side of access track.	Good	Good	>20	B2	As shown on plan	None
G29	Oak, lime, pine	450	12 & 8	10	2	EM	None	Linear group either side of access track.	Good	Good	>20	B2	As shown on plan	None
G30	Elm, field maple, elder, lime	300	10 & 8	9	1	EM	None	Compact mixed species group at field edge.	Fair	Good	>20	B2	As shown on plan	None
G31	Hybrid black poplar, sycamore, elder, elm	500	16-4	10	1	M	None	Unmanaged linear group following ditch.	Fair	Good	>20	B2	As shown on plan	None
G32	Ash, hawthorn, oak, beech, field maple, holly, willow, field maple	250	12 & 10	11	1	EM	None	linear informal tree group following line of drain.	Fair	Good	20+	B2	As shown on plan	None
G33	Hawthorn, dog rose	75	3 & 2.5	3	0	EM	None	Growing along ditch edge.	Fair	Good	20+	B2	As shown on plan	None
G34	Hawthorn, dog rose	75	3 & 2.5	3	0	EM	None	Growing along drain edge, dense in places.	Fair	Good	20+	B2	As shown on plan	None
G35	Elm, elder	250	8 & 3	6	1	EM	None	Self-set group at field intersection, Dutch elm disease present.	Fair	Fair	10+	C2	As shown on plan	None

Ref	Common names of woody species present	Estimated average trunk diameter at 1.5m (mm)	Estimated minimum & maximum heights (m)	Estimated average height (m)	Estimated average canopy height (m)	Life stage	Special status	General observations & management recommendations	Struct. cond.	Phys. cond.	ULE	Quality grading	RPA radius from canopy edge (m)	TPO
G36	Silver birch, sycamore, cherry	250	12 & 4	10	2	EM	None	Remnant garden trees.	Fair	Good	20+	B2	As shown on plan	None
G37	4no Silver birch	200	6 & 5	5.5	2	EM	None	4 evenly spaced ornamental birch within hedgerow.	Fair	Fair	10+	C2	As shown on plan	None
G38	Hawthorn, elder, crab apple, damson, cherry, elder, Leyland cypress, crack willow	300	17 & 5	10	0	EM	None	Haphazard mix, neglect farm edge boundary, cypress outgrowing location.	Fair	Good	10+	C2	As shown on plan	None
G39	2no ash, 1no oak	800	20 & 14	16	2	M	None	Prominent large trees next to derelict farm buildings. Assess oak tree for veteran status.	Fair	Good	20+	B2	As shown on plan	None
G40	6no Oak	300	12 & 10	11	1	EM	None	Even aged linear group adjacent to road.	Good	Good	20+	B2	As shown on plan	None
G41	Ash	250	11	11	4	EM	None	Growing in hedgerow, symptoms of ash dieback.	Fair	Fair	10+	C2	As shown on plan	None
G42	4no Oak	300	10 & 7	8	1	EM	None	Severely pruned on S side to provide highway clearance.	Fair	Good	10+	C2	As shown on plan	None
G43	7no Oak	300	10 & 7	8	1	EM	None	Severely pruned on S side to provide highway clearance.	Fair	Good	10+	C2	As shown on plan	None
G44	2no Oak	300	10 & 7	8	1	EM	None	Severely pruned on S side to provide highway clearance.	Fair	Good	10+	C2	As shown on plan	None
G14	2no Oak	400	10 & 7	8	1	EM	None	Severely pruned on S side to provide highway clearance.	Fair	Good	10+	C2	As shown on plan	None
G46	Common ash	450	17-16	16	2	M	Aged/ancient	Cohesive group of 14 trees with canopy closure. Significant crown dieback.	Fair	Poor	>10	C2	As shown on plan	None

WOODLANDS

Ref	Common names of woody species present	Estimated average trunk diameter at 1.5m (mm)	Estimated minimum & maximum heights (m)	Estimated average height (m)	Estimated average canopy height (m)	Life stage	Special status	General observations & management recommendations	Struct. cond.	Phys. cond.	ULE	Quality grading	RPA radius from canopy edge (m)	TPO
W1	Ash, horse chestnut, oak, poplar, sycamore, elder, red horse chestnut, hawthorn, field maple, robinia	450	20 & 12	16	2	M	None	Diverse copse containing a number of older oaks. Ash showing symptoms of ash dieback.	Good	Good	40+	A2	As shown on plan	None
W2	Leyland cypress, oak, field maple, hawthorn, sycamore, ash	200	15 & 8	12	1	EM	None	Early mature mixed copse. Ash displaying symptoms of ash dieback.	Good	Good	20+	B2	As shown on plan	None
W3	Ash, oak, hawthorn, field maple, elder	200	14 & 7	11	1	EM	None	Early mature copse, ash displaying symptoms of ash dieback.	Fair	Fair	20+	B2	As shown on plan	None
W4	Ash, oak, sycamore, field lime, hawthorn, cherry	200	16 & 9	14	1	EM	None	Early mature copse, ash displaying symptoms of ash dieback.	Good	Fair	20+	B2	As shown on plan	None
W5	Oak, goat willow, silver birch, hazel, field maple, aspen, lime, ash, dogwood	250	14 & 12	13	1	EM	None	Woodland planting mix for landscape screening purposes.	Good	Good	20+	B2	As shown on plan	None

Ref	Common names of woody species present	Estimated average trunk diameter at 1.5m (mm)	Estimated minimum & maximum heights (m)	Estimated average height (m)	Estimated average canopy height (m)	Life stage	Special status	General observations & management recommendations	Struct. cond.	Phys. cond.	ULE	Quality grading	RPA radius from canopy edge (m)	TPO
W6	Oak, goat willow, silver birch, hazel, field maple, aspen, lime, ash, dogwood	250	14 & 12	13	1	EM	None	Woodland planting mix for landscape screening purposes.	Good	Good	20+	B2	As shown on plan	None
W7	Silver birch, oak, goat willow, hawthorn, alder, cherry, dogwood, hazel, aspen, blackthorn	200	12 & 4	9	1	EM	None	Diverse native broadleaf woodland mix	Good	Good	20+	B2	As shown on plan	None

HEDGEROWS

Ref	Common names of woody species present	Estimated minimum & maximum heights (m)	Estimated average height (m)	Estimated average trunk diameter (mm)	Estimated average lateral spread (m)	Estimated average canopy height (m)	Life stage	Special status	General observations & management recommendations	Struct. cond.	Phys. cond.	ULE	Quality grading	RPA radius from canopy edge (m)
H1	Elder, hawthorn, sycamore, Robinia	8 & 4	6	200	3	0	M	None	Approx 40m section of hedgerow on E side of ditch.	Fair	Good	20+	B2	As shown on plan
H2	Hawthorn, elder, willow	6 & 1	3	100	1.5	0	M	None	Gappy hedgeline, predominately made up of hawthorn. In places gaps of up to 5m.	Fair	Good	20+	B2	As shown on plan
H3	Hawthorn	5 & 2	3	100	1.5	0	EM	None	Gappy hedge. In places gaps of up to 5m.	Fair	Good	20+	B2	As shown on plan
H4	Hawthorn, elder, willow	7 & 2	4	150	2	0	M	None	Gappy hedgeline, predominately made up of hawthorn. In places gaps of up to 5m.	Fair	Good	20+	B2	As shown on plan
H5	Hawthorn, elder, willow	8 & 2	4	150	2	0	M	None	Gappy hedgeline, predominately made up of hawthorn. In places gaps of up to 5m.	Fair	Good	20+	B2	As shown on plan
H6	Hawthorn, cherry, oak	6 & 3	4	150	2	0	EM	None	Dense, early mature hedge.	Good	Good	20+	B2	As shown on plan
H7	Hawthorn, elm, field maple	2-1	2	100	1.5	0	EM	None	Reasonable condition.	Good	Good	20	B2	As shown on plan
H8	Hawthorn, field maple, elder, oak,	8 & 6	8	200	4	0	M	None	Dense hedge/linear tree group.	Good	Good	20	B2	As shown on plan
H9	Hawthorn	1	1	75	1	0	EM	None	Low hedge, small proportion of gaps.	Fair	Good	10	C2	As shown on plan
H10	Hazel, hawthorn, field maple, oak, blackthorn	6-3	5	200	2	0	EM	None	Dense mixed species	Good	Good	20	B2	As shown on plan
H11	Hawthorn	4-3	3.5	100	1.5	0	EM	None	Informal planting on far side of railroad.	Fair	Good	10	C2	As shown on plan
H12	Hawthorn, dog rose	4 & 2	3	75	3	0	EM	None	unmanaged with low proportion of gaps.	Fair	Good	10+	C2	As shown on plan
H13	Hawthorn	3 & 2	2.5	75	2	0	EM	None	hedgerow remnant with high proportion of gaps.	Fair	Good	10+	C2	As shown on plan
H14	Hawthorn	3 & 2	2.5	75	2	0	EM	None	hedgerow remnant with high proportion of gaps.	Fair	Good	10+	C2	As shown on plan
H15	Hawthorn	3 & 2	2.5	75	2	0	EM	None	hedgerow remnant with high proportion of gaps.	Fair	Good	10+	C2	As shown on plan

Ref	Common names of woody species present	Estimated minimum & maximum heights (m)	Estimated average height (m)	Estimated average trunk diameter (mm)	Estimated average lateral spread (m)	Estimated average canopy height (m)	Life stage	Special status	General observations & management recommendations	Struct. cond.	Phys. cond.	ULE	Quality grading	RPA radius from canopy edge (m)
H16	Hawthorn	3 & 2	2.5	75	2	0	EM	None	hedgerow remnant with high proportion of gaps.	Fair	Good	10+	C2	As shown on plan
H17	Hawthorn	4 & 2	3	75	3	0	EM	None	hedgerow remnant with high proportion of gaps.	Fair	Good	10+	C2	As shown on plan
H18	Hawthorn	1.5	1.5	75	1.5	0	M	None	maintained by flailing.	Fair	Good	10+	C2	As shown on plan
H19	Hawthorn, sycamore	1.5	1.5	75	1.5	0	EM	None	Compact hedge adjacent to access drive to derelict farm. Contains 8 sycamore pollards.	Fair	Good	10+	C2	As shown on plan
H20	field maple, hazel, dogwood, goat willow, blackthorn, hawthorn	8 & 6	7	100	5	0	EM	None	Diverse roadside hedgerow.	Good	Good	20+	B2	As shown on plan
H21	Hawthorn, hazel, field maple, dog rose	4 & 2	3.5	50	1	0	EM	None	Effective screening for sub station.	Fair	Good	10+	C2	As shown on plan
H22	Hawthorn	3 & 2	2.5	100	2	0	EM	None	Gappy hedge line.	Fair	Good	10+	C2	As shown on plan

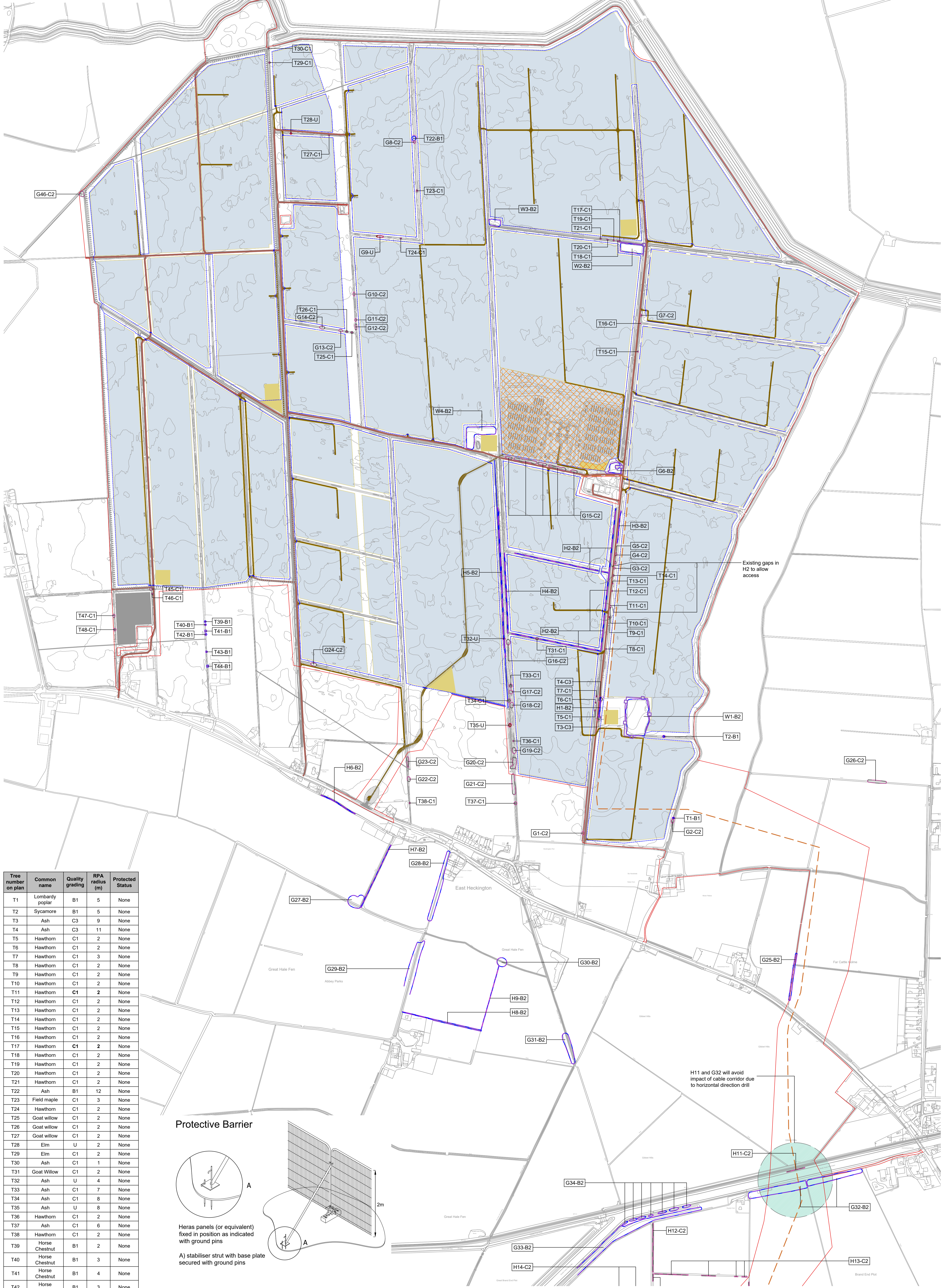
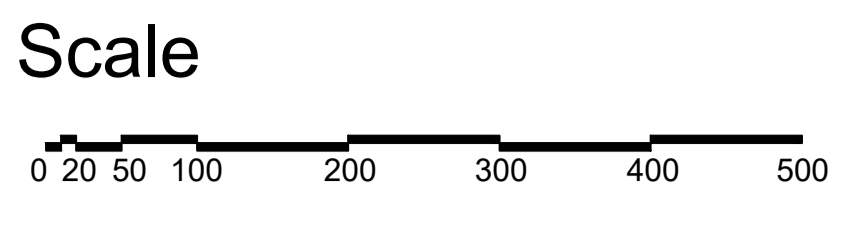
KEY

Assessment criteria	Description
Reference number on plan	T: Tree, G: Group, W: Woodland, H: Hedgerow. This reference is recorded on the Tree Survey and Constraints Plan against the relevant survey item.
Common name (Scientific name)	Common names: normal type. Scientific names where required: italic type in brackets
Heights	Unit: metres (m). Recorded to the nearest half metre for heights upto 10m and to the nearest whole metre for heights above 10m.
Stem diameter	Unit: millimetres (mm). Rounded to the nearest 10mm. Single and multi-stemmed trees are measured at 1.5m above highest ground level or otherwise as in accordance with Annex C, BS5837:2012.
Estimates	Measured tree dimensions are identified by an '-' in the adjacent 'Estimate' column. Where dimensions have been estimated (offsite, or otherwise inaccessible survey items) this is clearly identified by a '#' in the adjacent 'Estimate' column.
Crown spread	Unit: metres (m). Directions refer to the four compass points (north, east, south, west). Dimensions are rounded-up to the nearest half metre for heights up to 10m and to the nearest whole metre for heights above 10m.
Estimated average lateral spread	Unit: metres (m). For hedgerows only. An estimate of the average width between branch tips.
Crown clearance height	Unit: metres (m). The existing height above ground level of: <ul style="list-style-type: none"> • First significant branch and the compass direction of its growth: North (N), North-east (NE), East (E), South-east (SE) etc. • Canopy (height between branch tips and ground level).
Life stage	Y – young (stake dependent), SM - Semi-Mature (still capable of being transplanted without preparation, up to 30cm girth and not yet sexually mature), EM – Early Mature (not yet having reached 75% of expected mature size), M – Mature (anything else up to normal life expectancy for the species), OM – Over Mature (anything beyond mature and in natural decline), V – Veteran, A - Ancient (any tree displaying characteristics described by the Ancient Tree Forum and referenced by Natural England).
Special status	<ul style="list-style-type: none"> • None • Veteran: any tree judged to meet criteria as defined by the Ancient Tree Forum • Ancient: any tree judged to meet criteria as defined by the Ancient Tree Forum¹
General observations and preliminary management recommendations	General observations are recorded in relation to a survey item's structural and/or physiological condition (eg the presence of any decay and physical defect) and /or any preliminary management recommendations that may be appropriate.

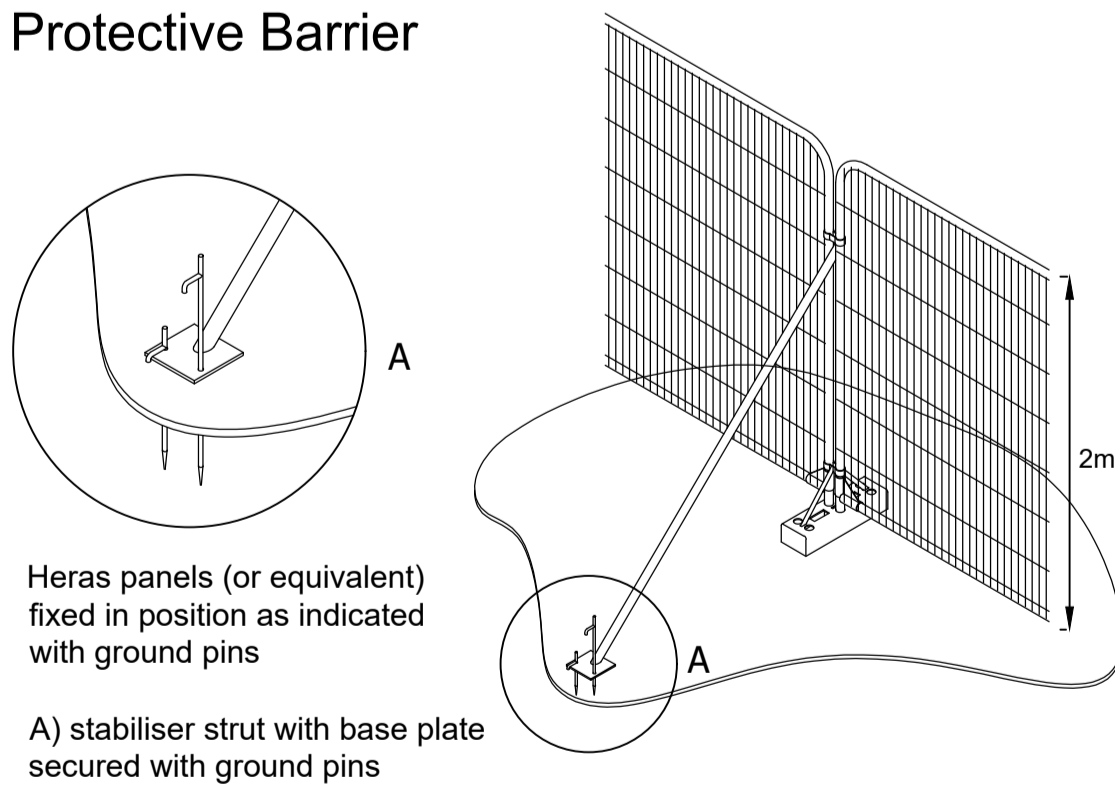
¹ LONSDALE, D. (Ed). Ancient and other veteran trees: further guidance on management. The Tree Council. London. 2013.

Assessment criteria	Description
Structural condition	<ul style="list-style-type: none"> • Good: without any observable significant biomechanical structural weaknesses • Fair: with minor biomechanical structural flaws. Some remedial action may be required • Poor: with significant biomechanical weaknesses requiring intervention particularly where risk management is required.
Physiological condition	<ul style="list-style-type: none"> • Good: no indications of impaired physiological function and in optimum condition for age and species • Fair: with indicators of reduced vitality. Some intervention may be required • Poor: with significantly impaired physiological function for age and species
Remaining contribution	Useful life expectancy, or the length of time a tree's is estimated to be able to make a useful contribution, is expressed in years as: <10, 10+, 20+, 40+.
Quality grading	<p>Assessed in accordance with Table 1, BS5837:2012. Colours relate to depiction on the Tree Constraints Plan.</p> <ul style="list-style-type: none"> • Category A (Green) Trees of high quality with an estimated remaining life expectancy of 40 years • Category B (Blue) Trees of moderate quality with an estimated remaining life expectancy of at least 20 years. • Category C (Grey) Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150mm. • Category U (Red) Unsuitable for retention. Trees in such a poor condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years. <p>Note - A, B and C trees are also given a sub-category of 1, 2 or 3 which reflects their arboricultural, landscape or cultural and conservation values respectively. Each subcategory has an equal weight, for example an A1 tree has the same retention priority as an A3 tree. More than one sub-category may be applied to a survey item as appropriate.</p>
RPA radius	Root Protection Area (RPA): a layout design tool. Unit: metres (m). Radial distance from tree centre to define a circle that indicates on the Tree Survey Plan the minimum rooting area required to maintain tree's viability. Calculated in accordance with Annex D, BS5837:2012
RPA area	Unit: square metres (m ²). The area of the RPA radius circle described above. Applies only to individual trees.

APPENDIX 2 – ARBORICULTURAL IMPACT ASSESSMENT AND TREE PROTECTION PLAN

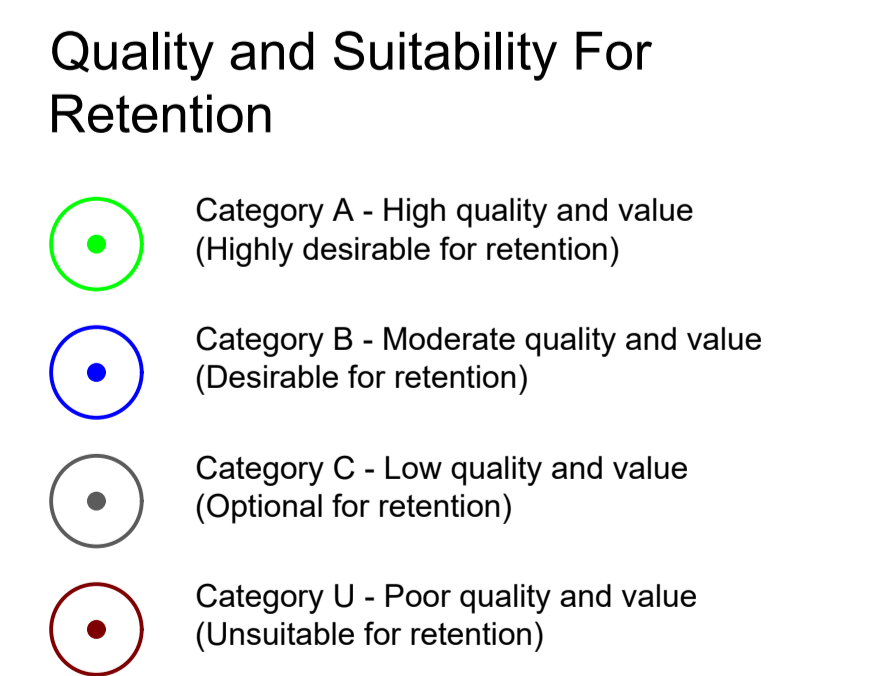
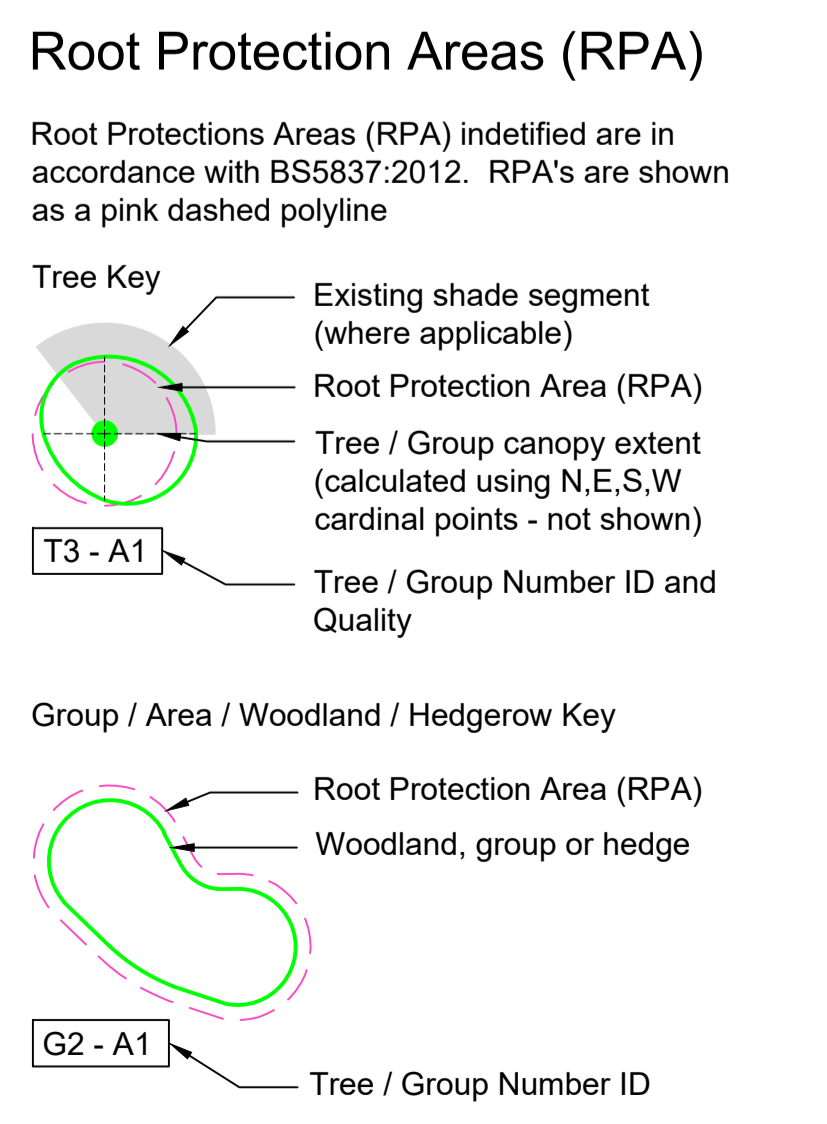


Tree number on plan	Common name	Quality grading	RPA radius (m)	Protected Status
T1	Lombardy poplar	B1	5	None
T2	Sycamore	B1	5	None
T3	Ash	C3	9	None
T4	Ash	C3	11	None
T5	Hawthorn	C1	2	None
T6	Hawthorn	C1	2	None
T7	Hawthorn	C1	3	None
T8	Hawthorn	C1	2	None
T9	Hawthorn	C1	2	None
T10	Hawthorn	C1	2	None
T11	Hawthorn	C1	2	None
T12	Hawthorn	C1	2	None
T13	Hawthorn	C1	2	None
T14	Hawthorn	C1	2	None
T15	Hawthorn	C1	2	None
T16	Hawthorn	C1	2	None
T17	Hawthorn	C1	2	None
T18	Hawthorn	C1	2	None
T19	Hawthorn	C1	2	None
T20	Hawthorn	C1	2	None
T21	Hawthorn	C1	2	None
T22	Ash	B1	12	None
T23	Field maple	C1	3	None
T24	Hawthorn	C1	2	None
T25	Goat willow	C1	2	None
T26	Goat willow	C1	2	None
T27	Goat willow	C1	2	None
T28	Elm	U	2	None
T29	Elm	C1	2	None
T30	Ash	C1	1	None
T31	Goat Willow	C1	2	None
T32	Ash	U	4	None
T33	Ash	C1	7	None
T34	Ash	C1	8	None
T35	Ash	U	8	None
T36	Hawthorn	C1	2	None
T37	Ash	C1	6	None
T38	Hawthorn	C1	2	None
T39	Horse Chestnut	B1	2	None
T40	Horse Chestnut	B1	3	None
T41	Horse Chestnut	B1	4	None
T42	Horse Chestnut	B1	3	None
T43	Horse Chestnut	B1	3	None
T44	Horse Chestnut	B1	3	None
T45	Ash	C1	4	None
T46	Ash	C1	2	None
T47	Ash	C1	5	None
T48	Ash	C1	5	None
T49	Common ash	B1	7	None
T50	Horse chestnut	B1	8	None
T51	Ash	B1	4	None
T52	Silver birch	B1	3	None
T53	Ash	C1	3	None
T54	Silver birch	C1	1	None
T55	Sycamore	C1	4	None
T56	Horse chestnut	C1	2	None
T57	Horse chestnut	C1	4	None
T58	Horse chestnut	C1	4	None
T59	Horse chestnut	C1	2	None
T60	Ash	B1	6	None
T61	Ash	B1	8	None



Key

- Order limits
- Vegetation to be removed / area pruned
- Indicative cable route
- Solar development area
- Construction compound/ laydown area
- Energy storage and substation
- Possible drill (or similar technology) location to avoid vegetation
- Security fencing
- Additional tree protection fencing
- Existing road
- Proposed maintenance track



Group/ Hedgerow/ Woodland number on plan	Common name	Quality grading	RPA radius (m)	Protected Status
G1	10no Elm	C2	As shown on plan	None
G2	4no Goat willow	C2	As shown on plan	None
G3	2no Hawthorn	C2	As shown on plan	None
G4	4no Hawthorn	C2	As shown on plan	None
G5	3no Hawthorn	C2	As shown on plan	None
G6	Sycamore, oak, ash, apple, cherry, hawthorn, elder	B2	As shown on plan	None
G7	3no Hawthorn	C2	As shown on plan	None
G8	2no Goat willow	C2	As shown on plan	None
G9	6no Elm	U	As shown on plan	None
G10	4no Goat willow	C2	As shown on plan	None
G11	3no Goat willow	C2	As shown on plan	None
G12	7no Goat willow	C2	As shown on plan	None
G13	5no Goat willow	C2	As shown on plan	None
G14	3no Goat willow	C2	As shown on plan	None
G15	26no Ash, 3no Sycamore, 3no Oak, 1no lime, 1no cherry, 1no Field maple	C2	As shown on plan	None
G16	6no Goat willow	C2	As shown on plan	None
G17	2no Ash	C2	As shown on plan	None
G18	4no Ash	C2	As shown on plan	None
G19	1no Hawthorn, 4no Ash	C2	As shown on plan	None
G20	15 no Ash, 2no Goat willow	C2	As shown on plan	None
G21	12no Ash	C2	As shown on plan	None
G22	2no Elm	C2	As shown on plan	None
G23	3no Elm, 1no hawthorn	C2	As shown on plan	None
G24	2no Goat willow	C2	As shown on plan	None
G25	22no Lombardy poplar	B2	As shown on plan	None
G26	Hawthorn	C2	As shown on plan	None
G27	Sycamore, horse chestnut	B2	As shown on plan	None
G28	Oak, lime	B2	As shown on plan	None
G29	Oak, lime, pine	B2	As shown on plan	None
G30	Elm, field maple, elder, lime	B2	As shown on plan	None
G31	Hybrid black poplar, sycamore, elder, elm	B2	As shown on plan	None
G32	Ash, hawthorn, oak, beech, field maple, holly, willow, field maple	B2	As shown on plan	None
G33	Hawthorn, dog rose	B2	As shown on plan	None
G34	Hawthorn, dog rose	B2	As shown on plan	None
G35	Elm, elder	C2	As shown on plan	None
G36	Silver birch, sycamore, cherry	B2	As shown on plan	None
G37	4no Silver birch	C2	As shown on plan	None
G38	Hawthorn, elder, crab apple, dog rose, cherry, elder, Leyland cypress, crack willow	C2	As shown on plan	None
G39	2no ash, 1no oak	B2	As shown on plan	None
G40	6no Oak	B2	As shown on plan	None
G41	Ash	C2	As shown on plan	None
G42	4no Oak	C2	As shown on plan	None
G43	7no Oak	C2	As shown on plan	None
G44	2no Oak	C2	As shown on plan	None
G45	2no Oak	C2	As shown on plan	None
G46	14no Ash	C2	As shown on plan	None
W1	Ash, horse chestnut, oak, poplar, sycamore, elder, red horse chestnut, hawthorn, field maple, robinia	A2	As shown on plan	None
W2	Leyland cypress, oak, field maple, hawthorn, sycamore, ash	B2	As shown on plan	None
W3	Ash, oak, hawthorn, field maple, elder	B2	As shown on plan	None
W4	Ash, oak, sycamore, field lime, hawthorn, cherry	B2	As shown on plan	None
W5	Oak, goat willow, silver birch, hazel, field maple, aspen, lime, ash, dogwood	B2	As shown on plan	None
W6	Oak, goat willow, silver birch, hazel, field maple, aspen, lime, ash, dogwood	B2	As shown on plan	None
W7	Silver birch, oak, goat willow, hawthorn, elder, cherry, dogwood, hazel, aspen, blackthorn	B2	As shown on plan	None
H1	Elder, hawthorn, sycamore, robinia	B2	As shown on plan	None
H2	Hawthorn, elder, willow	B2	As shown on plan	None
H3	Hawthorn	B2	As shown on plan	None
H4	Hawthorn, elder, willow	B2	As shown on plan	None
H5	Hawthorn, cherry, oak	B2	As shown on plan	None
H6	Hawthorn, elm, field maple	B2	As shown on plan	None
H7	Hawthorn, field maple, elder, oak	B2	As shown on plan	None
H8	Hawthorn	C2	As shown on plan	None
H9	Hawthorn	C2	As shown on plan	None
H10	Hazel, hawthorn, field maple, oak, blackthorn	B2	As shown on plan	None
H11	Hawthorn	C2	As shown on plan	None
H12	Hawthorn, dog rose	C2	As shown on plan	None
H13	Hawthorn	C2	As shown on plan	None
H14	Hawthorn	C2	As shown on plan	None
H15	Hawthorn	C2	As shown on plan	None
H16	Hawthorn	C2	As shown on plan	None
H17	Hawthorn	C2	As shown on plan	None
H18	Hawthorn	C2	As shown on plan	None
H19	Hawthorn, sycamore	C2	As shown on plan	None
H20	Field maple, hazel, dogwood, goat willow, blackthorn, hawthorn	B2	As shown on plan	None
H21	Hawthorn, hazel, field maple, dog rose	C2	As shown on plan	None
H22	Hawthorn	C2	As shown on plan	None

- Notes**
- 1) Survey Date 23rd, 24th & 25th May 2022.
 - 2) This drawing has been produced to be printed in colour. If you have been given this drawing in monochrome please request a colour version.
 - 3) Do not scale directly from this drawing.
 - 4) This drawing is to be read in conjunction with all other relevant MHP drawings and information supplied by other consultants.

Project: Heckington Fen Energy Park

Client: Ecotricity (Heck Fen Solar Park) Limited

Title: Arboricultural Impact Assessment and Tree Protection Plan (Sheet 1 of 2)

Drawing number: 22045.502

Status: FOR INFORMATION

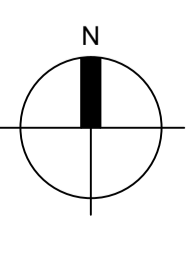
Drawn By: GW

Checked By: MR

Date: 14-06-22

Scale @ A3: 1:5000

Heckington Fen Energy Park Arb Impact & Protection Plan



MHP ARBORICULTURAL, 18 THE PROMENADE, CHELTENHAM, GLOS, UK. T: 01242 299 299 E: info@mhp-arb.co.uk www.mhp-arb.co.uk

Tree number on plan	Common name	Quality grading	RPA radius (m)	Protected Status
T1	Lombardy poplar	B1	5	None
T2	Sycamore	B1	5	None
T3	Ash	C3	9	None
T4	Ash	C3	11	None
T5	Hawthorn	C1	2	None
T6	Hawthorn	C1	2	None
T7	Hawthorn	C1	2	None
T8	Hawthorn	C1	2	None
T9	Hawthorn	C1	2	None
T10	Hawthorn	C1	2	None
T11	Hawthorn	C1	2	None
T12	Hawthorn	C1	2	None
T13	Hawthorn	C1	2	None
T14	Hawthorn	C1	2	None
T15	Hawthorn	C1	2	None
T16	Hawthorn	C1	2	None
T17	Hawthorn	C1	2	None
T18	Hawthorn	C1	2	None
T19	Hawthorn	C1	2	None
T20	Hawthorn	C1	2	None
T21	Hawthorn	C1	2	None
T22	Ash	B1	12	None
T23	Field maple	C1	3	None
T24	Hawthorn	C1	2	None
T25	Goat willow	C1	2	None
T26	Goat willow	C1	2	None
T27	Goat willow	C1	2	None
T28	Elm	U	2	None
T29	Elm	C1	2	None
T30	Ash	C1	1	None
T31	Goat Willow	C1	2	None
T32	Ash	U	4	None
T33	Ash	C1	7	None
T34	Ash	C1	8	None
T35	Ash	U	8	None
T36	Hawthorn	C1	2	None
T37	Ash	C1	6	None
T38	Hawthorn	C1	2	None
T39	Horse Chestnut	B1	2	None
T40	Horse Chestnut	B1	3	None
T41	Horse Chestnut	B1	4	None
T42	Horse Chestnut	B1	3	None
T43	Horse Chestnut	B1	3	None
T44	Horse Chestnut	B1	3	None
T45	Ash	C1	4	None
T46	Ash	C1	2	None
T47	Ash	C1	5	None
T48	Ash	C1	5	None
T49	Common ash	B1	7	None
T50	Horse chestnut	B1	8	None
T51	Ash	B1	4	None
T52	Silver birch	B1	3	None
T53	Ash	C1	3	None
T54	Silver birch	C1	1	None
T55	Sycamore	C1	4	None
T56	Horse chestnut	C1	2	None
T57	Horse chestnut	C1	4	None
T58	Horse chestnut	C1	4	None
T59	Horse chestnut	C1	2	None
T60	Ash	B1	6	None
T61	Ash	B1	8	None

Quality and Suitability For Retention

- Category A - High quality and value (Highly desirable for retention)
- Category B - Moderate quality and value (Desirable for retention)
- Category C - Low quality and value (Optional for retention)
- Category U - Poor quality and value (Unsuitable for retention)

Root Protection Areas (RPA)

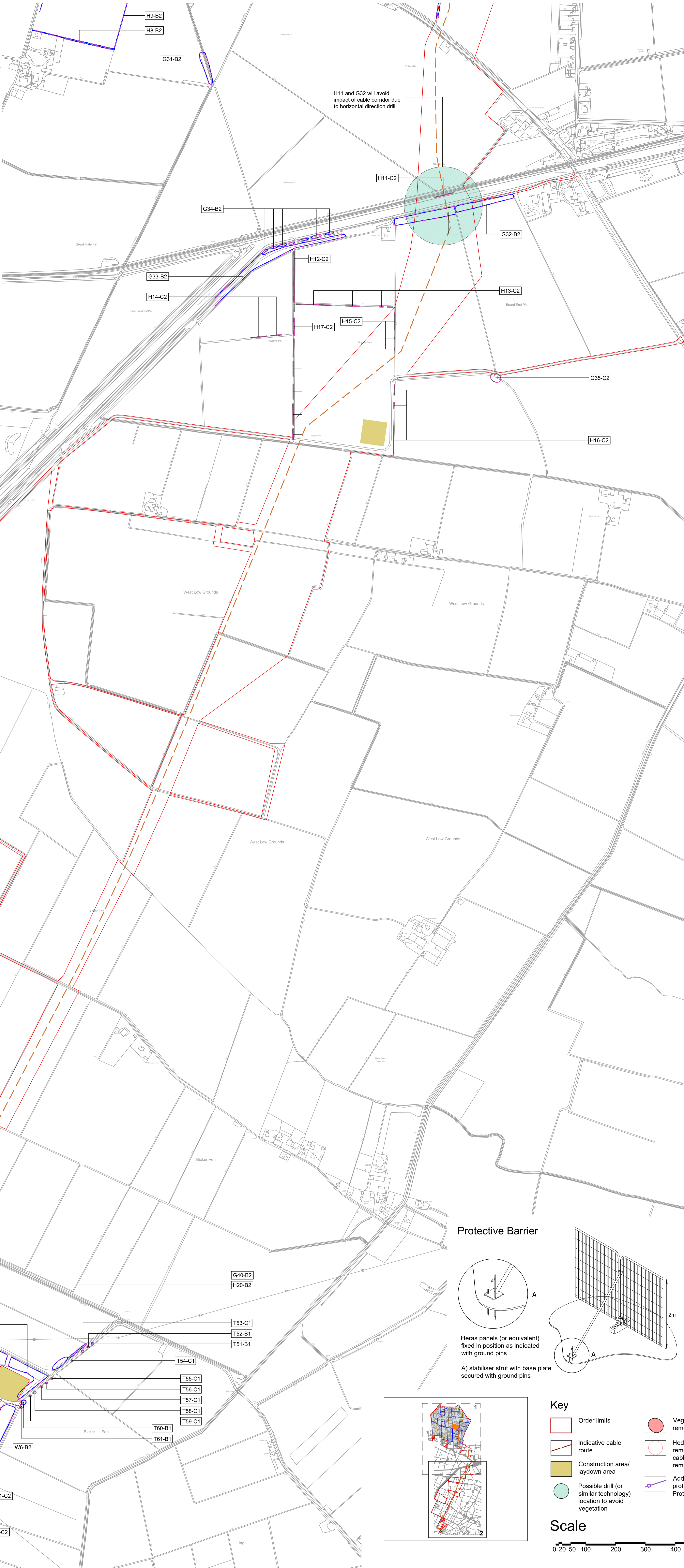
Root Protection Areas (RPA) identified are in accordance with BS5837:2012. RPA's are shown as a pink dashed polyline

Tree Key

- Existing shade segment (where applicable)
- Root Protection Area (RPA)
- Tree / Group canopy extent (calculated using N.E.S.W cardinal points - not shown)
- Tree / Group Number ID and Quality

Group / Area / Woodland / Hedgerow Key

- Root Protection Area (RPA)
- Woodland, group or hedge
- Tree / Group Number ID



Group/ Hedge/ Woodland number on plan	Common name	Quality grading	RPA radius (m)	Protected Status
G1	10no Elm	C2	As shown on plan	None
G2	4no Goat willow	C2	As shown on plan	None
G3	2no Hawthorn	C2	As shown on plan	None
G4	4no Hawthorn	C2	As shown on plan	None
G5	3no Hawthorn	C2	As shown on plan	None
G6	Sycamore, oak, ash, apple, cherry, hawthorn, elder	B2	As shown on plan	None
G7	3no Hawthorn	C2	As shown on plan	None
G8	2no Goat willow	C2	As shown on plan	None
G9	6no Elm	U	As shown on plan	None
G10	4no Goat willow	C2	As shown on plan	None
G11	3no Goat willow	C2	As shown on plan	None
G12	7no Goat willow	C2	As shown on plan	None
G13	5no Goat willow	C2	As shown on plan	None
G14	3no Goat willow	C2	As shown on plan	None
G15	26no Ash, 3no Sycamore, 3no Oak, 1no lime, 1no cherry, 1no Field maple	C2	As shown on plan	None
G16	6no Goat willow	C2	As shown on plan	None
G17	2no Ash	C2	As shown on plan	None
G18	4no Ash	C2	As shown on plan	None
G19	1no Hawthorn, 4no Ash	C2	As shown on plan	None
G20	15 no Ash, 2no Goat willow	C2	As shown on plan	None
G21	12no Ash	C2	As shown on plan	None
G22	2no Elm	C2	As shown on plan	None
G23	3no Elm, 1no hawthorn	C2	As shown on plan	None
G24	2no Goat willow	C2	As shown on plan	None
G25	22no Lombardy poplar	B2	As shown on plan	None
G26	Hawthorn	C2	As shown on plan	None
G27	Sycamore, horse chestnut	B2	As shown on plan	None
G28	Oak, lime	B2	As shown on plan	None
G29	Oak, lime, pine	B2	As shown on plan	None
G30	Elm, field maple, elder, lime	B2	As shown on plan	None
G31	Hybrid black poplar, sycamore, elder, elm	B2	As shown on plan	None
G32	Ash, hawthorn, oak, beech, field maple, holly, willow, field maple	B2	As shown on plan	None
G33	Hawthorn, dog rose	B2	As shown on plan	None
G34	Hawthorn, dog rose	B2	As shown on plan	None
G35	Elm, elder	C2	As shown on plan	None
G36	Silver birch, sycamore, cherry	B2	As shown on plan	None
G37	4no Silver birch	C2	As shown on plan	None
G38	Hawthorn, elder, crab apple, dogwood, cherry, elder, Leyland cypress, crack willow	C2	As shown on plan	None
G39	2no ash, 1no oak	B2	As shown on plan	None
G40	6no Oak	B2	As shown on plan	None
G41	Ash	C2	As shown on plan	None
G42	4no Oak	C2	As shown on plan	None
G43	7no Oak	C2	As shown on plan	None
G44	2no Oak	C2	As shown on plan	None
G45	2no Oak	C2	As shown on plan	None
G46	14no Ash	C2	As shown on plan	None
W1	Ash, horse chestnut, oak, poplar, sycamore, elder, red horse chestnut, hawthorn, field maple, robinia	A2	As shown on plan	None
W2	Leyland cypress, oak, field maple, hawthorn, sycamore, ash	B2	As shown on plan	None
W3	Ash, oak, hawthorn, field maple, elder	B2	As shown on plan	None
W4	Ash, oak, sycamore, field, lime, hawthorn, cherry	B2	As shown on plan	None
W5	Oak, goat willow, silver birch, hazel, field maple, aspen, lime, ash, dogwood	B2	As shown on plan	None
W6	Oak, goat willow, silver birch, hazel, field maple, aspen, lime, ash, dogwood	B2	As shown on plan	None
W7	Silver birch, oak, goat willow, hawthorn, elder, cherry, dogwood, hazel, aspen, blackthorn	B2	As shown on plan	None
H1	Elder, hawthorn, sycamore, robinia	B2	As shown on plan	None
H2	Hawthorn, elder, willow	B2	As shown on plan	None
H3	Hawthorn	B2	As shown on plan	None
H4	Hawthorn, elder, willow	B2	As shown on plan	None
H5	Hawthorn, cherry, oak	B2	As shown on plan	None
H6	Hawthorn, elm, field maple	B2	As shown on plan	None
H7	Hawthorn, field maple, elder, oak	B2	As shown on plan	None
H8	Hawthorn	C2	As shown on plan	None
H9	Hawthorn	C2	As shown on plan	None
H10	Hazel, hawthorn, field maple, oak, blackthorn	B2	As shown on plan	None
H11	Hawthorn	C2	As shown on plan	None
H12	Hawthorn, dog rose	C2	As shown on plan	None
H13	Hawthorn	C2	As shown on plan	None
H14	Hawthorn	C2	As shown on plan	None
H15	Hawthorn	C2	As shown on plan	None
H16	Hawthorn	C2	As shown on plan	None
H17	Hawthorn	C2	As shown on plan	None
H18	Hawthorn	C2	As shown on plan	None
H19	Hawthorn, sycamore	C2	As shown on plan	None
H20	field maple, hazel, dogwood, goat willow, blackthorn, hawthorn	B2	As shown on plan	None
H21	Hawthorn, hazel, field maple, dog rose	C2	As shown on plan	None
H22	Hawthorn	C2	As shown on plan	None

Notes

- 1) Survey Date 23rd, 24th & 25th May 2022.
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- 3) Do not scale directly from this drawing.
- 4) This drawing is to be read in conjunction with all other relevant MHP drawings and information supplied by other consultants.
 - F: Date Limits (change on revision) 08-09-20 08:00
 - A: Issue amendments to key, notes and scale 08-09-20 08:00
 - B: Issue amendments to key, notes and scale 08-09-20 08:00
 - C: Issue amendments to key, notes and scale 08-09-20 08:00
 - D: Issue amendments to key, notes and scale 08-09-20 08:00
 - E: Issue amendments to key, notes and scale 08-09-20 08:00
 - F: Issue amendments to key, notes and scale 08-09-20 08:00

Key

- Order limits
- Indicative cable route
- Construction area/ laydown area
- Possible drill (or similar technology) location to avoid vegetation
- Vegetation to be removed / area pruned
- Hedgerow section to be removed to allow cabling. Anticipated removal of 4m
- Additional tree protection fencing (see Protective Barrier detail)

Scale

0 20 50 100 200 300 400 500