

**ARBORICULTURAL
IMPACT
ASSESSMENT**

Pelham Spring Solar
Farm

August 2022
Revision B



Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Pelham Spring Solar Farm	
Project reference:	4217	
Site Address:	Maggots End, Uttlesford, Essex.	
Nearest Postcode:	CM23 1AZ	
Central Grid reference:	<u>TL 47437 28288</u>	
Local Planning Authority:	Uttlesford District Council	
Relevant planning policies:	Uttlesford Local Plan (January 2005): GEN2 - Design; ENV3 - Open spaces and trees; ENV7 - The protection of the natural environment - designated sites; ENV8 - Other landscape elements of importance for nature conservation.	
Statutory Controls:	Tree Preservation Order	Conservation Area
	None	N/a
Soil Type: (Source: BGS online soils map © NERC 2021)	Superficial/Drift	Bedrock
	Lowestoft Formation - Diamicton	Lewes Nodular Chalk Formation and Seaford Chalk Formation - Chalk
Topographical Survey:	11836-1 - March 21	
Site Layout:	LCS032-MASTER XREF_rev18	
Notes:	Woodland W4 is designated as Ancient Woodland (Battle Wood)	
Report author:	Andrew Cunningham <i>FdSc (Arb) Tech.Cert (AA), MArborA</i>	
Checked by:	Richard Hyett <i>MSc, BSc (Hons), MICFor, MArborA</i>	
Date of issue:	23th September 2021	
Date of Revision:	Revision B, 17 August 2022 - Revision to the site layout	

REPORT CONTENTS:

SECTION 1:	SUMMARY, SITE DETAILS & SURVEY FINDINGS
SECTION 2:	TREE SURVEY & CONSTRAINTS PLAN
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SECTION 5:	METHODOLOGY
SECTION 6:	DESIGN GUIDANCE AND GENERIC ADVICE



R:3681

1. INSTRUCTION

- 1.1. Barton Hyett Associates Ltd have been instructed by Pegasus Group on behalf of Low Carbon Investment Company Ltd to survey trees located on land at Pelham Spring Solar Farm, Maggots End, Hertfordshire ('the site') in accordance with the recommendations of British Standard 5837:2012 'Trees in relation to design, demolition and construction - recommendations'.
- 1.2. The scope of the instruction was to inspect trees relevant to a planning application at the site and provide written advice on how they inform feasibility and design options. The instruction also required an assessment of the potential impact (the arboricultural impact assessment) of the proposed development on the site's arboricultural resource to be undertaken.
- 1.3. This revision (Revision B) has been requested to incorporate site layout changes that were made to address comments by the LPA.

2. SITE DESCRIPTION

- 2.1. The site is made up of a number of irregular shaped agricultural fields which, at the time of survey were being used for a mix of crop production and pasture.
- 2.2. The site is located on land approximately five miles to the north of the market town of Bishops Stortford, Hertfordshire.
- 2.3. The local landscape can be described as rural with the occasional domestic dwelling. The majority of the local adjacent land is being utilised for agricultural purposes such as crop production. The sites boundaries are made up of either linear tree groups or managed hedgerows.
- 2.4. The site is reasonably level throughout with only slight variation. There are a number of public rights of way which bisect the site in places.
- 2.5. Currently, the access is via existing farm tracks from the farm to the east of the site. These made tracks are currently limited to the southern region of the site.

3. TREE SURVEY FINDINGS

- 3.1. A total of one hundred and thirteen trees, groups of trees, hedgerows and areas of woodland were surveyed. These are summarised in terms of their quality in accordance with the recommendations of BS5837 below, and shown in more detail on the Tree Survey and Constraints Plan (Section 2) and within the Tree Survey Schedule (Section 3).

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	52	16	24	10	2
Groups	43	7	23	11	2
Hedgerows	12	-	1	11	-
Woodlands	6	6	-	-	-
Total	113	29	48	32	4

Table 1: Summary of arboricultural features of each BS5837 quality category

4. KEY ARBORICULTURAL FEATURES

- 4.1. Most of the trees and hedgerows are located around the periphery of each field that make up the site. There are some larger mature trees as well a number of wooded areas of varying sizes.
- 4.2. A desktop search of DEFRA's MAGIC online mapping database has revealed a an area of Ancient Semi-Natural Woodland (ASNW) to be present in the east of the site (W4). A full ASNW survey was not undertaken but the designated areas of ASNW have the appearance and some of the characteristics one would expect to observe in Ancient Woodland.
- 4.3. The National Planning Policy Framework 20 21(NPPF) states that:

'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused unless there are wholly exceptional reasons, and a suitable compensation strategy exists'.

- 4.4. Detrimental impacts upon the identified ASNW from proposed development might include, but are not limited to, damage to roots and understorey, damage to or compaction of soil around the tree roots, changes to the water table or drainage within the nearby soil and increased pollution.
- 4.5. The Forestry Commission and Natural England standing advice 'Ancient woodland, ancient trees and veteran trees: protecting them from development' is a material planning consideration that is taken into account when making decisions on planning applications. In reaching a planning decision, the LPA should assess the potential impacts, and avoid, mitigate or compensate for identified impacts. A key method of mitigation is the use of a 'buffer zone'. So, in accordance with the standing advice, an additional ancient woodland buffer of 15m from the furthest edge of the woodland canopy has been applied to W4.
- 4.6. The standing advice also states that the inclusion of gardens within a veteran tree or ancient woodland buffer zones should be avoided. Instead, the buffers should consist of semi-natural habitats such as woodland or a mix of scrub, grassland, heathland and wetland planting. The area within the buffer zone should contribute to wider ecological networks, and only be planted with local and appropriate native species. Access within a buffer should be appropriate and can be allowed if the habitat is not harmed by trampling. Please refer to the further guidance in Section 5.
- 4.7. The constraint posed by the ancient woodland buffer zones is an important design consideration for the site and in this case, the proposed development will be able to respect the required buffer zones.

5. PROPOSED DEVELOPMENT

- 5.1. The proposed development is for a solar farm development, associated infrastructure and landscaping. This includes a new 132Kv DNO substation compound, together with transformer, customer switchgear and meter unit.

6. IMPACT ASSESSMENT

6.1. The AIA considers the effects of any tree and hedgerow loss required to implement the proposed development as well as any reasonably foreseeable potentially damaging activities proposed in the vicinity of retained trees. This is undertaken with reference to BS5837:2012 and considering the nature of the proposals. This can include tree removal to facilitate development, demolition of buildings and removal of existing hard surfacing, soil compaction in close proximity to trees and direct impact damage to canopy and roots of retained trees from construction activities. A combined Tree Retention/Removal and protection Plan is provided in Section 3.

Anticipated Tree/Hedgerow Losses

- 6.2. The development proposals result in none of the survey items being removed in their entirety. However, sectional removal of low quality hedgerow H2 (circa 5m) will be required to allow for a new access into the site.
- 6.3. A circa 5m section of G9 will also be required to allow for the routing of the proposed access track. This will need to pass from north to south through the eastern edge of G9 and the western edge of W2. Here G9 is more of an outgrown hedgerow and these removals will amount to circa 5m of outgrown native mixed hedgerow trees such as field maple, hazel and hawthorn/blackthorn trees. The loss of trees here will constitute a low level arboricultural impact which can be readily mitigated through the significant amount of new tree and hedgerow planting that is proposed within landscape plans for the site.
- 6.4. It is recommended that Category U trees/tree group T45, T50 and G23 are removed (subject to ecological constraints and assessment). These trees were identified as standing dead which pose a safety risk if the land-use changes. It is recommended that these trees are removed in accordance with proactive, appropriate tree management rather than direct result of the development proposals.
- 6.5. The proposed removals are considered very minor when comparing them to the overall arboricultural resource which will be retained. Therefore, the significance of the removals is considered negligible.
- 6.6. All tree and hedgerow removals will be mitigated through tree/hedgerow planting as part of the overall landscape strategy for the site.

Potential Impacts on Retained Trees/Hedgerows

- 6.7. Although solar farm developments are considered reasonably low impact, there is still potential for unacceptable damage to occur to retained trees during the construction phase of the project, unless robust tree protection is implemented.
- 6.8. The proposed perimeter security fence for the solar farm could act as an effective tree protection barrier. This will reduce the need to source and install significant linear meterage of temporary tree protection fencing such as heras. The perimeter fencing is usually driven wooden posts with a 2 metre high mesh fence attached (e.g deer fencing). If this fencing is installed before any other construction activities commence on-site, it will protect much of the arboricultural resource during this phase of the project and reduce the amount of tree protection fencing required.
- 6.9. It should be noted that some trees, hedgerows located within the inner regions of the site will require tree protection fencing of some sort. It is proposed that in areas of high volume construction activity or for larger trees with increased root protection areas, a full BS5837:2012 specification fencing should be utilised. In areas where construction activities are less or existing access roads will be used, it is proposed that a lower

grade of fencing (such as euro-mesh) is used to mark the root protection zones. The specification for this fencing should be agreed with LPA before works commence.

- 6.10. There is adequate space within the site to allow the site compound and contractor parking to be situated with little impact to retained trees. As a rule, these should be sited away from tree canopies and RPAs. The Project Arboriculturist can offer guidance as needed.
- 6.11. Access roads will consist of crushed stone laid on a geo-textile membrane where existing roads do not exist. The location of these has been mostly positioned to avoid RPAs of retained trees which will ensure their successful retention. It should be noted that the existing farm access road will be utilised and improved. Operational access to the site is proposed from the existing unnamed road which runs to the south of the site via an existing farm track extending from the south-east and adjacent to Battles Hall. Here there is an existing farm track that heads west into the site that is proposed to be improved by applying crushed stone over a geo-textile membrane layer.
- 6.12. Where the track is to be within, or passes close to the edge of the RPA for W2 there will need to be a 'no dig' approach to construction with no cutting into the existing ground levels. A geo-textile layer would be laid on-top of the existing ground levels and crushed stone then laid on top. Edging for the track would also need to be installed and secured through a 'no dig' approach, such as through the use of driven metal stakes.
- 6.13. The main cable route is shown to cut through the RPAs of high-quality areas of woodland (W5 and W6) and moderate-quality tree/tree groups (T52, G55, G56 and G57). It is proposed that to minimise the impact to these trees, directional drilling will be utilised to allow the installation of the cable beneath the rooting area of these trees. Where this is not possible, an open trench will be excavated which will be positioned outside of the RPAs of the retained adjacent trees. The project Arboriculturist will be available to offer guidance to the route to ensure that any damage to retained trees is kept to an acceptable level.

7. HEADS OF TERMS FOR AN ARBORICULTURAL METHOD STATEMENT (AMS)

- 7.1. BS5837:2012 (Figure 1) recommends that detailed/technical design of tree protection and arboricultural methodologies should be resolved and finalised following on from the approval of the feasibility of a scheme by the Local Planning Authority.
- 7.2. Annex B and Table B.1 of BS5837:2012, an informative, advises that arboricultural method statement heads of terms are a sufficient level of information in order to deliver tree-related information into the planning system. The table also advises that a detailed Arboricultural Method Statement might reasonably be required as a planning condition.
- 7.3. In relation to the site, it is anticipated that arboricultural working methods are likely to be quite straightforward. A brief summary of the principles of tree protection on development sites is included in Section 7. A draft, 'heads of terms' for an Arboricultural Method Statement is set out below:
- Project arboriculturist – schedule of monitoring and supervision
 - Pre commencement site meeting
 - Hedgerow and tree group partial removals (and facilitation pruning if required)
 - Erection of perimeter security fence (passed roll out ahead of main construction)
 - Erection of temporary tree protection barriers

- Main construction phase (Project Arboriculturist will offer guidance as needed)
- Removal of temporary tree protection barriers (subject to sign of on site conditions)
- Final landscaping including tree planting.

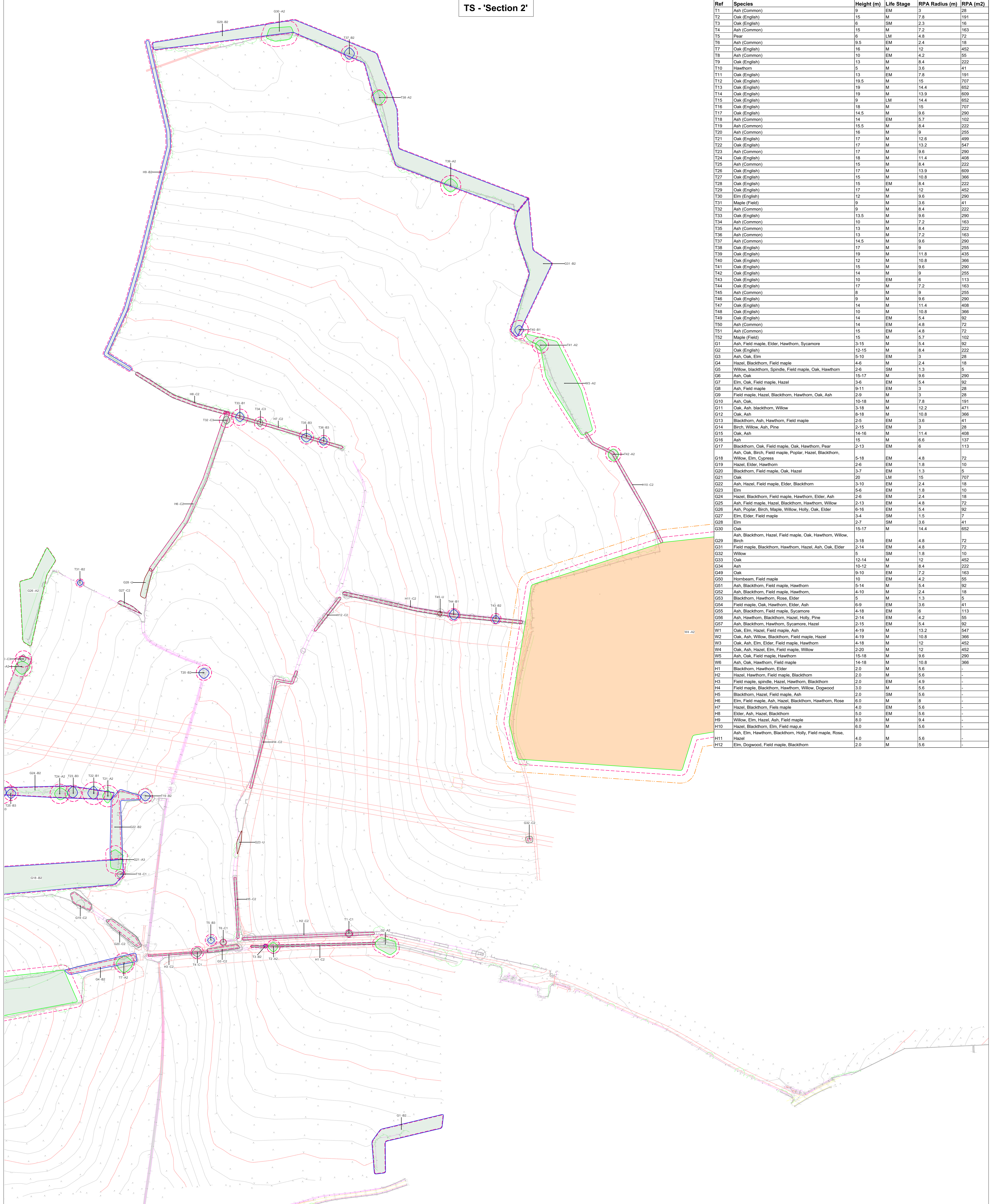
8. RECOMMENDATION AND SUMMARY

- 8.1. The minor loss of hedgerow can be readily mitigated and the retained trees can be adequately protected during construction activities to sustain their health and longevity.
- 8.2. As the construction phase progresses the Project Arboriculturist will be on hand to offer advice as needed.
- 8.3. Subject to the implementation of the advice contained within this report the proposed development is acceptable from an arboricultural perspective.



Andrew Cunningham
Arboriculturist

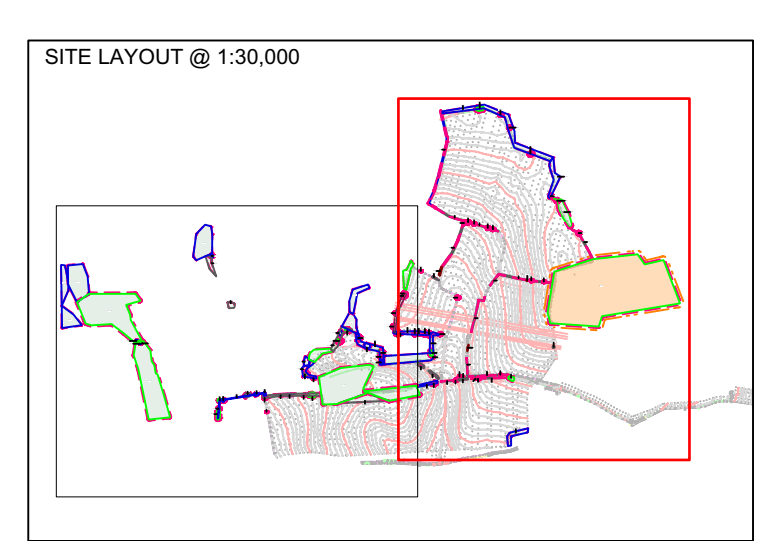
TS - 'Section 2'



Ref	Species	Height (m)	Life Stage	RPA Radius (m)	RPA (m2)
T1	Ash (Common)	9	EM	3	28
T2	Oak (English)	15	M	7.8	191
T3	Oak (English)	6	SM	2.3	16
T4	Ash (Common)	15	M	7.2	163
T5	Pear	6	LM	4.8	72
T6	Ash (Common)	9.5	EM	2.4	18
T7	Oak (English)	16	M	12	452
T8	Ash (Common)	10	EM	4.2	55
T9	Oak (English)	13	M	8.4	222
T10	Hawthorn	5	M	3.6	41
T11	Oak (English)	13	EM	7.8	191
T12	Oak (English)	19.5	M	15	707
T13	Oak (English)	19	M	14.4	652
T14	Oak (English)	19	M	13.9	609
T15	Oak (English)	9	LM	14.4	652
T16	Oak (English)	18	M	15	707
T17	Oak (English)	14.5	M	9.6	290
T18	Ash (Common)	14	EM	5.7	102
T19	Ash (Common)	15.5	M	8.4	222
T20	Ash (Common)	16	M	9	255
T21	Oak (English)	17	M	12.6	499
T22	Oak (English)	17	M	13.2	547
T23	Ash (Common)	17	M	9.6	290
T24	Oak (English)	18	M	11.4	408
T25	Ash (Common)	15	M	8.4	222
T26	Oak (English)	17	M	13.9	609
T27	Oak (English)	15	M	10.8	366
T28	Oak (English)	15	EM	8.4	222
T29	Oak (English)	17	M	12	452
T30	Elm (English)	12	M	9.6	290
T31	Maple (Field)	9	M	3.6	41
T32	Ash (Common)	9	M	8.4	222
T33	Oak (English)	13.5	M	9.6	290
T34	Ash (Common)	10	M	7.2	163
T35	Ash (Common)	13	M	8.4	222
T36	Ash (Common)	13	M	7.2	163
T37	Ash (Common)	14.5	M	9.6	290
T38	Oak (English)	17	M	9	255
T39	Oak (English)	19	M	11.8	435
T40	Oak (English)	12	M	10.8	366
T41	Oak (English)	15	M	9.6	290
T42	Oak (English)	14	M	9	255
T43	Oak (English)	10	EM	6	113
T44	Oak (English)	17	M	7.2	163
T45	Ash (Common)	8	M	9	255
T46	Oak (English)	9	M	9.6	290
T47	Oak (English)	14	M	11.4	408
T48	Oak (English)	10	M	10.8	366
T49	Oak (English)	14	EM	5.4	92
T50	Ash (Common)	14	EM	4.8	72
T51	Ash (Common)	15	EM	4.8	72
T52	Maple (Field)	15	M	5.7	102
G1	Ash, Field maple, Elder, Hawthorn, Sycamore	3-15	M	5.4	92
G2	Oak (English)	12-15	M	8.4	222
G3	Ash, Oak, Elm	5-10	EM	8.4	222
G4	Hazel, Blackthorn, Field maple	4-6	M	2.4	18
G5	Willow, blackthorn, Spindle, Field maple, Oak, Hawthorn	2-6	SM	1.3	5
G6	Ash, Oak	15-17	M	9.6	290
G7	Elm, Oak, Field maple, Hazel	3-6	EM	5.4	92
G8	Ash, Field maple	9-11	EM	3	28
G9	Field maple, Hazel, Blackthorn, Hawthorn, Oak, Ash	2-9	M	3	28
G10	Ash, Oak	10-18	M	7.8	191
G11	Oak, Ash, blackthorn, Willow	3-18	M	12.2	471
G12	Oak, Ash	8-18	M	10.8	366
G13	Blackthorn, Ash, Hawthorn, Field maple	2-5	EM	3	41
G14	Birch, Willow, Ash, Pine	2-15	EM	3	28
G15	Oak, Ash	14-16	M	11.4	408
G16	Ash	15	M	6.6	137
G17	Blackthorn, Oak, Field maple, Oak, Hawthorn, Pear	2-13	EM	6	113
G18	Willow, Elm, Cypress	5-18	EM	4.8	72
G19	Hazel, Elder, Hawthorn	2-6	EM	1.8	10
G20	Blackthorn, Field maple, Oak, Hazel	3-7	EM	1.3	5
G21	Oak	20	LM	15	707
G22	Ash, Hazel, Field maple, Elder, Blackthorn	3-10	EM	2.4	18
G23	Elm	5-6	EM	1.8	10
G24	Hazel, Blackthorn, Field maple, Hawthorn, Elder, Ash	2-6	EM	2.4	18
G25	Ash, Field maple, Hazel, Blackthorn, Hawthorn, Willow	2-13	EM	4.8	72
G26	Ash, Poplar, Birch, Maple, Willow, Holly, Oak, Elder	6-16	EM	5.4	92
G27	Elm, Elder, Field maple	3-4	SM	1.5	7
G28	Elm	2-7	SM	3.6	41
G30	Oak	15-17	M	14.4	652
G29	Ash, Blackthorn, Hazel, Field maple, Oak, Hawthorn, Willow	3-18	EM	4.8	72
G31	Field maple, Blackthorn, Hawthorn, Hazel, Ash, Oak, Elder	2-14	EM	4.8	72
G32	Willow	5	SM	1.8	10
G33	Oak	12-14	M	12	452
G34	Ash	10-12	M	8.4	222
G49	Oak	9-10	EM	7.2	163
G50	Hornbeam, Field maple	10	EM	4.2	55
G51	Ash, Blackthorn, Field maple, Hawthorn	5-14	M	5.4	92
G52	Ash, Blackthorn, Field maple, Hawthorn	4-10	M	2.4	18
G53	Blackthorn, Hawthorn, Rose, Elder	5	M	1.3	5
G54	Field maple, Oak, Hawthorn, Elder, Ash	6-9	EM	3.6	41
G55	Ash, Blackthorn, Field maple, Sycamore	4-18	EM	6	113
G56	Ash, Hawthorn, Blackthorn, Hazel, Holly, Pine	2-14	EM	4.2	55
G57	Ash, Blackthorn, Hawthorn, Sycamore, Hazel	2-15	EM	5.4	92
W1	Oak, Elm, Hazel, Field maple, Ash	4-19	M	13.2	547
W2	Oak, Ash, Willow, Blackthorn, Field maple, Hazel	4-19	M	10.8	366
W3	Oak, Ash, Elm, Elder, Field maple, Hawthorn	4-18	M	12	452
W4	Oak, Ash, Hazel, Elm, Field maple, Willow	2-20	M	12	452
W5	Ash, Oak, Field maple, Hawthorn	15-18	M	9.6	290
W6	Ash, Oak, Hawthorn, Field maple	14-18	M	10.8	366
H1	Blackthorn, Hawthorn, Elder	2.0	M	5.6	-
H2	Hazel, Hawthorn, Field maple, Blackthorn	2.0	M	5.6	-
H3	Field maple, spindle, Hazel, Hawthorn, Blackthorn	2.0	EM	4.9	-
H4	Field maple, Blackthorn, Hawthorn, Willow, Dogwood	3.0	M	5.6	-
H5	Blackthorn, Hazel, Field maple, Ash	2.0	SM	5.6	-
H6	Elm, Field maple, Ash, Hazel, Blackthorn, Hawthorn, Rose	6.0	M	8	-
H7	Hazel, Blackthorn, Field maple	4.0	EM	5.6	-
H8	Elder, Ash, Hazel, Blackthorn	5.0	EM	5.6	-
H9	Willow, Elm, Hazel, Ash, Field maple	8.0	M	9.4	-
H10	Hazel, Blackthorn, Elm, Field maple	6.0	M	5.6	-
H11	Ash, Elm, Hawthorn, Blackthorn, Holly, Field maple, Rose	4.0	M	5.6	-
H12	Elm, Dogwood, Field maple, Blackthorn	2.0	M	5.6	-

KEY

- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
- Category C Tree - Low quality (May be retained but should not constrain development)
- Category C - Hedgerow, Group, Woodland - Low quality (May be retained but should not constrain development)
- Category U Tree - Very low quality (Mostly unsuitable for retention)
- Category U - Hedgerow, Group, Woodland - Very low quality (Mostly unsuitable for retention)
- Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability
- Shrub mass/offsite break-out of scope (OOS)
- Ancient Tree / Woodland or Veteran Trees
- Ancient tree/woodland or Veteran tree: Important trees that require special consideration
- Ancient tree/woodland or Veteran tree buffer: As per published standing advice from Natural England and the Forestry Commission



PROJECT TITLE
Pelham Spring Solar Farm

DRAWING TITLE
Tree Survey & Constraints Plan

SCALE: 1:2000 @ A1 DRAWING NUMBER: BHA_1082_01

DRAWN BY: DV APPROVED BY: AC REVISION: A SHEET: 2/2 DATE: 30/06/2021

LAYOUT USED WITHIN DRAWING: xxxxxxxxxx

CLIENT: Low Carbon

COORDINATE SYSTEM / DATUM: British National Grid / Newlyn Datum (AOD)

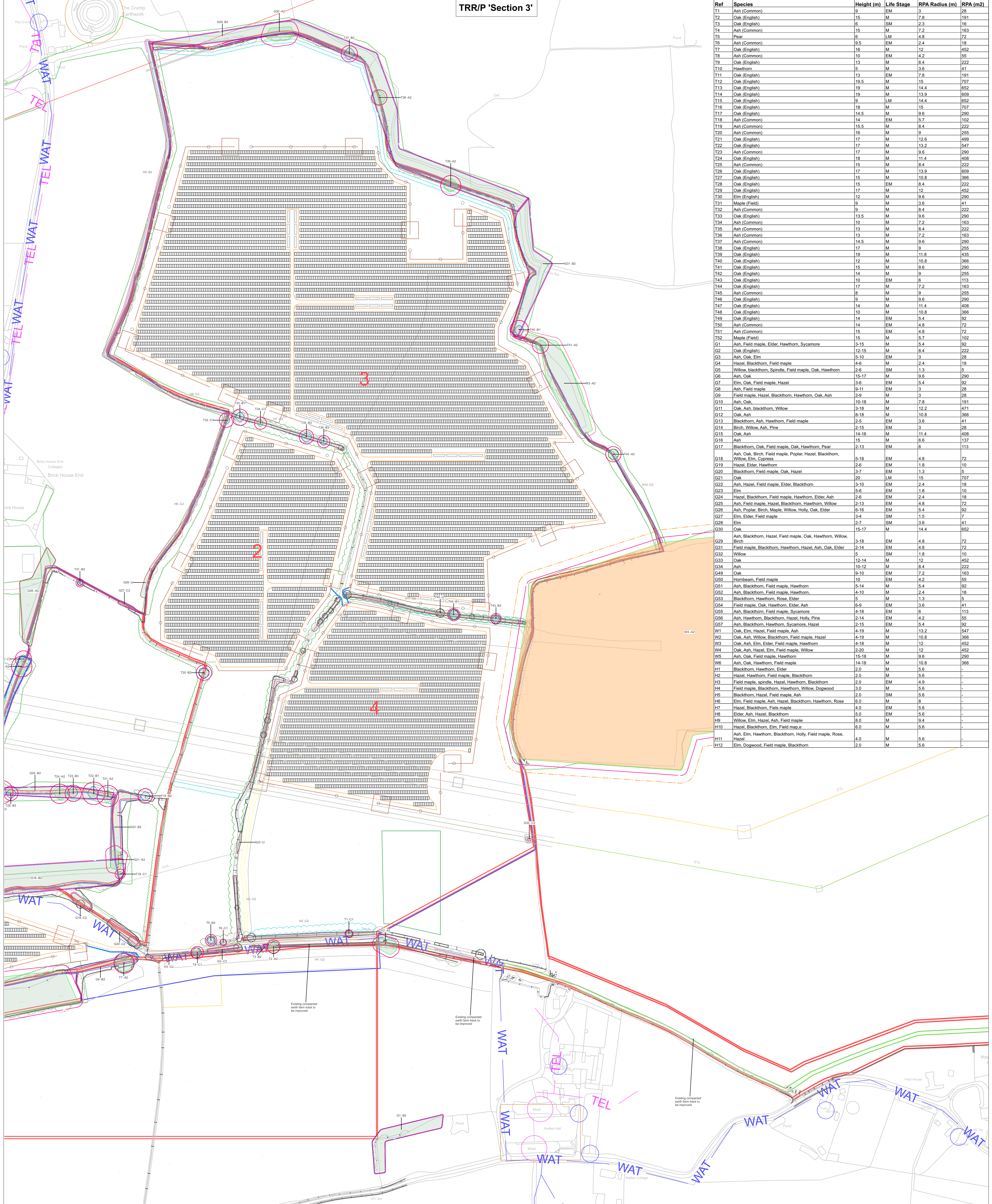
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Note: The original of this drawing was produced in colour - a monochrome copy should not be relied upon. This drawing should be interpreted with reference to the accompanying tree schedule and written advice

TRR/P 'Section 3'



Ref	Species	Height (m)	Life Stage	RPA Radius (m)	RPA (m2)
T1	Ash (Common)	9	EM	3	28
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T14	Oak (English)	19	M	13.9	609
T15	Oak (English)	9	LM	14.4	602
T16	Oak (English)	18	M	15	707
T17	Oak (English)	14.5	M	9.6	290
T18	Ash (Common)	14	EM	5.7	102
T19	Ash (Common)	15.5	M	8.4	222
T20	Ash (Common)	16	M	9	255
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T49	Oak (English)	14	EM	5.4	92
T50	Ash (Common)	14	EM	4.8	72
T51	Ash (Common)	15	EM	4.8	72
T52	Maple (Field)	15	M	5.7	102
G1	Ash, Field maple, Elder, Hawthorn, Sycamore	3-15	M	5.4	92
G2	Oak (English)	12-15	M	8.4	222
G3	Ash, Oak, Elm	5-10	EM	3	28
G4	Hazel, Blackthorn, Field maple	4-6	M	2.4	18
G5	Willow, blackthorn, Spindle, Field maple, Oak, Hawthorn	2-6	SM	1.3	5
G6	Ash, Oak	15-17	M	9.6	290
G7	Elm, Oak, Field maple, Hazel	3-6	EM	5.4	92
G8	Ash, Field maple	9-11	EM	3	28
G9	Field maple, Hazel, Blackthorn, Hawthorn, Oak, Ash	2-9	M	3	28
G10	Ash, Oak	10-18	M	7.8	191
G11	Oak, Ash, blackthorn, Willow	3-18	M	12.2	471
G12	Oak, Ash	8-18	M	10.8	366
G13	Blackthorn, Ash, Hawthorn, Field maple	2-5	EM	3.6	41
G14	Birch, Willow, Ash, Pine	2-15	EM	3	28
G15	Oak, Ash	14-16	M	11.4	408
G16	Ash	15	M	6.6	137
G17	Blackthorn, Oak, Field maple, Oak, Hawthorn, Pear	2-13	EM	6	113
G18	Ash, Oak, Birch, Field maple, Poplar, Hazel, Blackthorn, Willow, Elm, Cypress	5-18	EM	4.8	72
G19	Hazel, Elder, Hawthorn	2-6	EM	1.8	10
G20	Blackthorn, Field maple, Oak, Hazel	3-7	EM	1.3	5
G21	Oak	20	LM	15	707
G22	Ash, Hazel, Field maple, Elder, Blackthorn	3-10	EM	2.4	18
G23	Elm	5-6	EM	1.8	10
G24	Hazel, Blackthorn, Field maple, Hawthorn, Elder, Ash	2-6	EM	2.4	18
G25	Ash, Field maple, Hazel, Blackthorn, Hawthorn, Willow	2-13	EM	4.8	72
G26	Ash, Poplar, Birch, Maple, Willow, Holly, Oak, Elder	6-16	EM	5.4	92
G27	Elm, Elder, Field maple	3-4	SM	1.5	7
G28	Elm	2-7	SM	3.6	41
G30	Oak	15-17	M	14.4	652
G29	Ash, Blackthorn, Hazel, Field maple, Oak, Hawthorn, Willow, Birch	3-18	EM	4.8	72
G31	Field maple, Blackthorn, Hawthorn, Hazel, Ash, Oak, Elder	2-14	EM	4.8	72
G32	Willow	5	SM	1.8	10
G33	Oak	12-14	M	12	452
G34	Ash	10-12	M	8.4	222
G49	Oak	9-10	EM	7.2	163
G50	Hornbeam, Field maple	10	EM	10.8	366
G51	Ash, Blackthorn, Field maple, Hawthorn	5-14	M	5.4	92
G52	Ash, Blackthorn, Field maple, Hawthorn	4-10	M	2.4	18
G53	Blackthorn, Hawthorn, Rose, Elder	5	M	1.3	5
G54	Field maple, Oak, Hawthorn, Elder, Ash	6-9	EM	3.6	41
G55	Ash, Blackthorn, Field maple, Sycamore	4-18	EM	6	113
G56	Ash, Hawthorn, Blackthorn, Hazel, Holly, Pine	2-14	EM	4.2	55
G57	Ash, Blackthorn, Hawthorn, Sycamore, Hazel	2-15	EM	5.4	92
W1	Oak, Elm, Hazel, Field maple, Ash	4-19	M	13.2	547
W2	Oak, Ash, Willow, Blackthorn, Field maple, Hazel	4-19	M	10.8	366
W3	Oak, Ash, Elm, Elder, Field maple, Hawthorn	4-18	M	12	452
W4	Oak, Ash, Hazel, Elm, Field maple, Willow	2-20	M	12	452
W5	Ash, Oak, Field maple, Hawthorn	15-18	M	9.6	290
W6	Ash, Oak, Hawthorn, Field maple	14-18	M	10.8	366
H1	Blackthorn, Hawthorn, Elder	2.0	M	5.6	-
H2	Hazel, Hawthorn, Field maple, Blackthorn	2.0	M	5.6	-
H3	Field maple, spindle, Hazel, Hawthorn, Blackthorn	2.0	EM	4.9	-
H4	Field maple, Blackthorn, Hawthorn, Willow, Dogwood	3.0	M	5.6	-
H5	Blackthorn, Hazel, Field maple, Ash	2.0	SM	5.6	-
H6	Elm, Field maple, Ash, Hazel, Blackthorn, Hawthorn, Rose	6.0	M	8	-
H7	Hazel, Blackthorn, Field maple	4.0	EM	5.6	-
H8	Elder, Ash, Hazel, Blackthorn	5.0	EM	5.6	-
H9	Willow, Elm, Hazel, Ash, Field maple	8.0	M	9.4	-
H10	Hazel, Blackthorn, Elm, Field maple	6.0	M	5.6	-
H11	Ash, Elm, Hawthorn, Blackthorn, Holly, Field maple, Rose, Hazel	4.0	M	5.6	-
H12	Elm, Dogwood, Field maple, Blackthorn	2.0	M	5.6	-

KEY

- Category A Tree - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category C Tree - Low quality (May be retained but should not constrain development)
- Category D Tree - Very low quality (Mostly unsuitable for retention)
- Category U Tree - Hedge/row, Group, Woodland - Very low quality (Mostly unsuitable for retention)
- Category V Tree - Hedge/row, Group, Woodland - High quality (Retention highly desirable)
- Category W Tree - Hedge/row, Group, Woodland - Moderate quality (Retention desirable)
- Category X Tree - Hedge/row, Group, Woodland - Low quality (May be retained but should not constrain development)
- Category Y Tree - Hedge/row, Group, Woodland - Very low quality (Mostly unsuitable for retention)
- Category Z Tree - Hedge/row, Group, Woodland - Very low quality (Mostly unsuitable for retention)

Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability

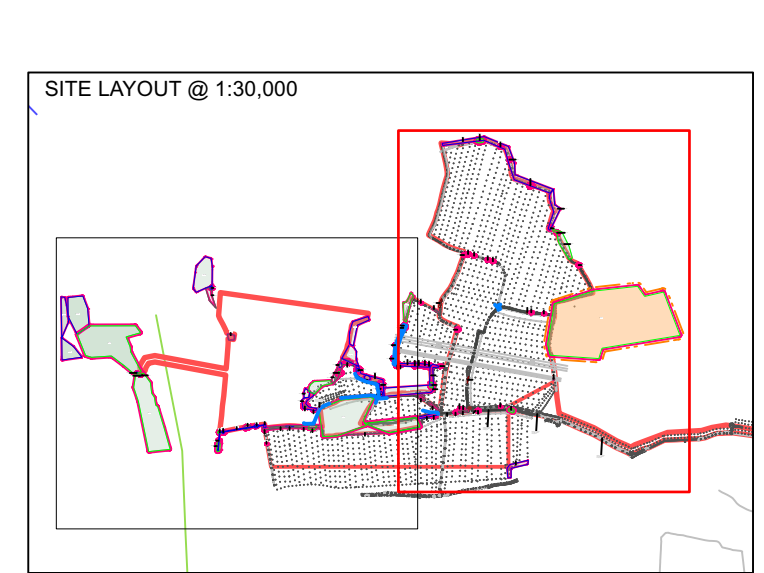
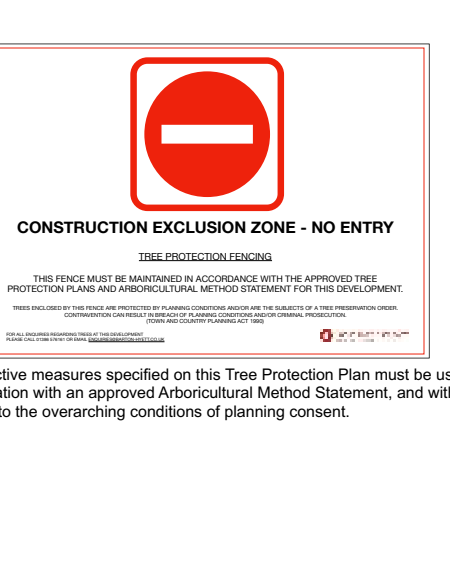
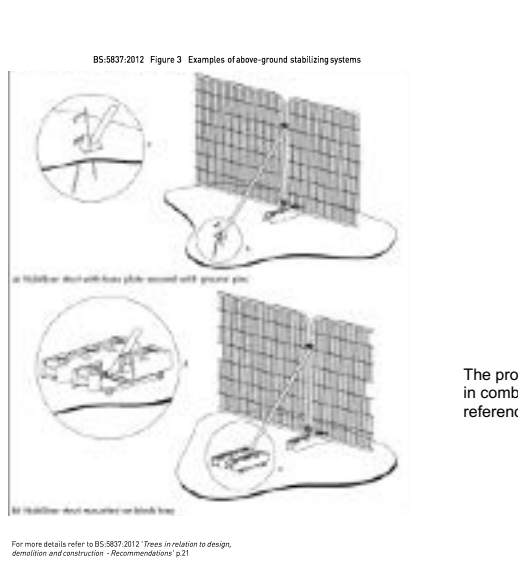
Shrub mass/offside (breed of) of scope (OOS)

Cable Route

Down-graded tree protection fencing such as 'suro-mat'. To be agreed with LPA

Tree protection fencing in accordance with BS5837:2012.

Tree / Hedge/row / Group to be removed to allow development proposals to be implemented



PROJECT TITLE
Pelham Spring Solar Farm

DRAWING TITLE
Tree Retention, Removal & Protection Plan

SCALE: 1:2000 @ A1

DRAWING NUMBER: BHA_1082_02

DRAWN BY: RH | APPROVED BY: AC | REVISION: E | SHEET: 2/2 | DATE: 09/09/2021

LAYOUT USED WITHIN DRAWING: LCS032-PL01-rev25

CLIENT: Low Carbon

COORDINATE SYSTEM / DATUM: British National Grid / Newlyn Datum (AOD)

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Note: The original of this drawing was produced in colour - a monochrome copy should not be relied upon. This drawing should be interpreted with reference to the accompanying tree schedule and written advice

INDIVIDUAL TREES

Ref	Species	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	TPO?
T1	Ash (Common)	9.0	3	Yes	250	3.5-4.0-4.0-3.5	3.0	2	S	EM	None	Multi-stemmed tree, ivy clad, obvious dieback within canopy. Probably ash dieback.	Poor	Fair	10+	C1	3.0	28	No
T2	Oak (English)	15.0	1	-	650	4.5-5.0-6.0-6.0	3.0	2	E	M	None	Good specimen tree located within boundary hedgerow. Good form.	Good	Good	40+	A2	7.8	191	No
T3	Oak (English)	6.0	1	-	190	2.0-2.5-2.5-2.0	2.5	1	N	SM	None	Recently established tree, lower limbs removed in past.	Good	Good	40+	B2	2.3	16	No
T4	Ash (Common)	15.0	1	-	600	6.0-5.0-5.0-6.0	5.0	4	N	M	None	Obvious dieback within canopy, ditch to south. Tree in decline.	Poor	Fair	<10	C1	7.2	163	No
T5	Pear	6.0	2	-	400	3.5-4.0-4.0-4.0	1.0	2	W	LM	None	Old tree located on field edge. Cavity formation at base and to stems. Good form.	Good	Fair	10+	B3	4.8	72	No
T6	Ash (Common)	9.5	3	-	200	4.0-4.0-3.0-4.0	2.5	2	S	EM	None	Self-set tree on edge of track. Multi-stemmed form. Some dieback to canopy.	Fair	Fair	10+	C1	2.4	18	No
T7	Oak (English)	16.0	1	-	1000	8.0-10.0-11.0-9.0	4.0	3.5	E	M	None	Hedgerow tree, good specimen. Good form.	Good	Good	40+	A2	12.0	452	No
T8	Ash (Common)	10.0	3	Yes	350	4.0-4.0-4.0-4.0	5.0	3	E	EM	None	Hedgerow tree, obvious signs of ash dieback, multi-stemmed form.	Fair	Fair	<10	C1	4.2	55	No
T9	Oak (English)	13.0	1	-	700	6.0-7.0-6.0-6.0	5.0	2.5	W	M	None	Mature tree located on site boundary, canopy lifted in recent past, typical tree. Good form.	Good	Good	40+	A2	8.4	222	No
T10	Hawthorn	5.0	2	-	300	3.0-2.0-2.0-2.0	2.0	2	N	M	None	Tree located adjacent to ditch on field edge, twin stemmed.	Good	Fair	10+	C1	3.6	41	No
T11	Oak (English)	13.0	1	Yes	650	6.0-5.0-6.0-5.0	4.0	4	W	EM	None	Hedgerow tree, typical form, some deadwood within canopy.	Good	Good	40+	B1	7.8	191	No
T12	Oak (English)	19.5	1	-	1280	8.0-8.0-8.0-7.0	5.0	3	S	M	None	Good specimen tree located within boundary group. Prominent, good form.	Good	Good	40+	A2	15.0	707	No
T13	Oak (English)	19.0	1	-	1200	8.0-8.0-9.0-8.0	1.0	2	S	M	None	Good specimen tree located within boundary group, typical form with some retrenchment. Decay between buttresses.	Good	Fair	40+	A2	14.4	652	No

Ref	Species	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	TPO?
T14	Oak (English)	19.0	1	-	1160	10.0-9.0-11.0-9.0	5.0	4	N	M	None	Good specimen tree located on field edge. Some deadwood within canopy, bleeding canker to stem, typical form.	Fair	Good	40+	A2	13.9	609	No
T15	Oak (English)	9.0	1	-	1200	7.0-6.0-5.0-5.0	4.0	4	W	LM	None	Old hollow tree located within boundary group. Overrun with ivy, major decay to stem. Stag horns.	Poor	Poor	10+	B3	14.4	652	No
T16	Oak (English)	18.0	1	-	1300	19.0-10.0-10.0-9.0	4.0	3	W	M	None	Good specimen tree located within boundary group. Watercourse to east of stem, minor deadwood throughout canopy. Evidence of past branch failures.	Good	Good	40+	A2	15.0	707	No
T17	Oak (English)	14.5	1	-	800	4.0-7.0-8.0-7.5	6.0	3	S	M	None	Tree located on site boundary, some retrenchment within canopy, poor form.	Fair	Good	40+	B3	9.6	290	No
T18	Ash (Common)	14.0	1	-	475	3.0-4.0-4.5-4.0	4.0	4	S	EM	None	Tree located on edge of group, in decline, canopy dieback.	Poor	Fair	<10	C1	5.7	102	No
T19	Ash (Common)	15.5	1	-	700	5.0-6.0-6.0-5.0	5.0	4	S	M	None	Tree located adjacent to ditch. Typical form, Inonotus bracket to stem, substantial epicormic growth at base. Prominent. Evidence of past limb failures/minor dieback.	Fair	Fair	10+	B2	8.4	222	No
T20	Ash (Common)	16.0	1	-	750	5.0-6.0-7.0-6.0	6.0	3	W	M	None	Tree located adjacent to ditch, prominent. Evidence of canopy dieback, woodpecker holes, mis-shaped canopy.	Fair	Fair	10+	B2	9.0	255	No
T21	Oak (English)	17.0	1	-	1050	7.0-4.0-8.0-6.0	5.0	2	S	M	None	Large tree on field edge, ditch to south of stem, retrenchment within canopy, some large deadwood. Prominent.	Fair	Fair	40+	A2	12.6	499	No
T22	Oak (English)	17.0	1	-	1100	8.0-5.5-7.0-7.0	5.5	2	S	M	None	Large tree located on field boundary, ditch to south, extensive decay at base, adaptive growth evident, historic limb failures within canopy, deadwood throughout.	Fair	Fair	20+	B1	13.2	547	No
T23	Ash (Common)	17.0	1	-	800	8.0-5.0-5.0-7.0	2.0	5	S	M	None	Large tree on field edge, historic major limb failure within mid canopy - hung up limb. Inonotus brackets to upper stem - probably related to branch failures. Pollard if land use changes.	Fair	Poor	10+	B3	9.6	290	No

Ref	Species	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	TPO?
T24	Oak (English)	18.0	1	-	950	7.0-9.5-7.0-6.0	5.0	3	N	M	None	Large tree on field edge, ditch to south of stem. Evidence of limb failures within upper canopy. Evidence of pruning to some limbs. Decayed fruiting bodies at base.	Good	Fair	40+	A2	11.4	408	No
T25	Ash (Common)	15.0	1	-	700	5.0-6.0-6.0-5.0	4.0	5	S	M	None	Mature tree on field boundary, ino outs infection, canopy dieback, woodpecker holes to stem	Fair	Fair	10+	B3	8.4	222	No
T26	Oak (English)	17.0	1	-	1160	7.0-6.0-8.0-7.0	6.0	5	S	M	None	Mature tree on field edge, mix-sharpen canopy due to historic limb failures, thinning canopy.	Poor	Fair	20+	B3	13.9	609	No
T27	Oak (English)	15.0	1	Yes	900	9.0-8.0-9.0-8.0	5.0	2.5	N	M	None	Off-site tree, no access. Good specimen, good form.	Good	Good	40+	A2	10.8	366	No
T28	Oak (English)	15.0	1	-	700	5.0-5.5-6.0-6.0	7.0	2.5	E	EM	None	Obviously larger tree located within boundary group. Thinning canopy.	Fair	Fair	20+	B2	8.4	222	No
T29	Oak (English)	17.0	1	Yes	1000	6.0-9.5-9.0-8.0	6.0	4	S	M	None	Mature tree located on site boundary, stem and canopy obscured by ivy, thinning canopy in places, prominent but asymmetric. Sever ivy.	Fair	Good	40+	A2	12.0	452	No
T30	Elm (English)	12.0	1	Yes	800	5.0-3.0-3.0-4.0	2.5	3	W	M	None	Mature tree, ivy clad, limited foliage. Poor form. Sever ivy.	Poor	Fair	10+	C3	9.6	290	No
T31	Maple (Field)	9.0	2	-	300	3.5-3.5-3.0-3.0	1.0	1	E	M	None	Field side tree located on edge of ditch. Twin-stemmed. Flailed back away from field edge.	Good	Good	20+	B2	3.6	41	No
T32	Ash (Common)	9.0	1	Yes	700	5.0-4.0-4.5-4.0	5.0	2.5	S	M	None	Standard tree located within hedgerow. Failed at 5m in past. Small canopy. Poor form. Better ecologically.	Fair	Fair	10+	C3	8.4	222	No
T33	Oak (English)	13.5	1	Yes	800	6.0-5.0-5.0-5.0	5.0	3.5	W	M	None	Mature tree located within boundary hedgerow, some retrenchment within upper canopy, self set ash at base (growing through canopy).	Fair	Good	40+	B1	9.6	290	No
T34	Ash (Common)	10.0	1	-	600	5.0-3.0-4.0-4.0	2.5	2.5	W	M	None	Tree located within boundary hedgerow. Ditch to south of stem. Serious decline - main leader dead. Cavity at base.	Poor	Poor	10+	C3	7.2	163	No
T35	Ash (Common)	13.0	1	-	700	4.0-6.0-6.0-6.0	4.0	3	W	M	None	Mature tree located on field edge. Cavities to stem, typical form. Prominent.	Fair	Fair	10+	B3	8.4	222	No

Ref	Species	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	TPO?
T36	Ash (Common)	13.0	1	-	600	5.0-4.0-4.0-5.0	3.0	3	N	M	None	Mature tree on field edge. Major historic limb failure within upper canopy. Poor form. Better ecologically.	Fair	Fair	10+	B3	7.2	163	No
T37	Ash (Common)	14.5	1	Yes	800	7.0-6.0-6.5-6.0	5.0	4	N	M	None	Field side tree, large historic cavity to stem, canopy lifted in recent past. Woodpecker holes to stem indications decay. Prominent tree.	Good	Fair	10+	B2	9.6	290	No
T38	Oak (English)	17.0	1	-	750	8.0-7.0-8.5-9.0	8.0	4	W	M	None	Good specimen tree located on edge of larger group. Ivy to stem, broad canopy. Ploughline within 1m of stem.	Good	Good	40+	A2	9.0	255	No
T39	Oak (English)	19.0	1	-	980	8.0-8.0-7.5-8.5	6.0	5	E	M	None	Large tree located on field edge and on edge of larger group. Prominent. Ivy obscuring stem. Recent canopy lifting. Good specimen.	Good	Good	40+	A2	11.8	435	No
T40	Oak (English)	12.0	1	Yes	900	5.0-5.0-7.0-5.0	5.0	4	S	M	None	Located within larger group. Poor form/suppressed.	Good	Good	40+	B1	10.8	366	No
T41	Oak (English)	15.0	1	-	800	6.0-7.0-6.0-6.0	4.0	4	E	M	None	Tree located on edge of larger group, ivy obscuring stem. Typical form.	Good	Fair	40+	A2	9.6	290	No
T42	Oak (English)	14.0	1	Yes	750	6.0-6.0-8.0-6.0	5.0	3	S	M	None	Hedgerow tree located adjacent to drainage ditch. Typical form.	Good	Good	40+	A2	9.0	255	No
T43	Oak (English)	10.0	1	-	500	3.5-4.0-6.0-4.0	4.0	2	S	EM	None	Hedgerow tree, stunted form.	Good	Fair	40+	B2	6.0	113	No
T44	Oak (English)	17.0	1	-	600	6.0-6.0-6.0-5.0	4.0	3	E	M	None	Hedgerow tree, good form, prominent. Limited access to base.	Good	Good	40+	B1	7.2	163	No
T45	Ash (Common)	8.0	1	Yes	750	2.0-2.0-4.0-3.0	4.0	1	W	M	None	Standing dead tree. Fell.	Poor	Poor	None	U	9.0	255	No
T46	Oak (English)	9.0	1	Yes	800	5-5-4-3	-	-	W	M	None	Standing dead tree located adjacent to access road, good ecological value.	Poor	Poor	<10	C3	9.6	290	No
T47	Oak (English)	14.0	1	Yes	950	7-6-6-8	-	-	E	M	None	Mature tree located on field edge, ivy to stem, ditch adjacent to stem, canopy lifted over track in past, good form.	Good	Good	40	A2	11.4	408	No
T48	Oak (English)	10.0	1	Yes	900	6-5-6-5	-	-	W	M	None	Good hedgerow tree on edge of site, typical form.	Good	Good	40	B1	10.8	366	No
T49	Oak (English)	14.0	3		450	7-6-7-7	-	-	N	EM	None	Tri-stemmed tree located on site boundary, ditch to east of stems, canopy lifted in past on field edge	Good	Good	40	B2	8.8	92	No
T50	Ash (Common)	14.0	1		400	5-5-3-4	-	-	E	EM	None	Standing dead tree. Fell.	Poor	Poor	<10	U	4.8	72	No

Ref	Species	Top Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. low crown height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	TPO?
T51	Ash (Common)	15.0	1		400	5-3-2-4	-	-	N	EM	None	Woodland edge tree. Lean to west.	Fair	Good	20	B2	4.8	72	No
T52	Maple (Field)	15.0	1		475	4-5-4-5	-	-	S	M	None	Woodland edge tree. Suppressed form.	Good	Good	20	B2	5.8	102	No

GROUPS OF TREES

Ref	Species	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. Canopy Height (m)	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO
G2	Oak (English)	12-15	2	-	700	5.0	4.0	M	None	Two similar sized trees located on edge of existing farm track, some retrenchment within upper canopy, ivy to stem of one tree.	Fair	Good	20+	A2	8.4	No
G1	Ash, Field maple, Elder, Hawthorn, Sycamore	3-15	50	-	450	6.0	4.0	M	None	Linear group located off-site. Most trees early mature and multi-stemmed.	Fair	Good	20+	B2	5.4	No
G3	Ash, Oak, Elm	5-10	7	-	250	4.0	4.0	EM	None	Small group of self set trees located adjacent to access track. Ash with obvious signs of ash dieback.	Fair	Fair	10+	C2	3.0	No
G4	Hazel, Blackthorn, Field maple	4-6	15	Yes	200	4.0	1.0	M	None	Linear tree group, spreading form.	Good	Good	20+	B2	2.4	No
G5	Willow, blackthorn, Spindle, Field maple, Oak, Hawthorn	2-6	100	Yes	100	1	1.0	SM	None	Replaced section, recently established.	Good	Good	20+	C2	1.3	No
G6	Ash, Oak	15-17	3	-	800	7	6.0	M	None	Three mature trees located on site boundary, good collectively. Ash are ivy clad, typical form.	Fair	Fair	20+	A2	9.6	No
G8	Ash, Field maple	9-11	3	-	250	5	4.0	EM	None	Hedgerow trees, multi-stemmed form. Thinning canopy to Ash.	Fair	Good	10+	B2	3.0	No
G7	Elm, Oak, Field maple, Hazel	3-6	50	-	450	3	2.0	EM	None	Linear boundary, ditch to north, some standard trees within group.	Fair	Good	20+	C2	5.4	No
G9	Field maple, Hazel, Blackthorn, Hawthorn, Oak, Ash	2-9	50	-	250	4	1.0	M	None	Boundary group. Unmanaged, spreading and becoming thicket like in places.	Good	Good	20+	B2	3.0	No
G10	Ash, Oak,	10-18	5	-	650	6	4.0	M	None	Small group of trees on site boundary, mostly Ash. Canker to ash, in decline.	Fair	Fair	20+	B2	7.8	No

Ref	Species	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. Canopy Height (m)	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO
G11	Oak, Ash, Blackthorn, Willow	3-18	40	-	1020	9	4.0	M	None	Wooded area, dominated by mature Oak, willow, Blackthorn understory. Prominent	Good	Good	40+	A2	12.2	No
G12	Oak, Ash	8-18	3	-	900	8	2.5	M	None	Three tree group, all trees in decline with deadwood, retrenchment and stem failure to Adh. Good ecological value.	Fair	Fair	20+	B3	10.8	No
G13	Blackthorn, Ash, Hawthorn, Field maple	2-5	50	-	300	2	1.0	EM	None	Thicket like group, dominated by Blackthorn.	Good	Good	10+	C2	3.6	No
G14	Birch, Willow, Ash, Pine	2-15	50	Yes	250	4	2.0	EM	None	Planted group, limited access. Good collectively.	Good	Good	20+	B2	3.0	No
G15	Oak, Ash	14-16	2	-	950	10	4.0	M	None	Two similar sized trees, both in decline. Deadwood throughout and canopy dieback. Good ecological value	Poor	Fair	10+	B3	11.4	No
G16	Ash	15	2	-	550	6	5.0	M	None	Two tree group. Both trees in decline with thinning canopies, watercourse adjacent to stems.	Fair	Fair	10+	B3	6.6	No
G17	Blackthorn, Oak, Field maple, Oak, Hawthorn, Pear	2-13	100	Yes	500	3	1.0	EM	None	Linear boundary group, straddling watercourse. Badger sett within northern section. Thicket like in places with larger trees towards southern section, some early mature Ash standards contained within. Better collectively.	Good	Good	20+	B2	6.0	No
G18	Ash, Oak, Birch, Field maple, Poplar, Hazel, Blackthorn, Willow, Elm, Cypress	5-18	150	Yes	400	4	2.0	EM	None	Planted linear group of mixed woodland. Mostly Birch, drawn up and suppressed. Some stem failures within.	Good	Fair	20+	B2	4.8	No
G19	Hazel, Elder, Hawthorn	2-6	10	-	150	3	1.5	EM	None	Scrubby tree group straddling drainage ditch.	Good	Good	10+	C2	1.8	No
G20	Blackthorn, Field maple, Oak, Hazel	3-7	40	-	100	3	1.0	EM	None	Scrubby group located on edge of field. Mostly Blackthorn.	Good	Good	10+	C2	1.3	No
G21	Oak	20	2	-	1500	10	5.0	LM	None	Two similar size trees, grown cohesively to form one canopy. Lower limbs removed in past, retrenchment within upper canopy, decay at base to both trees. Future potential failures.	Fair	Fair	20+	A3	15.0	No
G22	Ash, Hazel, Field maple, Elder, Blackthorn	3-10	30	Yes	200	4	1.0	EM	None	Linear boundary group, unmanaged.	Good	Good	20+	B2	2.4	No
G23	Elm	5-6	15	-	150	1	3.0	EM	None	Standing dead tree group. Fell.	Poor	Poor	None	U	1.8	No

Ref	Species	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. Canopy Height (m)	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO
G24	Hazel, Blackthorn, Field maple, Hawthorn, Elder, Ash	2-6	40	Yes	200	3	4.0	EM	None	Unmanaged boundary group, becoming thicket like in places situated within ditch. Better collectively.	Fair	Good	20+	B2	2.4	No
G25	Ash, Field maple, Hazel, Blackthorn, Hawthorn, Willow	2-13	50	-	400	4	3.0	EM	None	Linear tree group on field edge, field edge flailed. Reduced from overhead power lines in past. Better collectively.	Fair	Good	20+	B2	4.8	No
G26	Ash, Poplar, Birch, Maple, Willow, Holly, Oak, Elder	6-16	100	Yes	450	5	4.0	EM	None	Planted tree group. Good collectively. Mostly located off-site so no access. Good collectively and prominent (adjacent to public right of way).	Good	Good	40+	A2	5.4	No
G27	Elm, Elder, Field maple	3-4	10	-	125	2	2.0	SM	None	Self-set trees. Fallen dead Elm (minor).	Fair	Fair	10+	C2	1.5	No
G28	Elm	2-7	20	-	300	2	3.0	SM	None	Group of dead or declining Elm. Fell.	Poor	Poor	<10	U	3.6	No
G29	Ash, Blackthorn, Hazel, Field maple, Oak, Hawthorn, Willow, Birch	3-18	200	Yes	400	4	5.0	EM	None	Large linear group along boundary. Good collectively. Unmanaged except for field edge. Good screen.	Good	Fair	40+	B2	4.8	No
G30	Oak	15-17	2	-	1200	8	6.0	M	None	Two larger trees within boundary group. Ivy obscuring stems. Recent canopy lifting to one tree. Good collectively.	Fair	Good	40+	A2	14.4	No
G31	Field maple, Blackthorn, Hawthorn, Hazel, Ash, Oak, Elder	2-14	50	-	400	4	5.0	EM	None	Linear tree group straddling site boundary, drainage ditch within. Trees suppressed and drawn up in form. Good collectively and prominent within landscape.	Good	Fair	40+	B2	4.8	No
G32	Willow	5	5	Yes	150	4	1.0	SM	None	Self-set trees beneath pylon.	Good	Good	10+	C2	1.8	No
G33	Oak	12-14	2	Yes	1000	6	4.0	M	None	Two similar sized trees located adjacent to access road, ivy to stems, ditch to east of stems, typical form, lifted over access road in past.	Good	Good	40+	A2	12.0	No
G34	Ash	10-12	2	Yes	700	5	3.0	M	None	Two similar sized hedgerow trees, ivy to stems, limited access. Obvious canopy dieback - probably ash dieback which will limit their useful life expectancy.	Poor	Fair	<10	C2	8.4	No
G35	Oak	9-10	3	Yes	600	5	3.0	EM	None	Three similar sized trees, ivy clad, good collectively. Limited access to tree stems.	Good	Good	40+	B2	7.2	No

Ref	Species	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. Canopy Height (m)	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO
G36	Hornbeam, Field maple	10	6		350	5	3.0	EM	None	Three hedgerow trees, good collectively.	Good	Good	20+	B2	4.2	No
G37	Ash, Blackthorn, Field maple, Hawthorn	5-14	100	Yes	450	4	2.5	M	None	Linear field edge tree group. Some standard Ash trees to 14m. Ash with minor dieback. Good screen, good collectively. Minor standing dead trees within group.	Good	Good	20+	B2	5.4	No
G38	Ash, Blackthorn, Field maple, Hawthorn,	4-10	50	Yes	200	3	0.2	M	None	Group of trees located adjacent to pond within interior of field. Mostly blackthorn, Ash in decline.	Fair	Good	10+	C2	2.4	No
G39	Blackthorn, Hawthorn, Rose, Elder	5	50	Yes	100	3	0.5	M	None	Thicket like group on edge of site. Ditch to east of stems.	Good	Good	10+	C2	1.3	No
G40	Field maple, Oak, Hawthorn, Elder, Ash	6-9	100	Yes	300	3	2.0	EM	None	S,all area of wooded group on field boundary. Good collectively but trees suppressed and drawn up in form.	Good	Good	20+	B2	3.6	No
G41	Ash, Blackthorn, Field maple, Sycamore	4-18	100	Yes	500	4	3.0	EM	None	Linear wooded group. Limited access. Good from landscape perspective.	Good	Good	20+	B2	6.0	No
G42	Ash, Hawthorn, Blackthorn, Hazel, Holly, Pine	2-14	50	Yes	350	4	1.0	EM	None	Scrubby group. Ash trees larger.	Good	Good	20+	B2	4.2	No
G43	Ash, Blackthorn, Hawthorn, Sycamore, Hazel	2-15	50	Yes	450	3	1.0	EM	None	Area of trees adjacent to clearing. Larger trees to east. Better collectively.	Good	Good	20+	B2	5.4	No

WOODLANDS

Ref	Species	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO?
W1	Oak, Elm, Hazel, Field maple, Ash	4-19	100	-	1100.0	7	6.0	M	None	Small woodland copse, dominated by mature Oak within. Good collectively, typical woodland, ivy clad trees, retrenchment to some trees.	Good	Good	40	A	13.2	No
W2	Oak, Ash, Willow, Blackthorn, Field maple, Hazel	4-19	200	-	900.0	7	4.0	M	None	Area of woodland, predominantly Ash and Oak with understory. Some ash in decline. Prominent within landscape.	Good	Good	40	A	10.8	No
W3	Oak, Ash, Elm, Elder, Field maple, Hawthorn	4-18	50	-	1000.0	8	5.0	M	None	Small wooded copse. Predominantly Oak with understory. Good collectively.	Good	Good	40	A	12.0	No
W4	Oak, Ash, Hazel, Elm, Field maple, Willow	2-20	500	-	1000.0	6	6.0	M	ASNW	Larger wooded area skirting site boundary. Prominent in form. Limited access within.	Good	Fair	20	A	15.0	No
W5	Ash, Oak, Field maple, Hawthorn	15-18	100		800.0	5.0	4.0	M	None	Linear woodland group located to the south of access route between fields. Predominantly Ash/Oak. Trees ivy clad. Good collectively.	Good	Good	40	A2	9.6	No
W6	Ash, Oak, Hawthorn, Field maple	14-18	100		900.0	5.0	4.0	M	None	Substantial area of woodland. Gap between fields 13m. Predominantly Ash/Oak. Good collectively form.	Good	Good	40	A2	10.8	No

HEDGEROWS

Ref	Species	On / Off Site	Avg. Height (m)	Avg. Width (m)	Avg. Stem Diameter (mm)	Avg. Canopy Height (m)	Life Stage	Health & vitality	Structural condition	General Observations	BS5837 Category	RPA Radius (m)
H1	Blackthorn, Hawthorn, Elder	On	2.0	1.5	100.0	0.1	EM	Fair	Good	Managed hedgerow adjacent to access track, gaps in places, recently flailed.	C2	1.2
H2	Hazel, Hawthorn, Field maple, Blackthorn	On	2.0	3	100.0	0.1	EM	Fair	Good	Managed hedgerow adjacent to access track, ditch to north of stems. Recently flailed. Some standard trees to 8m.	C2	1.2
H3	Field maple, spindle, Hazel, Hawthorn, Blackthorn	On	2.0	1.5	75.0	0.1	EM	Fair	Good	Managed hedgerow, recently flailed, ditch to south of stems. Gaps in places.	C2	0.9
H4	Field maple, Blackthorn, Hawthorn, Willow, Dogwood	On	3.0	2.5	100.0	0.1	EM	Fair	Fair	Unmanaged hedgerow, small standards contained within.	C2	1.2
H5	Blackthorn, Hazel, Field maple, Ash	On	2.0	2	100.0	0.2	EM	Fair	Good	Unmanaged hedgerow with some standard Ash trees to 11m. Located adjacent to drainage ditch.	C2	1.2
H6	Elm, Field maple, Ash, Hazel, Blackthorn, Hawthorn, Rose	On	6.0	5	200.0	1	EM	Fair	Fair	Unmanaged interior hedgerow, straddling ditch. Many standing dead Elm trees - mostly within southern region. Better collectively. Would benefit from Elms removed and infill planting.	C2	2.4
H7	Hazel, Blackthorn, Field maple	On	4.0	3	100.0	0.2	EM	Fair	Fair	Gappy unmanaged hedgerow located on edge of ditch.	C2	1.2
H8	Elder, Ash, Hazel, Blackthorn	On	5.0	4	100.0	0.2	EM	Good	Good	Unmanaged boundary hedgerow straddling ditch. Mostly continuous in form.	C2	1.2
H9	Willow, Elm, Hazel, Ash, Field maple	On	8.0	4	275.0	3	EM	Good	Good	More substantial hedgerow. Many standard trees contained within to up to 12m. Good collectively and prominent within landscape. Could be valuable screening value.	B2	3.3
H10	Hazel, Blackthorn, Elm, Field maple	On	6.0	3	100.0	0.1	M	Fair	Fair	Flailed edge boundary hedgerow. Gaps in places, straddling drainage ditch.	C2	1.2
H11	Ash, Elm, Hawthorn, Blackthorn, Holly, Field maple, Rose, Hazel	On	4.0	4	100.0	0.1	EM	Good	Good	Previously managed hedgerow. Ditch to north. Mostly Elm. Some standard trees contained within to 6m.	C2	1.2
H12	Elm, Dogwood, Field maple, Blackthorn	On	2.0	3	100.0	0.1	EM	Fair	Good	Scrubby hedgerow, some standard trees contained within to 5m. Ditch to west of stems.	C2	1.2



IMAGE 1: Looking west along the existing farm access route in to the site. High quality individual tree T2 (left of centre).



IMAGE 2: Looking north-east towards high quality individual tree T7 located within the southern region of the site. Good specimen tree which is reasonably prominent.



IMAGE 3: Looking east towards low quality T4 located adjacent to the existing farm track within the southern region of the site.



IMAGE 4: Looking north towards high quality woodland group W4 located on the eastern boundary. This is designated as Ancient Semi-natural woodland.



IMAGE 5: Looking west towards existing gap between woodland W5 and W6. This is the proposed route for the cable to connect the solar farm to the main grid.



IMAGE 6: Category U tree group G23 located within southern region of the site. It is recommended that these trees be removed on safety grounds.

- The tree survey was carried out with reference to the methodology set out in BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations'.
- Trees were surveyed individually or as groups where it was considered that they had grown together to form cohesive arboricultural features either aerodynamically (trees that provide companion shelter), visually (e.g. avenues or screens) or culturally (including for biodiversity). However, where it was considered that there was an arboricultural need to differentiate between attributes trees within groups and / or woodlands were also surveyed as individuals.
- The full tree survey findings are recorded in the following tree survey schedule.
- Within the tree survey schedule, each surveyed TREE (T), GROUP (G), HEDGEROW (H), WOODLAND (W) or SHRUB MASS on or adjacent to the site is given a reference number which refers to its position on the tree survey and constraints plan.
- TREE SPECIES are listed by common name.

The **DIMENSIONS** taken are:

- STEM-No. Indicates the number of main stems (i.e. whether the trunk divides at or below 1.5m; (Used in the calculation of RPA.) "m-s" = Multi-stemmed.
- STEM DIAMETER (measured in millimetres), obtained from the girth measured at approx. 1.5m. For trees with 2 to 5 sub-stems a notional figure is derived from the sum of their cross-sectional areas. For multi-stemmed trees, the notional diameter may be estimated on the basis of the average stem size x the number of stems. (A notional diameter may be estimated where measurement is not possible.)
- HEIGHT (measured in metres), recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- The CROWN SPREAD, taken at the four cardinal points to derive an accurate representation of the tree crown, recorded up to the nearest half metre for dimensions up to 10m and to up the nearest whole metre for dimensions over 10m.
- CROWN CLEARANCES are expressed both as existing height above ground level of first significant branch along with its direction of growth (e.g. 2.5m-N), and also in terms of the overall crown e.g. the average height of the crown above ground level. Measurements are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- ESTIMATES. Where any measurement has had to be estimated, due to inaccessibility for example, this is indicated by a "#" suffix to the measurement as shown in the tree survey schedule.

LIFE STAGE is defined as follows:

- Y Young: Normally stake dependent, establishing trees. Should be growing fast, usually primarily increasing in height more than spread but as yet making limited impact upon the landscape.
- SM Semi-mature: Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment. 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. Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment.
- M Mature: Well-established trees, still growing with some vigour but tending to fill out and increase spread. Bark may be beginning to crack and fissure. In the middle half of their safe, useful life expectancies.
- LM Late-Mature: In full maturity but possibly beyond mature and in a state of natural decline). Still retaining some vigour but any growth is slowing.
- A Ancient: A tree that has passed beyond maturity and is old/aged compared with other trees of the same species. Typically having a very wide trunk and a small canopy.

PHYSIOLOGICAL CONDITION (HEALTH & VITALITY):

Essentially a snapshot of the general health of the tree based upon its general appearance, it's apparent vigour and the presence or absence of symptoms associated with poor health, physiological stress etc. (Fungal infections may be recorded here but decay giving rise to structural weakness would be recorded under 'Structural Condition' – see next parameter):

Good: No significant health issues.

Fair: Indications of slight stress or minor disease (e.g. the presence of minor dieback/deadwood or of epicormic shoot growth).

Poor: Significant stress or disease noted; larger areas of dieback than above.

Dead: (or Moribund).

STRUCTURAL CONDITION:

Defects affecting the structural stability of the tree including decay, significant dead wood, root-plate instability or significant damage to structural roots, weak forks (e.g. those where bark is included between the members) etc.

Classified as:

Good: No obvious structural defects: basically sound.

Fair: Minor, potential or incipient defects.

Poor: Significant defect(s) likely to lead to actual failure in the medium to long-term.

Dead: (or Moribund).

ESTIMATED REMAINING CONTRIBUTION:

An estimate of the length of time in years that a tree might be expected to continue to make a useful contribution to the locality at an acceptable level of risk (based on an assumption of continued routine maintenance):

- Less than 10 years
- 10+ years
- 20+ years
- 40+ years

SPECIAL IMPORTANCE:

Trees that are particularly notable as high value trees such as ancient trees/woodland or veteran trees. Such trees may be regarded as the principal arboricultural features of a site and pose a significant constraint to potential development.

An *ancient* tree is one that has passed beyond maturity and is very old compared with other trees of the same species. Very few trees reach the ancient life-stage.

Veteran trees are often very old but not necessarily so; they may be regarded as ‘survivors’ that have developed some of the characteristic features of an ancient tree but have not necessarily lived as long. All ancient trees are veterans but not all veteran trees are ancient.

An ancient woodland is an area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland (ASNW), plantations on ancient woodland sites (PAWS) and ancient replanted woodland (ARW)

QUALITY CATEGORY:

Trees are classed as category U, A, B or C, based on criteria given in BS5837:2012; summary definitions as follows (see BS5837 for further details). Categories A, B and C are further characterised by the use of sub-categories, which attempt to identify what aspect of the tree is the main source of its perceived value, These are:

- (1) arboricultural qualities
- (2) landscape qualities, and
- (3) cultural, historic or ecological/conservation qualities.

Examples of these qualities for each of the three categories are given below, although these are indicative only.

Note: This is NOT a health and safety classification; the classification does not take into account any requirement for remedial tree care or ongoing maintenance apart from that which may affect the trees’ general suitability for retention.

CATEGORY A: HIGH QUALITY:

Trees or groups whose retention should be given a particularly high priority within the design process. Normally with an expected useful life expectancy of at least 40 years.

- A1: Notably fine specimens; rare or unusual specimens; essential component trees within groups, semi-formal or formal plantings (e.g. dominant trees within an avenue etc.).
- A2: Trees, groups or woodlands of particular visual importance as landscape features.
- A3: Trees, groups or woodlands of particular significance by virtue of their conservation, historical, commemorative or other value (e.g. veteran trees or wood pasture.)

CATEGORY B: MODERATE QUALITY:

Trees or groups of some importance with a likely useful life expectancy in excess of 20 years. Their retention would be desirable; selective removal of certain individuals may be acceptable but only after full consideration of all alternative courses of action.

- B1: Fair quality but not exceptional; good specimens showing some impairment (e.g. remediable defects, minor storm damage or poor past management.)
- B2: Acceptable trees situated such as to have little visual impact within the wider locality. Also numbers of trees, perhaps in groups or woodlands, whose value as landscape features is greater collectively than would warrant as individuals (such that the selective removal of an individual would not impact greatly upon the trees’ overall, collective value).
- B3: Trees, groups or woodlands with clearly identifiable conservation or other cultural benefits.

CATEGORY C: LOW QUALITY:

Trees or groups of rather low quality, although potentially capable of retention for at least approx. 10 years. Also small trees with stems below 15cm diameter.

Potentially retainable, but not of sufficient value to be regarded as a significant planning constraint.

- C1: Unremarkable trees of very limited merit or of significantly impaired condition.
- C2: Trees offering only low or short-term landscape benefits; also secondary specimens within groups or woodlands whose loss would not significantly diminish their landscape value.
- C3: Trees with extremely limited conservation or other cultural benefit.

CATEGORY U:

Trees likely to prove to be unsuitable for retention for longer than 10 years should any significant increase in site usage arise as a result of development.

E.g. dead or moribund trees; those at risk of collapse or in terminal decline; trees that will be left unstable by other essential works such as the removal of nearby category U trees; trees infected by pathogens that could materially affect other trees; low quality trees that are suppressing better specimens.

(Category U trees may have conservation values that it might be desirable to preserve. This category may also include trees that should be removed irrespective of any development proposals.)

ROOT PROTECTION AREA (RPA):

These are normally represented as a circle centred on the base of each tree stem with a radius of 12 times stem diameter, measured at 1.5m above ground level. The shape of the RPA may be altered where site conditions dictate that there are sound reasons to do so.

VETERAN OR ANCIENT TREE BUFFER (VTB/ATB)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone (in metres) around an ancient or veteran tree that should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree’s canopy if that area is larger than 15 times the tree’s stem diameter.

ANCIENT WOODLAND BUFFER (FOR ASNW, PAWS OR ARW)

In line with the Standing Advice produced by the Forestry Commission and Natural England this is a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, a larger buffer zone may be required.

THE IMPORTANCE OF TREES

Wider benefits:

There is a growing body of evidence that trees bring a wide range of benefits to the places people live.

Some *Economic* benefits of trees include:

- Trees can increase property values
- As trees grow larger, the lift they give to property values grows proportionately
- They can improve the environmental performance of buildings by reducing heating and cooling costs, thereby cutting bills
- Mature landscapes with trees can be worth more as development sites
- Trees create a positive perception of a place for potential property buyers
- Urban trees improve the health of local populations, reducing healthcare costs

Some *Social* benefits of trees include:

- Trees help create a sense of place and local identity
- They benefit communities by increasing pride in the local area
- They can create focal points and landmarks
- They have a positive impact on people's physical and mental health
- They can have a positive impact on crime reduction

Some *Environmental* benefits of trees include:

- Urban trees reduce the 'urban heat island effect' of localised temperature extremes
- They provide shade, making streets and buildings cooler in summer
- They help remove dust and particulates from the air
- They help to reduce traffic noise by absorbing and deflecting sound
- They help to reduce wind speeds
- By providing food and shelter for wildlife, they help increase biodiversity
- They can reduce the effects of flash flooding by slowing the rate at which rainfall reaches the ground
- They can help remediate contaminated soil

On new development sites:

Trees bring many benefits to new development. Where retained successfully they can form important and sustainable elements of green infrastructure, contribute to urban cooling and reduce energy demands in buildings. Their importance is acknowledged in relation to adaptation to the effects of climate change. Other benefits brought by trees include:

- Increasing property values
- Visual amenity
- Softening, complementing and adding maturity to built form
- Displaying seasonal change
- Increasing wildlife opportunities in built-up areas
- Contributing to screening and shade
- Reducing wind speed and turbulence

NATIONAL PLANNING POLICY

The National Planning Policy Framework 2021 (NPPF paragraph 180) states that:

'development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused unless there are wholly exceptional reasons, and a suitable compensation strategy exists.'

In this respect the following definitions apply:

'Ancient woodland: An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (PAWS)', and

'Ancient or veteran tree: A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value. All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient, but are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage.'

Note: Further information from the National Planning Policy Guidance Suite and Standing Advice is provided in the design guidance section.

STATUTORY CONTROLS

Statutory tree protection

Works to trees which are covered by Tree Preservation Orders (TPOs) or are within a Conservation Area (CA) require permission or consent from the Local Planning Authority. Where information is available on any Statutory designations such as this they are identified within the summary table in Section 1 and on the Tree Survey and Constraints Plan at Section 2.

Notwithstanding specific exceptions and in general terms, a TPO prevents the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of protected trees or woodlands without the prior written consent of the LPA.

Penalties for contravention of a TPO tend to reflect the extent of damage caused but can, in the event of a tree being destroyed, result in a fine of up to £20,000 if convicted in a Magistrates' Court, or an unlimited fine if the matter is determined by the Crown Court.

Similarly, and again notwithstanding specific exceptions, it is an offence to carry out any works to a tree in a Conservation Area with a trunk diameter greater than 75mm diameter at 1.5 height without having first provided the LPA with 6 weeks written notification of intent to carry out the works.

On many non-residential sites (excluding specific exemptions) there is also a statutory restriction relating to tree felling that relates to quantities of timber that can be removed within set time periods. In basic terms, it is an offence to remove more than 5 cubic metres of timber in any one calendar quarter without having first obtained a felling licence from the Forestry Commission.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with the statutory controls outlined.

Statutory Wildlife Protection

Although preliminary visual checks from ground level of likely wildlife habitats are made at the time of surveying, detailed ecological assessments of wildlife habitats are not made by the arboriculturist and fall outside of the scope for this report.

Trees which contain holes, splits, cracks and cavities could potentially provide a habitat for protected species such as bats in addition to birds and small mammals. It is advised that in some instances specialist ecological advice may be required. This may result in tree works being carried out following a detailed climbing inspection to the tree to ensure that protected species or their nests/roosts are not disturbed. If any are found, the site manager, site owner or consulting arboriculturist should be informed and appropriate action taken as recommended by the appointed Ecologist or the relevant Statutory Nature Conservation Organisation (SNCO): Natural England, Scottish Natural Heritage or Natural Resources Wales.

It is advised that tree/hedgerow works are carried out with the understanding that birds will generally nest in trees, hedges and shrubs between March and August. This time period only provides an indication of likely nesting times and as such diligence is required when undertaking tree works at all times.

Irrespective of the time of year and other than any actions approved under General Licence, it is an offence to intentionally kill, injure or take any wild bird or to intentionally take, damage or destroy the nest or eggs of any wild bird. Ideally, tree operations should be avoided during the likely bird nesting period. However, any tree works should always only be carried out following a preliminary visual check of the vegetation.

For information, the Wildlife and Countryside Act 1981 (as amended), The Countryside and Rights of Way Act 2000 (as amended) and the Conservation of Habitat and Species Regulations 2010, form the basis of the statutory legislation for flora and fauna in England and Wales. A different legislative framework applies in Scotland and Northern Ireland.

Any proposed tree works that are planned to be carried out on site must be carried out in accordance with any relevant statutory controls, outlined above.

DESIGN GUIDANCE

Approach

The approach adopts the guidelines set out in the British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations. The process is broken down to coordinate with the key elements within both the RIBA Plan of Work (2013) and British Standard 5837:2012 as set out in the table below:

Information Stage	RIBA Stage	BS5837:2012
Stage A – Tree Survey	2: Concept	4: Feasibility
Stage B – Arboricultural Impact Assessment	3: Developed design	5: Proposals
Stage C – Arboricultural Method Statement	4: Technical design	6: Technical Design
Stage D – Arboricultural Site Supervision	5: Construction	7: Demolition and construction

A hierarchical approach is adopted in order to achieve optimum use of the site and location of built structures. This is set out below:

Avoid

The starting point of Site layout design should be to avoid the RPA of retained trees and provide suitable clearance from above ground constraints [tree canopies]. Where possible building lines should be at least 2m outside the RPA to provide working space for construction. However, protection measures can be taken if such clearance is not achievable.

Mitigate

Where intrusion within the RPA is unavoidable then its impact on the tree can be mitigated by specialist measures:

Foundations that avoid trenching e.g. screw piles, suspended floor slabs or casting at ground level for lightweight structures such as bin and cycle stores.

Limited use may be made for parking, drives or hard surfaces within the root protection areas, subject to advice from a qualified arboriculturist. Cellular confinement systems that enable hard surfaces to be built above existing soil levels are acceptable methods subject to site-specific soil conditions.

Service runs that cannot be routed outside the RPA(s) can be installed by, for example, thrust boring, directional drilling, air excavation or hand digging. These operations often require supervision by the project arboriculturist.

Compensate

Replacement planting can ensure the continuity of tree cover where tree removal is unavoidable or desirable. Off-site provision may be considered in some circumstances but this will require negotiation with the local planning authority.

Considerations:

For proposed residential developments, consideration must be given to numerous factors future tree growth and orientation.

Tree constraints

Root Protection Areas:

With reference to BS5837:2012, a root protection area (RPA) is defined as “a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree’s viability, and where the protection of the roots and soil structure should be treated as a priority”. **“The default position [when considering design layout in relation to RPAs] should be that structures are located outside the RPAs of trees to be retained”.**

BS5837:2012 states (4.6.2) that, “where pre-existing site conditions or other factors indicate that rooting has occurred asymmetrically, a polygon of equivalent area should be produced.” The BS goes on to state that, “modifications to the shape of the RPA should reflect a soundly based arboricultural assessment of likely root distribution,” and that any deviation from the original circular plot should take into account:

- Morphology and disposition of roots;
- topography and drainage;
- soil type and structure;
- the likely tolerance of the tree to root damage/disturbance.

Additional buffer zones beyond the RPA:

The following text is taken from the Standing Advice produced by the Forestry Commission and Natural England as included in the National Planning Policy Guidance:

‘A buffer zone’s purpose is to protect ancient woodland and individual ancient or veteran trees. The size and type of buffer zone should vary depending on the scale, type and impact of the development’.

Ancient woodland buffer:

‘For ancient woodlands, you should have a buffer zone of at least 15 metres to avoid root damage. Where assessment shows other impacts are likely to extend beyond this distance, you’re likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic’.

Ancient and veteran tree buffer:

‘A buffer zone around an ancient or veteran tree should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5m from the edge of the tree’s canopy if that area is larger than 15 times the tree’s diameter’.

Above ground:

Above ground constraints posed by trees describe the capacity for trees to have an overbearing or dominating effect on new developments; usually post occupancy. Typical above ground constraints include a number or combination of inconveniences including shading, branch spread, movement of trees during strong winds and so on. If not adequately considered, above ground constraints can lead to repeated requests to fell or heavily prune retained and protected trees.

Shade:

Adverse shading and blocked views from windows raise concerns for incoming residents, which may lead to pressure to fell or remove trees in the future. Wherever possible it is advisable to arrange fenestration away from tree canopies to lessen the conflict, or increase window size to accommodate ambient light. Conversely, appropriate designed development can use existing or new trees to create necessary and welcome shade and screening.

As part of the adopted approach the above considerations and constraints are assessed cumulatively in order to provide clear and site-specific advice on the areas of a site most suitable for the location of development.

Dependent on the site and nature of the proposed development, the Tree Survey and Constraints Plans may show the following:

Recommended Developable area - an advisory area defined in order to minimise arboricultural impacts using standard approaches to construction. Restricting proposed development to this area will limit the risk of harm to retained trees and of the Local Planning Authority objecting to the proposed development. It may be possible to propose development outside of this area but specific ‘low impact’ construction techniques may be needed recommended.

Recommended Buffer to development - similar to the Recommended Developable Area but defined as a line marking a suitable buffer to retained trees. More commonly used on large sites or sites where the presence of trees is localised.

Tree Opportunities

Depending on the scale of developments existing trees can often provide opportunities to enhance the existing arboricultural resource of a site by bringing it into good management or by putting in place remedial measures e.g. soil amelioration.

Appropriately designed new tree planting is extremely important in maintaining healthy and sustainable tree populations. For the reasons highlighted, new trees can bring many benefits to new developments. It is critical to the establishment of new tree planting that the locations, species and specification of new trees is appropriate. Subsequently the sourcing of high-quality stock, suitable planting and the provision of post planting maintenance are essential to allow new trees to establish and to allow them to mature.