

A close-up photograph of a tree branch with vibrant green leaves. The leaves are oval-shaped with prominent veins and serrated edges. The background is a soft, out-of-focus green, creating a bokeh effect with bright light spots.

ARBORICULTURAL IMPACT ASSESSMENT

Minety Solar Farm

September 2025

Revision



Barton Hyett Associates
Arboricultural Consultants

Summary table

Site Name:	Minety Solar Farm	
Project reference:	J.3536	
Site Address:	Minety, Malmesbury, Wiltshire	
Nearest Postcode:	SN16 9PR	
Central Grid reference:	SU 00567 90188	
Local Planning Authority:	Wiltshire Council	
Relevant planning policies:	Wiltshire Core Strategy: CP50 Biodiversity and geodiversity; CP51 Landscape; CP52 Green infrastructure; CP57 Ensuring high quality design and place shaping.	
Statutory Controls:	Tree Preservation Order	Conservation Area
	No	No
Soil Type: (Source: BGS online soils map © NERC 2024)	Superficial/Drift	Bedrock
	None recorded	Oxford Clay Formation - Mudstone. Sedimentary Bedrock
Topographical Survey:	Tir 3d (Nov 2019) : 19124 - JBM Solar Projects Ltd - Minety Aerial Topo Survey - UK	
Site Layout:	Proposed - Layout NG02_1000_08	
Notes:	The topographic survey did not show stem locations or canopy outlines for many of the surveyed trees. Trees that were not plotted on the topographic survey have been highlighted yellow on the plan in section 2	
Report author:	Ian Howell - BA (Hons), Cert Arb L4 (ABC) TechArborA	
Checked by:	Richard Hyett - MSc, BSc (Hons), MArborA, MICFor.	
Date of first issue:	04.06.2021	
Revision E:	02.09.2025 - Revision to layout showing land purchased by National Grid	

REPORT CONTENTS:

SECTION 1:	SITE DETAILS & IMPACT ASSESSMENT
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SECTION 6:	GENERAL ADVICE
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1. Instruction

- 1.1. Barton Hyett Associates Ltd has been instructed by RWE/JBM Solar Projects Ltd to survey trees located within the redline area associated to a proposed solar farm development in Minety, Malmesbury ('the site') in accordance with BS5837:2012 '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, and to then assess the impacts of the final design on the sites arboricultural resource.

2. Site Description

- 2.1. The site is located on agricultural land surrounding the existing National Grid sub-station and to the north of the B4040 approximately 1 mile south-west of Minety village. The site consists of a number of agricultural fields currently used for a mixture of arable crop production and the grazing of livestock.
- 2.2. Field edges are defined by typical agricultural hedgerows, woodland plantations and groups of trees. Within the hedgerows and field edge margins are many mature trees, the dominant species being English oak. One arable field to the north of the site is populated with a number of mature open-grown English oak.

3. Tree Survey Findings

- 3.1. A total of 111 trees, groups of trees, hedgerows and woodlands 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). It should be noted that not all trees were plotted on the topographical survey, where this is the case they have been highlighted on the plan in section 2.

	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	49	12	35	2	-
Groups	41	-	39	2	-
Hedgerows	17	-	8	9	-
Woodland	4	-	4	-	-
Total	111	12	86	13	-

4. Key arboricultural features

- 4.1. As can be seen from the summary table the majority of the arboricultural resource at the site is of high or moderate quality and is therefore desirable for retention. No high-quality hedgerows were identified with all surveyed hedgerows being evenly split with the exception of the hedgerows which are evenly split between low and moderate quality.
- 4.2. The most significant trees to incorporate within the proposes layout design for the site are the significant mature trees scattered along the hedgerows and within the interior of some of the fields. Many of these trees are mature English oak trees that have large stem diameters. The large stem diameters have resulted in Root Protection Areas (RPA) with radii of 10m to 15m. One of these trees (T47) has been classified as a 'Veteran'.
- 4.3. Due to its 'Veteran' status, T47 requires an additional buffer zone, within which no development should take place. For this tree the 'Veteran Tree Buffer's (VTB's) is set at a radius of 20m; an additional 5m to the calculated RPA. Further advice on what a VTB should contain is provided in section 5. The advice provided is based on the Standing Advice produced by Natural England and the Forestry Commission (England).
- 4.4. The presence of Ancient Semi-Natural Woodland and Ancient Replanted Woodland should also be noted in relation to W4. Standing Advice produced by Natural England and the Forestry Commission (England) and published within the NPPF guidance suite recommends that a minimum15m buffer zone to any development be adhered to at the perimeter of all designated ancient woodland, the location of which can be referenced on the DEFRA online facility 'MAGIC'. The areas of Ancient Woodland (and associated buffers) are also shown on the tree survey and constraints plan (section 2). Further advice on what an ancient tree buffer should contain is provided in section 5.

5. Proposed development

- 5.1. The proposed development is for a solar farm and associated infrastructure. This includes the provision of new internal access tracks, transformers, substations and a site perimeter security fence. The application description is as follows:

'Proposed solar installation and infrastructure including 132kV substation.'

- 5.2. The proposed layout (20230301_NG02_3P570BI_61.7MWp) is shown on the Tree Protection Plan in section 3.

6. Impact Assessment

Tree removals

- 6.1. The proposed development will not require the complete removal of any significant trees, groups or hedgerows. Hedgerows removals have been limited to a maximum of 22 linear meters as required for construction and operational access points and tracks (H4 -12m, H3 - 5m, H10-5m). In addition, it will be necessary to remove circa 1-2m sections of H3, H5, H7, H8, H10, H11 and H18 (14m) to allow for the installation of the site perimeter security fence.

- 6.2. Where security fencing passes through larger tree groups or woodland tree removals should be avoided by locally routing the fence around tree stems. Some removal of stems below 150mm dbh and minor crown raising or pruning of low branches may be required to facilitate this but should be kept to a minimum (W2, G14, G15, G17, G21, G25, G38).
- 6.3. At the eastern edge of G38, both the access track and security fencing will require localised removal of a small number of trees. There is an existing gated field access located here already which is to be utilised in order to limit the scope of the required removals.
- 6.4. G23 and G32 will require some localised removal of understorey trees to allow for the routing of a cable connection, which is to be installed for the most part via open trench excavation. The routing of the cable trench will need to be agreed and set out at a pre-commencement site meeting and installed under arboricultural supervision. This will ensure that removal or damage to the root systems of the more mature and significant trees within these tree groups is avoided. Any tree removals will be restricted to trees that have a stem diameter no greater than 150dbh.
- 6.5. If during the pre-commencement site meeting and setting out of the cable connection, it is deemed necessary, in order to protect the roots of and therefore successfully retain the more mature trees in G23 and G32, then the cable trench can be excavated using vacuum excavation. There are vacuum excavation units that are specifically designed to be tracked through wooded areas and will be perfectly suited for this application. Tracked vacuum excavation plant will need to be operated from suitably specified ground protection mats and the excavation will need to be carried out under arboricultural supervision.

Impacts upon retained trees

- 6.6. In response to the arboricultural constraints identified the proposed development has been designed in order that all Root Protection Areas (RPAs), the 15m Ancient woodland buffer for W4, the 20m Veteran tree buffer for T47 can be respected. On the basis that the construction process is carried out appropriately, the proposed development can be implemented without any direct impacts on these important trees.
- 6.7. The installation of underground cables linking the arrays with the transformers and sub-station will be required, however, for the most part these can be installed without the need to remove any trees or hedgerows nor impact upon them by means of utilising existing gaps within hedgerows, with the exception of G23 and G23 where localised removals may be required (see para 6.4 and 6.5).
- 6.8. The proposals are considered to be acceptable from an arboricultural perspective, and if carefully implemented according to the advice set out within this report there would be only a low potential for significant negative impacts on the retained trees or woodland.

7. Tree Protection Barriers

- 7.1. The proposed site security fence (standard deer fence on timber posts), which is to be erected around the periphery of the site, will act as an effective tree protection barrier if erected before any construction works commence on site. This will mitigate the need to install BS5837:2012 fencing along the outer perimeters of the site. However, the perimeter fencing will only protect trees located around the site periphery. Trees and

hedgerows contained within the interior of the site that could be impacted during the construction phase of the development and some will require protection.

- 7.2. In order for the site security fence to successfully operate as a tree protective barrier and create the Construction Exclusion Zone (CEZ), it will be necessary to avoid the tracking of plant, machinery and driving of site vehicles in-between the security fence and trees/hedgerows. The area beyond the site security fence should be considered to be a Construction Exclusion Zone (CEZ).
- 7.3. Where more significant, high-value trees (of moderate or high quality) are located within the site interior, specific robust temporary tree protection barriers have been proposed (BS5837:2012 Figure 3).
- 7.4. Due the duration of the installation of the solar farm it will be necessary to phase the installation of the tree protection barriers across the site. This will start with the fencing required around the access points and the internal access track as the track is rolled out across the site. Then, prior to the installation works commencing in each field area the temporary protection barriers for that field (along with the site perimeter fence) will be installed. This must be completed ahead of panel/cable installation works being carried out in proximity to retained trees. It will be necessary at the commencement of works on site for the site manager and project arboriculturist to agree the phasing for the roll out of tree protection measures across the site.
- 7.5. The location of the temporary tree protection barriers, and the barrier specification proposed, is shown on the combined Tree Retention/Removal and Protection Plan in **Section 3**

8. Heads of terms for an Arboricultural Method Statement (AMS)

- 8.1. 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.
- 8.2. Annex B and Table B.1 of BS5837:2012, an informative, advises that Arboricultural Method Statement Heads of Terms is 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.
- 8.3. In relation to the site, it is anticipated that arboricultural working methods are straightforward. A brief summary of the principles of tree protection on development sites is included in **Section 7**.
- 8.4. A draft, 'Heads of Terms' for an Arboricultural Method Statement is set out below:
 - Project arboriculturist – schedule of monitoring and supervision to be agreed with applicant and LPA
 - Pre-commencement site meeting - to be attended by the project arboriculturist, client, site manager and other relevant parties. Project arboriculturist to ensure that all parties have copies of the tree protection plan and this report.
 - Tree/hedgerow removals and facilitation pruning - as shown on a finalised Tree Retention/Removal and Protection Plan
 - Erection of tree perimeter security fence and protection barriers and any temporary ground protection as may be required as per the Tree Retention/Removal and Protection Plan (phased roll out across the site)

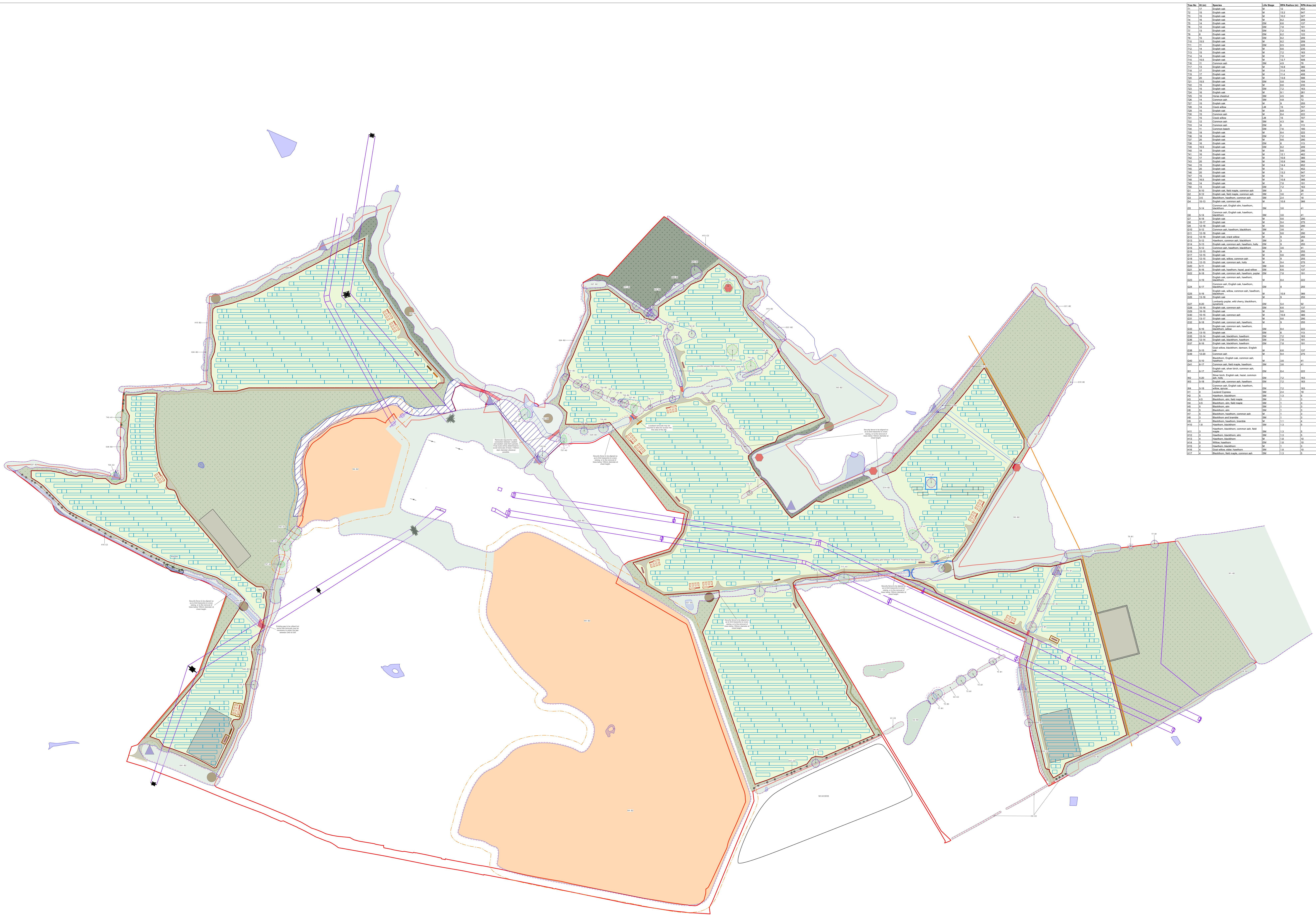
- Installation of access tracks - no access for any machinery within the fenced tree protection areas.
- Main construction phase - all tree protection measures shall remain in situ and intact for the duration of the construction phase
- Removal of tree protection barriers - only to occur following approval of site conditions by the project arboriculturist.
- Final landscaping including tree and hedgerow planting.

9. Conclusion and Recommendations

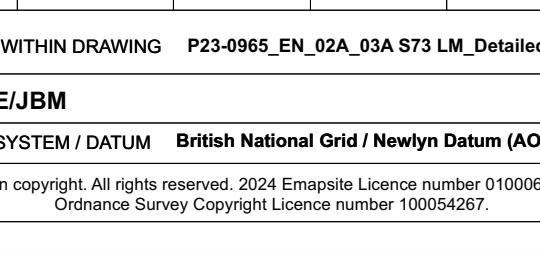
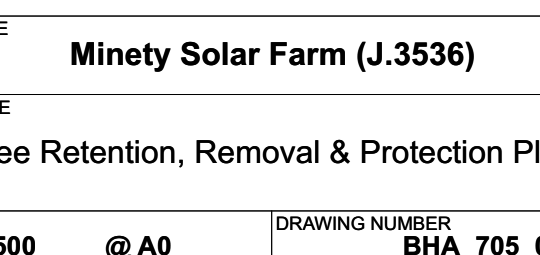
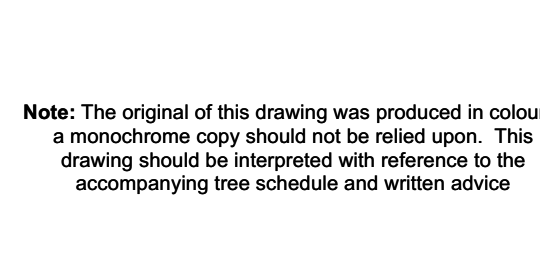
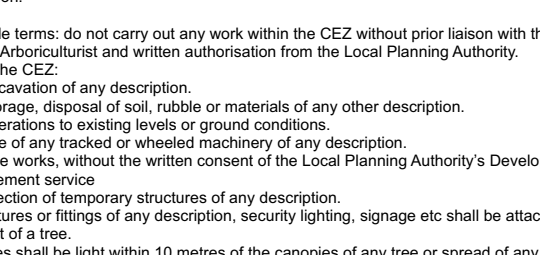
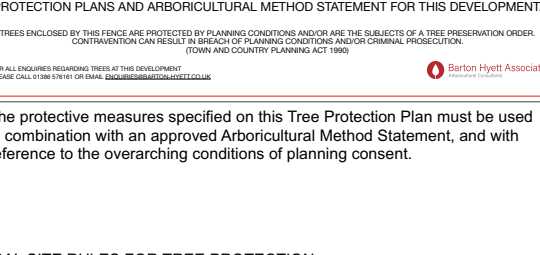
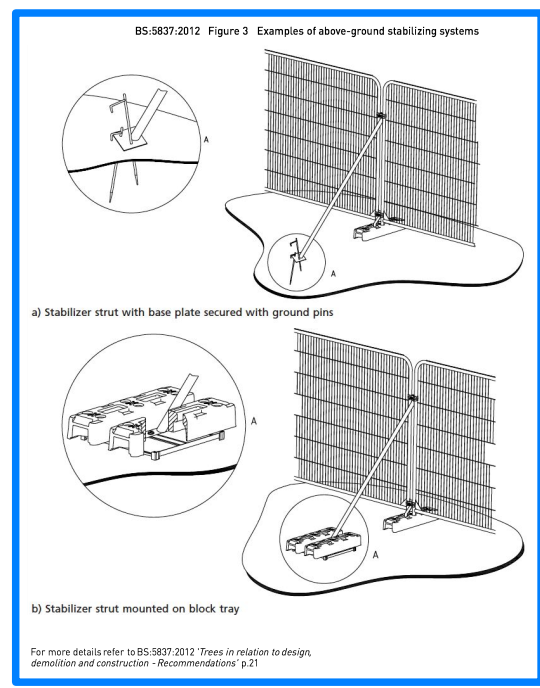
- 9.1. No individually surveyed trees require removal to implement the proposed development, with all of the arboricultural resource being retained. The retained trees, tree groups and woodlands have been successfully integrated into the proposed development and can be protected, in line with the relevant guidance, throughout the construction and operation of the solar farm.
- 9.2. The extent of the required removals will be limited to a maximum of circa 36 linear meters of hedgerow which will be restricted to short sections to allow for the installation of security fencing, District Network Operator access tracks and construction tracks. Localised removal of understorey trees will also be required within G23 and G32, the extent of which can be controlled through arboricultural supervision when determining the routing of the cable trench through the tree group, and at the eastern edge of G38.
- 9.3. The routing of the cable trench through G23 and G32 will need to be agreed and set out at a pre-commencement site meeting and installed under arboricultural supervision. Some excavation utilising vacuum excavation plant is likely to be necessary, the extent of which can be further assessed at the pre-commencement meeting.
- 9.4. These proposed tree and hedgerow removals are considered to present a low arboricultural impact when considered within the context of the whole of the site.
- 9.5. On the basis that the advice contained within this report is adopted, the proposed development is acceptable from an arboricultural perspective. In arboricultural terms, the proposed development is also NPPF and Local Plan Policy compliant.
- 9.6. Once planning consent is granted, an arboricultural method statement and finalised tree protection plan may need to be produced (based on the final approved design and construction details) in order to inform, in more detail, the construction process.



Ian Howell (Arboriculturist)



Tree No.	Tree No.	Species	Life Stage	DBH (cm)	HT (m)
1	1	Prunella	SM	1.2	1.2
2	2	Prunella	SM	1.2	1.2
3	3	Prunella	SM	1.2	1.2
4	4	Prunella	SM	1.2	1.2
5	5	Prunella	SM	1.2	1.2
6	6	Prunella	SM	1.2	1.2
7	7	Prunella	SM	1.2	1.2
8	8	Prunella	SM	1.2	1.2
9	9	Prunella	SM	1.2	1.2
10	10	Prunella	SM	1.2	1.2
11	11	Prunella	SM	1.2	1.2
12	12	Prunella	SM	1.2	1.2
13	13	Prunella	SM	1.2	1.2
14	14	Prunella	SM	1.2	1.2
15	15	Prunella	SM	1.2	1.2
16	16	Prunella	SM	1.2	1.2
17	17	Prunella	SM	1.2	1.2
18	18	Prunella	SM	1.2	1.2
19	19	Prunella	SM	1.2	1.2
20	20	Prunella	SM	1.2	1.2
21	21	Prunella	SM	1.2	1.2
22	22	Prunella	SM	1.2	1.2
23	23	Prunella	SM	1.2	1.2
24	24	Prunella	SM	1.2	1.2
25	25	Prunella	SM	1.2	1.2
26	26	Prunella	SM	1.2	1.2
27	27	Prunella	SM	1.2	1.2
28	28	Prunella	SM	1.2	1.2
29	29	Prunella	SM	1.2	1.2
30	30	Prunella	SM	1.2	1.2
31	31	Prunella	SM	1.2	1.2
32	32	Prunella	SM	1.2	1.2
33	33	Prunella	SM	1.2	1.2
34	34	Prunella	SM	1.2	1.2
35	35	Prunella	SM	1.2	1.2
36	36	Prunella	SM	1.2	1.2
37	37	Prunella	SM	1.2	1.2
38	38	Prunella	SM	1.2	1.2
39	39	Prunella	SM	1.2	1.2
40	40	Prunella	SM	1.2	1.2
41	41	Prunella	SM	1.2	1.2
42	42	Prunella	SM	1.2	1.2
43	43	Prunella	SM	1.2	1.2
44	44	Prunella	SM	1.2	1.2
45	45	Prunella	SM	1.2	1.2
46	46	Prunella	SM	1.2	1.2
47	47	Prunella	SM	1.2	1.2
48	48	Prunella	SM	1.2	1.2
49	49	Prunella	SM	1.2	1.2
50	50	Prunella	SM	1.2	1.2
51	51	Prunella	SM	1.2	1.2
52	52	Prunella	SM	1.2	1.2
53	53	Prunella	SM	1.2	1.2
54	54	Prunella	SM	1.2	1.2
55	55	Prunella	SM	1.2	1.2
56	56	Prunella	SM	1.2	1.2
57	57	Prunella	SM	1.2	1.2
58	58	Prunella	SM	1.2	1.2
59	59	Prunella	SM	1.2	1.2
60	60	Prunella	SM	1.2	1.2
61	61	Prunella	SM	1.2	1.2
62	62	Prunella	SM	1.2	1.2
63	63	Prunella	SM	1.2	1.2
64	64	Prunella	SM	1.2	1.2
65	65	Prunella	SM	1.2	1.2
66	66	Prunella	SM	1.2	1.2
67	67	Prunella	SM	1.2	1.2
68	68	Prunella	SM	1.2	1.2
69	69	Prunella	SM	1.2	1.2
70	70	Prunella	SM	1.2	1.2
71	71	Prunella	SM	1.2	1.2
72	72	Prunella	SM	1.2	1.2
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75	75	Prunella	SM	1.2	1.2
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78	78	Prunella	SM	1.2	1.2
79	79	Prunella	SM	1.2	1.2
80	80	Prunella	SM	1.2	1.2
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82	82	Prunella	SM	1.2	1.2
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84	84	Prunella	SM	1.2	1.2
85	85	Prunella	SM	1.2	1.2
86	86	Prunella	SM	1.2	1.2
87	87	Prunella	SM	1.2	1.2
88	88	Prunella	SM	1.2	1.2
89	89	Prunella	SM	1.2	1.2
90	90	Prunella	SM	1.2	1.2
91	91	Prunella	SM	1.2	1.2
92	92	Prunella	SM	1.2	1.2
93	93	Prunella	SM	1.2	1.2
94	94	Prunella	SM	1.2	1.2
95	95	Prunella	SM	1.2	1.2
96	96	Prunella	SM	1.2	1.2
97	97	Prunella	SM	1.2	1.2
98	98	Prunella	SM	1.2	1.2
99	99	Prunella	SM	1.2	1.2
100	100	Prunella	SM	1.2	1.2



TREES

Ref	Species	Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	Veteran / Ancient tree buffer (m)
T1	English oak	17	1	#	1000	10-10-12-9	3.0	3	W	M	None	Significant tree located within dense vegetation	Good	Good	40+	B1	12.0	452	-
T2	English oak	15	2	#	1100	9-9-11-10	6.0	3	S	M	None	Significant tree located within dense vegetation, twin stemmed with wounding on main stems	Good	Fair	40+	B3	13.2	547	-
T3	English oak	15	1	#	850	9-10-10.5-9.5	4.0	3	W	M	None	Significant tree located within dense vegetation	Good	Good	40+	B1	10.2	327	-
T4	English oak	16	1	#	680	9-8.5-9-10	3.0	3	S	M	None	Significant tree located within the hedgerow	Good	Good	40+	B1	8.2	209	-
T5	English oak	14	1	#	550	6.5-7.5-7.5-8	3.0	3	W	EM	None	Significant tree located within the hedgerow	Good	Good	40+	B1	6.6	137	-
T6	English oak	12	1	#	650	8-8-8-8	3.5	3.5	N	EM	None	Located amongst the hedgerow, overhanging the site by up to 5m	Good	Good	40+	B1	7.8	191	-
T7	English oak	13	1	#	600	8-8-7.5-7.5	3.5	3.5	W	EM	None	Located amongst the hedgerow, overhanging the site by up to 6m	Good	Good	40+	B1	7.2	163	-
T8	English oak	8	1	#	520	4-4-4-4	3.5	3.5	N/a	EM	None	Located amongst the hedgerow, canopy retrenched, overhanging the site by up to 4	Good	Good	40+	B1	6.2	122	-
T9	English oak	15	1	#	680	10.5-9-11-11	5.0	5	N/a	EM	None	Located amongst the hedgerow, overhanging the site by up to 10m to the east	Good	Good	40+	B1	8.2	209	-
T10	English oak	16	1	#	680	11-10.5-11-11	5.0	5	N	M	None	Located amongst the hedgerow, overhanging the site by up to 10m to the east and west	Good	Good	40+	B1	8.2	209	-
T11	English oak	11	1	#	710	9.5-9.5-9.5-9.5	3.5	3	N/a	EM	None	Not on topo, located within the field interior	Good	Good	40+	B1	8.5	228	-

Ref	Species	Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	Veteran / Ancient tree buffer (m)
T12	English oak	14	1	-	720	9-7-9-7	5.0	5.5	E	M	None	One tree within a linear feature, likely that access will be a requirement to the east or west of the stem	Good	Fair	40+	B2	8.6	235	-
T13	English oak	15	1	-	600	8.59-7-7-5	6.0	5	W	M	None	Located at the edge of W2. With the existing gateway to the west of the stem (7.7m in-between T12 and T13 stem locations)	Good	Fair	40+	B2	7.2	163	-
T14	English oak	14.0	1	-	660	7-7-10-7	6.0	5	N	M	None	One tree within a linear feature, a new wider access could be established to the east of the stem that is wider than the existing gateway. (12m in-between T12 and T14)	Good	Fair	40+	B2	7.9	197	-
T15	English oak	15.5	1	-	1060	9-12.5-12.5-8	6.0	4	E	M	None	One tree within a linear feature. More mature and prominent than surrounding trees	Good	Good	40+	A1	12.7	508	-
T16	Common ash	11.0	1	#	410	4-7-5-4.5	5.5	5	S	SM	None	Located amongst the hedgerow, overhanging the site by up to 5m, reduced vitality	Fair	Fair	20+	C1	4.9	76	-
T17	English oak	13.0	1	-	900	11-10-11.5-11	4.5	4	E	M	None	One tree within a linear feature. More mature and prominent than surrounding trees. Owl box installed on main stem	Good	Good	40+	A3	10.8	366	-
T18	English oak	17.0	1	-	950	10.5-10-9.5-10.5	5.0	5	W	M	None	One tree within a linear feature. More mature and prominent than surrounding trees	Good	Good	40+	B1	11.4	408	-
T19	English oak	17.0	1	-	950	10.5-13-11.5-10	5.0	4	W	M	None	Not plotted on topo. One broadly spreading tree with another stem to the east. Dead stem at centre. Dead branch at 4m over the access track/path to the west	Good	Good	40+	B2	11.4	408	-

Ref	Species	Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	Veteran / Ancient tree buffer (m)
T20	English oak	20.0	2	-	1150	11-10-10-11.5	5.0	3	S	M	None	Prominent tree within a dense group located around a large natural pond	Good	Good	40+	A2	13.8	598	-
T21	English oak	15.5	1	-	480	6-7.5-8-7.5	4.5	4	N/a	EM	None	One tree within a linear feature. Good form and condition	Good	Good	40+	B2	5.8	104	-
T22	English oak	15.0	1	-	720	9-9-7.5-9	4.5	4	N/a	M	None	One tree within a linear feature. Good form and condition	Good	Good	40+	B2	8.6	235	-
T23	English oak	15.0	1	-	600	8-9-9-9	4.0	4	S	EM	None	One tree within a linear feature. Good form and condition	Good	Good	40+	B2	7.2	163	-
T24	English oak	16.0	1	-	760	9-11-12-13	3.0	5	W	M	None	One tree within a linear feature. Broadly spreading form and good condition	Good	Good	40+	B2	9.1	261	-
T25	Horse chestnut	10.0	1	#	380	5-5-5-5	2.0	2	N	SM	None	Located amongst the hedgerow	Good	Good	40+	B2	4.5	65	-
T26	Common ash	14.0	1	#	400	6-5-2-6	3.0	4.5	N	SM	None	Located amongst the hedgerow	Good	Fair	40+	B2	4.8	72	-
T27	English oak	15.0	1	-	750	8-9-8-9	3.0	3	N/a	M	None	One tree within a linear feature. Good form and condition	Good	Good	40+	B2	9.0	255	-
T28	Crack willow	14.0	1	-	1450	9-8-11-6	2.0	2	S	LM	None	Significant tree with a large stem diameter of lapsed pollard form. Some veteran characteristics and with good habitat potential	Good	Fair	40+	A3	15.0	707	-
T29	English oak	15.0	1	-	730	10-10.5-9-10	4.0	3	W	M	None	One tree within a linear feature. Of good form and condition	Good	Good	40+	B2	8.8	241	-
T30	Common ash	15.0	1	-	700	9-7-6-7.5	4.0	2	N	M	None	One tree within a linear feature. Of good form and condition	Good	Good	40+	B2	8.4	222	-
T31	Crack willow	15.0	1	-	1530	12-6-4-8	1.0	2	N	LM	None	Significant tree with a large stem diameter of lapsed pollard form. Some veteran characteristics such as large tear outs and a hollowed stem, and with good habitat potential	Good	Fair	40+	A3	15.0	707	-

Ref	Species	Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	Veteran / Ancient tree buffer (m)
T32	Common ash	12.0	1	#	360	4.5-5-5-5	4.0	2	N	SM	None	Located amongst the hedgerow, slightly reduced vitality	Good	Fair	20+	C1	4.3	59	-
T33	Common ash	14.0	1	#	500	7-7-7-6.5	4.0	3	N	EM	None	Located amongst the hedgerow, slightly reduced vitality in upper crown	Good	Fair	20+	B1	6.0	113	-
T34	Common beech	11.0	1	-	630	7.5-7.5-6-5	4.5	4	W	EM	None	Some decline in upper canopy and mechanical damage to the basal flair but the tree has good habitat potential with hollowing stems in the upper canopy and branch stubs with fungi present	Fair	Fair	40+	B3	7.6	180	-
T35	English oak	18.0	1	-	700	10.6-9.5-10-9	2.0	2	N/a	M	None	Open grown tree of good form and condition. Not plotted on topo	Good	Good	40+	B1	8.4	222	-
T36	English oak	18.0	1	-	600	7-7-7-6.5	2.0	2	W	EM	None	Open grown tree of good form and condition. Not plotted on topo	Good	Good	40+	B1	7.2	163	-
T37	English oak	20.0	1	#	800	11.5-11-11.5-9	2.0	6	N/a	M	None	Tree of good form and condition. Located amongst the hedgerow and forming a cohesive canopy with the neighbouring tree	Good	Good	40+	B2	9.6	290	-
T38	English oak	16.0	1	#	500	7-6-8-8	2.0	3	N	EM	None	Tree of good form and condition. Located amongst the hedgerow and forming a cohesive canopy with the neighbouring tree	Good	Good	40+	B2	6.0	113	-
T39	English oak	16.5	1	#	680	8.5-8-9-8	2.0	2	E	EM	None	Tree of good form and condition. Located amongst the hedgerow	Good	Good	40+	B1	8.2	209	-
T40	English oak	18.0	1	-	800	11-10-11.5-10.5	2.0	3	N/a	M	None	Open grown tree of good form and condition. Not plotted on topo	Good	Good	40+	A1	9.6	290	-

Ref	Species	Height (m)	No. of Stems	Est diam?	Calc. / Actual Stem Dia. (mm)	Crown radii (m) N-E-S-W	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m ²	Veteran / Ancient tree buffer (m)
T41	English oak	16.0	1	-	1010	10-10-10-9.5	2.0	3	N/a	M	None	Open grown tree of good form and condition.	Good	Good	40+	A1	12.1	462	-
T42	English oak	17.0	1	-	900	10-10-10-10.5	2.0	3	N/a	M	None	Open grown tree of good form and condition.	Good	Good	40+	A1	10.8	366	-
T43	English oak	15.0	1	-	1200	9-10.5-9-10	4.0	3	S	M	None	Significant tree, located amongst the hedgerow, some veteran characteristics such as branch, stubs, deadwood and hollowing	Good	Good	40+	A3	14.4	652	-
T44	English oak	20.0	1	-	1000	12-11-11.51-12	3.0	4	S	M	None	Significant tree of good form and condition located amongst a linear belt of dense scrub . Off-site	Good	Good	40+	A1	12.0	452	-
T45	English oak	20.0	1	#	1100	12-12-12-12	5.0	53	E	M	None	Significant tree of good form and condition located amongst a linear belt of dense scrub	Good	Good	40+	A1	13.2	547	-
T46	English oak	15.0	1	-	1390	7-7-7-6	4.0	3	N/a	M	Veteran	Significant tree, located amongst the scrub, veteran characteristics such as branch, stubs, deadwood and hollowing of the main stem, lapsed pollard form, pronounced basal flair, fungal associations	Good	Good	40+	A3	15.0	707	20
T47	English oak	16.5	1	#	900	8.5-11-9-7	4.0	2	S	M	None	Tree of good form and condition. Located amongst the hedgerow, stem lean to the east	Good	Good	40+	B1	10.8	366	-
T48	English oak	14.0	1	#	650	8.5-8-9-8	3.0	2.5	S	M	None	Tree of good form and condition. Located amongst the hedgerow	Good	Good	40+	B1	7.8	191	-
T49	English oak	13.0	1	#	600	8-8-9-8	3.0	2.5	S	EM	None	Tree of good form and condition. Located just north of the hedgerow	Good	Good	40+	B1	7.2	163	-

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)
G1	English oak, field maple, common ash	6-10	80	#	250	3	1.0	SM	None	Small plantation of establishing trees some with reduced vitality	Fair	Fair	40+	C2	3.0
G2	English oak, field maple, common ash	8-12	90	#	300	4	1.0	SM	None	Small plantation of establishing trees	Good	Good	40+	B2	3.6
G3	Blackthorn, hawthorn, common ash	3-5	80	#	200	3	0.5	SM	None	Understorey trees to the mature oak, likely an outgrown hedgerow	Good	Good	40+	C2	2.4
G4	English oak, common ash	10-13	6	#	900	8.5	3.0	M	None	Early mature to mature linear group of trees growing amongst the hedgerow. Oak tree	Good	Good	40+	B2	10.8
G5	Common ash, English elm, hawthorn,	5-14	100	#	300	4.5	4.0	SM	None	Linear group bounding the highway, flailed to the north, providing good screening for the site from the road	Good	Fair	40+	B2	3.6
G6	Common ash, English oak, hawthorn,	5-14	150	#	300	4.5	4.0	SM	None	Linear group bounding the highway, flailed to the north, providing good screening for the site from the road. Width tapers	Good	Fair	40+	B2	3.6
G7	English oak	8-18	12	#	800	9	4.0	M	None	Linear group of trees located along the hedgerow, overhanging the site by up to 8m. 1 tree at the eastern end of the group is a standing dead tree	Good	Good	40+	B2	9.6
G8	English oak	10-17	3	#	780	9	4.0	M	None	Linear group of trees located along the hedgerow, overhanging the site by up to 8m	Good	Good	40+	B2	9.4
G9	English oak	12-18	7	#	800	10	5.0	M	None	Linear group of trees located along the hedgerow, overhanging the site by up to 10m	Good	Good	40+	B2	9.6
G10	Common ash, hawthorn, blackthorn	5-12	80	#	300	4	1.0	SM	None	Outgrown hedgerow, now a dense linear group of establishing trees	Good	Fair	40+	B2	3.6
G11	English oak	12-18	10	#	800	10	5.0	M	None	Linear group of trees located along the hedgerow, overhanging the site by up to 8m	Good	Good	40+	B2	9.6

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)
G12	English oak, crack willow	12-18	4	#	750	8	5.0	M	None	Linear group of trees located along the hedgerow, overhanging the site by up to 8m	Good	Good	40+	B2	9.0
G13	Hawthorn, common ash, blackthorn	5-12	150	#	250	4	1.0	SM	None	Outgrown hedgerow, now a dense linear group of establishing trees	Good	Fair	40+	B2	3.0
G14	English oak, common ash, hawthorn, holly	5-13	50	#	750	8	2.0	EM	None	Linear group that divides the site from the rest of the site from the northern field	Good	Good	40+	B2	9.0
G15	Common ash, hawthorn, blackthorn	5-12	80	#	300	6	1.0	EM	None	Outgrown hedgerow, now a dense linear group of establishing trees	Good	Fair	40+	B2	3.6
G16	English oak	12-15	6	#	750	8	5.0	M	None	Linear group of trees located along the hedgerow, overhanging the site by up to 8m. Track to the west	Good	Good	40+	B2	9.0
G17	English oak	12-15	8	#	800	9	4.0	M	None	Linear group of trees located along the hedgerow, overhanging the site by up to 8m. Access at the east and west,	Good	Good	40+	B2	9.6
G18	English oak, willow, common ash	12-15	8	#	750	8	4.0	M	None	Linear group of trees located along the hedgerow, overhanging the site by up to 8m.	Good	Good	40+	B2	9.0
G19	English oak, common ash, holly	12-15	6	#	780	8	4.0	M	None	Linear group of trees located along the hedgerow, overhanging the site by up to 8m. Access point to the south	Good	Good	40+	B2	9.4
G20	English oak	5-11	9	#	550	6	4.0	SM	None	Linear group forming a cohesive canopy with two young trees at the eastern and western edge that could be removed to widen access with low impact	Good	Good	40+	B2	6.6

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)
G21	English oak, hawthorn, hazel, goat willow	6-16	35	#	550	7	4.0	EM	None	Linear group leading into a natural pond to the west where trees surround the pond. Wild and unmanaged, good habit potential	Good	Good	40+	B3	6.6
G22	English oak, common ash, hawthorn, poplar	6-18	1500	#	650	8	1.0	EM	None	Linear group parallel to the boundary, overhanging the site by up to 8m	Good	Good	40+	B2	7.8
G23	English oak, common ash, hawthorn, blackthorn	4-19	50	#	700	8	0.5	M	None	Dense group with mature oak canopy and an understorey of scrub. Bound by a large natural pond to the east and a barn to the west	Good	Good	40+	B3	8.4
G24	Common ash, English oak, hawthorn, blackthorn	6-17	500	#	750	7	4.0	EM	None	Linear group of early mature oak with a blackthorn understorey that is essentially an unmaintained hedgerow	Good	Fair	40+	B2	9.0
G25	English oak, willow, common ash, hawthorn, blackthorn	5-16	50	#	900	8	2.0	M	None	Linear feature with some mature and significant trees within. Understorey of hawthorn and blackthorn, existing access into the field to the north at the east and west of the group	Good	Good	40+	B3	10.8
G26	English oak	13-16	12	#	750	9	4.0	M	None	Linear group of trees forming a cohesive canopy of uniform age, form and condition	Good	Good	40+	B2	9.0
G27	Lombardy poplar, wild cherry, blackthorn, sycamore	8-20	25	#	450	5	0.5	EM	None	Off-site group located parallel to the boundary	Good	Good	40+	B2	5.4
G28	English oak, common ash	10-16	6	#	550	7	4.0	EM	None	Establishing linear group located amongst the hedgerow	Good	Good	40+	B2	6.6
G29	English oak	16-18	2	#	800	10	3.0	M	None	Two trees forming a cohesive canopy, both of good form and condition	Good	Good	40+	B2	9.6

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)
G30	English oak, common ash	10-15	6	#	900	10	4.0	M	None	Off-site group growing parallel to the boundary and overhanging the site by up to 9m	Good	Good	40+	B2	10.8
G31	English oak	13-17	3	#	800	9	3.0	M	None	Located amongst the hedgerow, possibly off site	Good	Good	40+	B2	9.6
G32	English oak, common ash, hawthorn,	6-18	1500	#	750	9	1.0	M	None	Linear group parallel to the boundary, overhanging the site by up to 9m	Good	Good	40+	B2	9.0
G33	English oak, common ash, hawthorn, blackthorn, willow	6-16	500	#	700	7.5	1.5	EM	None	Linear group parallel to the boundary, overhanging the site by up to 8m. Outgrown scrub forms the understorey	Good	Good	40+	B2	8.4
G34	English oak	13-15	8	#	500	8	3.0	EM	None	Off-site linear group of establishing trees of uniform species, age and condition	Good	Good	40+	B2	6.0
G35	English oak, blackthorn, hawthorn	12-14	50	#	600	8	3.0	EM	None	Off-site linear group of establishing trees of uniform species, age and condition with an understorey of thorn trees	Good	Good	40+	B2	7.2
G36	English oak, blackthorn, hawthorn	12-14	40	#	650	8	3.0	EM	None	Off-site linear group of establishing trees of uniform species, age and condition with an understorey of thorn trees	Good	Good	40+	B2	7.8
G37	English oak, blackthorn, hawthorn	6-16	50	#	650	8	3.0	EM	None	Off-site linear group of establishing trees of uniform species, age and condition with an understorey of thorn trees	Good	Good	40+	B2	7.8
G38	Goat willow, blackthorn, damson, English oak	5-15	500	#	550	8	0.5	M	None	Linear group on the banks of the stream, good habitat/nature corridor	Good	Good	40+	B3	6.6

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)
G39	Common ash	12-20	6	#	780	8	3.0	M	None	Group of ash forming a cohesive canopy and located amongst scrub	Good	Good	40+	B2	9.4
G40	Blackthorn, English oak, common ash, hawthorn	5-10	250	#	300	4	0.2	M	None	Established linear belt of scrub forming a good habitat/ nature corridor	Good	Good	40+	B3	3.6
G41	Common ash, field maple, hawthorn	6-17	250	#	300	5	2.0	SM	None	Off-site group parallel with the highway providing good screening	Good	Good	40+	B2	3.6

HEDGES

Ref	Species	Av. Height (m)	Av. width (m)	Av. Stem diam (mm)	Avg. Canopy Height (m)	Life Stage	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)
H1	Leyland Cypress	8.0	5	200	0.5	SM	Evergreen screening hedgerow, unmaintained	Good	Good	40+	C2	2.4
H2	Hawthorn, blackthorn	5.0	3	100	0.2	SM	Outgrown hedgerow, unmaintained	Good	Fair	40+	C2	1.3
H3	Blackthorn, elm, field maple	4.5	3.5	80	0.2	SM	Outgrown hedgerow, unmaintained	Good	Fair	40+	C2	1.0
H4	Blackthorn, elm, field maple	4.5	3.5	80	0.2	SM	Outgrown hedgerow, unmaintained, road to the south with an existing access central located along its length	Good	Fair	40+	C2	1.0
H5	Blackthorn, elm	5.0	2.5	80	0.2	SM	Remnant of a hedgerow, unmaintained	Poor	Poor	10+	C2	1.0
H6	Blackthorn, elm	5.0	3	80	0	SM	Remnant of a hedgerow, understorey to G17	Fair	Fair	20+	C2	1.0
H7	Blackthorn, hawthorn, common ash	5.0	3	80	0	M	Outgrown hedgerow, unmaintained, some laid stems	Good	Fair	20+	B2	1.0
H8	Blackthorn and bramble	3.0	4	80	0	SM	Dense scrub along the line of an unmaintained hedgerow	Good	Fair	40+	C2	1.0
H9	Blackthorn, hawthorn, bramble	2.0	2	90	0	M	Dense hedgerow, currently in maintained	Good	Good	40+	B2	1.1
H10	Hawthorn, blackthorn	1.8	2	100	0	SM	Dense and well maintained hedgerow	Good	Good	40+	B2	1.3
H11	Hawthorn, blackthorn, common ash, field maple	3.0	2	100	0	SM	Dense and well maintained hedgerow, some ash and maple are growing throughout the hedgerow	Good	Good	40+	B2	1.3
H12	Hawthorn, blackthorn, elm	3.0	2	100	0	SM	Dense and well maintained hedgerow located within a ditch	Good	Good	40+	B2	1.3
H13	Hawthorn, blackthorn	4.0	3	150	0	M	Off-site outgrown hedgerow	Good	Good	40+	B2	1.8
H14	Willow, hawthorn	5.0	3	150	0	EM	Off-site hedgerow, unmaintained	Good	Good	40+	B2	1.8
H15	Hawthorn, blackthorn	2.0	2	80	0	M	Off-site dense and well maintained hedgerow	Good	Good	40+	B2	1.0
H16	Goat willow, elder, hawthorn	4.0	3.0	150	0.2	SM	Remnant of a hedgerow, now consisting of flailed clumps of trees located along the ditch	Good	Fair	20+	C2	1.8
H17	Blackthorn, field maple, common ash	4.0	2.0	100	0.2	SM	Unmaintained hedgerow	Good	Fair	40+	C2	1.3

WOODLAND

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)	ASNW Buffer
W1	English oak, silver birch, common ash, hawthorn	6-17	500	#	700	8	2.0	EM	None	Establishing, predominantly oak woodland, overhanging the site by up to 7m	Good	Good	40+	B2	8.4	-
W2	Silver birch, English oak, hazel, common ash, holly	5-20	1000	#	600	7	2.0	EM	None	Predominantly oak and ash with hazel at the woodland edge. Overhanging the site by up to 8m	Good	Good	40+	B2	7.2	-
W3	English oak, common ash, hawthorn	5-18	1000	#	600	7	1.0	EM	None	Predominantly oak and ash at the site perimeter	Good	Good	40+	B2	7.2	-
W4	Common ash, English oak, hawthorn, willow, spruce	5-18	7500	#	600	6	1.0	EM	Ancient Semi-Natural Woodland	Off-site, Mixed species plantation surrounding the National Grid sub station.	Good	Good	40+	B2	7.2	15m



PHOTO 1: A typical field edge hedgerow with mature oak interspersed along its length



PHOTO 2: Woodland plantation at the boundary to the site, typically overhanging the site by 6m-8m



PHOTO 3: Significant mature English oak group within the field edge hedgerows



PHOTO 4: A good example of existing gaps in hedgerows to be utilised for the construction and maintenance tracks.



PHOTO 5: Significant tree with a hollowing stem located at the field edge margin. Such features provide good habitat potential



PHOTO 6: Photoview of T47, the veteran English oak tree requiring a 20m veteran tree buffer (VTB)

- 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 (eg 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/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 (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, are measured in metres. They are recorded to the nearest half metre for dimensions up to 10m and to the nearest whole metre for dimensions over 10m.
- The CROWN SPREAD are taken at the four cardinal points to derive an accurate representation of the tree crown. They are 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 (eg 2.5m-N), and also in terms of the overall canopy. 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 & 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 & 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 & 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, its 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)

REMAINING USEFUL LIFE EXPECTANCY:

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.

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:

- (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 U: UNSUITABLE:

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.

It may also include trees that should be removed irrespective of any development proposals.)

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 highly 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: MINOR VALUE:

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.

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, but the shape of the RPA may be altered where site conditions dictate that there are sound reasons to do so.

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 2023 (NPPF paragraph 186) states that, when determining planning applications, local planning authorities should apply the following principle:

c) '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.

Other paragraphs of the NPPF 2023 of relevance to this report are:

Paragraph 136: *'Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.'*

Paragraph 180: *'Planning policies and decisions should contribute to and enhance the natural and local environment by:*

b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.'

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.

HOW TREE DAMAGE CAN OCCUR

Above the ground

Damage can occur as a result of knocks and scuffs, breakages of branches and/or tree trunks. This is often but not always associated with machine operations, groundworks excavations, telehandlers, high sided vehicles and crane use. Other forms of above ground damage include fixings to trunk and unauthorised cutting back of branches. Wounds will harm a tree's health and shorten its life by letting in disease-causing organisms.

Below the ground

It is often not appreciated that the majority of most tree roots are generally located within the top 600mm of the ground. On this basis it needs to be understood that damage to roots can occur in three ways:

Root severance can occur as a result of, for example, soil stripping during site clearance or excavations.

Root dieback and death can result from compaction of the soil. Compaction can occur as a result of vehicle weight, weight of stored materials or increased pedestrian access. Compaction crushes out soil pore space and prevents tree respiration from occurring (respiration requires gas exchange between the ground and the atmosphere). Compacted soil is denser and therefore inhibits/prevents any further new root growth.

Pollution of the soil with chemicals such as oil or cement washings can destroy the soil environment, making it inhospitable for the tree cause causing it stress.

The effects of these impacts can be disfiguring to a tree's appearance and also weaken a tree making it more liable to attack by pest and diseases. In addition, root damage or death results in corresponding decline above the ground with dieback occurring within the tree crown.

The effects of damage to trees generally take some time to become fully apparent. In many cases, damaged trees decline slowly after the completion of a new development, until they eventually need to be removed due to ill health. Tree protection barriers and load distributing 'no-dig' paths are specified in order to prevent soil compaction from taking place.

GENERAL SITE RULES FOR TREE PROTECTION

Do not independently carry out any activity that is at odds with the site scheme of tree protection. This is contained within an approved Arboricultural Method Statement (AMS) and accompanying Tree Protection Plan.

In simple terms: do not carry out any work within any Construction Exclusion Zone (CEZ) without prior liaison with the Project Arboriculturist and written authorisation from the Local Planning Authority.

Within the CEZ:

No mixing of cement

No soil/turf stripping, raising/lowering of ground levels (unless advised), deposit or excavation of soil or rubble

No excavations for services or installation of services

No storage of materials, machinery fuel, chemicals or other materials of any other description

No parking/use of tracked or wheeled machinery

No siting of temporary structures including hard standing areas, portaloos, site huts

No lighting of fires or disposal of liquids

Fires on site should be avoided if possible. Where they are unavoidable, they must not be lit in a position where heat could damage foliage or branches. Fires must be a minimum of 20m from the trunk of any retained tree or the centre line of any hedgerow to be retained

No signs, cables, fixtures or fittings of any other description shall be attached to any part of a retained tree.