

Arboricultural Impact Assessment

DOC 09

Development of National Significance

Alaw Môn Solar Farm

Land west of the B5112, 415m south of Llyn Alaw, 500m east of Llantrisant and 1.5km west of Llannerch-y-Medd, Anglesey

October 2023



**ARBORICULTURAL
IMPACT
ASSESSMENT**

Alaw Môn Solar Farm,
Anglesey

October 2023



Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Alaw Môn Solar Farm	
Project reference:	4202	
Site Address:	Land to the west of the B5112 and to south of Llyn Alaw at Llantrisant, Anglesey	
Nearest Postcode:	LL71 7BN	
Central Grid reference:	SH 38593 84357	
Local Planning Authority:	Isle of Anglesey County Council	
Relevant planning policies:	Anglesey and Gwynedd Joint Local Development Plan 2011 - 2026: PCYFF 4 - Design And Landscaping PS 19 - Conserving And Where Appropriate Enhancing The Natural Environment AMG 5 - Local Biodiversity Conservation	
Statutory Controls:	Tree Preservation Order	Conservation Area
	N/a	N/a
Soil Type: (Source: BGS online soils map © NERC 2023)	Superficial/Drift	Bedrock
	No superficial deposits recorded	Ordovician Rocks - Mudstone and sandstone, interbedded
Topographical Survey:	Landmark Surveys Wales - Wylfa, Anglesey, ref: 5915	
Notes:	None	
Report author:	Richard Hyett <i>MSc, BSc (Hons), MICFor, MArborA</i>	
Date of issue:	13th October 2023	

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1. INTRODUCTION

- 1.1. Barton Hyett Associates Ltd have been appointed by Wylfa Green Limited (herein referred to as “the Applicant”) to undertake a tree survey in accordance with the recommendations of British Standard 5837:2012 ‘Trees in relation to design, demolition and construction - recommendations’, for a ground-mounted solar photovoltaic (PV) farm, with a generating capacity of approximately 160 Mega-Watts an a battery energy storage system facility, together with associated infrastructure (hereafter referred to as 'the Development') on land to the west of the B5112 and to south of Llyn Alaw at Llantrisant, Anglesey' (hereafter referred to as 'the Site'). The project is called Alaw Mon Solar Farm'.
- 1.2. The scope of the instruction was to inspect trees relevant to a Development of National Significance (DNS) application for a solar farm at the Site and provide written advice on how they inform feasibility and design options for the Site. The Arboricultural Impact Assessment (AIA) will form part of the suite of documents submitted to Planning and Environment Decisions Wales (PEDW).

2. SITE DESCRIPTION

- 2.1. The Site is located on the Isle of Anglesey, in North Wales. The Site is located to the north west of the island and approximately 14km (as the crow flies) north east of Holyhead.
- 2.2. The Site is rural in nature. It is irregularly shaped and comprises predominantly agricultural fields, currently utilised for grazing purposes. The agricultural fields are typically bound by hedgerows.
- 2.3. The Site extends to 268.77 hectares, including land within the adopted highway of local roads for the Development's grid connection to the National Grid Substation at Wylfa. Numerous lanes that link the existing farms cross the Site (outside of the DNS application boundary) and provide access to fields via the farmsteads or via agricultural gateways direct from the adjacent lanes.
- 2.4. Due to the location and character of the area where the Site is located, it has limited tree cover for its large size. Apart from some discreet blocks of woodland or groups of trees, the primary features present are hedgerows. The hedgerows are generally either gappy areas of gorse, intensively managed hawthorn, or mixed species areas that are spreading and unmanaged.
- 2.5. The Site lies partially within the Nantanog geological Site of Special Scientific Interest (SSSI), and within 415m of Llyn Alaw SSSI.
- 2.6. The Natural Resources Wales online woodland inventory confirms that the Site does not contain, nor is it nearby, any designated Ancient Woodland (either Ancient Semi-Natural Woodland or Ancient Replanted Woodland).

3. TREE SURVEY FINDINGS

- 3.1. The survey recorded 220 arboricultural features within the main part of the Site but currently excluding the adopted highway of local roads for the Development's grid connection he National Grid Substation at Wylfa. The extent of the Site is shown on the Overall Site Location Plan (drawing reference: ENSO-11-01 Sheet 1 to 4). These are summarised in terms of quality in accordance with the recommendations of BS 5837 in Table 1 below and shown in more detail on the Tree Survey and Constraints Plan (**Section 2**) and within the Tree Survey Schedule and within the Tree Survey Schedule (**Section 4**).

	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	42	4	23	12	3
Groups	72	-	36	31	5
Hedgerows	101	-	41	60	-
Woodlands	5	1	4	-	-
Total	220	3	106	108	3

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

4. KEY ARBORICULTURAL FEATURES

- 4.1. The Site contains few individual trees but has many tree groups and hedgerows. The individual trees identified are mostly of moderate quality (Category B). The majority of the trees associated to the Site are contained within groups of trees or woodland blocks. Most of these are of moderate quality (Category B) but a significant number were also considered to be of low quality (Category C). This is mainly due to either their small size or impaired physiological/structural condition. A single, high-quality woodland (W4) was identified. W4 is located offSite and adjacent to the north west corner of the Site.
- 4.2. There are a significant number of hedgerows across the Site, most of which are low quality (Category C), due to their impaired condition, absence of recent management and gappy appearance.
- 4.3. There are two high-quality (Category A) trees within, or immediately adjacent to the Site. Both of these trees are located in the vicinity of the derelict farmstead to the north west of Nantanog. One of these trees is a mature hawthorn (T7) of particularly large size and the other is a mature ash (T6). T6 has been assigned to BS 5837:2012 sub-category '3' due to its conservation/heritage value. T6 also displayed the characteristics associated with a veteran and therefore this tree has been assigned Veteran status.

4.4. It will therefore be necessary to consider paragraph 6.4.26 of the Planning Policy Wales - Edition 11 (PPW) . In relation to veteran trees, PPW states:

'Ancient woodland and semi-natural woodlands and individual ancient, veteran and heritage trees are irreplaceable natural resources and have significant landscape, biodiversity and cultural value. Such trees and woodlands should be afforded protection from development which would result in their loss or deterioration unless there are significant and clearly defined public benefits; this protection should prevent potentially damaging operations and their unnecessary loss. In the case of a Site recorded on the Ancient Woodland Inventory, authorities should consider the advice of NRW. Planning authorities should also have regard to the Ancient Tree Inventory'.

4.5. The PPW goes on to state:

'The protection and planting of trees and hedgerows should be delivered, where appropriate, through locally specific strategies and policies'

4.6. In the absence of any specific guidance for Wales on the incorporation of veteran trees within the Development, the guidance produced for England (in the form of the Forestry Commission and Natural England standing advice) has been applied in this case. A key method of mitigating impacts upon Veteran trees is the use of a 'buffer zone'. Therefore, in applying the standing advice for England an additional veteran tree buffer has been assigned to T6.

4.7. The constraint posed by the veteran tree buffer is an important design consideration for the Site. In this case the Development will be able to avoid the required buffer zone.

4.8. A check has been made with Isle of Anglesey County Council as to whether any of the individual trees on the Site are protected by Tree Preservation Order(s) and it has been confirmed there are no trees that are the subject of such Orders within 20m of the Site boundary.

5. PROPOSED DEVELOPMENT

5.1. The Development comprises of a renewable energy scheme and the main element of the proposal is the construction, operation, maintenance and decommissioning of a ground mounted solar farm. The solar farm will include a battery storage facility. The scheme will also require a cable route to connect to the grid. The Development has a modelled operational lifespan of 40 years, after which it will be decommissioned, and the Site returned to agricultural use.

6. IMPACT ASSESSMENT

6.1. The AIA considers the effects of any tree and hedgerow loss required to implement the 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 Development. Impacts can include tree removal to facilitate design, soil compaction in close proximity to trees and direct impact damage to the canopy and roots of retained trees from construction activities.

6.2. In response to the arboricultural constraints (e.g. the presence of high and moderate-quality trees and tree groups) the Development has been designed in order that tree removal has been avoided and Root Protection Areas (RPAs) have avoided. Wherever possible, the existing farm access tracks and gaps in hedgerows have been utilised for the routing of the construction and maintenance tracks and for the perimeter/security fencing where practical. On the basis that the construction and decommissioning process is carried out appropriately, the Development can be implemented without significant direct impacts on these important trees.

6.3. A summary of anticipated impacts resulting from the Development is provided below.

Vegetation removal:

6.4. The Development is not anticipated to require the removal (partial or in full) of any significant trees, tree groups or hedgerows.

Impacts on retained trees:

6.5. The Development's layout in relation to the retained trees is shown in the Tree Retention and Removal Plan in **Section 3**.

6.6. *Tracks* - The proposed access tracks onto the Site will make use of existing access, in particular, the tracks passing adjacent to trees and hedgerows. The existing tracks have been used by agricultural machinery for many decades. However, some trees along sections of the proposed access tracks may need to be crown-lifted to provide in the region of 5m of ground clearance. At present clearance along the routes is sufficient and it is recommended that the ground levels of the tracks be retained wherever possible. If the surface is to be improved it should be done by adding a top-dressing and retaining the existing materials as a sub-base.

6.7. *Panels* - all of the solar panels are indicated to be located outside of the RPAs of trees, groups, woodlands and hedgerows. In addition, there are further offset distances between the RPAs and the panel locations.

6.8. *Site perimeter fencing* - The proposed fence alignment indicates some isolated sections of hedgerow removal across the Site may also be required. The anticipated hedgerow removal is summarised below. The summary provides the hedgerow reference, BS5837:2012 quality category and length of removal (full or partial and linear metres).

- H20 - B2 - partial - 2 linear metres
- H23 - B2 - partial - 2 linear metres
- G45 - B2 - partial - 2 linear metres
- H46 - C2 - partial - 2 linear metres
- H49 - C2 - partial - 2 linear metres
- H62 - B2 - partial - 2 linear metres
- H68 - B2 - partial - 2 linear metres
- H71 - B2 - partial - 2 linear metres
- H74 - B2 - partial - 2 linear metres
- Total (maximum) = circa 18 linear metres

6.9. With local adjustments (convenient existing gaps in hedgerows could be exploited) it may be possible to move the Site perimeter security fence line in order to reduce the number of stems to be removed and further reduce the minimal impacts. As this is a matter of detail that could be addressed at implementation stage these potential removals are not shown on the plan in **Section 3**. It is recommended that where the fence is to pass through a hedgerow, strainer posts are installed at a distance of 3m either side, with a 6m stretch of panel mesh being affixed to these posts in order to minimise ground disturbance.

6.10. *Underground services* - service and connecting cable runs within the Site interior should be designed to avoid the RPAs of retained trees. An assessment of the Development's layout indicates this will be possible. Should services need to be installed near, or within RPAs, the project arboriculturist should be consulted and an appropriate installation method statement prepared.

6.11. *Ground levels and foundations* - No ground-level changes or foundations are proposed within the root protection areas of retained trees.

6.12. *Planting* - adding new planting to the existing arboricultural resource will be beneficial to enhancing the biodiversity of the Site. There exists the opportunity to enhance the existing hedgerows with supplementary planting to fill in gaps brought about by undesirable species colonising the plots, such as bramble or elder. A landscape strategy plan has been prepared to specify mitigation planting.

Anticipated impacts - cable connection and internal cabling

6.13. All cabling alignments should be designed to avoid, or limit, vegetation removal or the need to carry out works within the RPAs of retained trees. However, it may be necessary to install the cables close to the RPAs of significant trees and tree groups.

6.14. Should this be required, guidance is set out within the National Joint Utilities Group (NJUG) Volume 4 (Section 4) - How To Avoid Damage To Trees which details acceptable working methods relating to 'excavations or other works occurring within the Prohibited zone or Precautionary Zone'.

6.15. Section 4.1 reinforces the role of the project arboriculturist and the requirement for arboricultural supervision to be necessary when working within RPAs: 'Wherever trees are present, precautions should be taken to minimise damage to their root systems. As the shape of the root system is unpredictable, there should be control and supervision of any works, particularly if this involves excavating through the surface to 600mm, where the majority of roots develop'.

6.16. The preferred approach is to avoid RPAs through the realignment of apparatus. 'Whenever possible apparatus should always be diverted or re-aligned outside the Prohibited or Precautionary Zones. Under no circumstances can machinery be used to excavate open trenches within the Prohibited Zone'.

6.17. If, RPA avoidance is not possible, the preferred solution is to use trench-less techniques such as directional drilling. The approach adopted needs to be proportionate to the arboricultural feature that is being protected (i.e. directional drilling may not be appropriate to avoid the root loss of a low quality, category c, tree).

6.18. As trench-less techniques may not be practical for sections of installation that are less than circa 50m in length, it is likely that the more common approach will utilise open trench excavation that will work around the RPAs of individual trees, where this is deemed to be a practical solution.

6.19. NJUG states that where necessary 'trench-less techniques should be used the launch and receiver pits should be located outside the Prohibited or Precautionary Zones (as defined within the NJUG guidance). In order to avoid damage to roots by percussive boring techniques, it is recommended that the depth of run should be below 600mm. Techniques involving external lubrication of the equipment with materials other than water (e.g. oil, bentonite, etc.) must not be used when working within the Prohibited Zone.

Summary

6.20. The proposal is feasible from an arboricultural perspective, with no significant arboricultural losses proposed, and if carefully implemented according to an approved arboricultural method statement, there would be no or only a very low potential negative impact on the retained trees.

7. TREE PROTECTION MEASURES

- 7.1. To define the individual solar fields and the periphery of the Site, it is proposed that security fencing (2 - 2.5m high deer fence) be erected. This fence will act as an effective tree protection barrier if erected before any construction works commence on the Site and mitigate the need to install temporary BS5837:2012 fencing along the outer perimeters of the Site.
- 7.2. Trees and hedgerows within the interior of the Site could be impacted during the construction phase of the Development. However, there are substantial offsets between the panels and the internal field boundary hedgerows. Given this, (along with the previous long-standing agricultural use of this Site, and limited value of the trees, and hedgerows within the interior) the use of additional temporary protective fencing for the hedgerows or remnant hedgerows within the Site interior is not recommended during the construction and the decommissioning phase.

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 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 (AMS) 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 AMS might reasonably be required as a planning condition.
- 8.3. 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 AMS is set out below:
- Project arboriculturist – schedule of monitoring and supervision to be agreed with the applicant and LPA (as required)
 - 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
 - Facilitation pruning (if required)
 - Erection of tree protection barriers as per the finalised Tree Protection Plan (TPP), if required by the finalised, approved layout.
 - Site preparation and ground works - 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 planting

9. CONCLUSIONS AND RECOMMENDATIONS

- 9.1. Subject to the implementation of the advice contained within this report the Development is acceptable from an arboricultural perspective. No trees will require removal and all retained trees can be adequately protected during construction activities to sustain their health and longevity. The potential minor hedgerow loss can be mitigated by new planting.
- 9.2. The proposed new tree planting could enhance the existing tree stock and help further improve the habitat value of the Site.
- 9.3. An Arboricultural Method Statement and finalised Tree Protection Plan will need to be produced. Where the feasibility of a scheme has been agreed upon by the Welsh Ministers, this detail can be agreed and submitted later as part of a pre-commencement planning condition.
- 9.4. On the basis that the construction process is carried out appropriately, the Development can be implemented without significant impact on the Site's arboricultural resources. In conclusion, the proposals are acceptable from an arboricultural perspective, subject to the implementation of the advice and recommendations set out in this report.



Richard Hyett MSc, BSc (Hons), MICFor, MArborA
Chartered Arboriculturist



IMAGE 1: Looking west towards G3 (left of centre frame) showing the typical nature of the western part of the Site.



IMAGE 2: Looking south west along the southern edge W2 and W3. W1 can be seen in the background and to the right of centre frame. A 20m buffer is recommended between these woodland belts and any solar infrastructure.



IMAGE 3: Looking south towards the westernmost part of G13.



IMAGE 4: Looking north along the western edge of G9 showing the aged and stilted appearance of the trees.



IMAGE 5: Looking east down the slope towards the stem of T6 (a Veteran ash tree). This tree requires an additional buffer to any development.



IMAGE 6: Looking north west along the deep valley of the watercourse that runs through the western part of the Site. The trees in this valley are off Site and comprised of small gorse and hawthorn. These trees were not surveyed.



KEY

- Category A Tree - High quality
(Preservation Highly desirable)
- Category B Tree - Moderate quality
(Preservation Highly desirable)
- Category C Tree - Low quality
(Preservation desirable)
- Category D Tree - Very low quality
(Preservation desirable)
- Category E Tree - Very low quality
(Preservation desirable)
- Category F Tree - Very low quality
(Preservation desirable)
- Category G Tree - Very low quality
(Preservation desirable)
- Category H Tree - Very low quality
(Preservation desirable)
- Category I Tree - Very low quality
(Preservation desirable)
- Category J Tree - Very low quality
(Preservation desirable)
- Category K Tree - Very low quality
(Preservation desirable)
- Category L Tree - Very low quality
(Preservation desirable)
- Category M Tree - Very low quality
(Preservation desirable)
- Category N Tree - Very low quality
(Preservation desirable)
- Category O Tree - Very low quality
(Preservation desirable)
- Category P Tree - Very low quality
(Preservation desirable)
- Category Q Tree - Very low quality
(Preservation desirable)
- Category R Tree - Very low quality
(Preservation desirable)
- Category S Tree - Very low quality
(Preservation desirable)
- Category T Tree - Very low quality
(Preservation desirable)
- Category U Tree - Very low quality
(Preservation desirable)
- Category V Tree - Very low quality
(Preservation desirable)
- Category W Tree - Very low quality
(Preservation desirable)
- Category X Tree - Very low quality
(Preservation desirable)
- Category Y Tree - Very low quality
(Preservation desirable)
- Category Z Tree - Very low quality
(Preservation desirable)

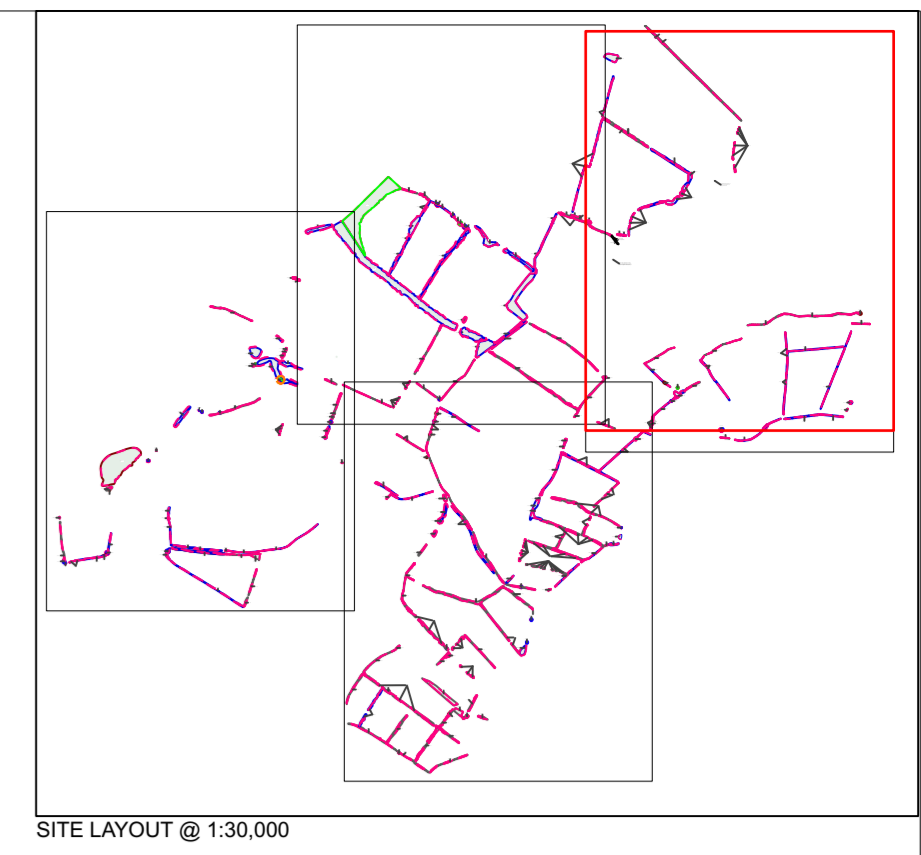


SITE LAYOUT @ 1:30,000

PROJECT TITLE			
Alaw Mon Solar Farm, Anglesey			
DRAWING TITLE			
Tree Survey & Constraints Plan			
SCALE	@ A0	DRAWING NUMBER	BHA_1096_01
DRAWN BY	APPROVED BY	REVISION	SHEET
DV	RH	B	1/4
LAYOUT USED WITHIN DRAWING	XXXXXXXXXX	DATE	18/08/2023
CLIENT Enso Energy			
COORDINATE SYSTEM (DATUM) British National Grid / Newlyn Datum (AOD)			
<small> Crown copyright. All rights reserved. 2019 Ordnance Licence number 100081204. Ordnance Survey Copyright Licence number 100045257. </small>			
 Barton Hyett Associates Arboricultural Consultants			

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.

TS - Section 2'



Point boundary vegetation consists of scrubby and small trees of various species. A large number of trees are present along the boundary.

On way and off way from road to property

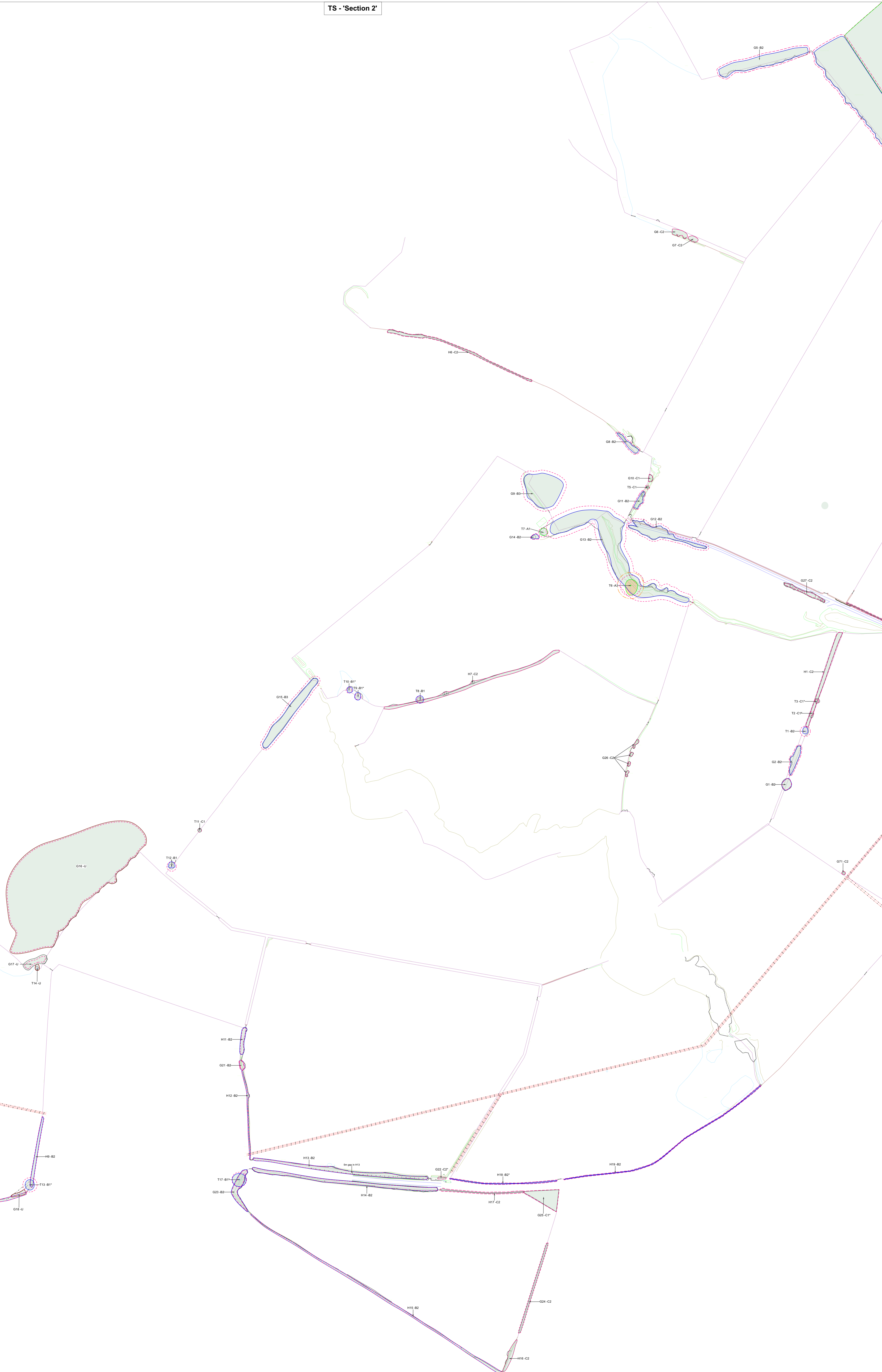
KEY

- Category A Tree - High quality (Green circle)
- Category B Tree - High quality (Light green circle)
- Category C Tree - Moderate quality (Yellow circle)
- Category D Tree - Low quality (Orange circle)
- Category E Tree - Very low quality (Red circle)
- Category F Tree - Not suitable for retention (White circle)
- Category G Tree - Not suitable for retention (White circle)
- Category H Tree - Not suitable for retention (White circle)
- Category I Tree - Not suitable for retention (White circle)
- Category J Tree - Not suitable for retention (White circle)
- Category K Tree - Not suitable for retention (White circle)
- Category L Tree - Not suitable for retention (White circle)
- Category M Tree - Not suitable for retention (White circle)
- Category N Tree - Not suitable for retention (White circle)
- Category O Tree - Not suitable for retention (White circle)
- Category P Tree - Not suitable for retention (White circle)
- Category Q Tree - Not suitable for retention (White circle)
- Category R Tree - Not suitable for retention (White circle)
- Category S Tree - Not suitable for retention (White circle)
- Category T Tree - Not suitable for retention (White circle)
- Category U Tree - Not suitable for retention (White circle)
- Category V Tree - Not suitable for retention (White circle)
- Category W Tree - Not suitable for retention (White circle)
- Category X Tree - Not suitable for retention (White circle)
- Category Y Tree - Not suitable for retention (White circle)
- Category Z Tree - Not suitable for retention (White circle)

PROJECT TITLE			
Alaw Mon Solar Farm, Anglesey			
DRAWING TITLE			
Tree Survey & Constraints Plan			
SCALE	DRAWING NUMBER		
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CLIENT Enso Energy			
COORDINATE SYSTEM (DATUM) British National Grid / Newlyn Datum (A00)			
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Barton Hyett Associates Arboricultural Consultants			

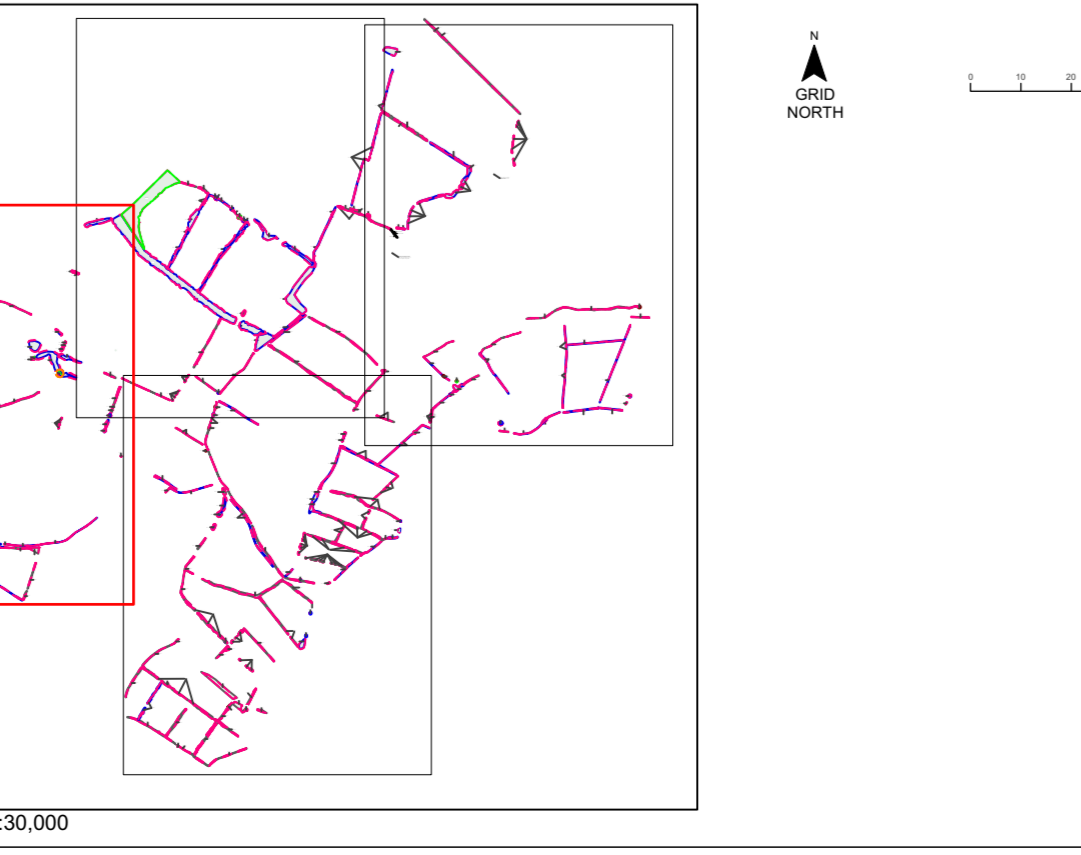
Note: The original of this drawing was produced in colour - a monochrome copy should not be relied upon. This drawing should be interpreted with reference to the accompanying tree schedule and written advice.

Ref	Species	Height (m)	Life Stage	RPA Radius (m)	RPA (m ²)
12	Ash	5	M	2.4	18
13	Ash	5.5	SM	2.2	16
14	Basswood	8	SM	4.4	66
15	Basswood	5	SM	2.5	22
16	Ash	5	LM	11.9	443
17	Basswood	5	SM	2.5	22
18	Basswood	6	SM	4.2	55
19	Goat willow	4	M	1.9	10
20	Goat willow	4	M	1.9	10
21	Basswood	4	M	2.2	15
22	Basswood	5	LM	5.4	92
23	Basswood	5	M	3.2	33
24	Basswood	4	M	4.2	55
25	Basswood	5.5	M	5.9	108
26	Basswood	6	M	6.4	128
27	Basswood	6	M	7.9	181
28	Basswood	6.5	M	8.4	194
29	Basswood	7	M	9.9	252
30	Basswood	7	M	10.4	267
31	Basswood	7	M	11.9	333
32	Basswood	7	M	12.4	348
33	Basswood	7	M	13.9	420
34	Basswood	7	M	14.4	435
35	Basswood	7	M	15.9	513
36	Basswood	7	M	16.4	528
37	Basswood	7	M	17.9	612
38	Basswood	7	M	18.4	627
39	Basswood	7	M	19.9	717
40	Basswood	7	M	20.4	732
41	Basswood	7	M	21.9	828
42	Basswood	7	M	22.4	843
43	Basswood	7	M	23.9	945
44	Basswood	7	M	24.4	960
45	Basswood	7	M	25.9	1068
46	Basswood	7	M	26.4	1083
47	Basswood	7	M	27.9	1197
48	Basswood	7	M	28.4	1212
49	Basswood	7	M	29.9	1332
50	Basswood	7	M	30.4	1347
51	Basswood	7	M	31.9	1473
52	Basswood	7	M	32.4	1488
53	Basswood	7	M	33.9	1620
54	Basswood	7	M	34.4	1635
55	Basswood	7	M	35.9	1773
56	Basswood	7	M	36.4	1788
57	Basswood	7	M	37.9	1932
58	Basswood	7	M	38.4	1947
59	Basswood	7	M	39.9	2100
60	Basswood	7	M	40.4	2115
61	Basswood	7	M	41.9	2277
62	Basswood	7	M	42.4	2292
63	Basswood	7	M	43.9	2460
64	Basswood	7	M	44.4	2475
65	Basswood	7	M	45.9	2652
66	Basswood	7	M	46.4	2667
67	Basswood	7	M	47.9	2853
68	Basswood	7	M	48.4	2868
69	Basswood	7	M	49.9	3063
70	Basswood	7	M	50.4	3078
71	Basswood	7	M	51.9	3285
72	Basswood	7	M	52.4	3297
73	Basswood	7	M	53.9	3513
74	Basswood	7	M	54.4	3525
75	Basswood	7	M	55.9	3750
76	Basswood	7	M	56.4	3762
77	Basswood	7	M	57.9	4000
78	Basswood	7	M	58.4	4011
79	Basswood	7	M	59.9	4260
80	Basswood	7	M	60.4	4271
81	Basswood	7	M	61.9	4530
82	Basswood	7	M	62.4	4541
83	Basswood	7	M	63.9	4810
84	Basswood	7	M	64.4	4821
85	Basswood	7	M	65.9	5100
86	Basswood	7	M	66.4	5111
87	Basswood	7	M	67.9	5400
88	Basswood	7	M	68.4	5411
89	Basswood	7	M	69.9	5710
90	Basswood	7	M	70.4	5721
91	Basswood	7	M	71.9	6030
92	Basswood	7	M	72.4	6041
93	Basswood	7	M	73.9	6360
94	Basswood	7	M	74.4	6371
95	Basswood	7	M	75.9	6700
96	Basswood	7	M	76.4	6711
97	Basswood	7	M	77.9	7050
98	Basswood	7	M	78.4	7061
99	Basswood	7	M	79.9	7410
100	Basswood	7	M	80.4	7421



KEY

- Category A Tree - High quality (Retention highly sensitive)
- Category B Tree - Moderate quality (Retention highly sensitive)
- Category C Tree - Moderate quality (Retention sensitive)
- Category D Tree - Low quality (May be retained but subject to conservation development)
- Category E Tree - Low quality (Should be retained for amenity)
- Category F Tree - Low quality (Should be retained for amenity)
- Category G Tree - Low quality (Should be retained for amenity)
- Category H Tree - Low quality (Should be retained for amenity)
- Category I Tree - Low quality (Should be retained for amenity)
- Category J Tree - Low quality (Should be retained for amenity)
- Category K Tree - Low quality (Should be retained for amenity)
- Category L Tree - Low quality (Should be retained for amenity)
- Category M Tree - Low quality (Should be retained for amenity)
- Category N Tree - Low quality (Should be retained for amenity)
- Category O Tree - Low quality (Should be retained for amenity)
- Category P Tree - Low quality (Should be retained for amenity)
- Category Q Tree - Low quality (Should be retained for amenity)
- Category R Tree - Low quality (Should be retained for amenity)
- Category S Tree - Low quality (Should be retained for amenity)
- Category T Tree - Low quality (Should be retained for amenity)
- Category U Tree - Low quality (Should be retained for amenity)
- Category V Tree - Low quality (Should be retained for amenity)
- Category W Tree - Low quality (Should be retained for amenity)
- Category X Tree - Low quality (Should be retained for amenity)
- Category Y Tree - Low quality (Should be retained for amenity)
- Category Z Tree - Low quality (Should be retained for amenity)



PROJECT TITLE
Alaw Mon Solar Farm, Anglesey

DRAWING TITLE
Tree Survey & Constraints Plan

SCALE 1:1500 @ A0
DRAWING NUMBER BHA_1096_01

DRAWN BY DV **APPROVED BY** RH **REVISION** B **SHEET** 4/4 **DATE** 18/08/2023

LAYOUT USED WITHIN DRAWING xxxxxxxxxx

CLIENT Enso Energy

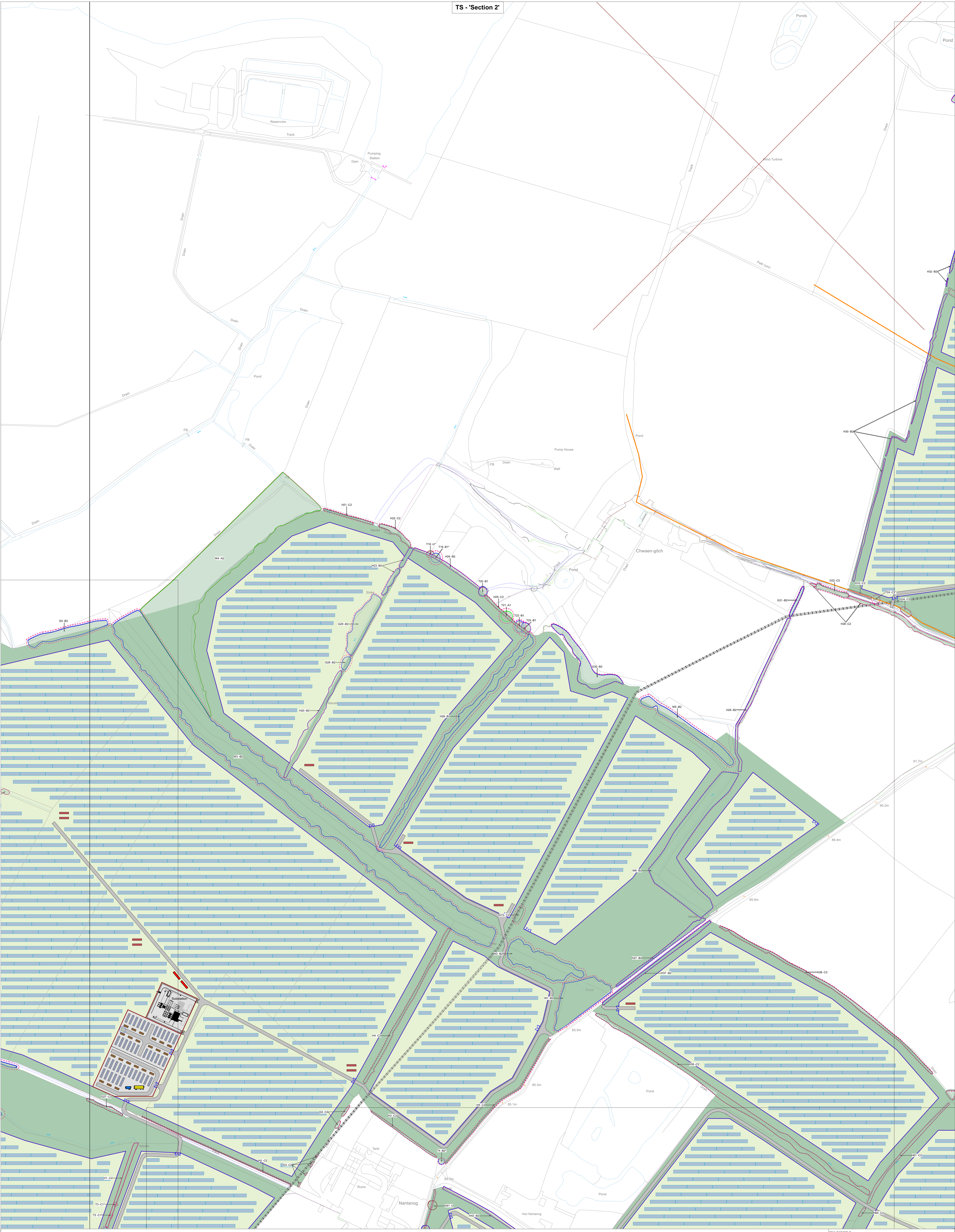
COORDINATE SYSTEM (DATUM) British National Grid / Newlyn Datum (A00)

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Barton Hyett Associates
Arboricultural Consultants

26, 1306 Street, Walsby, Lincolnshire, LN12 2RN
01509 541000
www.bartonhyett.co.uk
0044 1509 541000
0044 1509 541001

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



KEY

Category A Tree - High quality (Preservation highly desirable)	Tree (High quality - Group to be removed)
Category B Tree - High quality (Preservation highly desirable)	Tree Protection Boundary
Category C Tree - Moderate quality (Preservation desirable)	Secondary Tree Protection Boundary (Subject to allow works within GZ if approved and retained A&D)
Category D Tree - Low quality (May be retained but should not constrain development)	All auxiliary infrastructure related to road construction (Temporary Site, Site Store, etc.) All such items shall be protected by tree protection barriers at ground level.
Category E Tree - Very low quality (Should be removed for amenity)	
Category F Tree - Very low quality (Should be removed for amenity)	
Category G Tree - Very low quality (Should be removed for amenity)	
Category H Tree - Very low quality (Should be removed for amenity)	
Category I Tree - Very low quality (Should be removed for amenity)	
Category J Tree - Very low quality (Should be removed for amenity)	
Category K Tree - Very low quality (Should be removed for amenity)	
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Category M Tree - Very low quality (Should be removed for amenity)	
Category N Tree - Very low quality (Should be removed for amenity)	
Category O Tree - Very low quality (Should be removed for amenity)	
Category P Tree - Very low quality (Should be removed for amenity)	
Category Q Tree - Very low quality (Should be removed for amenity)	
Category R Tree - Very low quality (Should be removed for amenity)	
Category S Tree - Very low quality (Should be removed for amenity)	
Category T Tree - Very low quality (Should be removed for amenity)	
Category U Tree - Very low quality (Should be removed for amenity)	
Category V Tree - Very low quality (Should be removed for amenity)	
Category W Tree - Very low quality (Should be removed for amenity)	
Category X Tree - Very low quality (Should be removed for amenity)	
Category Y Tree - Very low quality (Should be removed for amenity)	
Category Z Tree - Very low quality (Should be removed for amenity)	

Notes:

- Tree Protection Area (TPA) - Layout design that indicates the minimum clearance to be achieved around individual trees and root retaining structures.
- Tree Protection Boundary (TPB) - Boundary of the tree protection area.
- Tree Protection Zone (TPZ) - Boundary of the tree protection zone.
- Tree Protection Barrier - Barrier to be installed to protect trees from damage.
- Tree Protection Signage - Signage to be installed to inform the public of the tree protection measures.
- Tree Protection Schedule - Schedule of trees to be protected.
- Tree Protection Plan - Plan showing the tree protection measures.
- Tree Protection Report - Report detailing the tree protection measures.
- Tree Protection Survey - Survey of trees to be protected.
- Tree Protection Assessment - Assessment of trees to be protected.
- Tree Protection Mitigation - Mitigation measures for trees to be protected.
- Tree Protection Monitoring - Monitoring of trees to be protected.
- Tree Protection Maintenance - Maintenance of trees to be protected.
- Tree Protection Replacement - Replacement of trees to be protected.
- Tree Protection Removal - Removal of trees to be protected.



PROJECT TITLE
Alaw Mon Solar Farm, Anglesey

DRAWING TITLE
Tree Retention/Removal and Protection Plan

SCALE
1:1500 @ A0

DRAWING NUMBER
BHA_1096_02

DRAWN BY
DV

APPROVED BY
RH

REVISION
1/4

SHEET
1/4

DATES
05/10/2023

LAYOUT USED WITHIN DRAWING
WAM-01-P02 Proposed Site Plan

CLIENT
Enso Energy

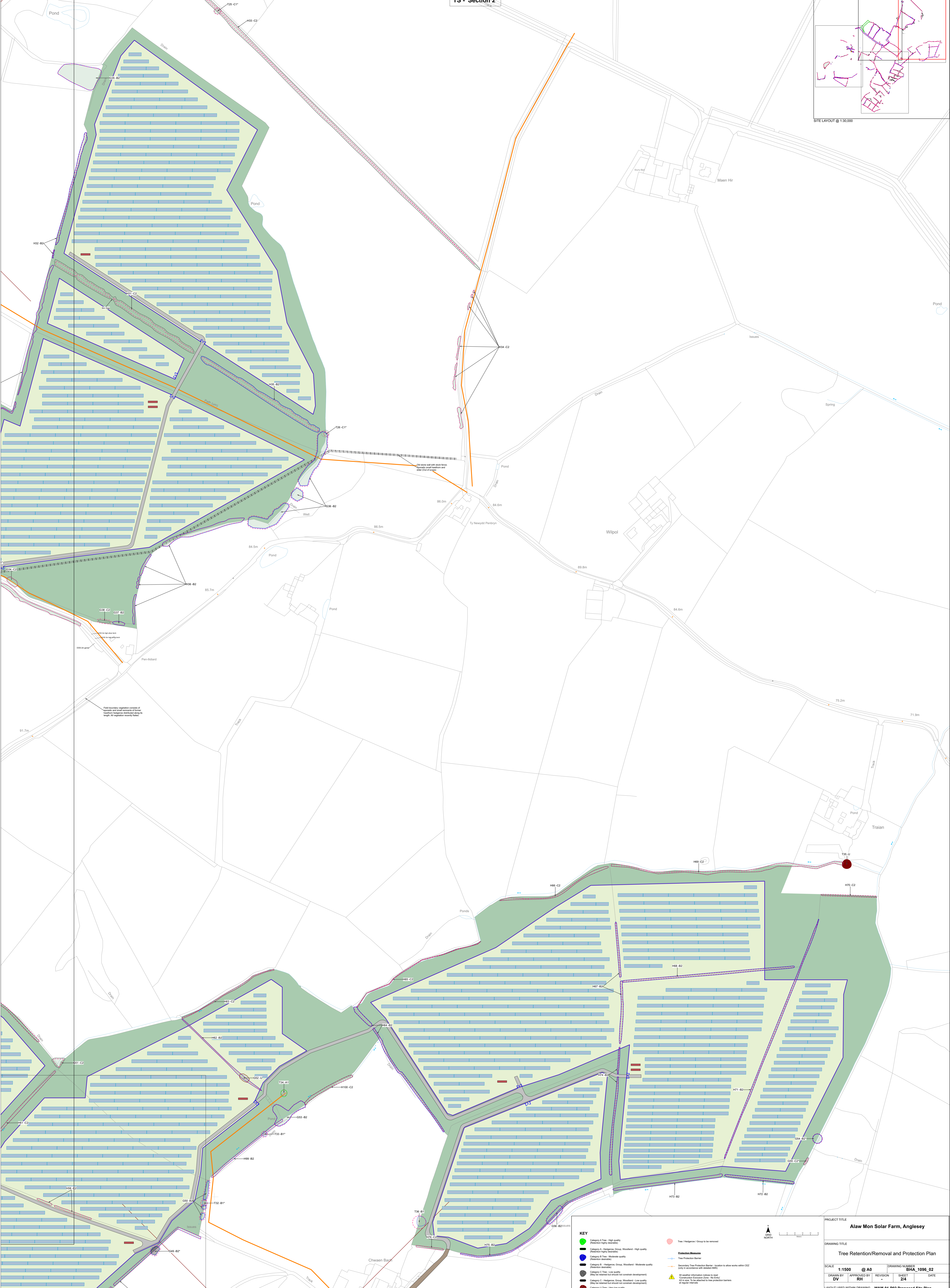
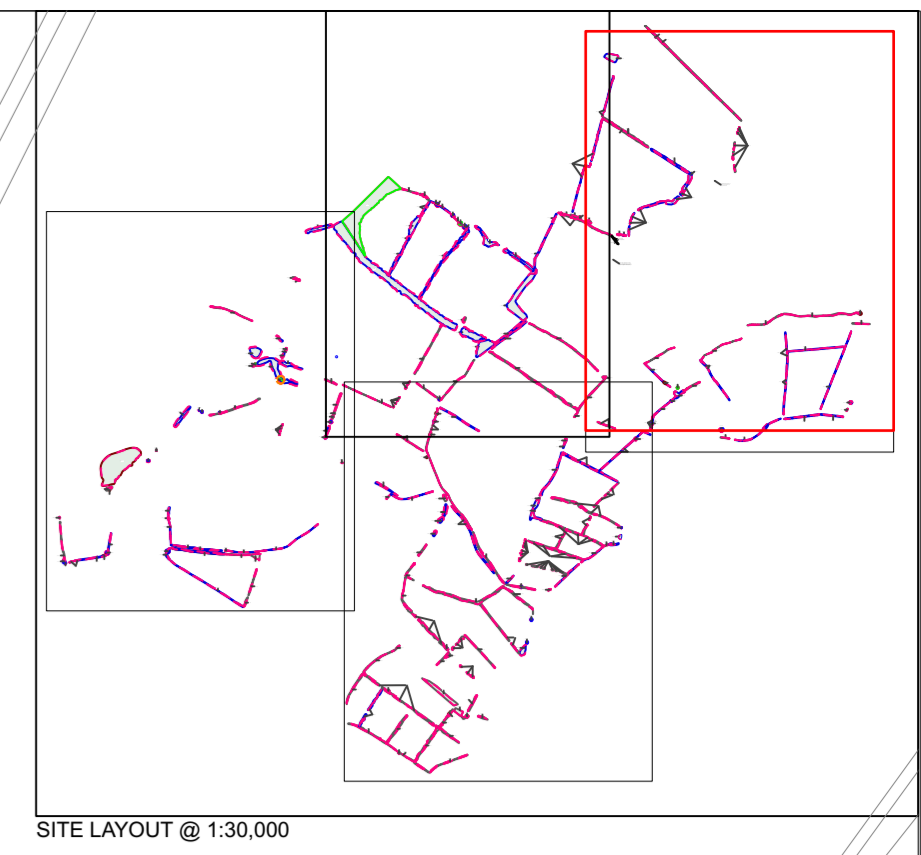
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Barton Hyett Associates
Arboricultural Consultants

251-253 High Street, London, EC1A 1BB, UK
Tel: 020 7593 8800, Fax: 020 7593 8801, Email: info@bartonhyett.com

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KEY	
●	Category A Tree - High quality (Preservation High Importance)
○	Category A - Hedgerow, Group, Woodland - High quality (Preservation High Importance)
●	Category B Tree - Moderate quality (Preservation Moderate)
○	Category B - Hedgerow, Group, Woodland - Moderate quality (Preservation Moderate)
●	Category C Tree - Low quality (Preservation Low)
○	Category C - Hedgerow, Group, Woodland - Low quality (Preservation Low)
●	Category D Tree - Very low quality (Preservation Very Low)
○	Category D - Hedgerow, Group, Woodland - Very low quality (Preservation Very Low)
●	Road Protection Area (RPA) - Layout design not including the necessary area around a tree to protect it from adjacent roads and not shown in this drawing
○	Tree marked for removal at date (DD/MM)
*	Tree marked for removal in an ecological survey. Location given in Appendix 1
*	Tree marked for removal in a Wetland Data
*	Accident tree marked for retention. Important trees that require special consideration
*	Accident tree marked for retention. Important trees that require special consideration from Natural England and the Forestry Commission
○	Tree / Hedgerow / Group to be retained
○	Tree Protection Barrier
—	Secondary Tree Protection Barrier - location to allow works within CSE
△	All weather information unless stated. Comments: Exclosure Zone, No Entry. At 1.8m. To be attached to the protection barriers at regular intervals.

PROJECT TITLE
Alaw Mon Solar Farm, Anglesey

DRAWING TITLE
Tree Retention/Removal and Protection Plan

SCALE 1:1500 @ A0 **DRAWING NUMBER** BHA_1096_02

DRAWN BY DV **APPROVED BY** RH **REVISION** 2/4 **DATE**

LAYOUT USED WITHIN DRAWING WAM-01-P02 Proposed Site Plan

CLIENT Enso Energy

COORDINATE SYSTEM (DATUM) British National Grid / Newlyn Datum (A00)

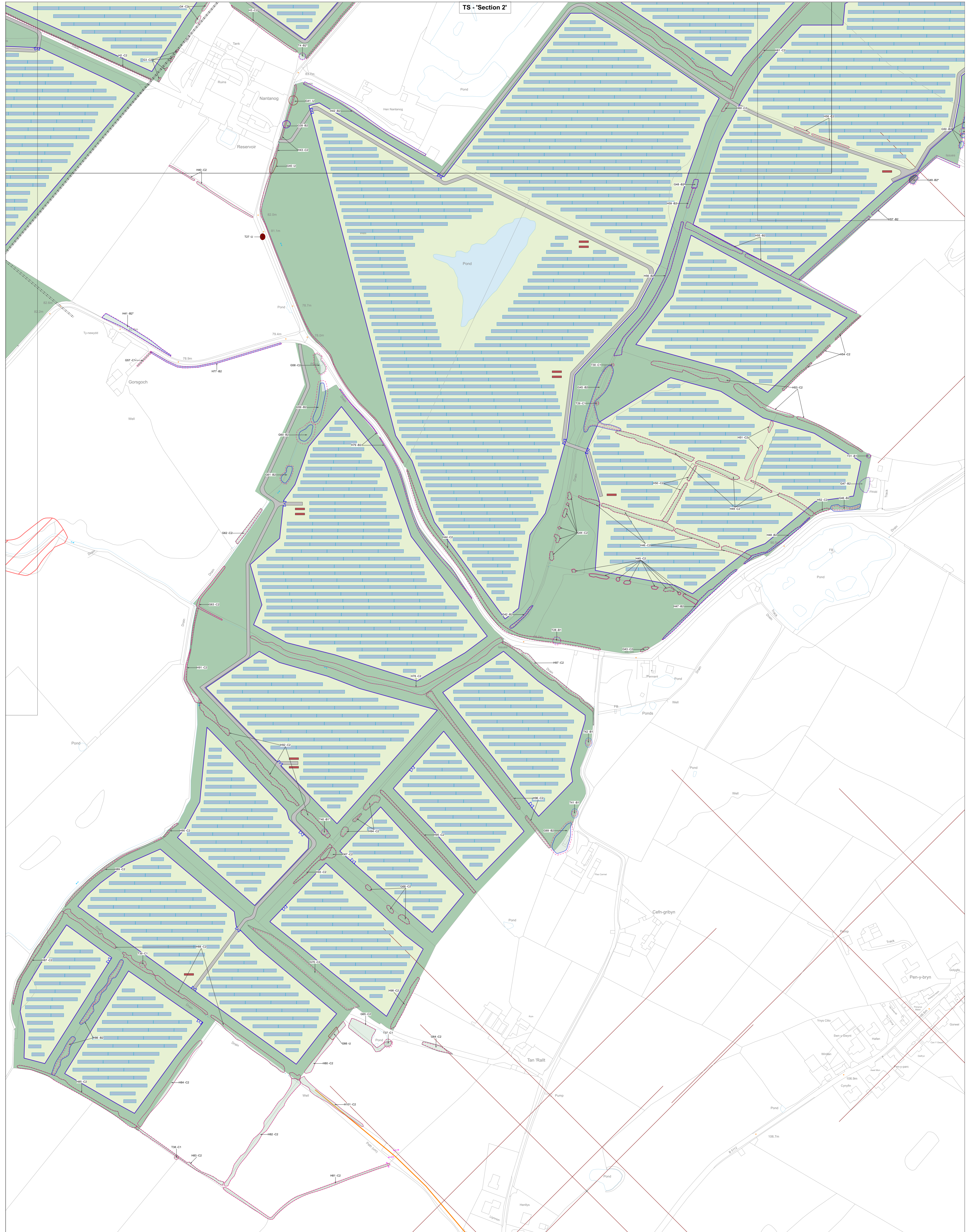
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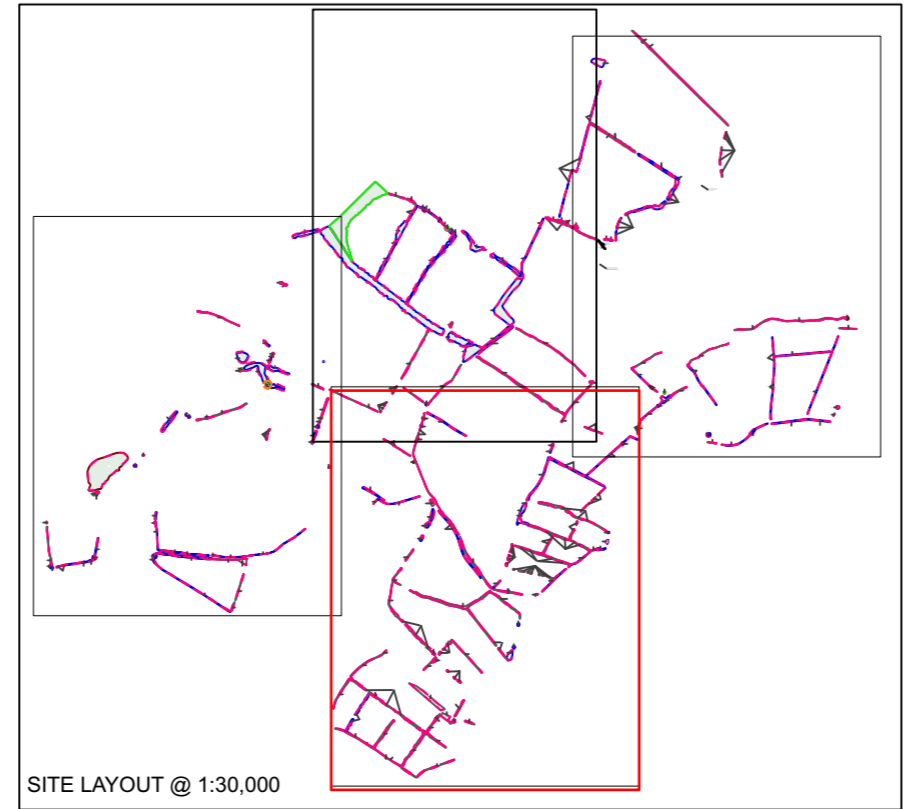
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TS - Section 2'



KEY

	Category A Tree - High quality (Retention highly desirable)		Tree (Highlights - Group to be removed)
	Category B Tree - Moderate quality (Retention highly desirable)		
	Category C Tree - Moderate quality (Retention desirable)		
	Category D Tree - Low quality (May be retained but should not constrain development)		
	Category E Tree - Very low quality (Should be removed for reasons)		
	Category F Tree - Very low quality (Should be removed for reasons)		
	Category G Tree - Very low quality (Should be removed for reasons)		
	Tree Protection Barrier		Demarcate Tree Protection Barrier - location to allow works within CDZ (if it is considered an ASP boundary)
	Tree Protection Barrier		All further information refers to the Construction Exposure Zone - See Doc 10. All sites have attached to tree protection barriers and/or drainage
	Tree Protection Barrier - not on topographical survey. Location given is approximate		
	Access Zone / Roadway / Utility Lines		
	Access Zone / Roadway / Utility Lines		
	Access Zone / Roadway / Utility Lines		



PROJECT TITLE		Alaw Mon Solar Farm, Anglesey	
DRAWING TITLE			
Tree Retention/Removal and Protection Plan			
SCALE	1:1500 @ A0	DRAWING NUMBER	BHA_1096_02
DRAWN BY	DW	APPROVED BY	RH
LAYOUT USED WITHIN DRAWING	WAM-01-P02-Proposed Site Plan	SHEET	3/4
CLIENT	Enso Energy		
COORDINATE SYSTEM (DATUM)	British National Grid / Newlyn Datum (AOD)		
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Barton Hyett Associates Arboricultural Consultants			

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SURVEY DATE: 24/25 MARCH 2021 AND AUGUST 2023

INDIVIDUAL 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 m ²
T1	Ash	5.0	3	#	490	5-3-3-3	2.0	2.0	N	EM	None	Three stemmed tree of stunted form. Prolific bark cankers.	Fair	Fair	20+	B2	5.9	109
T2	Ash	5.0	1	#	200	0.5-2-5-3	2.0	2.0	S	M	None	Decayed stump with a single regenerated stem.	Fair	Poor	10+	C1	2.4	18
T3	Ash	4.5	1	#	180	3.5-3.5-2-1.5	2.5	2.5	N	SM	None	Trunk cavity from ground level to 1m. Stunted form.	Fair	Poor	10+	C1	2.2	15
T4	Sycamore	8.0	1	-	380	4.5-4-4-4	2.5	2.0	NE	SM	None	Edge tree of small copse overhanging Site. Growing on old stone wall. No significant defects.	Good	Good	40+	B2	4.5	65
T5	Hawthorn	3.0	6	-	220	1.5-2-1-0.5	1.0	1.0	E	EM	None	Small, stunted tree on old boundary stone wall.	Fair	Poor	10+	C1	2.6	22
T6	Ash	9.0	1	#	990	7-8-11-6	4.0	1.0	N	LM	Veteran	Stunted form with retrenching crown, decay pockets and deadwood throughout crown. Veteran in appearance. Add appropriate Veteran tree buffer.	Good	Fair	20+	A3	11.9	443
T7	Hawthorn	5.0	7	-	440	5-5-3.5-4	1.0	1.0	E	M	None	Good form and condition. Characterful twisted trunk.	Good	Good	40+	A1	5.3	88
T8	Sycamore	6.0	2	-	350	4.5-4-4-5	3.0	2.5	S	EM	None	Exposed roots on southeast side indicating historic movement. Minor deadwood.	Fair	Fair	20+	B1	4.2	55
T9	Goat willow	4.0	1	#	300	5-3-4-4	0.5	0.5	W	M	None	Strong trunk lean to west. Good vitality.	Good	Fair	20+	B1	3.6	41
T10	Goat willow	4.0	1	-	280	4-4.5-3-2	1.0	2.5	W	M	None	Basal cavity but good adaptive wood growth.	Good	Fair	20+	B1	3.3	35
T11	Hawthorn	4.0	1	#	180	2.5-2-2-2	1.0	1	SW	M	None	Isolated tree in area of gorse. Grazing damage on stem.	Fair	Fair	20+	C1	2.2	15
T12	Hawthorn	5.0	1	-	450	5.5-4-1.5-4	1.0	1.5	N	LM	None	Dense crown. Gnarled and twisted old trunk.	Good	Fair	20+	B1	5.4	92
T13	Sycamore	8.0	3	#	680	6-5-6-5.5	4.0	1.5	W	M	None	Growing on top of stone boundary wall. Minor ivy. No significant defects.	Good	Fair	40+	B1	8.2	209
T14	Hawthorn	4.0	3	#	350	5-2.5-2.5-2.5	2.0	0.5	SW	M	None	Dead tree	Dead	Dead	<10	U	4.2	55
T15	Hawthorn	3.5	10	#	250	2.5-2.5-2-2	1.0	-	-	M	None	Squat form. Exposed roots to north due to soil erosion.	Good	Fair	20+	B1	3.0	28
T16	Goat willow	5.5	4	#	490	5.5-5-9-5	0.2	N/a	N/a	M	None	Multi stemmed tree next to water course. Typical for species and age.	Good	Fair	20+	B1	5.9	109

SURVEY DATE: 24/25 MARCH 2021 AND AUGUST 2023

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
T17	Sycamore	8.0	1	#	700	7.0-8.0-8.0-8.0	2.0	0.5	N	M	None	A broad crowned, multi stemmed tree overhanging the Site by up to 6m. Located on steep embankment beyond fence.	Good	Good	40+	B1	8.4	222
T18	Sycamore	8.0	1	#	650	5-5-4-5	3.0	-	-	M	None	Moribund tree; 90% dead	Poor	Poor	<10	U	7.8	191
T19	Sycamore	10.0	1	#	750	6-6-6-6	4.0	2	N	M	None	Prolific basal shoots. Stunted by wind. No significant defects.	Good	Good	20+	B1	9.0	255
T20	Sycamore	8.5	1	#	480	7-6-5-5	3.5	3	S	M	None	Wind deformed crown. Next to gateway with basal wounds on gate side and heartwood decay exposed.	Good	Fair	10+	B1	5.8	104
T21	Sycamore	12.0	1	#	800	6-8-7-7	4.0	2.5	W	M	None	Growing on old stone wall. Good form and condition.	Good	Good	20+	A1	9.6	290
T22	Sycamore	10.0	1	#	700	7-6-7-6	3.5	2.5	E	M	None	Pronounced basal flare providing adaptive wood tissue for some trunk decay. Crown stunted by wind.	Good	Fair	20+	B1	8.4	222
T23	Ash	11.0	1	#	750	8-9-5-5-3	2.0	2	E	M	None	Large buttress roots along bottom of old stone wall. Fair vitality.	Fair	Good	20+	B1	9.0	255
T24	Leyland Cypress	7.0	10	#	470	6-5-1-3	0.5	N/a	N/a	SM	None	Wind deformed crown. Heavily reduced back to main stems on road side.	Fair	Fair	20+	C1	5.6	100
T25	Goat willow		6	-	370	3-4-3.5-5	1.5	0	SE	SM	None	Located north of ditch. Unremarkable but stands proud of hedgerow.	Good	Fair	40+	C1	4.4	62
T26	Goat willow	7.0	1	#	250	5-4-4-6	2.0	2	W	EM	None	Located on edge of brook, overhanging Site by up to 4m.	Good	Good	10+	C1	3.0	28
T27	Ash	6.0	1	#	380	4-3.5-4-3	2.5	1.75	W	EM	None	Extensive dieback caused by ADB	Poor	Fair	<10	U	4.5	65
T28	Sycamore	9.0	1	#	450	4.5-5-4-4.5	3.0	1	E	EM	None	Good form and condition. Perched on top of hedge bank within flailed hedge.	Good	Good	40+	B1	5.4	92
T29	Hawthorn	4.0	1	#	150	2.5-2.5-2.5-2.5	0.5	-	-	M	None	Typical for species and age.	Good	Good	20+	C1	1.8	10
T30	Hawthorn	4.0	1	#	150	2-2-2-2	0.5	-	-	M	None	Typical for species and age.	Good	Good	20+	C1	1.8	10
T31	Hawthorn	4.0	1	-	230	2.5-2.5-2.5-2.5	1.5	1	S	M	None	Typical for species and age.	Good	Fair	20+	B1	2.8	24
T32	Ash	7.0	1	#	350	5.0-4.0-4.0-2.0	2.5	1.5	N	EM	None	Good crown form. On side of ditch.	Good	Fair	20+	B1	4.2	55
T33	Sycamore	5.0	2	#	320	4.0-3.0-3.0-2.0	0.5	0.2	SE	EM	None	Stunted form. Located on top of hedgebank.	Fair	Fair	20+	B1	3.8	46
T34	Sycamore	6.0	1	#	320	4.0-4.0-5.0-4.0	2.0	2	SW	EM	None	Good form. Self set growing next to ruin.	Good	Good	40+	A1	3.8	46
T35	Ash	10.0	2	#	510	7-6-5-6	2.5	2	N	EM	None	Twin stemmed from ground level. Dead.	Dead	Dead	<10	U	6.1	118

SURVEY DATE: 24/25 MARCH 2021 AND AUGUST 2023

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
T36	English elm	9.0	1	-	710	8-9-5-3	2.0	3	E	M	None	Rarity value as most mature elms have died from Dutch elm disease. Basal decay in east side. Windswept form.	Good	Poor	20+	B1	8.5	228
T37	Goat willow	7.0	1	-	450	6-4-4-5	2.0	1.5	S	M	None	Fallen hawthorn hung up in south side of crown. Windswept form.	Fair	Fair	10+	C1	5.4	92
T38	Goat willow	4.5	1	#	180	4-3-2-3	2.0	1.5	N	SM	None	Small windswept tree at hedgerow junction. Overhanging Site by 2m.	Good	Good	20+	C1	2.2	15
T39	Goat willow	5.0	1	#	350	5-4.5-2-2	1.5	0.5	E	M	None	An old, windswept tree on bank edge. Previously uprooted but now stable.	Good	Fair	10+	C1	4.2	55
T40	Goat willow	5.0	7	-	290	5-5-3-4	0.5	-	-	EM	None	Multiple stems from ground level.	Good	Fair	20+	B1	3.5	38
T41	Sycamore	8.0	4	#	290	6-5-6-4	2.0	0.5	W	SM	None	Multi stemmed tree growing on roadside stone wall. No significant defects.	Good	Fair	40+	B1	3.5	38
T42	Sycamore	8.0	5	#	290	6.0-5.0-6.0-4.0	2.0	0.5	W	SM	None	Multi stemmed tree growing on roadside stone wall. No significant defects.	Good	Fair	40+	B1	3.5	38

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	Ash, hawthorn	3-7	4	-	400	5.0	2.0	EM	None	1 ash and 3 smaller hawthorns between double fence line. Minor bark cankers on ash.	Fair	Fair	20+	B2	4.8
G2	Hawthorn, ash	3-7	15	-	350	3.0	2.0	EM	None	A single stunted ash in the middle of a row of small hawthorns. Ash bark canker.	Fair	Fair	20+	B2	4.2
G3	Hawthorn	2-3	28	-	100	1.5	1.0	EM	None	A broken field boundary hedge formed of 4 clumps of small trees adjacent the farm yard along the top of an old stone wall.	Fair	Good	20+	C2	1.3
G4	Hawthorn	2-3	15	#	100	1.3	1.5	EM	None	Grown against wall. Wind deformed crown. Many dead stems.	Fair	Poor	20+	C2	1.3
G5	Sitka spruce, Monterey pine	8-14	>51	-	500	4	2.0	EM	None	Linear belt of trees along fence line south of dense scrub area. Several standing dead trees.	Fair	Fair	20+	B2	6.0
G6	Hawthorn and gorse	2-4	6	#	125	1.5	1.0	EM	None	Linear group along ditch. Gappy in parts. Wind deformed crowns.	Fair	Fair	20+	C2	1.5

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)
G7	Hawthorn and gorse	2-4	6	#	125	1.5	1.0	EM	None	Linear group along ditch. Gappy in parts. Wind deformed crowns.	Fair	Fair	20+	C2	1.5
G8	Sycamore, hawthorn	4-8	10	-	450	4	1.0	EM	None	One sycamore at south end. Trees growing out of the northeast side of stone wall over rock. Crowns biased to northeast side.	Fair	Fair	20+	B2	5.4
G9	Sycamore	5-13	15	#	750	5.5	3.5	M	Emerging veteran	Collection of close grown old trees around water course. Single cohesive crown. Exposed roots and basal decay present in most trees. Deadwood throughout crown. Branch tear scars and open cavities and internal decay at old limb loss scars.	Good	Fair	20+	B3	9.0
G10	Hawthorn	3-4	3	-	180	2	1.0	M	None	One mature tree in good health and two smaller trees with sparse crowns.	Fair	Fair	10+	C1	2.2
G11	Hawthorn, sycamore, ash	3-8	11	#	350	3	1.5	EM	None	Row of trees on old stone wall. Dominant sycamore in middle of group. Ash at south end is regenerating from a decayed stump.	Good	Fair	20+	B2	4.2
G12	Ash, hawthorn	4-9	30	-	550	4	3.0	M	None	Two ash on north side of farm track but all others along south side. Two mature dominant ash trees with linear hawthorn group beneath. Approximately 5m clearance over track.	Fair	Fair	20+	B2	6.6
G13	Sycamore, ash, Douglas fir, hawthorn, goat willow	4-12	>50	#	750	4.5	3.0	M	None	Linear group in deep gully following water course. Many trees have old weathered appearance and some have future veteran potential.	Good	Fair	20+	B2	9.0
G14	Hawthorn	2-4	2	#	300	3	0.5	M	None	One partially uprooted tree and the other growing out of the west facing rock face. Characterful old trees.	Good	Poor	20+	B2	3.6
G15	Hawthorn, pear	4-7	49	#	450	3	1.2	M	None	Linear line of trees developed from outgrown hedgerow. Hawthorns are generally uniform in condition and form. Occasional collapsed hawthorn due to basal decay. Large pear tree in middle of group with recently lost large limb and basal wounding.	Good	Fair	20+	B3	5.4
G16	Goat willow	2-4	>50	#	400	6	0.2	EM	None	Large area of dense wet woodland formed by multi stemmed willows. Some areas declining and dying. Multistemmed Dbh estimated.	Poor	Fair	<10	U	4.8
G17	Goat willow	2-4	9	#	350	6	0.2	EM	None	Area of dense wet woodland formed by multi stemmed willows. Multistemmed Dbh estimated. Extensive browning of foliage.	Fair	Fair	20+	C2	4.2
G18	English elm, hawthorn	8	13	-	180	3	2.0	SM	None	Elm with under storey of hawthorn along stone wall. Elms likely to succumb to Dutch elm disease and die within 5-10 years.	Fair	Fair	<10	U	2.2

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)
G19	Sycamore	5-6	2	-	250	3	3.0	SM	None	Two roadside trees within hedge. Overhead power cable through crowns.	Fair	Good	20+	B2	3.0
G20	Hawthorn	3-4	3	#	300	3	1.5	EM	None	Windswept trees on brook edge. Overhang Site by up to 2m.	Good	Good	20+	B2	3.6
G21	Sycamore	7-8	2	#	350	5	2.5	EM	None	Growing west of ditch along field edge. Two trees form a cohesive canopy.	Good	Fair	20+	B2	4.2
G22	Hawthorn	3-4	3	#	200	2.5	1.0	EM	None	Small trees along side of boundary stone wall.	Good	Fair	20+	C2	2.4
G23	Sycamore, hawthorn	4-8	25	-	200	3	2.0	SM	None	Dense off-Site tree belt overhanging Site by up to 3m.	Fair	Fair	20+	B2	2.4
G24	Hawthorn	2-2.5	8	#	100	0.75	1.5	EM	None	Spaced out trees with small wind deformed crowns and clear stems.	Fair	Fair	20+	C2	1.3
G25	Hawthorn	3-5	20	#	200	2	1.0	SM	None	A scrappy area of tree cover consisting of sparse, windswept small trees. Some are overwhelmed by ivy.	Poor	Poor	10+	C1	2.4
G26	Hawthorn	2-3	17	#	100	1.25	1.5	EM	None	Spaced out trees with small wind deformed crowns and clear stems.	Fair	Fair	20+	C2	1.3
G27	Hawthorn	4	40	#	120	2	2.0	SM	None	Small scrappy trees along edge of farm track.	Fair	Fair	10+	C2	1.5
G28	Goat willow	3-5	2	#	650	4.5	1.0	M	None	Multistemmed Dbh equivalent estimated. Growing out of wall next to ditch. Typical for species, age and location.	Good	Fair	20+	B2	7.8
G29	Alder, cherry, hawthorn, willow	3-7	>25	#	400	3.5	2.0	SM	None	Plantation area on field boundary.	Fair	Fair	20+	B2	4.8
G30	Hawthorn, goat willow, larch, Douglas fir	5-10	50	#	300	3	1.0	EM	None	Hawthorn and goat willow along boundary stone wall adjacent brook, with larch and fir beyond to the north.	Fair	Fair	20+	B2	3.6
G31	Sitka spruce, hawthorn	3-9	30	-	300	3	1.0	SM	None	Row of approximately 12 spruce with understory hawthorn hedge along ditch.	Fair	Fair	20+	B2	3.6
G32	Larch, alder, willow, beech, hawthorn	3-5	10	#	275	2	2.0	EM	None	Linear tree belt on road side. Wind deformed crowns.	Fair	Fair	20+	C2	3.3
G33	Larch	3-5	6	#	150	3	1.5	Y	None	Small roadside trees. Crown bias to north due to prevailing wind.n	Fair	Fair	10+	C2	1.8
G34	Larch	4.5	5	#	170	2	2.0	Y	None	Linear tree belt on road, wind deformed crowns.	Fair	Fair	20+	C2	2.0
G35	Spruce (Sitka)	6-9	>50	#	200	2.5	1.0	SM	None	Linear plantation group.	Fair	Fair	20+	B2	2.4

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)
G36	Goat willow, hawthorn	3-6	Approx 25	#	450	4.5	0.5	M	None	Multistemmed Dbh equivalent estimated. On line of hedgebank and ditch. Some hawthorn are large and old. Gaps present within group.	Fair	Fair	20+	B2	5.4
G37	Sycamore	8	6	#	400	5	1.5	EM	None	Located on south side of ditch, adjoining residential garden. Crowns overhanging Site by up to 1m.	Good	Good	20+	B2	4.8
G38	Lawson cypress, leyland cypress	6-10	8	#	450	4	1.0	EM	None	Row of trees on south side of ditch adjoining residential garden. Two fallen trees. Poor form.	Fair	Poor	10+	C2	5.4
G39	Ash	5-8	2	-	380	5	2.0	EM	None	One larger dominant tree with crown bias to east, and one small suppressed tree.	Fair	Fair	20+	B2	4.5
G40	Ash	5-7	2	#	600	4.5	2.0	EM	None	Hedgerow trees, coppiced and topped in the past. Signs of decline in upper crown. Under overhead BT cable	Poor	Fair	<10	U	7.2
G41	Ash	10-12	2	-	480	6	2.0	EM	None	One dominant and one smaller suppressed tree with bias to east. No significant defects.	Poor	Fair	<10	U	5.8
G42	Hawthorn, elm	2-5	16	-	200	3	1.0	SM	None	Small hawthorn plus three larger elm trees along old stone wall.	Good	Fair	20+	B2	2.4
G43	Sycamore	4-5	3	-	200	2	1.0	Y	None	Broken group of small trees along roadside stone wall.	Good	Good	40+	C2	2.4
G44	Hawthorn	2-3	9	#	150	2.5	0.5	EM	None	Spread out row of same sized tree in marshy area in valley bottom.	Fair	Fair	20+	C2	1.8
G45	Goat willow, hawthorn	3-5	20	-	150	3	0.5	EM	None	Low lying, scrubby trees in marshy area.	Good	Good	20+	B2	1.8
G46	Goat willow, sycamore, gorse, hawthorn	3-7	25	-	200	4	1.5	EM	None	Goat willow and sycamore with understorey of hawthorn and gorse on hedge bank.	Fair	Fair	20+	B2	2.4
G47	Sycamore	8-9	3	#	450	5	2.0	M	None	Close grown trees with single crown. Southern tree pollarded at 2.5m in past. Northern tree is old coppice.	Fair	Fair	20+	B2	5.4
G48	Goat willow	5	3	-	200	2	0.0	EM	None	Multi stemmed trees west of ditch	Good	Fair	40+	B2	2.4
G49	Malus and willow	4-5	2	#	350	3	2.0	EM	None	On top of hedgebank, no access to stems.	Good	Fair	20+	B2	4.2
G50	Hawthorn	2-5	10	#	300	2.5	1.0	M	None	Remnant hedgerow on side of ditch.	Fair	Fair	20+	B2	3.6
G51	Goat willow	5	10	-	150	3	1.0	EM	None	Scrappy densely spaced trees along ditch.	Fair	Fair	10+	C2	1.8
G52	Ash	7-8	2	#	500	4	3.0	EM	None	Windswept form. Minor ivy.	Poor	Fair	10+	C2	6.0
G53	Sycamore, ash	4-7	18	#	400	4.5	2.0	EM	None	All new growth from old coppice stools on top of hedgebank.	Good	Fair	20+	B2	4.8

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)
G54	Ash	9	2	#	450	5	2.5	EM	None	Located east of ditch; no overhang in to Site. North tree dying back.	Fair	Fair	20+	B2	5.4
G55	White willow	4	4	#	180	3	0.0	SM	None	Located east of ditch; no canopy overhanging Site.	Good	Good	20+	C2	2.2
G56	Elm	7-9	6	-	400	4	2.0	EM	None	Located south of boundary stone wall. Overhanging Site by up to 5m. No signs of Dutch elm disease.	Good	Good	20+	B2	4.8
G57	Hawthorn	3-4	25	-	150	2	1.0	SM	None	Row of small trees along edge of driveway in adjacent property.	Fair	Fair	20+	C1	1.8
G58	Hawthorn, willow	3-6	9	#	350	3	1.0	EM	None	On steep bank down to water course.	Fair	Fair	20+	C2	4.2
G59	Hawthorn	3-5	18	#	450	2.5	2.0	M	None	Mature willows on bank down to water course. Stunted form.	Fair	Fair	20+	B2	5.4
G60	Willow, hawthorn	3-6	5	#	550	3	2.0	M	None	Adjacent water course. Characterful trees.	Fair	Fair	20+	B2	6.6
G61	Willow, hawthorn	3-6	5	#	350	2.75	2.5	M	None	Adjacent water course. Characterful trees. Wind deformed crown.	Fair	Fair	20+	B2	4.2
G62	Hawthorn	2-4	21	-	200	3	1.0	EM	None	Row of small trees along west of ditch.	Fair	Fair	10+	C2	2.4
G63	Hawthorn, white willow, gorse	3-5	29	-	150	2	0.5	SM	None	Scattered small trees with understorey of blackthorn.	Fair	Fair	10+	C2	1.8
G64	Hawthorn, gorse	2-3	12	-	100	2	0.0	EM	None	Small stunted trees growing over sunken track. Hawthorn on south side, gorse on north.	Fair	Fair	10+	C2	1.3
G65	Goat willow, gorse, hawthorn	2-3	20	-	100	1.5	0.0	SM	None	Low lying, scrappy trees around pond.	Fair	Fair	10+	C2	1.3
G66	Sycamore	5-6	2	#	250	4	2.0	SM	None	Sparse canopy and tip dieback.	Poor	Poor	<10	U	3.0
G67	Willow	4-6	3	#	400	4.5	0.5	M	None	Group of collapsed and layering willows. Typical for species.	Good	Fair	20+	C2	4.8
G68	Hawthorn, gorse	2-5	12	#	200	2	1.0	M	None	Isolated stems from remnant hedgerow. Wind deformed crowns.	Fair	Fair	20+	C2	2.4
G69	Sycamore, beech	18-20	9	-	750	7	3.0	M	None	Large mature trees surrounding static caravan in adjacent residential land. No access to stems for detailed inspection.	Good	Fair	20+	B2	9.0
G70	Hawthorn, gorse	3-5	30	-	150	3	1.0	EM	None	Growing on steep sides of sunken farm track. Canopies from each Site almost converge over track.	Fair	Fair	10+	C2	1.8
G71	Hawthorn	2.5-3	2	#	175	2	2.0	M	None	Single wind deformed crown with stem wounds and decay within main stem.	Good	Fair	20+	C2	2.1
G72	Blackthorn, willow, gorse	3-4	12	#	375	2	0.2	EM	None	Remnant of old hedgerow on field boundary wall and ditch.	Poor	Poor	10+	C2	4.5

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	Hawthorn, gorse	1.5	2.0	100	0.2	EM	Remanent hedgerow with small number of old hawthorn stems supplemented with recent hawthorn plantings.	Fair	Fair	20+	C2	1.3
H2	Hawthorn, privet, bramble	2.0	0.8	75	0.2	EM	Gappy hedgerow, top flailed in past. Between stone wall and stock fence.	Fair	Poor	20+	C2	1.0
H3	Hawthorn, blackthorn	2.0	1.5	75	0.0	SM	Between double stock fences on old stone wall. Young stems regenerating from coppiced stumps.	Good	Fair	20+	C2	1.0
H4	Hawthorn	1.5	1.0	100	0.2	M	Topped at 500mm in past with 1m of new growth. Gappy in parts. Single ash to 4m.	Fair	Fair	20+	C2	1.3
H5	Hawthorn, blackthorn	1.8	0.8	100	0.2	SM	Regularly maintained with flail. Box cut. Close to boundary stone wall.	Fair	Fair	20+	C2	1.3
H6	Hawthorn	2.5	1.5	100	0.5	SM	Gappy remnant hedgerow with wind deformed crowns. Between stone wall and stock fence.	Fair	Fair	20+	C2	1.3
H7	Hawthorn, sycamore, goat willow, gorse	2.0	2.0	75	0.2	SM	Gappy remnant hedgerow with wind deformed crowns. Ditch to north. Gorse dominates in parts.	Fair	Fair	20+	C2	1.0
H8	Hawthorn, blackthorn, dog rose, gorse	2.0	2.0	75	0.1	SM	On hedgebank adjacent highway. Maintained with flail in past. Recently topped with flail.	Fair	Fair	20+	B2	1.0
H9	Hawthorn, sycamore, blackthorn	3.0	3.0	150	0.5	EM	Low level thorns with several larger sycamore trees up to 5m high. Overhangs Site by up to 1.5m.	Fair	Fair	20+	B2	1.8
H10	Goat willow, hawthorn, gorse, bramble	2.5	2.0	100	0.5	M	Gappy hedgerow along either side of water course. Behind stock fence. No access to stems. Gorse and bramble dominate in parts.	Fair	Fair	20+	C2	1.3
H11	Hawthorn, gorse, blackthorn	3.0	3.0	80	0.2	M	Dense hedgerow on top of stone walled hedgebank. Larger hawthorn at northern end. Flailed in past.	Fair	Fair	20+	B2	1.0
H12	Blackthorn, hawthorn, gorse, elder	2.5	2.0	75	0.0	M	Dense hedgerow on hedgebank. Gorse dominates. Deep ditch to east side. Occasional sycamore and ash (2 trees) to 5m.	Fair	Fair	20+	B2	1.0
H13	Hawthorn, sycamore, gorse	2.0	3.0	100	0.5	M	Flailed roadside hedge along historic stone wall. Occasional sycamore trees up to 6m tall.	Good	Good	20+	B2	1.3
H14	Hawthorn, blackthorn, sycamore, gorse	2.0	2.5	75	0.0	SM	Dense hedgerow on hedgebank. Gappy and sparse in some areas. Gorse dominates. Deep ditch to south side. Two sycamores to 4m.	Fair	Fair	20+	B2	1.0
H15	Hawthorn. Blackthorn gorse, elder	3.0	2.0	80	0.0	SM	Dense hedgerow on hedgebank. Some gaps present particularly at eastern end. Ditch to north. Side flailed in past. Would benefit from some planting within gaps.	Fair	Fair	20+	B2	1.0
H16	Hawthorn, gorse, goat willow	3.0	2.0	75	0.0	SM	Small, unmanaged trees between double fence line. One larger goat willow on west side.	Fair	Fair	10+	C2	1.0

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)
H17	Hawthorn	1.8	1.0	100	0.0	SM	Dense, previously laid hedge. Wall and ditch to north. Recently flailed on top.	Fair	Fair	20+	C2	1.3
H18	Hawthorn, tamarisk, elder, blackthorn	1.5	1.0	75	0.0	EM	Flailed roadside hedge along old stone wall.	Good	Good	20+	B2	1.0
H19	Hawthorn	1.8	1.0	75	0.0	EM	Flailed roadside hedge along old stone wall.	Good	Good	20+	B2	1.0
H20	Hawthorn, gorse	3.0	4.0	150	0.2	SM	Outgrown hedgerow along line of wall and ditch, bramble and gorse dominates in parts. Gappy, especially to northern end.	Fair	Fair	20+	B2	1.8
H21	Hawthorn, gorse	3.5	2.0	150	0.5	SM	A broken hedge along the north side of the field boundary ditch with significant gaps.	Fair	Fair	10+	C2	1.8
H22	Hawthorn, gorse, bramble	3.0	2.0	150	0.0	SM	A broken hedgerow north of the ditch. Larger hawthorn 5m from field gate. Gaps filled by bramble	Fair	Fair	10+	C2	1.8
H23	Hawthorn	5.0	3.0	200	1.2	M	Outgrown hedgerow trees with clear stems. No sign of recent management. Single collapsed stem.	Good	Fair	20+	B2	2.4
H24	Hawthorn, field maple	4.5	3.0	125	1.0	M	Outgrown hedgerow trees with clear stems. No sign of recent management. 2 field maple to 6 m.	Good	Fair	20+	B2	1.5
H25	Hawthorn, field maple	2.2	1.3	100	0.2	SM	Western end recently partially laid. Remnants of hedgerow under larger trees.	Fair	Fair	20+	C2	1.3
H26	Ash, sycamore, gorse, hawthorn, blackthorn	4.0	5.0	150	0.0	SM	Wide spreading hedgerow along path of water course. Trees either side of water course. Occasional larger tree to 6m. E.g. sycamore at northern end.	Good	Fair	20+	B2	1.8
H27	Hawthorn	1.5	1.0	75	0.0	SM	Flailed roadside hedge along stone boundary wall.	Good	Good	20+	B2	1.0
H28	Hawthorn, blackthorn, gorse	1.0	2.0	75	0.0	EM	On hedgebank adjacent road. Water course to south, recently flailed (box cut) occasional larch to 3-4m.	Fair	Fair	20+	C2	1.0
H29	Hawthorn, gorse	3.5	3.0	100	0.0	EM	Growing to west of field edge ditch.	Good	Fair	20+	B2	1.3
H30	Hawthorn. Blackthorn, goat willow, gorse, tamarisk	2.2	3.0	100	0.0	EM	On hedgebank, ditch to west and east. Gappy in parts and dominated by bramble, particularly at southern end. Could be improved through management and new planting.	Fair	Fair	20+	B2	1.3
H31	Hawthorn, gorse	3.0	5.0	80	0.0	EM	Low level gorse and bramble with sporadic hawthorn trees along raised mound with ditches either side.	Fair	Fair	10+	C2	1.0
H32	Hawthorn, goat willow	3.0	3.0	90	0.0	EM	On hedgebank, ditch to east. Gappy in parts and dominated by bramble, in some parts. Could be improved through management and new planting.	Fair	Fair	20+	B2	1.1
H33	Hawthorn, gorse, goat willow,	3.5	5.0	75	0.0	EM	Low level gorse along old field boundary mound with occasional small hawthorn.	Fair	Fair	40+	C2	1.0

SURVEY DATE: 24/25 MARCH 2021 AND AUGUST 2023

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)
H34	Hawthorn, gorse	2.0	2.0	90	0.0	EM	Remnant hawthorn hedgerow on line of wall, dominated by gorse in parts.	Fair	Fair	20+	C2	1.1
H35	Hawthorn, gorse	4.0	5.0	90	0.5	EM	Low level gorse and sporadic small hawthorn growing on hedgebank sides. Some gaps up to 5m wide.	Fair	Fair	40+	B2	1.1
H36	Blackthorn, hawthorn, gorse	4.0	4.0	150	0.5	M	Gappy hedgerow on line of hedgebank.	Fair	Fair	20+	B2	1.8
H37	Hawthorn	2.5	1.5	100	0.0	M	Dense hedgerow recently maintained with flail.	Fair	Fair	20+	B2	1.3
H38	Hawthorn	3.0	1.5	100	1.0	SM	Outgrown hedgerow, wind deformed crowns. Gappy in parts. Clear stems.	Fair	Fair	20+	C2	1.3
H39	Hawthorn, blackthorn	3.5	2.0	100	0.5	M	Predominantly hawthorn, little recent management	Fair	Fair	20+	C2	1.3
H40	Hawthorn	3.0	2.0	90	1.0	SM	Gappy, unmanaged outgrown hedgerow on top of hedgebank.	Fair	Fair	20+	C2	1.1
H41	Hawthorn	2.0		75	0.5	EM	Flailed roadside hedge along stone wall.	Good	Good	40+	B2	1.0
H42	Leyland cypress	6.0	4.0	150	1.0	SM	Established row of trees forming evergreen screen along south of adjacent driveway.	Good	Good	20+	B2	1.8
H43	Hawthorn	1.5	1.0	75	0.2	SM	Tightly managed highway boundary hedgerow	Fair	Fair	20+	C2	1.0
H44	Hawthorn, blackthorn, gorse	1.3	1.0	75	0.2	SM	Tightly managed highway boundary hedgerow	Fair	Fair	20+	C2	1.0
H45	Hawthorn, blackthorn, gorse	2.0	1.2	75	1.0	SM	Gappy, unmanaged, remnant hedgerow	Fair	Fair	20+	C2	1.0
H46	Hawthorn, blackthorn, gorse	2.0	1.2	75	1.0	SM	Gappy, unmanaged, hedgerow. Gorse dominates in parts.	Fair	Fair	20+	C2	1.0
H47	Hawthorn, blackthorn, gorse	2	1.5	75	0.2	SM	Tightly managed highway boundary hedgerow	Fair	Fair	20+	B2	1.0
H48	Hawthorn, blackthorn, gorse	2	1.0	75	0.2	SM	Tightly managed highway boundary hedgerow	Fair	Fair	20+	B2	1.0
H49	Hawthorn, blackthorn, gorse	2.0	1.2	75	1.0	SM	Gappy, unmanaged, hedgerow. Gorse dominates in parts.	Fair	Fair	20+	C2	1.0
H50	Hawthorn	1.5	1.0	75	1.0	SM	Gappy, unmanaged, hedgerow. Clear stems. Grazing damage at base.	Fair	Fair	20+	C2	1.0
H51	Hawthorn	2.5	2.0	10	1.0	SM	Gappy, unmanaged, hedgerow. Clear stems. Grazing damage at base.	Fair	Fair	20+	C2	0.0
H52	Hawthorn, blackthorn, gorse	1.3	1.0	75	0.2	SM	Tightly managed highway boundary hedgerow	Fair	Fair	20+	C2	1.0
H53	Hawthorn, blackthorn, gorse	2.0	2.5	75	1.0	SM	Gappy, unmanaged, hedgerow. Gorse dominates in parts.	Fair	Fair	20+	C2	1.0
H54	Hawthorn	2.0	1.0	75	0.5	SM	Gappy hedgerow adjacent stonewall. Recently topped with flail	Fair	Fair	20+	C2	1.0
H55	Hawthorn, gorse, blackthorn	2.0	2.0	75	0.0	SM	Well maintained hedgerow (flail), on top of hedgebank. Some minor gaps, gorse dominates some parts.	Fair	Fair	20+	B2	1.0

SECTION 4

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)
H56	Hawthorn	4.0	2.0	100	0.0	EM	Unmanaged trees along west side of 2m wide ditch. Some dead trees and gaps.	Fair	Fair	20+	B2	1.3
H57	Hawthorn, blackthorn, gorse	2.0	2.0	75	0.0	SM	On hedgebank. Deep ditch to south. Regularly maintained by flail.	Fair	Fair	20+	B2	1.0
H58	Hawthorn	2.0		90	1.0	SM	Gappy remnant hedgerow adjacent stone wall. Grazing damage at base. Maintained with flail.	Fair	Poor	10+	C2	1.1
H59	Hawthorn	2.0	2.0	75	0.0	EM	Flailed hedge west of ditch	Good	Good	40+	B2	1.0
H60	Hawthorn	4.0	3.0	100	0.5	EM	Unmanaged trees along stone wall west of ditch.	Fair	Fair	10+	C2	1.3
H61	Hawthorn	4.0	3.0	100	0.5	EM	Unmanaged trees along stone wall west of ditch. Some overwhelmed by ivy.	Fair	Fair	10+	C2	1.3
H62	Hawthorn	1.5	1.5	50	0.0	SM	Sporadic clumps of flailed hawthorn between stock fences.	Good	Good	40+	B2	0.6
H63	Hawthorn	4.0	3.0	100	0.5	EM	Unmanaged trees along stone wall west of ditch.	Fair	Fair	10+	C2	1.3
H64	Willow, gorse, blackthorn, hawthorn	2.5	3.0	90	0.0	SM	On hedgebank. Stream adjacent. Maintained with flail.	Fair	Fair	20+	B2	1.1
H65	Hawthorn	4.0	3.0	100	0.5	EM	Unmanaged trees along stone wall west of ditch. Numerous small gaps.	Fair	Fair	10+	C2	1.3
H66	Hawthorn	4.0	3.0	100	0.5	EM	Unmanaged trees along hedge bank. Overhanging Site by up to 1m.	Fair	Fair	10+	C2	1.3
H67	Willow, gorse, blackthorn, hawthorn	2.5	3.0	90	0.0	SM	On hedgebank. Stream adjacent. Maintained with flail.	Fair	Fair	20+	B2	1.1
H68	Willow, gorse, blackthorn, hawthorn	2.0	3.0	90	0.0	SM	On hedgebank. Stream adjacent. Maintained with flail.	Fair	Fair	20+	B2	1.1
H69	Hawthorn, ash, goat willow	4.0	3.0	100	0.5	EM	Unmanaged trees along hedge bank. Overhanging Site by up to 1m. Ash dying back	Fair	Fair	10+	C2	1.3
H70	Hawthorn	1.0	0.5	50	0.0	Y	Newly planted hedgerow on small new hedgebank.	Good	Good	40+	C2	0.6
H71	Willow, gorse, tamarisk, blackthorn, hawthorn	2.5	3.0	90	0.0	SM	On hedgebank. Stream adjacent. Maintained with flail.	Fair	Fair	20+	B2	1.1
H72	Hawthorn, blackthorn	2.5	2.0	50	0.0	Y	Relatively recently planted hedgerow on side of ditch. Maintained with flail.	Fair	Fair	40+	B2	0.6
H73	Hawthorn, blackthorn	2.5	3.0	100	0.0	SM	On hedgebank adjacent stream. Maintained with flail.	Fair	Fair	20+	B2	1.3
H74	Willow, gorse, blackthorn, hawthorn	2.5	3.0	90	0.0	SM	On hedgebank. Stream adjacent. Maintained with flail.	Fair	Fair	20+	B2	1.1

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)
H75	Gorse, hawthorn, blackthorn	2.5	1.5	75	0.8	SM	Growing against old stone wall. Gappy in parts, especially at southern end. Maintained with flail.	Fair	Fair	20+	B2	1.0
H76	Blackthorn, hawthorn	2.5	2.0	75	0.0	SM	On hedgebank. Maintained with flail.	Fair	Fair	20+	C2	1.0
H77	Hawthorn	2.0	1.5	80	0.5	EM	Flailed roadside hedge with some gaps.	Good	Good	20+	B2	1.0
H78	Hawthorn, blackthorn, gorse, willow	3.0	2.5	100	1.0	SM	Gappy hedgerow with wind deformed crowns. Eastern end on hedgebank,	Fair	Fair	20+	C2	1.3
H79	Hawthorn, gorse	2.0	2.0	75	2.0	EM	Flailed roadside hedge on bank.	Good	Good	20+	B2	1.0
H80	Gorse, hawthorn	3.0	2.5	100	1.0	SM	Outgrown and unmanaged, remnant hedgerow on top of hedgebank. Gappy. Hawthorns have clear stems from sheep grazing.	Fair	Fair	20+	C2	1.3
H81	Gorse, hawthorn	2.0	2.0	90	1.0	SM	Outgrown and unmanaged, remnant hedgerow on top of hedgebank. Gappy. Hawthorns have clear stems from sheep grazing.	Fair	Fair	20+	C2	1.1
H82	Gorse, hawthorn	3.0	2.5	100	1.0	SM	Outgrown and unmanaged, remnant hedgerow on top of hedgebank. Gappy. Hawthorns have clear stems from sheep grazing.	Fair	Fair	20+	C2	1.3
H83	Gorse, hawthorn	2.0	2.0	100	1.0	SM	Outgrown and unmanaged, remnant hedgerow on top of hedgebank. Gappy.	Fair	Fair	20+	C2	1.3
H84	Gorse, hawthorn	2.5	2.5	100	1.0	SM	Outgrown and unmanaged, remnant hedgerow on top of hedgebank and ditch. Gappy. Hawthorns have clear stems from sheep grazing.	Fair	Fair	20+	C2	1.3
H85	Gorse, hawthorn, willow	2.0	2.0	100	1.0	SM	Outgrown and unmanaged, remnant hedgerow on top of hedgebank. Gappy.	Fair	Fair	20+	C2	1.3
H86	Hawthorn, gorse, willow	3.0	6.0	150	0.5	M	Double line of hawthorn either side of hedgebank. Hedgebank has ditch on both side. Gorse infills some parts. No recent management.	Fair	Fair	20+	B2	1.8
H87	Hawthorn, goat willow, gorse	6.0	4.0	100	0.0	EM	Unmanaged trees forming informal hedge either side of brook.	Fair	Fair	20+	C2	1.3
H88	Hawthorn, gorse	2.5	3.0	100	0.0	M	Hedgerow on and either side of hedgebank. Gappy in parts. Gorse dominates, particularly in west. Unmanaged.	Fair	Fair	20+	C2	1.3
H89	Hawthorn, goat willow, gorse, sycamore	6.0	6.0	100	0.0	EM	Unmanaged trees forming informal hedge either side of brook.	Fair	Fair	20+	C2	1.3
H90	Hawthorn, goat willow, gorse	5.0	4.0	100	0.0	EM	Unmanaged trees on west side of brook. Overhanging Site by up to 1m.	Fair	Fair	20+	C2	1.3
H91	Hawthorn, goat willow, gorse	5.0	4.0	100	0.0	EM	Unmanaged trees on west side of brook. Overhanging Site by up to 2m.	Fair	Fair	20+	C2	1.3

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)
H92	Gorse	2.0	3.0	75	0.0	SM	Unmanaged. On hedgebank with water course/ditch on either side. Bramble dominates in parts.	Fair	Poor	20+	C2	1.0
H93	Hawthorn, gorse	1.5	1.5	100	0.0	SM	Remnant, gappy unmanaged hedgerow on hedgebank	Fair	Poor	10+	C2	1.3
H94	Hawthorn, gorse, willow	2.0	4.5	100	0.0	SM	Gappy unmanaged hedgerow on wide hedgebank with ditch either side.	Fair	Poor	10+	C2	1.3
H95	Hawthorn, gorse	2.5	3.5	100	0.0	M	Gappy unmanaged hedgerow on wide hedgebank with ditch either side. Ditches towards western end cleared in last couple of years.	Fair	Poor	10+	C2	1.3
H96	Hawthorn, gorse, willow	3.0	4.5	100	0.0	M	unmanaged hedgerow on wide hedgebank with ditch either side. Ditches to north and south cleared in last couple of years. Wind deformed crowns to the north.	Fair	Poor	10+	C2	1.3
H97	Gorse, hawthorn, tamarisk	2.5	4.0	100	0.2	M	Unmanaged hedgerow on hedge-bank. Gorse dominates.	Fair	Fair	20+	C2	1.3
H98	Hawthorn, gorse	2.5	2.0	100	0.2	M	Unmanaged hedgerow on hedge-bank. Gorse dominates.	Fair	Fair	20+	C2	1.3
H99	Hawthorn, blackthorn	2.0	2.0	50	0.0	SM	Located on hedgebank. Regularly maintained with flail.	Fair	Fair	20+	B2	0.6
H100	Hawthorn, blackthorn	2.0	2.0	50	0.0	SM	Located on hedgebank. Regularly maintained with flail.	Fair	Fair	20+	C2	0.6
H101	Gorse, hawthorn, willow	4.0	4.0	100	0.5	M	Outgrown and unmanaged, remnant hedgerow on top of hedgebank. Gappy.	Fair	Fair	20+	C2	1.3

SURVEY DATE: 24/25 MARCH 2021 AND AUGUST 2023

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)	RPA m ²
W1	Sitka spruce	4-16	>50	#	400	3.0	2.0	EM	None	Dense grown plantation. Numerous smaller and dead trees in centre. Quality category based on overall average condition and landscape presence.	Fair	Fair	20	B2	4.8	72
W2	Sitka spruce, alder	3-16	>50	#	500	3.0	2.0	EM	None	Dense grown linear plantation belt. Numerous smaller and dead trees in centre. Areas of recent and historic windthrow. Quality category based on overall average condition and landscape presence.	Fair	Fair	20	B2	6.0	113
W3	Sitka spruce, Monterey pine	8-14	500	-	500	4.0	2.0	EM	None	Linear shelterbelt landscape feature. Numerous small wind thrown trees within belt. Fenced pheasant pen in central section.	Fair	Fair	20	B2	6.0	113
W4	Sycamore, beech, wild cherry, alder, hawthorn, silver birch	10-14	500	#	350	4.0	2.0	SM	None	Broadleaf woodland used for rearing pheasants. Even aged with minimal understorey. Overhanging Site by up to 5m.	Good	Good	40	A2	4.2	55
W5	Sitka spruce, beech, willow	6-15	>50	#	450	3	2.0	EM	None	Prominent linear shelterbelt of trees. Some areas of windthrow. Willow condensed to central part of group.	Fair	Fair	20	B2	5.4	92
W6	Sitka spruce	10-15	500	#	400	4	1.5	EM	None	L-shaped shelterbelt plantation. Numerous windthrown trees.	Fair	Fair	20	B2	4.8	72

- 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 published advice 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 published advice 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

Paragraph 6.4.26 of the Planning Policy Wales - Edition 11 (PPW) states in relation to Ancient Woodland:

'Ancient woodland and semi-natural woodlands and individual ancient, veteran and heritage trees are irreplaceable natural resources, and have significant landscape, biodiversity and cultural value. Such trees and woodlands should be afforded protection from development which would result in their loss or deterioration unless there are significant and clearly defined public benefits; this protection should prevent potentially damaging operations and their unnecessary loss. In the case of a Site recorded on the Ancient Woodland Inventory, authorities should consider the advice of NRW. Planning authorities should also have regard to the Ancient Tree Inventory'.

The PPW goes on to state:

'The protection and planting of trees and hedgerows should be delivered, where appropriate, through locally specific strategies and policies'.

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. Therefore, we recommend that a further check is made with the LPA before any tree works are carried out.

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.

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, tele handlers, 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