ARBORICULTURAL IMPACT ASSESSMENT

Land at Chimmens
Solar Farm

October 2023

Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Land at Chimmens Solar Farm	
Project reference:	5287	
Site Address:	Speedgate Farm, Mussenden Lane, Longfield	
Nearest Postcode:	DA3 8PJ	
Central Grid reference:	TQ 56883 66678	
Local Planning Authority:	Sevenoaks District Council	
Relevant planning policies:	Core Strategy Adopted February 2011. Plan 2040 - A new Local Plan for Sevenoaks District (currently under review)	
Statutory Controls:	**Tree Preservation Order**	**Conservation Area**
	None	No
Soil Type: (Source: BGS online soils map © NERC 2023)	**Superficial/Drift**	**Bedrock**
	Clay-with-flints Formation - Clay, silt, sand and gravel	Lewes Nodular Chalk Formation, Seaford Chalk Formation and Newhaven Chalk Formation - Chalk
Proposed site plans:	P22-1221_EN_0012_A - Landscape Masterplan 18.10.23 05009-RES-LAY-DR-PT-003- Figure 4 - Infrastructure Layout (A3)	
Notes:	Ancient and Semi Natural Woodland - Horton Wood (W1,W2 &W3) AMS - BHA_5287_AMS_Chimens Solar Farm_IH_October2023_FINAL to be read alongside this AIA report	
Report author:	Ian Howell BA (Hons), Cert Arb L4 (ABC), TechArborA	
Checked by:	Richard Hyett MSc, BSc (Hons), MICFor, MArborA	
Date of issue:	27.10.2023	

Arboricultural Association Technician Member

TE6738

Institute of Chartered Foresters registered

Barton Hyett Arboricultural Consultants

REPORT CONTENTS:

1. INTRODUCTION

1.1. Barton Hyett Associates Ltd has been instructed by RES (Renewable Energy Systems) to survey trees located at Chimmens Solar Farm, Mussenden Ln, Longfield ('the site') in accordance with the recommendations of British Standard 5837:2012 '*Trees in relation to design, demolition and construction - recommendations*'.

1.2. The scope of the instruction was to inspect trees relevant to a planning application at the site and provide written advice on how they inform feasibility and design options. The instruction also required an assessment of the potential impact (the Arboricultural Impact Assessment) of the proposed development on the site's arboricultural resource to be undertaken.

2. SITE DESCRIPTION

2.1. The site is comprised of irregularly shaped agricultural fields that are associated with Chimmens Solar Farm. The site will be referred to as Chimmens Solar Farm.

2.2. The site is located circa 24m to the south of Dartford and circa 2 miles west of the village of New Ash Green.

2.3. The location of the site is rural, being bound by agricultural fields woodland parcels that form Horton Wood and roads including Mussenden Lane to the north-east and the M20 to the south-west.

2.4. Access to the site was gained via Mussenden Lane.

2.5. There is a public footpath which runs parallel to the southern boundary and heads north just beyond the westernmost field.

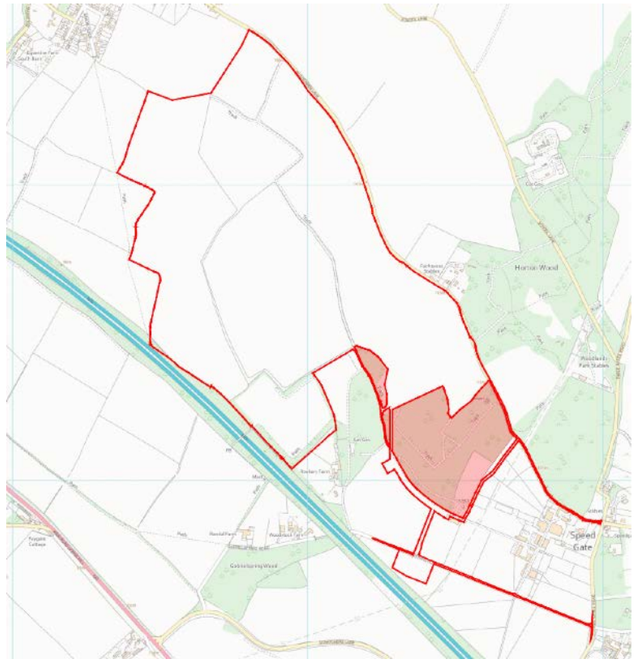


Figure 1: Red line shows the site location and approximate site area

3. TREE SURVEY FINDINGS

3.1. The survey recorded 113 arboricultural features. 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 (**Section 4**).

Table 1: arboricultural features by type and quality category.

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	**52**	8	39	4	1
Groups	**21**	3	15	3	-
Woodlands	**3**	3	-	-	-
Hedgerows	**37**	-	29	8	-
Total	**113**	**14**	**83**	**15**	**1**

4. KEY ARBORICULTURAL FEATURES

4.1. Based on the summary table, the majority of the arboricultural resource on site is of high/moderate quality, making it desirable for retention.

4.2. The site has many mature English oak, common ash, common beech, hornbeam and field maple populating the field boundaries, hedgerows and woodland edges.

4.3. Within the application area, there are eight high-quality (Category A) trees, two of these trees are mature English oak, five common beech, and one dogwood. These trees are considered to be particularly good examples of their species and are all mature trees of good form and condition that are prominent within the landscape.

4.4. There are also three high-quality (Category A) tree groups containing mature common beech, common ash and whitebeam within the application area.

4.5. Horton Wood (W1, W2 & W3) is designated as Ancient Semi-Natural Woodland (ASNW) within DEFRA's online mapping resource; MAGIC. The woodland has many mature English oak, common beech and hornbeam trees present at the woodland edge/site boundary. As such, it will be necessary to consider paragraph 180 of the National Planning Policy Framework 2021 (NPPF) and the associated Standing Advice produced by the Forestry Commission and Natural England.

5. PROPOSED DEVELOPMENT

5.1. The development proposal is for:

> "Construction and operation of a solar farm with all associated works, equipment, necessary infrastructure and biodiversity net gains."

6. IMPACT ASSESSMENT

6.1. The impact assessment considers the effects of any tree loss required to implement the proposed development as well as any reasonably foreseeable potentially damaging activities proposed in the vicinity of retained trees. This is undertaken with reference to BS5837:2012 and considering the nature of the proposed development. Actual and potential impacts can include tree removal to facilitate the development, soil compaction in close proximity to trees, and direct impact damage to the canopy and roots of retained trees from construction activities. A summary of anticipated impacts resulting from the proposed development is provided below.

Trees and hedgerows to be removed

6.2. The proposed development will not require the complete removal of any significant trees, tree groups or entire hedgerows.

6.3. The proposed development utilises the existing access points into the site and also the existing compacted earth and stone farm tracks where possible. It will however be necessary to establish some new construction and maintenance access tracks for the site. As mentioned above, where available these utilise the existing compacted earth farm tracks and field gateways or other natural gaps in hedgerows. However, circa 5m sections of H31, H11 (x2 sections), and a 10m section of H9 will require removal to allow for the routing of new tracks. This will equate to c.25 linear meters of hedgerow removal which is a very low arboricultural impact across the site as a whole, and this loss can be readily mitigated by the new tree and hedgerow planting as illustrated within the proposed Landscape Masterplan.

Impacts on retained trees

6.4. The proposed solar farm development is not anticipated to result in any significant long-term negative arboricultural impacts on the retained trees, tree groups, woodlands or hedgerows at the site. The new access tracks, positioning of solar arrays and associated equipment such as inverters/transformers, substation, fencing and CCTV are largely remote from the remainder of the site's arboricultural resource and the associated Root Protection Areas (RPAs) and ASNW buffers. This is due to the proposed layout responding to the arboricultural constraints that have been identified.

6.5. There are however existing compacted earth and stone farm tracks that are to be improved and utilised by site traffic that do pass through some RPAs. One instance of this is where the access track passes through the RPAs of trees T30, T4 and G3 in-between fields that are labeled as F8 and F9 in the Landscape Masterplan. This utilises an existing compacted earth track however some improvement to the existing tracks will need to be made. I advise installing a cellular confinement system over the existing farm track as this will avoid site traffic causing significant harmful damage to tree roots that may be close to the soil surface. This would typically incorporate a geo-textile separation layer topped with a cellular confinement system and filled with clean angular stone (20-40mm). This approach will limit the impact that might otherwise occur through soil compaction and direct damage to surface roots. The design specification, in relation to load bearing, should be suitable for the site traffic utilising the track and be detailed by the manufacturer. See relevant shading and annotations on the combined Tree Retention/Removal and Protection Plan in **Section 3** for the extent and location of the proposed cellular confinement system**.**

6.6. In order to achieve the necessary ground clearance for site traffic some crown raising of lower branches within G4 and T4 will be necessary also. Given that there is an existing track here that has been used by farm traffic any branch removal will be restricted to small-diameter growth only and will equate to a low arboricultural impact. (See **Section 1:** Image 1).

6.7. A section of the existing compacted earth and stone farm track (**Section 1**, Images 2, 3, 6) that passes to the south of Horton Wood ASNW (W2) and in between W1 and W2 will be utilised for site traffic also. This is annotated and shaded within the Tree Retention/Removal and Protection Plan in **Section 3.** This track has historically been used by farm traffic for many years and is already suitable for the majority of the anticipated site vehicles in its current state. However, there is an opportunity to improve the track where it passes through the ASNW in order to ensure that no further damage is caused to the upper soil levels beneath the track (by future farm traffic or traffic associated to the development) or to tree roots below the track during the construction phase of the development. These improvements will then go on to provide ongoing protection for the ASNW for many years after the development of the site is complete. I therefore advise installing a cellular confinement system over the existing farm track, the extent of the installation of the cellular confinement system is annotated and shaded within the Tree Retention/Removal and Protection Plan in **Section 3.**

6.8. Further detail relating to the specification and installation of the cellular confinement system that is to be installed over the existing farm track through the Horton Wood ASNW is set out within a separate Arboricultural Method Statement (AMS) which looks at this matter and has been submitted alongside this AIA. A site wide detailed AMS will however be required post consent.

6.9. The installation of a grid connection cable will require the use of Horizontal Directional Drilling (HDD) beneath Horton Wood ASNW therefore it will be necessary to consider paragraph 180 of the National Planning Policy Framework 2021 (NPPF) and the associated Standing Advice produced by the Forestry Commission and Natural England. See **Section 6** for further information on National Planning Policy and how this is applied to ASNW.

6.10. The working method for the HDD is set out in the below excerpt from the 'HDD Indicative Methodology':

Horizontal Directional Drilling

- HDD depth below the ancient woodland will be a minimum 7.5m to avoid tree roots and key soil horizons.
- Excavation of drill launch pits, approximately 2m x 3m x 1.5m deep.

- Set up drill rig within work zone and connect drill head with battery sonde attached, which is calibrated to a tracking system. The tracking system interprets the radio signals from the sonde into information required to execute the pilot bore.
- Drill out pilot bore using remote steering tracking system, which in turn sends the information to a screen at the drill rig operator station, which can make steering corrections, if and when required.
- Drilling fluid is pumped through the drill rods to the drill head to aid drilling and to cool the sonde.
- A bund will be set up around the drilling machine to collect and store drilling mud for disposal. Drilling mud will be removed to a bunded temporary storage and containment area prior to removal and disposal at an approved and licensed waste facility.
- All necessary precautions will be taken to prevent any discharge into the environment. Drilling mud returns will be monitored to ensure there is no loss of wellbore integrity.
- Any deviations from the drilling programme or unplanned / unexpected events will signal a stop to the drilling activity.

Cable pulling

- Cables will be pulled through the ducts using an appropriate technique depending on cable size.

Demobilisation / removal of temporary tracks / hardstanding

- Drilling plant and machinery to be removed from site via temporary access track.
- Temporary access track and hardstanding granular crushed rock to be removed from site and subsoil / topsoil to be reinstated.

6.11. As described above, the drilling rigs and any associated excavation can be set back from the woodland edge by a minimum of 15m which places them outside of the ASNW Buffer. See the Tree Retention and Removal Plan in **Section 3** for the launch pit and compound location. The drilling will then proceed beneath the woodland for an approximate length of 150m at a profile depth of 7.5m. No loss (or harm) of trees within the ASNW will occur as a result of these works and the potential for the deterioration of habitat/trees within Horton Wood will be avoided. However, some very localised damage to tree roots that may be present at this depth and within the path of the drill head may occur. Given the very localised nature of the HDD route, I am of the opinion that any minor damage caused would not result in any harm that would affect the overall, health and longevity of the trees. However, it is important to ensure the 7.5m drill depth is maintained as should the depth of the HDD vier closer to the surface, then the severity of the impacts could significantly increase. Maintaining the specified depth of 7.5m will therefore be paramount to keeping the impact on tree roots as low as possible.

6.12. The installation of underground cables linking the arrays with the power infrastructure and sub-station will be required. These should be installed without removing or impacting trees or hedgerows. This will be done by using open trench installation, avoiding RPAs and utilising existing gaps (or gaps created for the internal access track network) in hedgerows.

Conclusion

6.13. The proposal is feasible from an arboricultural perspective no trees are proposed to be removed and appropriate mitigation planting of hedgerows is to be provided through the tree and hedgerow planting that is proposed within the Landscape Masterplan. If the installation of the cellular confinement is carefully implemented over the existing track through Horton Wood ASNW (and according to a detailed AMS) there would only be a very low potential negative arboricultural impact across the site. A notable long term benefit to the ASNW can be gained for the future. Installation of the 'no dig' cellular confinement system for the access track, and for the HDD cable installation, within the vicinity of Horton Wood (W1 & W2) and T29, T30, T4 and G3 will require arboricultural supervision in order to control and limit the potential for damage to tree roots occurring during these works.

7. TREE PROTECTION MEASURES

7.1. The proposed site security fence, which is to be erected around the periphery of the site, will act as an effective tree protection barrier if erected before any construction works commence on site. This will mitigate the need to install BS 5837:2012 fencing along the outer perimeters of the site. However, the perimeter fencing will only protect trees located around the site periphery.

7.2. In order for the site security fence to successfully operate as a tree protective barrier and create the Construction Exclusion Zone (CEZ), it will be necessary to avoid the tracking of plant, machinery and driving of site vehicles in between the security fence and trees/hedgerows. The area beyond the site security fence should be considered to be a Construction Exclusion Zone (CEZ). For clarity, and where this is most crucial in-between the site security/perimeter fence and the Horton Wood ASNW a CEZ has been shaded within the Tree Retention/Removal and Protection Plan in **Section 3**

7.3. The location of the temporary tree protection barriers, and the barrier specification proposed, is shown on the Tree Retention/Removal and Protection Plan in **Section 3.**

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

8.1. BS5837:2012 (Figure 1) recommends that detailed/technical design of tree protection and arboricultural methodologies should be resolved and finalised following 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 aplanning condition.

8.3. For this site, it was deemed necessary to provide, along with this AIA, an initial AMS to cover the instalment of a cellular confinement system through Horton Wood ASNW in order to assist in demonstrating feasibility. It may, however, still be determined that a detailed AMS with a broader scope might still be required following approval of the scheme.

8.4. A brief summary of the principles of tree protection on development sites is included in **Section 7**.

8.5. A draft, 'Heads of Terms' for an AMS is set out below:

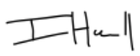
- Project arboriculturist – schedule of monitoring and supervision to be agreed upon with the applicant and LPA
- Pre-commencement site meeting - to be attended by the project arboriculturist, client, site manager and other relevant parties. Project arboriculturist to ensure that all parties have copies of the tree protection plan and this report.
- Hedgerow removals and facilitation pruning - as shown on the Tree Retention/Removal& Protection Plan (TRR&P)
- Erection of site perimeter fence and tree protection barriers as per the Tree Retention/Removal& Protection Plan (TRR&P)
- Site preparation and ground works to include installation of the cellular confinement - 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
- Installation of cable beneath Horton Wood using HDD
- 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. In conclusion, the proposed development incorporates professional arboricultural advice in the design of the scheme. Appropriate safeguards and mitigation measures are included and therefore the proposed solar farm development is not anticipated to result in any significant long-term negative arboricultural impacts on the retained trees, tree groups, woodlands or hedgerows at the site.

9.2. An initial AMS has been provided for submission with this AIA that covers the proposed principle and working methodology for the installation of a cellular confinement system over the existing farm track through Horton Wood. If this is well implemented then this will serve to protect tree roots potentially present in the upper soil horizons beneath the track and go on to provide a significant benefit to the ASNW in the long term

9.3. A finalised Tree Retention/Removal and Protection Plan may need to be produced if any alterations to the site layout are required. Where the feasibility of a scheme has been agreed upon by the Local Planning Authority, this detail along with further AMS details, can be agreed upon and submitted later as part of a pre-commencement planning condition (by agreement with the applicant) if required.



Ian Howell *BA (Hons), Dip Arb L4 (ABC), TechArborA*
Arboriculturist

IMAGE 1: Existing compacted east and stone track through the ASNW (W1 and W2).

IMAGE 2: Existing compacted east and stone track through the ASNW (W1 and W2).

IMAGE 3: A mature common beech within the ASNW adjacent to the track. Exposed surface roots would require some protection from site traffic.

IMAGE 4: Existing compacted earth and stone track through the centre of the site.

IMAGE 5: Existing compacted earth and stone farm track exiting W1 / W2 to the west. H11 to the left of the image

IMAGE 6: Existing compacted earth and stone track to the south of Horton Wood ASNW that enters the site from the east.

KEY

- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
- Category C Tree - Low quality (May be retained but should not constrain development)
- Category C - Hedgerow, Group, Woodland - Low quality (May be retained but should not constrain development)
- Category U Tree - Very low quality (Mostly unsuitable for retention)
- Category U - Hedgerow, Group, Woodland - Very low quality (Mostly unsuitable for retention)
- Root Protection Area (RPA) - Layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and soil volume to maintain the tree's viability
- Shrub mass/offsite tree/out of scope (OOS)
- ★ Tree/Group/Hedgerow not on topographical survey. Location given is an estimate

Ancient Tree / Woodland or Veteran Trees

- Ancient tree/woodland or Veteran tree: Important trees that require special consideration
- Ancient tree/woodland or Veteran tree buffer: As per published standing advice from Natural England and the Forestry Commission

Statutory Protection

Tree Preservation Order (TPO): Trees under statutory protection.
No tree works to be undertaken without specific consent or by relevant exception

The site may be within a designated Conservation Area which restricts tree works. Please see attached advice and guidance.

Label	Description
Off-site ASNW	
Informal	Occasional hawthorn but predominantly bramble
Dense bramble	
Dense bramble	
Gap in hedgerow	
Boundary	
Establishing	
Establishing	Hawthorn, field maple, blackthorn
OOS 1	Elder, rose, bramble and nettles
OOS 2	Elder, rose, bramble and nettles
OOS 3	Elder, bramble and nettles
OOS 4	Blackthorn suckers, bramble and nettles
OOS 5	bramble and nettles
OOS 6	bramble and nettles
OOS 7	bramble and nettles
OOS 8	bramble and nettles
OOS 9	bramble and nettles
OOS 10	Elder, bramble and nettles
OOS 11	Elder, bramble and nettles

Label	Description
TN1	Existing compacted earth and stone track
TN2	Existing compacted earth and stone track
TN3	Existing compacted earth and stone track
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TN6	Existing compacted earth and stone track
TN8	Existing compacted earth and stone track
TN8	Existing compacted earth farm track
TN9	Existing field access gates

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

N
GRID NORTH

0 30 60 120 Meters

PROJECT TITLE

Speedgate Farm (5287)

DRAWING TITLE

Tree Survey Plan

SCALE	DRAWING NUMBER
Scale: 1:1,750 @ A1	BHA_5287_01

DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
TB	IH	-	1 of 3	03/07/2023

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

CLIENT: **Pegasus Planning Group**

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556250 556500 556750 557000 557250

166750 166500 166250 166000

T21 -B1 T22 -B1 T23 -A1 T24 -B1 T25 -A1 T26 -U T28 -B1 T27 -B1 T38 -C1 T37 -B1 T36 -A1 T35 -A1 T34 -B1 T33 -B1 T32 -B1 T31 -B1 T30 -B1 T3 -A2 T4 -B3 T2 -B2 T1 -B2 T6 -A2 T5 -B3 T8 -B1 T7 -B1 T49 -B1 TN5 TN4 TN3 TN2 TN1 T29 -A2 W1 -A3 W2 -A3 G15 -B2 G2 -B2 G1 -B2 G3 -B2 G5 -B2 G6 -B2 G7 -B2 G8 -B2 G9 -B2 G10 -B2 H10 -B2 H11 -B2 H12 -B2 H13 -B2 H14 -B2 H15 -B2 H16 -B2 H17 -B2 H18 -B2 H19 -B2 G14 -C2 G13 -B2 G12 -B2 G11 -B2 G4 -B2 G16 -B2 OOS 1 OOS 2 OOS 3 OOS 4 OOS 5 OOS 6 OOS 7 OOS 8 OOS 9 OOS 10 OOS 11

Establishing highway verge trees

Establishing young trees

Informal hedgerow along fenceline

Boundary vegetation predominantly bramble and nettle

KEY

Category A Tree - High quality
(Retention highly desirable)

Category A - Hedgerow, Group, Woodland - High quality
(Retention highly desirable)

Category B Tree - Moderate quality
(Retention desirable)

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CLIENT
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INDEX MAP

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N
GRID NORTH

0 30 60 120 Meters

PROJECT TITLE

Speedgate Farm (5287)

DRAWING TITLE

Tree Survey Plan

SCALE				DRAWING NUMBER	
Scale: 1:1,750 @ A1				BHA_5287_01	
DRAWN BY	APPROVED BY	REVISION	SHEET	DATE	
TB	IH	-	3 of 3	03/07/2023	

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

CLIENT
Pegasus Planning Group

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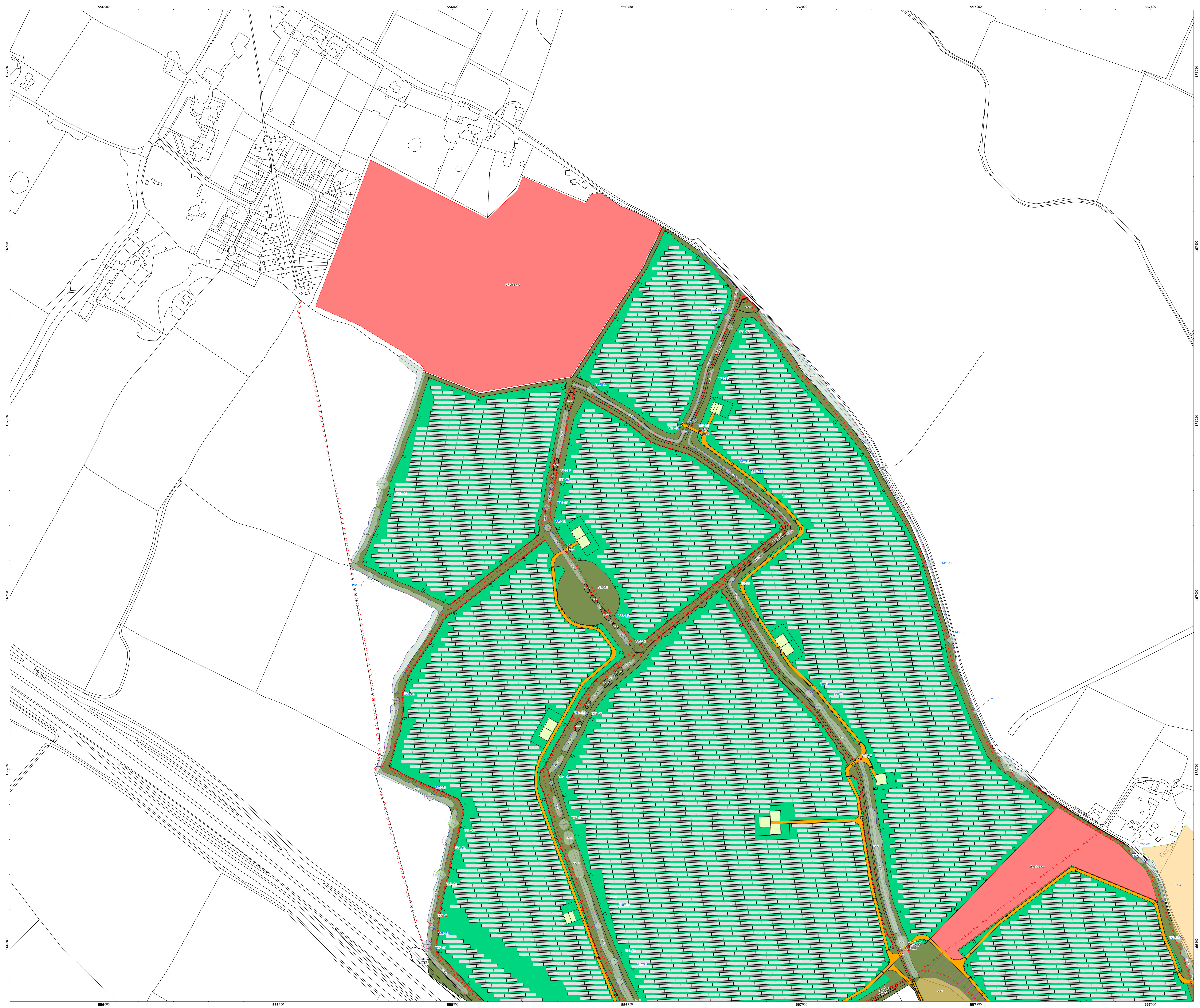
Barton Hyett Associates
Arboricultural Consultants

Tel: 01386 576161
Address: Office 5E, Deer Park Business Centre,
Eckington, Pershore, Worcestershire, WR10 3DN



KEY

- Category A Tree - High quality (Retention highly desirable)
- Category A - Hedgerow, Group, Woodland - High quality (Retention highly desirable)
- Category B Tree - Moderate quality (Retention desirable)
- Category B - Hedgerow, Group, Woodland - Moderate quality (Retention desirable)
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- Tree Protection Barrier
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- Target Note

Target Notes

Label	Description
TN1 - Cellular Confineme	Cellular confinement system to be installed over the existing compacted earth and stone farm track
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Label	Description
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TN7 - Pruning	Crown raising of small diameter low branches to provide adequate ground clearance
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TN9 - H11 Removal	c. 6m of hedgerow removal
TN10 - H11 Removal	c. 5m of Hedgerow removal
TN11 - H32/H31 Removal	c.5m of hedgerow removal

Label	Description
Off-site ASNW	
Informal	Occasional hawthorn but predominantly bramble
Dense bramble	
Dense bramble	
Gap in hedgerow	
Boundary	
Establishing	
Establishing	Hawthorn, field maple, blackthorn
OOS 1	Elder, rose, bramble and nettles
OOS 2	Elder, rose, bramble and nettles
OOS 3	Elder, bramble and nettles
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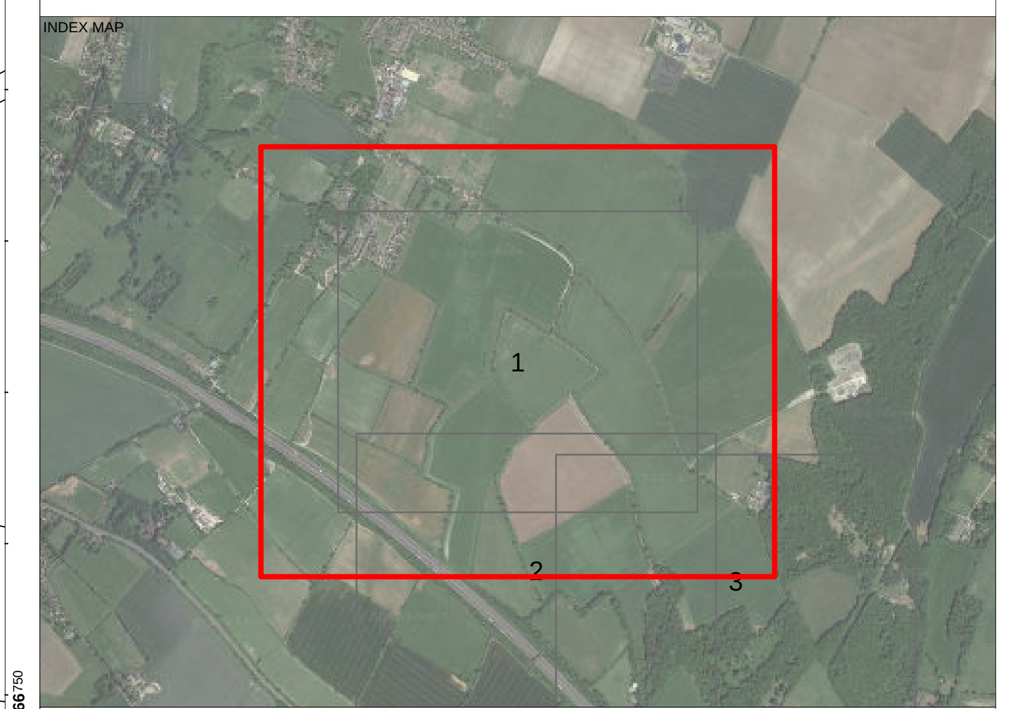
OOS 5	bramble and nettles
OOS 6	bramble and nettles
OOS 7	bramble and nettles
OOS 8	bramble and nettles
OOS 9	bramble and nettles
OOS 10	Elder, bramble and nettles
OOS 11	Elder, bramble and nettles



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N
GRID NORTH

0 50 100 200 Meters

PROJECT TITLE

Speedgate Farm (5287)

DRAWING TITLE

Tree Retention and Removal Plan

SCALE	DRAWING NUMBER			
Scale: 1:2,500 @ A1	**BHA_5287_02**			
DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
TB	**IH**	**-**	**1 of 3**	**24/03/2023**

COORDINATE SYSTEM / DATUM

British National Grid / Newlyn Datum (AOD)

CLIENT

Pegasus Planning Group

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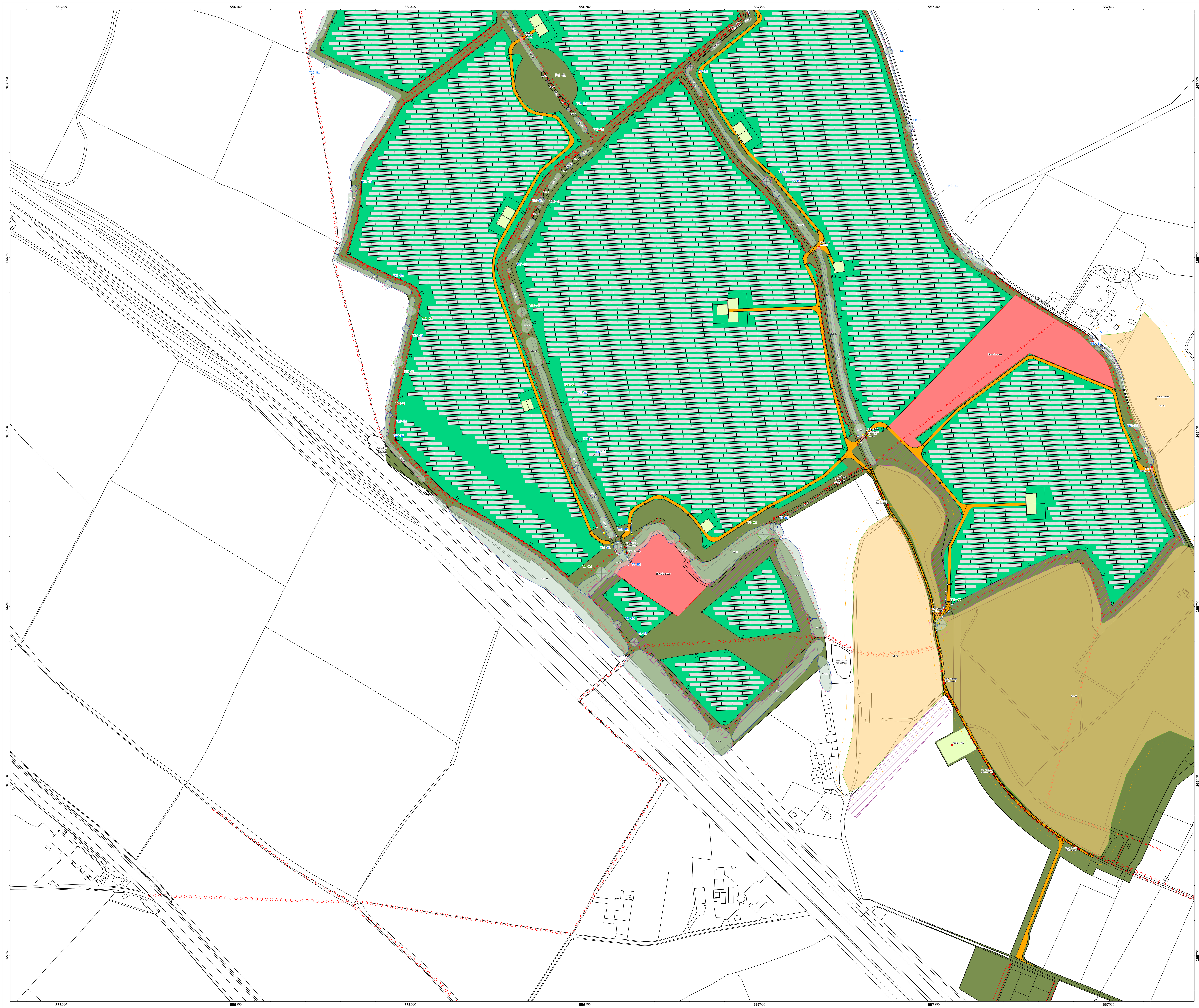

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Category A Tree - High quality
(Retention highly desirable)

Category A - Hedgerow, Group, Woodland - High quality
(Retention highly desirable)

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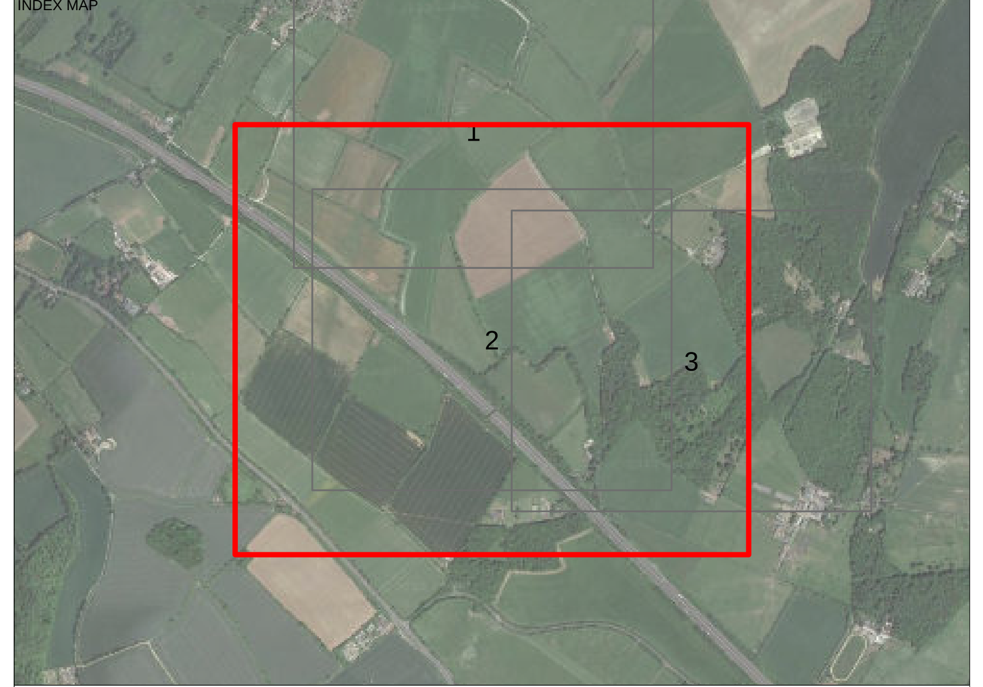
INDEX MAP



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N
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0 50 100 200 Meters

PROJECT TITLE

Speedgate Farm (5287)

DRAWING TITLE

Tree Retention and Removal Plan

SCALE	DRAWING NUMBER
Scale: 1:2,500 @ A1	**BHA_5287_02**

DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
TB	**IH**	**-**	**2 of 3**	**24/03/2023**

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

CLIENT
Pegasus Planning Group

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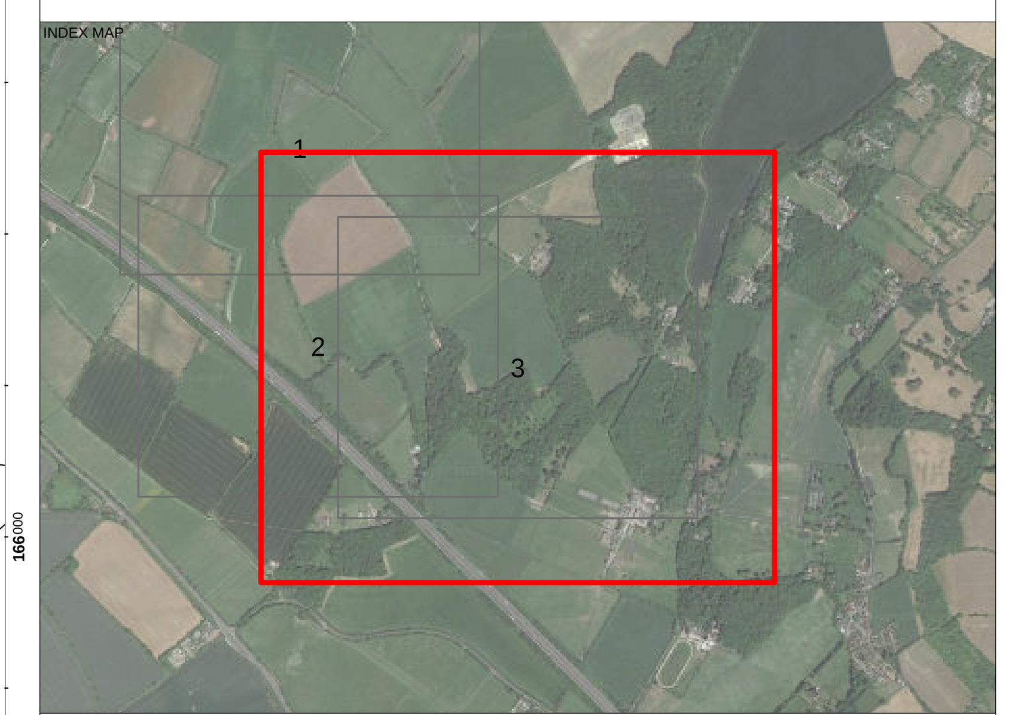

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N GRID NORTH

0 50 100 200 Meters

PROJECT TITLE	Speedgate Farm (5287)
DRAWING TITLE	**Tree Retention and Removal Plan**
SCALE	**Scale: 1:2,500 @ A1**
DRAWING NUMBER	**BHA_5287_02**
DRAWN BY	**TB**
APPROVED BY	**IH**
REVISION	**-**
SHEET	**3 of 3**
DATE	**24/03/2023**
COORDINATE SYSTEM / DATUM	**British National Grid / Newlyn Datum (AOD)**
CLIENT	**Pegasus Planning Group**
CREDITS	Crown copyright. All rights reserved. 2023 Emapsite Licence number 0100061264. Ordnance Survey Copyright Licence number 100054267.

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BS5837:2012 TREE SURVEY SCHEDULE

CHIMMENS SOLAR FARM

PROJECT NO: 5287

SURVEYOR: IAN HOWELL

CLIENT: RES (RENEWABLE ENERGY SYSTEMS)

SURVEY DATE: 28/06/2023

Barton Hyett Arboricultural Consultants

INDIVIDUAL TREES

Ref	Species	On/off site	Height (m)	No. of stems	Est diam?	Calc. / actual stem dia. (mm)	Crown radii (m) N-E-S-W	Av. low crown height (m)	1st branch ht (m)	1st branch dir.	Life stage	Special importance	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)	RPA m²
T1	Ash (Common)	On	16.0	1	Yes	500	7.0-6.5-6.0-6.0	4.0	3.0	S	EM	None	Ash tree growing above the rest of the group	Good	Good	40+	B2	6.0	113.0
T2	Ash (Common)	On	15.0	1	Yes	380	6.0-6.0-6.0-6.0	4.0	5.0	None	EM	None	Ash tree growing above the rest of the group	Good	Good	40+	B2	4.5	65.0
T3	Oak (English)	On	20.0	1	Yes	900	10.0-8.0-8.0-9.0	4.0	4.0	W	M	None	Prominent tree within the linear tree feature	Good	Good	40+	A2	10.8	366.0
T4	Ash (Common)	On	18.0	2	Yes	890	6.0-6.0-10.0-7.0	3.0	2.0	S	M	None	Mature tree within the linear tree feature. Existing compacted earth track through group to the east. Some cracks and hollows in stems	Good	Good	40+	B3	10.7	358.0
T5	Oak (English)	On	12.0	1	Yes	880	6.0-6.0-5.0-5.5	3.5	3.0	SE	M	None	Mature oak; ivy throughout crown; deadwood and cavities. Existing compacted earth track to the west	Good	Fair	40+	B3	10.6	350.0
T6	Oak (English)	On	20.0	1	Yes	900	9.0-8.0-8.0-9.0	4.0	6.0	N	M	None	Prominent tree within the linear tree feature	Good	Good	40+	A2	10.8	366.0
T7	Oak (English)	On	12.0	1	Yes	580	5.0-5.0-5.0-6.0	4.0	4.0	None	EM	None	Establishing oak within the outgrown hedgerow. Existing compacted earth and stone track to the south-west	Good	Good	40+	B1	7.0	152.0
T8	Beech (Common)	On	10.0	1	Yes	580	6.0-6.0-6.0-6.0	4.0	4.0	E	EM	None	Establishing beech within the outgrown hedgerow. Existing compacted earth and stone track to the south-west	Good	Good	40+	B1	7.0	152.0
T9	Yew (Common)	On	6.0	1	Yes	500	3.0-4.0-4.0-4.0	0.3	0.25	None	M	None	Mature yew within the outgrown hedgerow. Existing compacted earth and stone track to the north	Good	Good	40+	B1	6.0	113.0

BS5837:2012 TREE SURVEY SCHEDULE

CHIMMENS SOLAR FARM

PROJECT NO: 5287

SURVEYOR: IAN HOWELL

CLIENT: RES (RENEWABLE ENERGY SYSTEMS)

SURVEY DATE: 28/06/2023

Barton Hyett Arboricultural Consultants

Ref	Species	On/off site	Height (m)	No. of stems	Est diam?	Calc. / actual stem dia. (mm)	Crown radii (m) N-E-S-W	Av. low crown height (m)	1st branch ht (m)	1st branch dir.	Life stage	Special importance	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)	RPA m²
T10	Maple (Field)	On	5.0	3	Yes	460	4.0-4.0-4.0-4.0	3.0	0.25	None	M	None	Mature maple within the outgrown hedgerow. Existing compacted earth and stone track to the south	Good	Good	40+	B1	5.5	96.0
T11	Maple (Field)	On	5.0	1	Yes	420	4.0-4.0-4.0-4.0	3.0	0.25	None	M	None	Mature maple within the outgrown hedgerow. Existing compacted earth and stone track to the south	Good	Good	40+	B1	5.0	80.0
T12	Maple (Field)	On	5.0	1	Yes	420	4.0-4.0-4.0-4.0	3.0	0.25	None	M	None	Mature maple within the outgrown hedgerow. Existing compacted earth and stone track to the south	Good	Good	40+	B1	5.0	80.0
T13	Maple (Field)	On	5.0	1	Yes	300	4.0-4.0-3.0-4.0	3.0	0.25	None	M	None	Mature maple within the outgrown hedgerow. Existing compacted earth and stone track to the south	Good	Good	40+	B1	3.6	41.0
T14	Maple (Field)	On	5.0	1	Yes	250	2.0-4.0-4.0-4.0	3.0	0.25	None	M	None	Mature maple within the outgrown hedgerow. Existing compacted earth and stone track to the south	Good	Good	40+	B1	3.0	28.0
T15	Maple (Field)	On	5.0	1	Yes	250	2.0-4.0-4.0-4.0	3.0	0.25	None	M	None	Mature maple within the outgrown hedgerow. Existing compacted earth and stone track to the south	Good	Good	40+	B1	3.0	28.0
T16	Ash (Common)	On	8.0	1	Yes	350	4.5-4.5-4.5-4.5	2.0	2.0	E	SM	None	Establishing tree adjacent to the compacted earth track	Good	Good	40+	C1	4.2	55.0
T17	Beech (Common)	On	10.0	3	Yes	420	5.0-5.0-4.0-5.0	3.0	2.0	N	EM	None	Establishing tree adjacent to the compacted earth track	Good	Good	40+	B1	5.0	80.0
T18	Beech (Common)	On	10.0	1	Yes	500	6.0-6.0-6.0-5.0	3.5	4.0	None	EM	None	Establishing beech within the outgrown hedgerow.	Good	Good	40+	B1	6.0	113.0

BS5837:2012 TREE SURVEY SCHEDULE

CHIMMENS SOLAR FARM

PROJECT NO: 5287

SURVEYOR: IAN HOWELL

CLIENT: RES (RENEWABLE ENERGY SYSTEMS)

SURVEY DATE: 28/06/2023

Barton Hyett Arboricultural Consultants

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T19	Beech (Common)	On	20.0	1	Yes	800	9.0-8.5-8.5-9.0	3.0	3.0	None	M	None	Mature and prominent hedgerow tree	Good	Good	40+	A1	9.6	290.0
T20	Oak (English)	On	12.0	2	Yes	760	6.0-5.0-6.0-5.0	3.5	4.0	W	EM	None	Establishing oak within the outgrown hedgerow.	Good	Good	40+	B1	9.1	261.0
T21	Oak (English)	On	8.0	1	Yes	480	5.0-5.0-5.5-5.0	3.5	4.0	W	EM	None	Establishing oak within the outgrown hedgerow.	Good	Good	40+	B1	5.8	104.0
T22	Ash (Common)	On	13.0	2	Yes	670	6.5-6.0-6.0-5.0	3.5	4.0	N	M	None	Mature ash within the outgrown hedgerow.	Good	Good	40+	B1	8.0	203.0
T23	Beech (Common)	On	13.0	3	Yes	940	7.0-8.5-7.0-7.0	3.0	4.0	None	M	None	Mature beech within the outgrown hedgerow.	Good	Good	40+	A1	11.3	400.0
T24	Beech (Common)	On	10.0	3	Yes	710	6.0-5.0-5.0-5.0	3.0	1.0	None	EM	None	Early mature beech within the outgrown hedgerow.	Good	Good	40+	B1	8.5	228.0
T25	Beech (Common)	On	12.0	1	Yes	800	8.0-8.5-6.5-6.5	3.0	1.0	None	M	None	Mature beech within the outgrown hedgerow.	Good	Good	40+	A1	9.6	290.0
T26	Beech (Common)	On	9.0	1	Yes	600	5.0-6.0-5.0-5.0	3.0	2.0	None	M	None	Dead tree within the hedgerow	Poor	Poor	<10	U	7.2	163.0
T27	Beech (Common)	On	12.0	1	Yes	480	6.0-6.0-6.0-6.0	3.0	4.0	N	EM	None	Early mature beech within the outgrown hedgerow.	Good	Good	40+	B1	5.8	104.0
T28	Whitebeam	On	10.0	1	Yes	400	4.0-4.5-4.0-4.0	4.0	4.0	W	EM	None	Mature whitebeam within the outgrown hedgerow.	Good	Good	40+	B1	4.8	72.0
T29	Beech (Common)	On	20.0	1	None	1250	9.0-10.0-9.0-10.0	5.0	5.0	E	M	None	Mature beech with a large stem diameter adjacent to the existing farm track through the ASNW. Field access directly to the north. Roots exposed due to soil erosion caused by farm traffic	Good	Good	40+	A2	15.0	707.0
T30	Ash (Common)	On	20.0	1	Yes	550	4.5-7.0-7.0-6.0	4.0	4.5	E	M	None	Mature hedgerow ash; existing farm access with exposed tree roots to the north	Good	Good	40+	B1	6.6	137.0

BS5837:2012 TREE SURVEY SCHEDULE

CHIMMENS SOLAR FARM

PROJECT NO: 5287

SURVEYOR: IAN HOWELL

CLIENT: RES (RENEWABLE ENERGY SYSTEMS)

SURVEY DATE: 28/06/2023

Barton Hyett Arboricultural Consultants

Ref	Species	On/off site	Height (m)	No. of stems	Est diam?	Calc. / actual stem dia. (mm)	Crown radii (m) N-E-S-W	Av. low crown height (m)	1st branch ht (m)	1st branch dir.	Life stage	Special importance	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)	RPA m²
T31	Ash (Common)	On	16.0	1	Yes	470	4.5-5.0-6.0-6.0	4.0	4.0	None	EM	None	Early mature hedgerow ash; existing farm access with exposed tree roots to the south	Good	Good	40+	B1	5.6	100.0
T32	Ash (Common)	On	16.0	1	Yes	750	5.0-6.0-6.0-5.0	3.0	3.0	None	M	None	Mature hedgerow ash	Good	Good	40+	B1	9.0	254.0
T33	Maple (Field)	On	16.0	1	Yes	550	5.0-6.0-6.0-5.0	2.0	2.0	None	M	None	Mature hedgerow maple	Good	Good	40+	B1	6.6	137.0
T34	Maple (Field)	On	9.0	1	Yes	600	5.0-6.0-6.0-5.0	2.0	2.0	None	M	None	Mature hedgerow maple	Good	Good	40+	B1	7.2	163.0
T35	Dogwood	On	5.0	1	Yes	400	3.0-3.0-3.0-3.0	0.5	1.0	None	M	Notable Tree	Mature dogwood with an exceptionally large stem diameter for the species. Ivy throughout crown	Good	Fair	40+	A1	4.8	72.0
T36	Beech (Common)	On	17.0	4	Yes	1040	8.0-8.0-8.0-7.0	3.0	3.0	None	M	None	Mature beech within the outgrown hedgerow.	Good	Good	40+	A1	12.5	489.0
T37	Maple (Field)	On	7.0	1	Yes	300	3.5-3.5-3.5-3.5	0.5	0.5	None	M	None	Mature hedgerow tree	Good	Good	40+	B1	3.6	41.0
T38	Maple (Field)	On	4.5	1	Yes	200	3.0-3.0-3.0-3.0	1.0	1.0	None	SM	None	Young individual hedgerow tree	Good	Good	40+	C1	2.4	18.0
T39	Maple (Field)	On	9.0	1	Yes	500	5.0-5.0-5.0-5.0	0.5	1.0	None	M	None	Mature hedgerow maple	Good	Good	40+	B1	6.0	113.0
T40	Hawthorn	On	4.0	1	Yes	150	1.5-1.0-1.0-1.5	1.0	1.0	None	EM	None	Individual hedgerow tree; reduced vitality	Fair	Fair	<10	C1	1.8	10.0
T41	Hazel (Common)	On	4.0	10	Yes	90	3.0-3.0-3.0-3.0	0.3	0.25	None	M	None	Mature hedgerow coppice	Good	Fair	40+	B1	1.1	4.0
T42	Hawthorn	On	3.0	1	Yes	150	1.5-1.5-1.5-1.5	1.0	1.0	None	SM	None	Establishing individual hedgerow tree	Good	Good	40+	C1	1.8	10.0
T43	Walnut (Common)	On	10.0	1	Yes	400	6.0-5.0-5.5-5.5	3.5	3.0	None	EM	None	Early hedgerow tree; existing field access to the east	Good	Fair	40+	B1	4.8	72.0
T44	Maple (Field)	On	8.0	1	Yes	350	5.0-5.0-4.0-4.0	0.5	1.0	None	M	None	Mature hedgerow maple	Good	Good	40+	B1	4.2	55.0
T45	Maple (Field)	On	6.0	1	Yes	280	4.0-4.0-4.0-4.0	0.5	1.0	None	M	None	Mature hedgerow maple	Good	Good	40+	B1	3.3	35.0
T46	Hawthorn	On	5.0	1	Yes	250	3.0-3.0-1.0-3.0	1.0	1.0	None	M	None	Mature hedgerow hawthorn	Good	Good	40+	B1	3.0	28.0
T47	Ash (Common)	On	17.0	1	Yes	480	5.0-6.5-6.0-5.5	4.0	3.0	S	M	None	Hedgerow ash; some dead branches in crown	Fair	Good	40+	B1	5.8	104.0

BS5837:2012 TREE SURVEY SCHEDULE

CHIMMENS SOLAR FARM

PROJECT NO: 5287

SURVEYOR: IAN HOWELL

CLIENT: RES (RENEWABLE ENERGY SYSTEMS)

SURVEY DATE: 28/06/2023

Barton Hyett Arboricultural Consultants

Ref	Species	On/off site	Height (m)	No. of stems	Est diam?	Calc. / actual stem dia. (mm)	Crown radii (m) N-E-S-W	Av. low crown height (m)	1st branch ht (m)	1st branch dir.	Life stage	Special importance	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)	RPA m²
T48	Oak (English)	On	8.0	1	Yes	700	6.0-6.5-6.0-5.5	4.0	3.0	None	M	None	Hedgerow oak of stunted form	Good	Good	40+	B1	8.4	222.0
T49	Oak (Turkey)	On	5.0	1	Yes	300	2.0-4.0-4.0-2.5	4.0	3.0	None	SM	None	Hedgerow oak; slightly reduced vitality	Fair	Fair	40+	B1	3.6	41.0
T50	Hornbeam	On	7.0	1	Yes	300	4.5-4.0-4.0-4.0	4.0	3.0	None	EM	None	Hedgerow tree	Good	Good	40+	B1	3.6	41.0
T51	Ash (Common)	On	16.0	1	Yes	420	5.0-5.0-5.0-6.5	4.0	3.0	None	EM	None	Hedgerow ash; some dead branches in crown	Good	Good	40+	B1	5.0	80.0
T52	Oak (English)	On	10.0	1	Yes	400	5.0-5.0-5.0-6.0	4.0	3.0	None	EM	None	Hedgerow oak	Good	Good	40+	B1	4.8	72.0

GROUPS OF TREES

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. crown radius (m)	Av. low crown height (m)	Life stage	Special importance	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)
G1	Common ash; English oak; elm ; hawthorn	On	16-18	8	Yes	680.0	7.0	1.0	M	None	Copse of mature oak and ash with an understorey of elder; elm and hawthorn	Good	Good	40+	B2	8.2
G2	Common ash; hawthorn; yew; field maple English oak	On	4-14	700	Yes	450.0	5.0	0.5	EM	None	Dense belt of native species broadleaf trees. Good screening from the road. Existing compacted earth track at the field edge	Good	Good	40+	B2	5.4
G3	Common ash; English oak; hawthorn; Turkey oak; field maple	On	4-20	75	Yes	650.0	6.0	0.5	M	None	Mature and prominent linear tree feature. Some low branches are encroaching over the field edge and track	Good	Good	40+	B2	7.8
G4	Elder; hawthorn	On	2-5	10	Yes	250.0	3.0	1.0	SM	None	Area of scorched trees and regeneration. This area has been used as a burning site	Fair	Fair	10+	C2	3.0
G5	Common ash; English oak; hawthorn; whitebeam; common beech; field maple	On	4-20	100	Yes	700.0	6.0	0.5	M	None	Mature and prominent linear tree feature. Some low branches are encroaching over the field edge and track	Good	Good	40+	B2	8.4
G6	Common ash; English oak; hawthorn; field maple	On	4-20	50	Yes	700.0	6.0	0.5	M	None	Mature and prominent linear tree feature. Some low branches are encroaching over the field edge and track	Good	Good	40+	B2	8.4
G7	Elder; hawthorn; yew; cornus	On	3-6	20	Yes	235.0	3.0	0.2	SM	None	Dense; lower level field edge trees	Good	Good	40+	B2	2.8
G8	Common ash; English oak; hawthorn; field maple	On	4-20	50	Yes	575.0	6.0	0.5	EM	None	Establishing oak with understorey	Good	Good	40+	B2	6.9

BS5837:2012 TREE SURVEY SCHEDULE

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SURVEY DATE: 28/06/2023

Barton Hyett Arboricultural Consultants

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. crown radius (m)	Av. low crown height (m)	Life stage	Special importance	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)
G9	Common ash; common beech	On	15-16	2	Yes	850.0	8.0	2.0	M	None	Mature ash and beech; stems very close and forming a group canopy. Compacted earth and stone track to the south	Good	Good	40+	A2	10.2
G10	Common ash; field maple	On	8-15	10	Yes	650.0	6.0	2.0	M	None	Mature ash within the linear tree feature; outgrown hedgerow as understorey. Ivy on stems and through crowns. Existing compacted earth and stone track to the west	Good	Fair	40+	B2	7.8
G11	Field maple; whitebeam	On	5-8	5	Yes	300.0	4.0	3.0	EM	None	Outgrown hedgerow trees; ivy throughout	Good	Good	40+	B2	3.6
G12	Field maple; whitebeam; common beech	On	8-14	8	Yes	500.0	6.0	2.0	M	None	Mature hedgerow trees; understorey of elder and blackthorn; ivy throughout	Good	Good	40+	B2	6.0
G13	Common ash	On	5-8	20	Yes	225.0	3.5	1.5	SM	None	Row of ash; all of which are with Stage 2 ash dieback and likely to deteriorate quite rapidly	Poor	Poor	<10	C2	2.7
G14	Whitebeam; field maple; hawthorn	Off	4-5	10	Yes	250.0	3.0	0.5	SM	None	Establishing highway verge trees	Good	Good	40+	C2	3.0
G15	Common ash; hawthorn; yew; field maple English oak	On	4-14	700	Yes	450.0	5.0	0.5	EM	None	Dense belt of native species broadleaf trees. Good screening from the road. Existing compacted earth track at the field edge	Good	Good	40+	B2	5.4
G16	Common ash; field maple	On	8-10	4	Yes	300.0	4.5	2.0	SM	None	Establishing hedgerow trees growing above hedge height	Good	Good	40+	B2	3.6
G17	Common ash	On	8-1	2	Yes	300.0	4.5	2.0	SM	None	Establishing hedgerow trees growing above hedge height	Good	Good	40+	B2	3.6
G18	Common beech; common ash	On	16-18	5	Yes	775.0	7.0	3.0	M	None	Mature and prominent hedgerow trees of excellent form and condition	Good	Good	40+	A2	9.3
G19	Common beech; whitebeam	On	10-17	2	Yes	800.0	7.0	3.0	M	None	Mature and prominent hedgerow trees of excellent form and condition	Good	Good	40+	A2	9.6
G20	Common ash	On	15-20	4	Yes	600.0	8.0	4.0	M	None	Mature hedgerow ash trees forming a largely cohesive canopy; no access to base of trees	Good	Fair	40+	B2	7.2
G21	English oak; field maple	On	8-10	4	Yes	300.0	4.5	2.0	SM	None	Establishing hedgerow trees growing above hedge height	Good	Good	40+	B2	3.6

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SURVEY DATE: 28/06/2023

Barton Hyett Arboricultural Consultants

HEDGES

Ref	Species	On/off site	Av. height (m)	Av. width (m)	Av. stem diam (mm)	Av. low crown height (m)	Life stage	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)
H1	Hawthorn; blackthorn	On	2.0	1	75	0.1	SM	Maintained hedgerow bramble throughout; gaps along its length	Fair	Fair	10+	C2	1.0
H2	Blackthorn; hawthorn; common ash; field maple	On	4.0	3	80	0.1	SM	Dense hedgerow; some ash and maple beginning to establish above hedge height	Good	Fair	40+	B2	1.0
H3	Blackthorn; goat willow	On	4.5	3	80	0.1	SM	Remnant section of hedgerow	Good	Fair	10+	C2	1.0
H4	Blackthorn; hawthorn; cornus; field maple	On	2.0	1.5	80	0.1	EM	Dense and well maintained hedgerow	Good	Good	40+	B2	1.0
H5	Field maple; goat willow; hawthorn; blackthorn; crab apple	On	4.0	3.5	150	0.2	M	Dense and mature outgrown hedgerow; ivy throughout. Existing farm acces track parallel to the east	Good	Fair	40+	B2	1.8
H6	Blackthorn; hawthorn; common ash; field maple	On	4.0	4	100	0.1	SM	Dense hedgerow; some maple beginning to establish above hedge height	Good	Fair	40+	B2	1.3
H7	Hawthorn; blackthorn; field maple	On	2.0	2	80	0.1	M	Dense and well maintained hedgerow	Good	Good	40+	B2	1.0
H8	Hawthorn; blackthorn; field maple	On	2.0	2	80	0.1	M	Dense and well maintained hedgerow	Good	Good	40+	B2	1.0
H9	Hornbeam; field maple; English oak; sweet chestnut	On	2.0	2	100	0.1	M	Dense and well maintained hedgerow	Good	Good	40+	B2	1.3
H10	Hawthorn; hornbeam; field maple; cornus; hazel; blackthorn ; English oak; common ash	On	4.0	5	80	0.2	Y	Mixed native broadleaf species trees currently forming a hedgerow feature. Will become more of a tree group as they mature. Significant future growth potential	Good	Good	40+	B2	1.0
H11	Hawthorn; elder; cornus; common ash	On	5.0	5	200	0.1	EM	Outgrown hedgerow and understorey to the mature ash	Good	Fair	40+	B2	2.4
H12	Hawthorn; elder; cornus; common ash; holly; whitebeam	On	5.0	5	200	0.1	EM	Outgrown hedgerow with some holly; maple and whitbeam establishing within	Good	Fair	40+	B2	2.4
H13	Hawthorn; elder; cornus; holly	On	5.0	4	200	0.1	EM	Outgrown hedgerow	Good	Fair	40+	B2	2.4
H14	Hazel	On	4.0	4	70	0.2	EM	Remnant hedgerow trees	Fair	Fair	10+	C2	0.8
H15	Hazel; hawthorn	On	4.0	4	70	0.2	EM	Remnant hedgerow trees	Fair	Fair	10+	C2	0.8
H16	Field maple; hawthorn; blackthorn; elder	On	6.0	6	250	0.3	M	Outgrown and unmaintaned hedgerow	Good	Good	40+	B2	3.0
H17	Field maple; hawthorn; blackthorn; elder; whitebeam	On	6.0	6	225	0.3	M	Outgrown and unmaintaned hedgerow; existing compacted earth track parallel to the south east	Good	Good	40+	B2	2.7

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Ref	Species	On/off site	Av. height (m)	Av. width (m)	Av. stem diam (mm)	Av. low crown height (m)	Life stage	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)
H18	Field maple; hawthorn; blackthorn; elder; whitebeam	On	6.0	6	225	0.3	M	Outgrown and unmaintaned hedgerow; existing compacted earth track parallel to the east	Good	Good	40+	B2	2.7
H19	Field maple; hawthorn; blackthorn; elder; whitebeam	On	6.0	6	225	0.3	M	Outgrown and unmaintaned hedgerow; existing compacted earth track parallel to the south	Good	Good	40+	B2	2.7
H20	Field maple; hawthorn; blackthorn; elder; whitebeam	On	6.0	6	225	0.3	M	Outgrown and unmaintaned hedgerow; existing compacted earth track parallel to the east	Good	Good	40+	B2	2.7
H21	Field maple; hawthorn	On	6.0	6	180	0.1	EM	Outgrown hedgerow trees	Good	Fair	40+	B2	2.2
H22	Field maple; hawthorn; blackthorn; elder; cornus	On	6.0	6	225	0.3	M	Outgrown and unmaintaned hedgerow; existing compacted earth track parallel to the east and west	Good	Good	40+	B2	2.7
H23	Field maple; hawthorn	On	5.0	5	200	0.3	M	Outgrown and unmaintaned hedgerow; existing compacted earth track parallel to the east and west	Good	Good	40+	B2	2.4
H24	Field maple; hawthorn; hazel; cornus	On	5.0	5	150	0.3	EM	Outgrown and unmaintaned hedgerow; existing compacted earth track parallel to the north	Good	Good	40+	B2	1.8
H25	Field maple; hawthorn; hazel; cornus	On	5.0	5	150	0.3	EM	Outgrown and unmaintaned hedgerow; existing compacted earth track parallel to the north	Good	Good	40+	B2	1.8
H26	Blackthorn; cornus	On	4.0	5	80	0.3	EM	Outgrown and unmaintaned hedgerow; section is predominantly blackthorn; existing compacted earth track parallel to the north	Good	Fair	40+	C2	1.0
H27	Hazel	On	5.0	5	150	0.3	EM	Outgrown and unmaintaned section of hedgerow; existing compacted earth track parallel to the north	Good	Good	40+	B2	1.8
H28	Damson; hawthorn	On	5.0	5	150	0.3	M	Outgrown and unmaintaned section of hedgerow; existing compacted earth track parallel to the north	Good	Good	40+	B2	1.8
H29	Hazel ; cornus	On	5.0	5	150	0.3	EM	Outgrown and unmaintaned section of hedgerow	Good	Good	40+	B2	1.8
H30	Hazel	On	3.0	4	80	0.3	EM	Outgrown and unmaintaned section of hedgerow; reduced vitality	Fair	Fair	10+	C2	1.0
H31	Blackthorn; hawthorn	On	3.0	4	80	0.3	EM	Outgrown and unmaintaned section of hedgerow; reduced vitality	Fair	Fair	10+	C2	1.0
H32	Hazel ; cornus	On	5.0	5	150	0.3	M	Outgrown and unmaintaned section of hedgerow	Good	Good	40+	B2	1.8
H33	Hazel	On	3.0	4	80	0.3	EM	Outgrown and unmaintaned section of hedgerow; slightly reduced vitality	Fair	Fair	10+	C2	1.0
H34	Blackthorn	On	4.0	4	60	0.3	M	Outgrown and unmaintaned section of hedgerow	Good	Good	40+	B2	0.8
H35	Hazel; blackthorn; field maple; cornus	On	5.0	5	150	0.3	M	Outgrown and unmaintaned section of hedgerow; some trees within hedgerow are Cat C due to reduced vitality	Fair	Good	40+	B2	1.8

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SURVEY DATE: 28/06/2023

Ref	Species	On/off site	Av. height (m)	Av. width (m)	Av. stem diam (mm)	Av. low crown height (m)	Life stage	General observations	Health & vitality	Structural condition	Estimated remaining contribution (Years)	BS 5837 Category	RPA radius (m)
H36	Hazel; blackthorn; field maple; holly	On	5.0	5	100	0.3	M	Outgrown and unmaintaned section of hedgerow; some trees within hedgerow are Cat C due to reduced vitality	Fair	Good	40+	B2	1.3
H37	Hazel; blackthorn; field maple	On	5.0	5	100	0.3	M	Outgrown and unmaintaned section of hedgerow	Good	Good	40+	B2	1.3

WOODLANDS

Ref	Species	On/off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. low crown height (m)	Life Stage	Special importance	General Observations	Health & vitality	Structural condition	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO?
W1	English oak; hornbeam; common ash; common beech; hazel; yew; hawthorn; field maple	On	4-20	1500	Yes	700	6.0	2.0	M	ASNW	ASNW. Good species diversity for the most part but dominated by ash in some areas. Existing compacted earth and stone track passes throug the woodland	Good	Good	40+	A3	8.4	11.0
W2	English oak; hornbeam; common ash; common beech; hazel; yew; hawthorn; field maple	On	4-20	1500	Yes	700	6.0	2.0	M	ASNW	ASNW. Good species diversity for the most part but dominated by ash in some areas. Existing compacted earth and stone track passes throug the woodland	Good	Good	40+	A3	8.4	11.0
W3	English oak; hornbeam; common ash; common beech; hazel; yew; hawthorn; field maple	Off	4-20	1000	Yes	700	6.0	2.0	M	ASNW	Off site ASNW. Separated from the site by a road. Not inspected in any detail but plotted due due to proximity to the site	Good	Good	40+	A3	8.4	11.0

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

The **DIMENSIONS** taken are:

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

LIFE STAGE is defined as follows:

Y Young: Normally stake dependent, establishing trees. Should be growing fast, usually primarily increasing in height more than spread but as yet making limited impact upon the landscape.

SM Semi-mature: Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment. Semi-Mature (still capable of being transplanted without preparation, up to 30cm girth and not yet sexually mature).

EM Early-mature: Not yet having reached 75% of expected mature size. Established young trees, normally of good vigour and still increasing in height but beginning to spread laterally. Beginning to make an impact upon the local landscape and environment.

M Mature: Well-established trees, still growing with some vigour but tending to fill out and increase spread. Bark may be beginning to crack and fissure. In the middle half of their safe, useful life expectancies.

LM Late-Mature: In full maturity but possibly beyond mature and in a state of natural decline). Still retaining some vigour but any growth is slowing.

A Ancient: A tree that has passed beyond maturity and is old/aged compared with other trees of the same species. Typically having a very wide trunk and a small canopy.

PHYSIOLOGICAL CONDITION (HEALTH & VITALITY):

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

Good: No significant health issues.
Fair: Indications of slight stress or minor disease (e.g. the presence of minor dieback/deadwood or of epicormic shoot growth).
Poor: Significant stress or disease noted; larger areas of dieback than above.
Dead: (or Moribund).

STRUCTURAL CONDITION:

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

Good: No obvious structural defects: basically sound.
Fair: Minor, potential or incipient defects.
Poor: Significant defect(s) likely to lead to actual failure in the medium to long-term.
Dead: (or Moribund).

ESTIMATED REMAINING CONTRIBUTION:

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

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

SPECIAL IMPORTANCE:

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

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

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

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

QUALITY CATEGORY:

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

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

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

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

CATEGORY A: HIGH QUALITY:

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

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

CATEGORY B: MODERATE QUALITY:

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

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

CATEGORY C: LOW QUALITY:

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

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

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

CATEGORY U:

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

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

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

ROOT PROTECTION AREA (RPA):

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

VETERAN OR ANCIENT TREE BUFFER (VTB/ATB)

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

ANCIENT WOODLAND BUFFER (FOR ASNW, PAWS OR ARW)

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

THE IMPORTANCE OF TREES

Wider benefits:

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

Some *Economic* benefits of trees include:

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

Some *Social* benefits of trees include:

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

Some *Environmental* benefits of trees include:

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

On new development sites:

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

- increasing property values;
- visual amenity
- softening, complementing and adding maturity to built form
- displaying seasonal change
- increasing wildlife opportunities in built-up areas
- contributing to screening and shade
- reducing wind speed and turbulence

NATIONAL PLANNING POLICY

The National Planning Policy Framework 2021 (NPPF paragraph 180) states that, when determining planning applications, local planning authorities should apply the following principle:

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

In this respect the following definitions apply:

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

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

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

Other paragraphs of the NPPF 2021 of relevance to this report are:

Paragraph 131: *'Trees make an important contribution to the character and quality of urban environments, and can also help mitigate and adapt to climate change. Planning policies and decisions should ensure that new streets are tree-lined, that opportunities are taken to incorporate trees elsewhere in developments (such as parks and community orchards), that appropriate measures are in place to secure the long-term maintenance of newly-planted trees, and that existing trees are retained wherever possible. Applicants and local planning authorities should work with highways officers and tree officers to ensure that the right trees are planted in the right places, and solutions are found that are compatible with highways standards and the needs of different users.'*

Paragraph 174: *'Planning policies and decisions should contribute to and enhance the natural and local environment by:*
b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.'

STATUTORY CONTROLS

Statutory tree protection

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

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

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

CONSTRUCTION EXCLUSION ZONE - NO ENTRY

TREE PROTECTION FENCING

THIS FENCE MUST BE MAINTAINED IN ACCORDANCE WITH THE APPROVED TREE PROTECTION PLANS AND ARBORICULTURAL METHOD STATEMENT FOR THIS DEVELOPMENT.

TREES ENCLOSED BY THIS FENCE ARE PROTECTED BY PLANNING CONDITIONS AND/OR ARE THE SUBJECTS OF A TREE PRESERVATION ORDER.
CONTRAVENTION CAN RESULT IN BREACH OF PLANNING CONDITIONS AND/OR CRIMINAL PROSECUTION.
(TOWN AND COUNTRY PLANNING ACT 1990)

FOR ALL ENQUIRIES REGARDING TREES AT THIS DEVELOPMENT
PLEASE CALL 01386 576161 OR EMAIL ENQUIRIES@BARTON-HYETT.CO.UK

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