ARBORICULTURAL IMPACT ASSESSMENT

Low Farm, Wakefield

March 2022

Barton Hyett Associates
Arboricultural Consultants

Summary table		
Site Name:	Low Farm	
Project Reference:	4958	
Site Address:	Wakefield Road, Grange Moor, Huddersfield, Wakefield	
Nearest Postcode:	WF4 4BB	
Central Grid reference:	SE 24553 15991	
Local Planning Authority:	Kirklees Metropolitan Council	
Relevant Planning Policies:	Kirklees Local Plan (strategy and policies) - adopted 27th of February 2019, Policy LP33 - Trees	
Statutory Controls: (Refer to Section 6)	**Tree Preservation Order**	**Conservation Area**
	Yes; (07/18/G4, KB1/49/G9, KB1/49/G10, KB1/49/G11, KB1/49/G12, KB1/49/G15, 07/18/W2, KB1/49/W4, KB1/49/W5, KB1/49/W9, KB1/49/W11, KB1/49/W14, 07/18/T16, 07/18/T17, 07/18/T18, 07/18/T19, 07/18/T20, 07/18/T21, 07/18/T22	Yes, Hope Pit C/A
Soil Type: (Source: BGS online soils map © NERC 2022)	**Superficial/Drift**	**Bedrock**
	No superficial deposits recorded	Pennine Middle Coal Measures Formation - Mudstone, siltstone and sandstone
Topographical Survey:	Drawing No: 31351NGLS (sheets 1-10), dated: 01/04/2021	
Proposed Site Layout:	Drawing No: Overall Layout B001.1 - v3.9.1 FINAL, dated: 30/03/2022	
Notes:	TPO covers multiple trees; W5, W12, W13 and W14 designated as ancient replanted woodland.	
Report author:	David Holmes *FdSc, MArborA*	
Checked by:	Richard Hyett *MSc, BSc (Hons), MICFor, MArborA*	
Date of issue:	31st of March 2022	

Arboricultural Association Professional Member
PR01027

Institute of Chartered Foresters registered

Barton Hyett Arboricultural Consultants

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1. INTRODUCTION

1.1. Barton Hyett Associates Ltd have been instructed to survey trees located at Low Farm, Flockton ('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 detailed planning application at the site and provide written advice on how they inform feasibility and design options for the site. 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 made up of agricultural land used for growing crops and grazing cattle. Field boundaries are defined by a mixture of masonry walls, hedgerows, fences and ditches. Field gates allow vehicular access throughout the site.

2.2. The survey area measures approximately 80 hectares. To the eastern part of the site is Low Farm, consisting of a farmyard complete with several residential dwellings and out-buildings.

2.3. The town of Huddersfield lies to the west of the site, approximately 6.5 miles away. The city of Leeds is located approximately 10.5 miles north-east of the site.

2.4. The A642/Wakefield Road runs east to west through the centre of the site. To the east of the site lies the national Coal Mining Museum of England. Emley Moor Transmission Tower lies approximately 2.5miles south-west of the site.

2.5. The surrounding area is largely agricultural land with areas of woodland, small villages and outlying rural dwellings.

2.6. The site undulates throughout, with the approximate heights above sea level varying between 138m at the north; 155m to the east; 182 to the south and 204m recorded to the west.

2.7. The site is currently accessed by tracks leading from Low Farm, Wakefield Road and Grange Lane. There are multiple footpaths crossing the site along with several existing tracks, the latter being used for agricultural access.

3. TREE SURVEY FINDINGS

3.1. A total of 101 trees; 67 group features; 16 woodlands and 33 hedgerows were surveyed. These are summarised in terms of their quality in accordance with the recommendations of BS5837 below, and shown in more detail on the Tree Survey and Constraints Plan (**Section 2**) and within the Tree Survey Schedule (**Section 3**).

	Total	A - High quality trees whose retention is most desirable.	B - Moderate quality trees whose retention is desirable.	C - Low quality trees which could be retained but should not significantly constrain the proposal.	U - Very poor quality trees that should be removed unless they have high conservation value.
Trees	**101**	16	55	30	-
Groups	**67**	1	54	12	-
Hedgerows	**33**	-	29	4	-
Woodland	**16**	7	9	-	-
Total	**217**	**24**	**147**	**46**	**-**

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

4. KEY ARBORICULTURAL FEATURES

4.1. The features recorded as T1 - T15, T24 - T29, T48 - T55, T57 - 59, T69 - T71, T74, T75 - T91, T93 - T96, G1 - G11, G24 - G28, G43 - G45, G52, G53, G56 - G65, W1, W3, W4, W8 (western section); W9 (eastern section) and W10 are protected by Tree Preservation Orders. The woodland W4 is also located within The Hope Pit Conservation Area.

4.2. The high-quality category A woodlands W5 and W14 along with the moderate-quality category B woodlands W12 and W13 are listed as ancient replanted woodland on the '*Ancient Woodland Inventory 2011 and 2021*', hosted by DEFRA.

4.3. The features recorded as W2, W4, W5, W6, W7, W8, W9, W10, W11, G42 - G46, G53, G58 - G63, G65, T33, T47 - T55, T69 - T71, T76 - T78, T83 - T85, T90 - T92 and H21 are listed as deciduous woodland on the '*2021 Priority Habitat Inventory*' hosted by DEFRA.

4.4. The features recorded as W2, W4 - W11, G38 (northern section), G39, G42 - G45, G52 - G55, G58 - G63, T47 - T55, T70 - T72, T76 - T78, T83 - T85, T90 - T92 and H21 are listed as broadleaved woodland on the '*2014 National Forestry Inventory*' hosted by DEFRA. Within the same dataset, the features recorded as W12, W13 and W14 are listed as conifer woodland.

4.5. The features recorded as W11, W16, G52 - G65 and T69 - T96 are listed on the '*2021 Wood-Pasture and Parkland BAP Priority Habitat Inventory for England*' hosted by DEFRA.

4.6. Japanese knotweed (JKW) was found to be established as sporadic clusters across the site. This is an invasive species and specialist advice should be sought as to how this is best considered.

4.7. Recorded local name designations for groups and woodlands are included in the tree survey schedule (see **Section 4**).

5. PROPOSED DEVELOPMENT

5.1. The development proposal is to install solar panels across the site, along with the associated infrastructure of plant rooms, access tracks, security fencing, CCTV and underground cable connections. The proposed site layout is shown on the proposed site plan, drawing No: '*Overall Layout B001.1 - v3.9.1 FINAL*', dated: 30/03/2022 (as amended and submitted).

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.

6.2. In response to the arboricultural constraints (e.g. the presence of high and moderate-quality trees and tree groups) the proposed development has been designed in order that Root Protection Areas (RPAs) can be largely 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 process is carried out appropriately, the proposed development can be implemented without significant direct impacts on these important trees.

Trees to be removed

6.3. To facilitate the proposal, 1 low-quality category C tree, T22 would need to be removed in order to re-instate a derelict access point. The removal of this tree would afford more clearance for the retained moderate-quality trees within the immediate vicinity.

6.4. A small section of the moderate-quality category B hedgerow H7 would need to be removed in order to facilitate the security fencing. With local adjustments, it would be possible to move the fence line in order to minimise the number of stems to be removed, convenient gaps should be exploited. It is recommended that as the fence is to pass through the hedge, strainer posts are installed at a distance of 3m on either side of the hedgerow, with a 6m fencing panel being affixed to these posts in order to make the panel easier to install.

6.5. The loss of the low-quality tree and removal of a small section of moderate quality hedgerow are minimal disruptions to the tree stock and should be mitigated through replacement planting elsewhere on site. These removals are shown on the Tree Retention and Removal Plan in **Section 3.**

Impacts on retained trees

6.6. The high-quality category A woodlands W5 and W14 along with the moderate-quality category B woodlands W12 and W13 are listed as ancient replanted woodland on the '*Ancient Woodland Inventory 2011 and 2021*', hosted by DEFRA. Following the standing advice from the Forestry Commission and Natural England regarding ancient and veteran trees, a buffer zone of 15 x the stem diameter or 5m beyond the canopy drip-line (whichever is greater) has been applied, as shown on the tree survey plan.

6.7. The existing tracks are to be utilised where possible, the traffic during the construction phase of the development will be no more significant than the years of previous agricultural usage. If the surfacing of the track is to be improved, no excavations are to take place and the existing surfacing will be retained as a sub-base with a geotextile separation layer installed prior to making good existing tracks. Where new tracks OR existing infrequently used tracks pass through the RPA of retained trees, a cellular confinement system back-filled with with aggregate shall be used. The track which passes to the north of G63 and south of T91 in field number 1 will be constructed using a cellular confinement system. Ground level changes within the Root Protection Area (RPA) of trees are to be avoided.

6.8. The site construction and operation tracks are to be approximately 4m wide consisting of compacted aggregate, utilising existing entrances. The use of limestone for the aggregate is to be avoided; in the mid to long-term, limestone leaching into the soil will restrict the availability of nutrients as the soil chemistry is altered, and this will have a detrimental effect on the vigour of the trees

6.9. The existing width of tracks should be retained, particularly when running between arboricultural features. Where this is unavoidable and the track width needs to be widened to avoid run-out, the width should be added at the side furthest away from trees if possible, e.g. where a track runs to the eastern side of woodland, the extra width should be added to the eastern side of the track.

6.10. It was noted that across the majority of the site, where the existing access tracks pass beneath trees, the crown clearance has recently been increased for agricultural traffic. It may still be necessary to crown lift trees at some points of access, depending on the type of vehicles coming into site.

6.11. There are instances across the site where the existing track is routed parallel, and closely alongside hedgerows. Where this is the case, the close proximity of the tracks is acceptable since this is no more significant than the previous agricultural use of the land.

Anticipated Arboricultural Impacts - Cable Connection

6.12. No tree removals would be required to facilitate the installation of the proposed cable route, however, it may be necessary to install the cable close to and occasionally within the RPAs of significant trees and tree groups.

6.13. 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*'.

6.14. 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*'.

6.15. 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'*.

6.16. If, due to the constraints of the site, the two proposed indicative cable routes as identified in the Tree Protection Plan (**Section 3**) is not achievable the preferred solution is to use trench-less techniques such as directional drilling. 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. 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. Lubricating materials other than water may be used within the Precautionary Zone following consultation and by agreement'*.

6.17. 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 installation will utilise open trench excavation that will work around the RPAs of individual trees, where this is deemed to be a practical solution.

6.18. There are also certain factors that will have historically abated the growth of tree roots beneath the highway, such as the previous installation of services/apparatus which may have already severed tree roots and the presence of a drainage ditch or steep embankment at the highway edge.

6.19. The working methods, as set out above, will therefore need to be applied to the installation of the cable connection within the highway. If excavation is required to be carried out within RPAs, a schedule of arboricultural monitoring will need to be agreed with the project arboriculturist.

Conclusion

6.20. The proposal is feasible from an arboricultural perspective, and if carefully implemented according to an approved arboricultural method statement there would be no or only a low potential negative impact on the retained trees. A combined draft Tree Retention and Removal and Tree Protection Plan is included in **Section 3**.

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 BS5837:2012 fencing along the outer perimeters of the site. However, the perimeter fencing will only protect trees located around the periphery of the site. Trees and hedgerows within the interior of the site could be impacted during the construction phase of the development, however, given the locations, size and value of the individual trees recorded and taking into account the previous land usage, additional temporary tree protection barriers are not specified.

7.2. With this in mind, the trees T86, T87, T88, T89, T90 and T91 would be located within the site compound and T34 is located adjacent to an access track. During the construction phase only, temporary protective fencing (HERAS specification fencing, installed as per figure 3 of BS 5837:2012) should be erected around the RPA of these trees.

7.3. At field 9, there is a proposed District Network Operator (DNO) substation. It would be possible to omit additional temporary protective fence for the trees around the perimeter of this field T30 - T32, G32 and G43 - G36, if the compound is firstly defined with security fencing.

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

8.1. BS5837:2012 (Figure 1) recommends that detailed/technical design of tree protection and arboricultural methodologies should be resolved and finalised following on from the approval of the feasibility of a scheme by the Local Planning Authority.

8.2. Annex B and Table B.1 of BS5837:2012, an informative, advises that Arboricultural Method Statement Heads of Terms are a sufficient level of information in order to deliver tree-related information into the planning system. The table also advises that a detailed Arboricultural Method Statement might reasonably be required as a 'reserved matter' or planning condition.

8.3. In relation to the site, it is anticipated that arboricultural working methods are likely to be quite straightforward. A brief summary of the principles of tree protection on development sites is included in **Section 7**.

8.4. A draft, 'Heads of Terms' for an Arboricultural Method Statement is set out below:

- Project arboriculturist – a schedule of monitoring and supervision to be agreed with the applicant and LPA tree officer.
- 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. A walkover of the site, inspecting areas requiring special care to be undertaken, such as points of access.
- Tree removals and facilitation pruning - as shown on the Tree Retention and Removal Plan (TRR). To include the removal of T22, crown lift of trees for clearance where deemed necessary and the fencing route through H7. All tree works are to be carried out in accordance with BS 3998:2010.
- Erection of tree protection barriers and temporary ground protection as may be required as per the Tree Protection Plan (TPP). Weather-proof signage is to be affixed to the fencing, which should clearly prohibit the breaching of the fence. Photographic records of fencing to be kept.
- Site preparation and ground works - no access for any machinery or storage of equipment within the fenced tree protection areas. Access route improvements to be undertaken as per recommendations made within an AMS.
- Main construction phase - all tree protection measures shall remain in situ and intact for the duration of the construction phase. Should a problem arise, this will be communicated with the project arboriculturist at the earliest convenience.
- Removal of tree protection barriers - only to occur following discharge of condition by the LPA and approval of site conditions by the project arboriculturist.

- Final landscaping, including new tree planting, hedgerow re-stocking and biodiversity enhancement areas (BEA).

9. CONCLUSIONS AND RECOMMENDATIONS

9.1. Subject to the implementation of the advice contained within this report the proposed development is acceptable from an arboricultural perspective. The loss of trees can be readily mitigated and the retained trees can be adequately protected during construction activities to sustain their health and longevity.

9.2. Many of the hedgerows have small gaps appearing and the opportunity exists to restore these hedgerows with new supplementary planting that would help maintain their integrity and improve their long-term biodiversity value. Where new boundaries are to be defined, the establishment of new hedging would be a further opportunity to enhance the landscape.

9.3. The nature of the tree stock across the site could provide a good opportunity for the proposed development to improve the long-term tree cover on the site through appropriate new tree and woodland planting. Suitable planting alongside existing features or establishing new wildlife corridors to link existing ponds or woodland would help with improving biodiversity. Planning large scale features such as wildlife corridors or shelter belts could also offer a screening of the development from outside the site and better resilience to strong winds, whilst preserving the rural context of the surroundings.

9.4. The cellular continent system described shall be subject to an engineer-lead design, to ensure the system is fit for purpose.

9.5. 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 Local Planning Authority, this detail can be agreed and submitted later as part of a reserved matters application or pre-commencement planning condition (by agreement with the applicant).

David Holmes *FdSc, MArborA*
Arboriculturist

SECTION 2

423350 423500 423750 424000

416600 416500 416400

W12 -B2
T67 -B1
T68 -B1
H22 -C2
W14 -A2
W15 -B2
G50 -B2
G51 -B2
T69 -B1
G52 -B2
T70 -C1
T71 -B1
T72 -B1
G54 -B2
G53 -B2
T79 -B1
T80 -B1
T82 -A1
T81 -B1
G55 -B2
W16 -B2
G60 -B2
G59 -A2
T88 -B1
W11 -A2
T100 -C1
G66 -C2
G67 -C2
T101 -C1
T98 -C1
T99 -C1
T97 -C1
W10 -A2

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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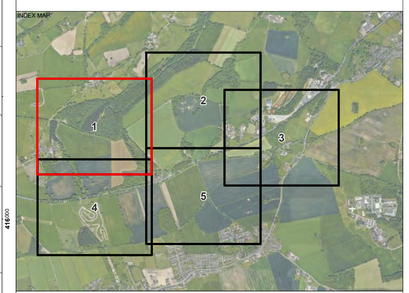
INDEX MAP



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GRID NORTH

0 20 40 80 Meters

PROJECT TITLE

Low Farm (4958)

DRAWING TITLE

Tree Survey Plan

SCALE			DRAWING NUMBER	
Scale: 1:1,250 @ A1			**BHA_4958_01**	
DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
DB	**DH**	**-**	**1 of 5**	**16/03/2022**

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

CLIENT: **Aardvark EM Limited**

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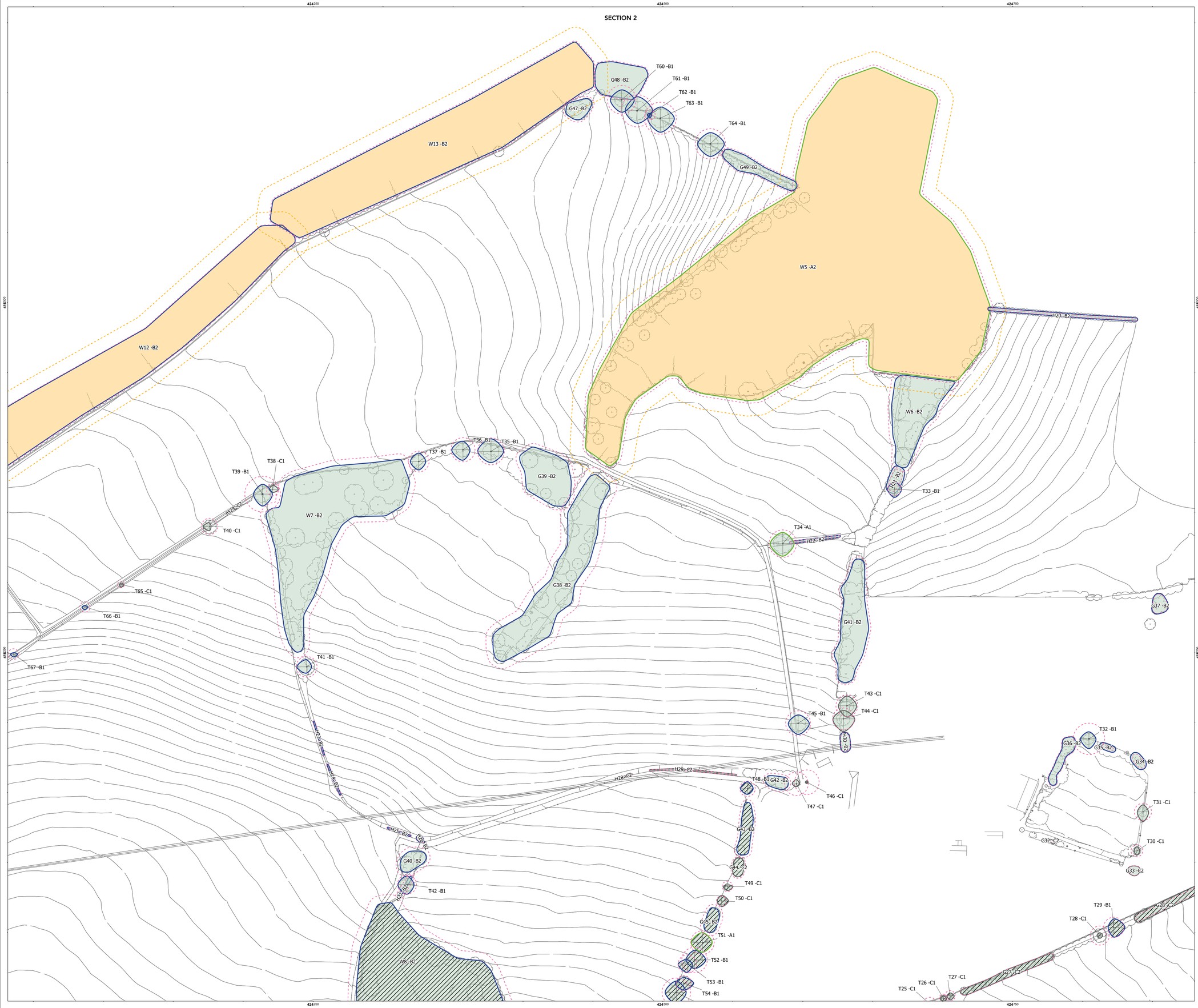
SECTION 2



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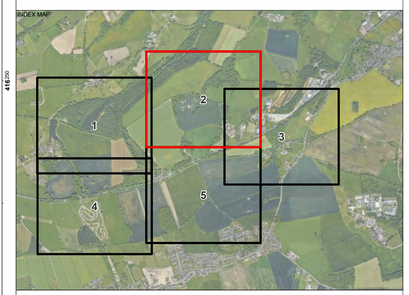

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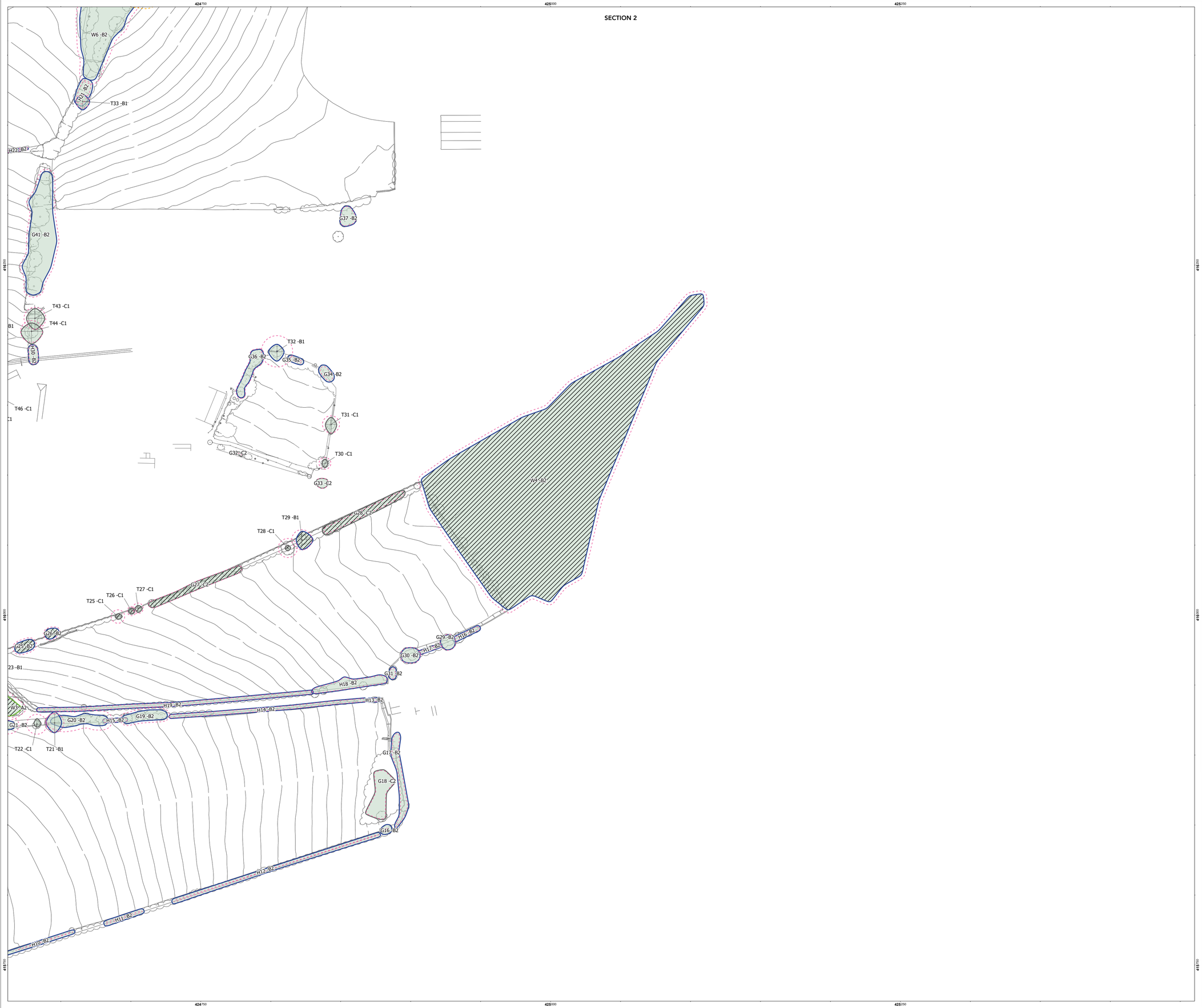

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415500 415250

T79 -B1
T80 -B1
T82 -A1
T81 -B1
T88 -B1
T87 -A1
T83 -B1
T85 -A1
T86 -A1
T84 -B1
T89 -A1
T90 -A1
T91 -A1
T92 -C1
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T3 -C1
T4 -B1
T5 -A1
T6 -B1
T7 -B1
T8 -B1
T9 -A1
T10 -B1
T11 -C1
T13 -B1
T12 -A1
T14 -B1
T15 -C1
T16 -B1

G54 -B2
G53 -B2
G55 -B2
G60 -B2
G61 -C2
G59 -A2
G62 -B2
G63 -B2
G64 -B2
G65 -B2
G58 -B2
G57 -B2
G56 -B2
G66 -C2
G67 -C2
G52 -B2
G53 -B2
G54 -C2
G5 -B2
G6 -B2
G7 -B2
G8 -B2
G9 -B2
G10 -B2
G11 -B2
G12 -B2

W16 -B2
W11 -A2
W10 -A2
W1 -B2

H8 -B2
H7 -B2
H6 -B2
H5 -B2
H4 -B2
H3 -B2
H2 -B2
H1 -B2

KEY

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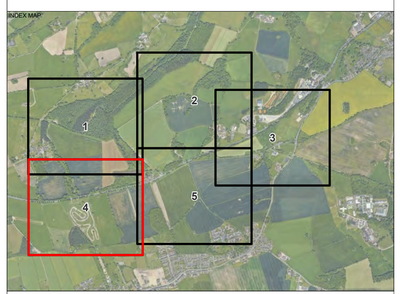
INDEX MAP



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N
GRID NORTH

0 20 40 80 Meters

PROJECT TITLE
Low Farm (4958)

DRAWING TITLE
Tree Survey Plan

SCALE				DRAWING NUMBER
Scale: 1:1,250 @ A1				**BHA_4958_01**
DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
DB	**DH**	**-**	**4 of 5**	**16/03/2022**

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

CLIENT
Aardvark EM Limited

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Barton Hyett Associates
Arboricultural Consultants
Tel: 01386 576161
Address: Office 5E, Deer Park Business Centre,
Eckington, Pershore, Worcestershire, WR10 3DN

DRAWING PRODUCED BY
SUMMIT GEO
info@summitgeo.co.uk

SECTION 2

W11 -A2
W8 -B2
W9 -A2
W3 -A2
W10 -A2
W2 -A2

T1 -B1
T2 -B1
T3 -C1
T55 -B1
T56 -B1
T57 -B1
T58 -C1
T59 -B1
T24 -A1
T23 -B1
T22 -C1
T21 -B1
T20 -B1
T19 -B1
T18 -B1
T17 -C1

G1 -B2
G2 -B2
G21 -B2
G22 -B2
G23 -B2
G24 -B2
G25 -B2
G26 -B3
G46 -B2
G20 -B2
G19 -B2
G18 -C2
G16 -B2
G15 -B2
G14 -C2
G13 -C2

H1 -B2
H2 -B2
H3 -B2
H4 -B2
H7 -B2
H10 -B2
H11 -B2
H12 -B2
H13 -B2
H15 -B2
H18 -B2
H19 -B2

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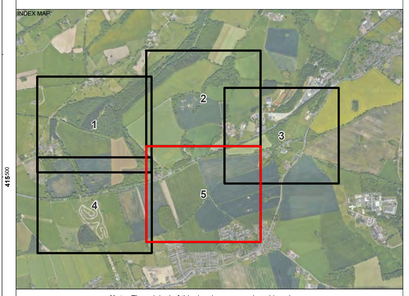

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DRAWING PRODUCED BY

SUMMIT GEO

info@summitgeo.co.uk

SECTION 2

Tree Ref	Species	Height (m)	LifeStage	RPA Radius (m)	RPA (m2)
T1	Oak (English)	10	EM	5.8	104
T2	Oak (English)	11	EM	7.7	185
T3	Sycamore	5.5	SM	3.6	41
T4	Oak (English)	14	EM	7.2	163
T5	Oak (Turkey)	20	M	11.2	391
T6	Sycamore	15	M	8.2	209
T7	Sycamore	12	EM	6.7	142
T8	Oak (English)	16	M	9.6	290
T9	Oak (English)	13	M	10.2	327
T10	Sycamore	14	M	6.8	147
T11	Elder	4.5	EM	2.6	22
T12	Oak (English)	16	M	10.2	327
T13	Sycamore	15	M	9	254
T14	Sycamore	13	M	7.2	163
T15	Sycamore	13	M	6	113
T16	Oak (English)	5	SM	4.4	62
T17	Sycamore	12	EM	5.8	104
T18	Oak (English)	9	M	7.9	197
T19	Hawthorn	4	EM	3	28
T20	Hawthorn	4	EM	4.2	55
T21	Oak (English)	9	EM	6.6	137
T22	Sycamore	8	SM	7.1	157
T23	Sycamore	16	M	7.7	185
T24	Beech (Common)	20	M	12.7	508
T25	Cypress (Lawson)	7	EM	4.8	72
T26	Cypress (Leyland)	8	EM	3.2	33
T27	Elm (English)	9	EM	3.7	43
T28	Elm (English)	8	EM	6.8	147
T29	Ash (Common)	14	EM	7.2	163
T30	Willow (Goat)	8	EM	4.2	55
T31	Ash (Common)	10	EM	6.1	118
T32	Willow (Goat)	14	EM	11.2	391
T33	Sycamore	14	EM	4.8	72
T34	Oak (English)	17	M	9.8	304
T35	Oak (English)	16	M	9.6	290
T36	Sycamore	16	M	8.6	235
T37	Sycamore	14	M	7.4	174
T38	Sycamore	8	EM	4.4	62
T39	Ash (Common)	15	M	12.7	508
T40	Sycamore	8	EM	5.8	104
T41	Oak (English)	13	M	7.4	174
T42	Sycamore	15	EM	6.8	147
T43	Sycamore	16	M	7.8	191
T44	Sycamore	16	M	7.8	191
T45	Sycamore	15	M	8.9	248
T46	Sycamore	7	M	8.8	241
T47	Oak (English)	5	M	8.4	222
T48	Sycamore	13	EM	5.5	96
T49	Sycamore	7	EM	3.7	43
T50	Sycamore	10	EM	3.6	41
T51	Sycamore	18	M	8.4	222
T52	Sycamore	18	M	9.1	261
T53	Sycamore	15	M	6.5	132
T54	Beech (Common)	14	EM	5.4	92
T55	Sycamore	18	M	10.2	327
T56	Oak (English)	15	M	7.9	197
T57	Sycamore	16	M	6.8	147
T58	Sycamore	12	EM	5.8	104
T59	Sycamore	16	M	8.4	222
T60	Sycamore	17	M	10.2	327
T61	Ash (Common)	18	M	11.5	417
T62	Hawthorn	4	EM	3.6	41
T63	Sycamore	17	M	11.4	408
T64	Sycamore	18	M	10.8	366
T65	Rowan	4	SM	2.4	18
T66	Hawthorn	5.5	EM	3.7	43
T67	Whitebeam	5	EM	3.8	46
T68	Whitebeam	5	EM	3.8	46
T69	Oak (English)	15	M	8.5	228
T70	Chestnut (Horse)	18	M	14.6	673
T71	Sycamore	17	EM	5.8	104
T72	Sycamore	18	M	9.5	282
T73	Chestnut (Horse)	14	M	7.9	197
T74	Beech (Common)	20	M	11.9	443
T75	Oak (Turkey)	20	M	11.9	443
T76	Beech (Common)	20	M	14.8	684
T77	Sycamore	20	M	10.6	350
T78	Chestnut (Horse)	20	M	10.6	350
T79	Sycamore	14	EM	4.5	65
T80	Sycamore	14	M	7.9	197
T81	Chestnut (Horse)	15	M	6.8	147
T82	Beech (Common)	20	M	9.8	304
T83	Sycamore	15	EM	6.2	122
T84	Oak (English)	18	M	9.8	304
T85	Oak (Turkey)	20	M	12.6	499
T86	Lime (Small-leafed)	20	M	12	452
T87	Oak (Turkey)	20	M	11	383
T88	Sycamore	16	M	11.6	426
T89	Oak (Turkey)	20	M	13.4	567
T90	Sycamore	20	M	10.2	327
T91	Oak (Turkey)	20	M	12.4	480
T92	Elder	4	SM	3.6	41
T93	Chestnut (Horse)	16	M	9.5	282
T94	Sycamore	12	SM	3.9	49
T95	Chestnut (Horse)	18	M	10.8	366
T96	Chestnut (Horse)	16	M	8.6	235
T97	Oak (English)	4	SM	2.8	24
T98	Oak (English)	5	EM	8.4	222
T99	Oak (English)	4	SM	3	28
T100	Oak (English)	4	SM	1.7	9
T101	Sycamore	6	EM	7.9	197

Group Ref	Species	Height Range (m)	LifeStage	RPA Radius (m)	RPA (m2)
G1	Elm	12	SM	4.1	52
G2	Sycamore; oak	12	EM	7.2	163
G3	Sycamore; oak	13	EM	7.2	163
G4	Elm; elder; hawthorn	12	SM	3.3	35
G5	Sycamore; oak; ash; elm	5 - 16	M	8.5	228
G6	Sycamore	8 - 14	M	5.9	109
G7	Sycamore	10 - 14	M	6.2	122
G8	Sycamore	10 - 12	M	7.2	163
G9	Sycamore	10 - 12	M	7.2	163
G10	Sycamore	8 - 12	EM	4.9	76
G11	Sycamore	12 - 16	M	7.9	197
G12	Sycamore	12	EM	5.3	88
G13	Sycamore; ash	12	EM	1.8	10
G14	Hawthorn; oak; elder	5 - 8	SM	3.3	35
G15	Oak; sycamore; hawthorn; hazel	6 - 12	M	8.5	228
G16	Hazel; holly	9	M	2.4	18
G17	Ash; hawthorn; elder	1 - 11	EM	4.2	55
G18	Goat willow; ash; hawthorn	1 - 11	SM	3	28
G19	Oak; sycamore; ash; hawthorn	5 - 15	EM	5.5	96
G20	Oak; sycamore; birch; hawthorn	4 - 15	EM	7.1	157
G21	Oak; birch; goat willow; sycamore; hawthorn;	4 - 15	EM	7.4	174
G22	Oak; sycamore; ash; blackthorn	4 - 15	EM	6.2	122
G23	Oak; ash; sycamore; hawthorn	4 - 15	EM	4.9	76
G24	Sycamore; elm	4 - 12	SM	3	28
G25	Lime	16	M	7.2	163
G26	Lime	12 - 14	EM	5.4	92
G27	Elm; ash; goat willow; cypress	2 - 14	EM	4.7	69
G28	Elm; goat willow; ash	2 - 14	EM	3.5	38
G29	Elm	14	EM	4.8	72
G30	Ash; goat willow	15	M	7.2	163
G31	Birch	12	EM	4.2	55
G32	Goat willow; elder	2 - 6	SM	1.5	7
G33	Goat willow; birch	8	EM	3	28
G34	Ash	15	EM	5.9	109
G35	Ash; hawthorn	10 - 14	EM	5.2	84
G36	Ash; goat willow; hawthorn; elder	8 - 12	EM	5	80
G37	Oak	14	EM	5.6	100
G38	Oak; sycamore; holly; hawthorn; elder	16	M	12	452
G39	Sycamore; oak; birch; hornbeam	16	M	8.6	235
G40	Ash	15	M	9.8	304
G41	Oak; ash; hawthorn; elder	16	M	7.6	180
G42	Oak; elder	17	M	7.7	185
G43	Sycamore; beech	12 - 16	EM	7.3	168
G44	Sycamore; beech	8 - 14	EM	6.1	118
G45	Sycamore	14 - 16	M	8.4	222
G46	Oak; hawthorn	12	EM	7.6	180
G47	Sycamore; elder	2 - 15	EM	6.7	142
G48	Sycamore; oak; ash; elm; holly; elder	2 - 12	EM	4.7	69
G49	Sycamore; ash	14	M	5.9	109
G50	Sycamore; oak; Corsican pine; elder; rhododendron	2 - 14	M	6.5	132
G51	Oak; birch; sycamore	8 - 10	EM	3.6	41
G52	Horse chestnut; sycamore; elder	2 - 16	M	9.5	282
G53	Horse chestnut; sycamore; oak; beech; elder	2 - 16	M	9.7	297
G54	Ash; elm	10 - 12	EM	5.2	84
G55	Oak; ash; elm	8 - 14	EM	4.9	76
G56	Sycamore; beech; horse chestnut; cherry; lime	8 - 16	EM	11.8	434
G57	Lime; beech; elm; elder	8 - 16	EM	6.7	142
G58	Sycamore; beech; elm; cherry; elder	6 - 16	M	11.5	417
G59	Sycamore; horse chestnut; beech; elder	6 - 17	M	13.2	547
G60	Horse chestnut; sycamore; elder	2 - 16	M	7.4	174
G61	Elm; goat willow	2 - 15	EM	5.3	88
G62	Sycamore; beech; horse chestnut; elder	2 - 18	M	12	452
G63	Sycamore; beech; cherry; horse chestnut; holly; elder	2 - 18	M	10.6	350
G64	Sycamore; horse chestnut; elm	4 - 14	M	7.2	163
G65	Beech; sycamore; oak; ash; horse chestnut; cherry;	2 - 18	M	12	452
G66	Sycamore; goat willow	4	SM	1.1	4
G67	Birch; goat willow; oak	2 - 8	SM	1.8	10

Woodland Ref	Species	Height Range (m)	LifeStage	RPA Radius (m)	RPA (m2)
W1	Oak; sycamore; holly; hazel; elder	2 - 15	M	8.3	215
W2	Oak; Scot's pine; ash; sycamore; holly; hawthorn	2 - 15	EM	6.6	137
W3	Oak; beech; sweet chestnut; ash; birch; sycamore;	2 - 18	M	8.8	241
W4	Sycamore; oak; birch ash; hawthorn; elder	2 - 16	M	7.2	163
W5	Oak; sycamore; birch; elm; hornbeam; holly; elder;	2 - 18	EM	7.9	197
W6	Sycamore; oak; birch; elm; holly; elder	2 - 18	EM	7.6	180
W7	Oak; sycamore; elder	16	EM	9	254
W8	Oak; sycamore; birch; goat willow ; hawthorn; elder	16	EM	11.9	443
W9	Oak; sycamore; hornbeam; ash; elm; beech; birch;	16	EM	7.6	180
W10	Sycamore; ash; elm; oak; sweet chestnut; holly; elder;	16	M	7.9	197
W11	Oak; sycamore; Scot's pine; beech; elm; blackthorn;	16	M	8.9	248
W12	Larch; birch; sycamore; elm; holly; elder	16	EM	4.9	76
W13	Beech; Corsican pine; sycamore; elm; elder	16	EM	5.8	104
W14	Oak; sycamore; Norway spruce; Scot's pine; larch;	2 - 18	EM	7.7	185
W15	Corsican pine; Norway spruce; oak; sycamore; elder;	16	EM	4.9	76
W16	Sycamore; birch; oak; larch; holly; rhododendron	16	EM	5.3	88

Hedge Ref	Species	Avg. Height (m)	Life Stage	RPA Radius (m)	RPA (m2)
H1	Hawthorn; blackthorn; elder	4.5	EM	1.1	4
H2	Hawthorn; blackthorn; elder; hazel	5	EM	1	3
H3	Hawthorn; hazel	4.5	EM	1.1	4
H4	Hawthorn	4	EM	1	3
H5	Hawthorn; elder	2	M	1.1	4
H6	Hawthorn	2	M	1.1	4
H7	Hawthorn	2	EM	0.8	2
H8	Hawthorn; elder	2	EM	0.8	2
H9	Hawthorn	2	EM	0.8	2
H10	Hawthorn; oak	4.5	EM	1.1	4
H11	Hawthorn	4.5	EM	1.1	4
H12	Hawthorn; oak; goat willow	4.5	EM	1.1	4
H13	Hawthorn; lilac	5	M	1.1	4
H14	Hawthorn; holly; sycamore	5	M	1.1	4
H15	Hawthorn	5	M	1.1	4
H16	Hawthorn	6	M	1.3	5
H17	Hawthorn	6	M	1.1	4
H18	Hawthorn; holly; goat willow; sycamore; ash	5	EM	1.1	4
H19	Hawthorn; holly; goat willow; sycamore; ash	5	M	1.1	4
H20	Hawthorn; elder; sycamore; elm	4.5	EM	0.8	2
H21	Blackthorn; goat willow; hazel	6	EM	1.1	4
H22	Hawthorn; holly; elder	2	EM	0.8	2
H23	Hawthorn	1.5	EM	0.8	2
H24	Hawthorn; elder	1.5	EM	0.8	2
H25	Hawthorn; elder	1.5	EM	0.8	2
H26	Hawthorn; holly	4.5	M	1.3	5
H27	Hawthorn	3.5	EM	2.6	22
H28	Hawthorn	1.5	SM	0.6	1
H29	Hawthorn; elder	1.5	SM	0.6	1
H29	Hawthorn; sycamore	4	M	1	3
H30	Hawthorn	4.5	M	1.3	5
H31	Hawthorn	4.5	M	1.5	7
H32	Hawthorn; sycamore; elder	4	Y	0.6	1

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(Retention highly desirable)

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

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Category C - Hedgerow, Group, Woodland - Low quality
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(Mostly unsuitable for retention)

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SECTION 3

LANE

Woodlands

Farm

The Dower

House

Field Access Point - North of Built Wall

W12 -B2

Stone wall 0.8ft

W14 -A2

Turning Circle

W15 -B2

Wood

Nook

G50 -B2

W16 -B2

G51 -B2

G52 -B2

G53 -B2

G54 -B2

G55 -B2

T67 -B1

T68 -B1

T69 -B1

T70 -C1

T71 -B1

T72 -B1

T79 -B1

T80 -B1

T81 -B1

T82 -A1

T88 -B1

T98 -C1

T99 -C1

T100 -C1

T101 -C1

G66 -C2

G67 -C2

W11 -A2

Vegetation 2.5m

Vegetation 3m

Denby

Grange

TX2

TX3

TX4

TREE SHADING AREA

Grass

PO

IL 158.51

ToW 163.08

IL 173.08

OHL

EP

Stone wall 0.5ft

Style

INDEX MAP

1

2

3

4

5

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
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(May be retained but should not constrain development)

Category C - Hedgerow, Group, Woodland - Low quality
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(Mostly unsuitable for retention)

Category U - Hedgerow, Group, Woodland - Very low quality
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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

Tree / Hedgerow / Group to be removed

Ancient Tree / Woodland or Veteran Trees

Ancient tree/woodland or Veteran tree: Important trees that require special consideration

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Protection Measures

Tree Protection Barrier

Cellular Confinement System (see AMS report for specification)

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Target Note Label	Description
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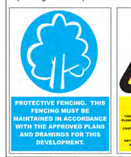

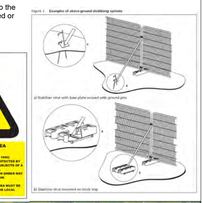

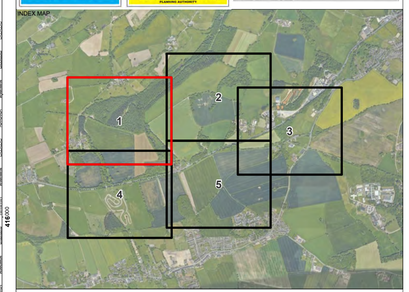

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N GRID NORTH

0 20 40 80 Meters

PROJECT TITLE

Low Farm (4958)

DRAWING TITLE

Tree Retention and Removal and Tree Protection Plan

SCALE			DRAWING NUMBER	
Scale: 1:1,250 @ A1			**BHA_4958_02**	
DRAWN BY	APPROVED BY	REVISION	SHEET	DATE
DB	**DH**	**-**	**1 of 5**	**31/03/2022**

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

CLIENT: **Aardvark EM Limited**

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Barton Hyett Associates
Arboricultural Consultants

Tel: 01386 576161
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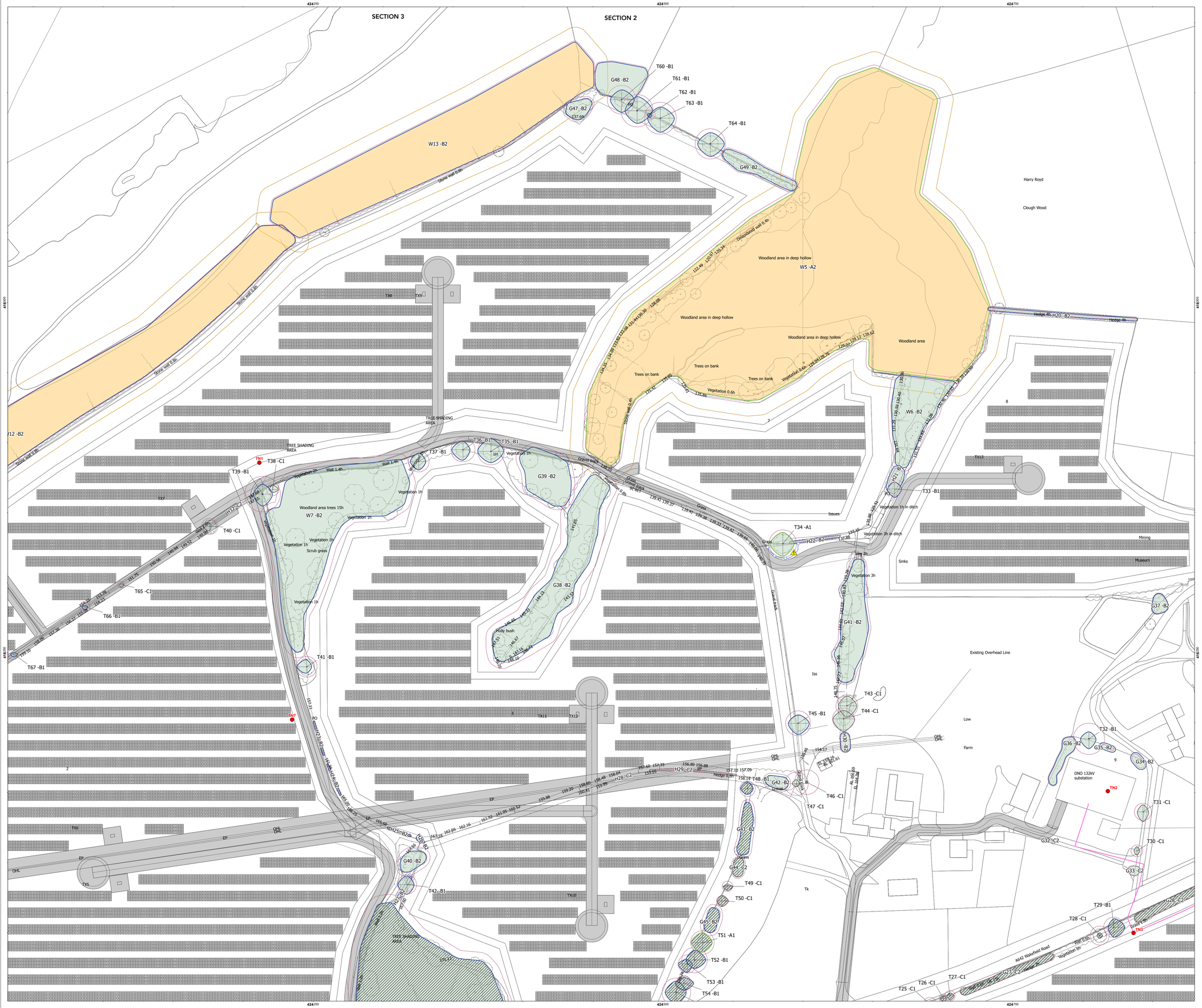
info@summitgeo.co.uk



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Target Note Label	Description
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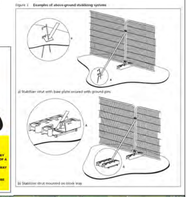
Figure 1 Examples of electro-ground shielding systems



INDEX MAP

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info@summitgeo.co.uk

SECTION 2

424750 425000 425250

416250 416000 415750

W6 -B2
T33 -B1
T21 -B1
Vegetation 1h in ditch
Vegetation 2h in ditch
Veg 2h
Vegetation 3h
Issues
Sinks
TX13
Mining
Museum
SKD RPA
EL 148.85
RL 152.21
EL 149.19
RL 151.84
EL 148.82
Tk
Quarry
(dis)
G37 -B2
G41 -B2
Existing Overhead Line
T43 -C1
T44 -C1
Low
Farm
Q45 OHL
T32 -B1
G36 -B2
G35 -B2
G34 -B2
9
DNO 132kV substation
TN2
T31 -C1
DNO 33kV DNO
T46 -C1
G32 -C2
T30 -C1
G33 -C2
Proposed Cable Route
W4 -B2
Gulley
Wood
Sinks
Ass2
Walkfield Rd
Hedge 4m
T29 -B1
T28 -C1
G28 -C2
Ditch 1.5m
TN3
Ditch 0.6m
Vegetation 0h
A612 Wakefield Road
T25 -C1
T26 -C1
T27 -C1
Ditch 0.5m
G27 -C2
Hedge 3h
6
G25 -B2
G26 -B2
H14 -B2
H15 -B2
G19 -B2
G20 -B2
H19 -B2
Hedge 4h
Hedge 5h
Grange lane
H13 -B2
H18 -B2
G31 -B2
G30 -B2
H17 -B2
G29 -B2
H16 -B2
LANE
163m
Grange Lane
Farm
Ass1
Ass2
Ass3
Ass4
Ass5
Ass6
Ass7
Ass8
Ass9
Ass10
Ass11
Ass12
Ass13
Ass14
Ass15
Ass16
Ass17
Ass18
Ass19
Ass20
Ass21
Ass22
Ass23
Ass24
Ass25
Ass26
Ass27
Ass28
Ass29
Ass30
Ass31
Ass32
Ass33
Ass34
Ass35
Ass36
Ass37
Ass38
Ass39
Ass40

SECTION 2
T79 -B1
T80 -B1
T82 -A1
T81 -B1
G54 -B2
G55 -B2
W16 -B2
G60 -B2
Vegetation 3m
T83 -B1
T85 -A1
G61 -C2
Dense woodland 14m
T84 -B1
T87 -A1
T86 -A1
T88 -B1
T89 -A1
TX2
T73 -C1
T74 -A1
Stone wall 1.2m
Dense woodland 10m
Txt/EOP
Storage Container
G59 -A2
Stone wall 1.2m
Vegetation 3m
G62 -B2
T90 -A1
T91 -A1
Temporary Compound Area
T92 -C1
T75 -A1
T76 -A1
T78 -B1
T77 -B1
G63 -B2
Vegetation 3m
G64 -B2
T93 -B1
T94 -C1
T95 -B1
T96 -B1
A642 Wakefield Road
Approximate edge of woodland
G65 -B2
G56 -B2
G58 -B2
TREE SHADING AREA
Trod 1.5m
Stone wall 1.2m
Dense woodland 10m
Hedge 4m
Post & wire fence
Stone wall 1.2m
Hedge 4m
Post & wire fence
Stone wall 1.2m
Hedge 4m
Post & wire fence
Stone wall 1.2

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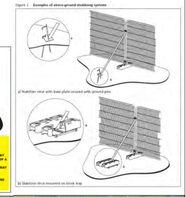
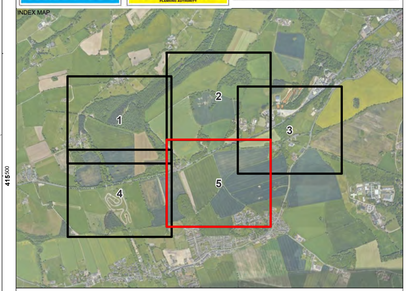


INDEX MAP



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DRAWING PRODUCED BY

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BS5837:2012 TREE SURVEY SCHEDULE

LOW FARM, WAKEFIELD

PROJECT NO: 4958

SURVEYOR: DAVE HOLMES

CLIENT: BOOM POWER

SURVEY DATE: 09-10/03/2022

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	Avg. Canopy Height (m)	1st branch ht (m)	1st branch dir.	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	RPA m²	TPO?
T1	Oak (English)	On	10	1	None	480.0	5-6-4-6	1	1.0	W	EM	None	Loss of main leader; heavily pruned to south	Good	Fair	20+	B1	6	104	Yes
T2	Oak (English)	On	11	1	None	640.0	6-6-7-6	1	2.0	E	EM	None	Loss of main leader; including cavity to north east of main stem @1.5m	Good	Fair	20+	B1	8	185	Yes
T3	Sycamore	On	6	1	None	300.0	4-5-3-4	0	0.0	None	SM	None	Self-seeded beneath oak	Fair	Fair	10+	C1	4	41	Yes
T4	Oak (English)	On	14	1	Yes	600.0	6-5-6-7	0	1.0	N	EM	None	Heavily swathed in ivy	Good	Fair	20+	B1	7	163	Yes
T5	Oak (Turkey)	On	20	1	None	930.0	8-8-9-10	0.5	1.5	S	M	None	Good example of species; historic storm damage to upper crown; pruning work to south of lower canopy	Good	Fair	40+	A1	11	391	Yes
T6	Sycamore	On	15	1	None	680.0	5-6-7-6	0	0.0	None	M	None	Sub-dominant limb to west forming cohesive crown with main stem	Good	Fair	20+	B1	8	209	Yes
T7	Sycamore	On	12	2	None	560.0	4-5-5-5	2	2.0	E	EM	None	Stem to west pruned to allow clearance above gateway	Good	Fair	20+	B1	7	142	Yes
T8	Oak (English)	On	16	1	Yes	800.0	8-7-7-9	3	5.0	S	M	None	Old beefsteak fungus to south east corner of root collar; excavations to south of root plate; heavily pruned to south	Good	Fair	20+	B1	10	290	Yes
T9	Oak (English)	On	13	1	Yes	850.0	6-9-8-7	1	2.0	N	M	Emerging Veteran	Damage to south of main stem @3-4m; decay/bark loss to first scaffold limb east; visible woodpecker activity to south west of main stem @5m; burred lower main stem; wind swept form to north east	Good	Fair	40+	A1	10	327	Yes
T10	Sycamore	On	14	1	None	570.0	5-6-7-6	2.5	2.5	W	M	None	Typical for species	Good	Fair	20+	B1	7	147	Yes
T11	Elder	On	5	3	None	220.0	2-2-1-2	0.5	0.25	W	EM	None	Typical for species	Fair	Fair	10+	C1	3	22	Yes
T12	Oak (English)	On	16	1	None	850.0	8-8-8-9	2	2.0	W	M	None	Good example of species; historic storm damage & pruning to south of crown; forks into 2 stems @5m	Good	Fair	40+	A1	10	327	Yes

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T13	Sycamore	Off	15	1	None	750.0	6-7-6-7	2.5	2.5	N	M	None	Sun dominant limb to south west forming cohesive crown with main stem	Good	Fair	20+	B1	9	254	Yes
T14	Sycamore	Off	13	1	None	600.0	5-7-6-6	2.0	2.0	N	M	None	Forks into 2 stems @3.5m; barbed wire embedded to east of stem	Good	Fair	20+	B1	7.2	163	Yes
T15	Sycamore	Off	13	1	Yes	500.0	5-5-6-5	2.0	2.5	S	M	None	Moderate dieback in upper crown; small elder to south of root plate	Fair	Fair	10+	C1	6.0	113	Yes
T16	Oak (English)	On	5	1	None	370.0	4-2-6-6	1.0	1.5	N	SM	None	Typical for species	Good	Fair	20+	B1	4.4	62	None
T17	Sycamore	Off	12	12	None	480.0	2-2-2-2	0.0	0.0	None	EM	None	Re-gen from mature boles	Fair	Fair	10+	C1	5.8	104	None
T18	Oak (English)	On	9	1	None	660.0	4-6-4-5	0.5	0.5	E	M	None	Historic occluding @2m to west of main stem; heavily crown lifted; forks into 2 stems @2.5m; parts of old fence affixed to lower stem	Good	Fair	20+	B1	7.9	197	None
T19	Hawthorn	On	4	1	None	250.0	1-2-1-2	0.0	0.0	None	EM	None	Diameter recorded @0.5m	Good	Fair	20+	B1	3.0	28	None
T20	Hawthorn	On	4	1	Yes	350.0	1-2-1-2	0.0	0.0	None	EM	None	Diameter estimated @0.5m	Good	Fair	20+	B1	4.2	55	None
T21	Oak (English)	On	9	2	None	550.0	8-5-7-6	0.5	0.5	W	EM	None	Sub dominant limb to south forming cohesive crown with main stem	Good	Fair	20+	B1	6.6	137	None
T22	Sycamore	On	8	8	None	590.0	4-3-2-2	0.0	0.0	None	SM	None	Had been partially cut back to clear gateway	Fair	Fair	10+	C1	7.1	157	None
T23	Sycamore	On	16	1	None	640.0	6-6-7-5	3.0	4.0	W	M	None	Typical for species	Good	Fair	20+	B1	7.7	185	None
T24	Beech (Common)	On	20	1	None	1060.0	9-10-8-8	1.0	3.0	N	M	None	Good example of species; forks into 2 stems @3m; main stems heavily swathed in ivy	Good	Fair	40+	A1	12.7	508	Yes
T25	Cypress (Lawson)	On	7	1	None	400.0	2-3-2-2	0.0	0.0	None	EM	None	Topped @7m	Fair	Fair	10+	C1	4.8	72	Yes
T26	Cypress (Leyland)	On	8	5	None	270.0	2-2-2-2	0.0	0.0	None	EM	None	Topped @8m	Fair	Fair	10+	C1	3.2	33	Yes
T27	Elm (English)	On	9	4	Yes	310.0	2-3-3-2	0.0	0.0	None	EM	None	Dead standing	None	Poor	<10	C1	3.7	43	Yes
T28	Elm (English)	On	8	10	None	570.0	2-2-2-2	0.0	0.0	None	EM	None	Multi stemmed	None	Poor	<10	C1	6.8	147	Yes

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T29	Ash (Common)	On	14	2	None	600.0	6-8-7-4	1.0	2.0	N	EM	None	Typical for species	Good	Fair	20+	B1	7.2	163	Yes
T30	Willow (Goat)	On	8	5	None	350.0	3-2-3-2	0.0	0.0	None	EM	None	Multi stemmed; within Conservation Area	Good	Fair	10+	C1	4.2	55	None
T31	Ash (Common)	On	10	4	None	510.0	5-4-7-4	0.0	0.0	None	EM	None	Multi stemmed; within Conservation Area	Good	Fair	10+	C1	6.1	118	None
T32	Willow (Goat)	Off	14	6	None	930.0	5-5-7-6	0.0	0.0	None	EM	None	Multi stemmed; within Conservation Area	Good	Fair	20+	B1	11.2	391	None
T33	Sycamore	On	14	1	Yes	400.0	5-5-6-5	0.0	0.0	None	EM	None	Difficult to access owing to ditch & thorn thicket	Good	Fair	20+	B1	4.8	72	None
T34	Oak (English)	On	17	1	None	820.0	8-8-9-9	1.0	1.5	N	M	None	Good example of species; pruning work to north & west of lower canopy	Good	Fair	40+	A1	9.8	304	None
T35	Oak (English)	On	16	1	None	800.0	9-9-8-9	4.5	4.5	E	M	None	Historic storm damage with loss of upper crown; pruning work to south of lower canopy; delaminated limb @8m to south east of crown; hung-up limb to east of crown @5m	Fair	Fair	20+	B1	9.6	290	None
T36	Sycamore	On	16	1	None	720.0	6-5-7-8	4.5	4.5	S	M	None	Occluding would to west of main stem @1.5m; pruning work to north; west & south of canopy	Good	Fair	20+	B1	8.6	235	None
T37	Sycamore	On	14	1	None	620.0	6-5-6-6	1.5	2.0	N	M	None	Occluding would to south of main stem @0.5m; pruning work to remove basal shoots	Good	Fair	20+	B1	7.4	174	None
T38	Sycamore	On	8	1	None	370.0	3-4-2-2	0.0	0.0	None	EM	None	Extensive decay throughout main stem; significant basal shoots; good habitat stem	Fair	Poor	10+	C1	4.4	62	None
T39	Ash (Common)	On	15	2	Yes	1060.0	7-7-8-6	5.0	4.5	N	M	None	Forks into 2 stems @2m; small cavity to south of root collar; historic storm damage/ damaged limbs with associated decay & visible woodpecker activity; pruning work to improve clearance above gateway	Good	Fair	20+	B1	12.7	508	None
T40	Sycamore	On	8	5	Yes	480.0	2-1-3-4	0.0	0.0	None	EM	None	Extensive decay to upper crown	Fair	Poor	10+	C1	5.8	104	None

BS5837:2012 TREE SURVEY SCHEDULE

LOW FARM, WAKEFIELD

PROJECT NO: 4958

SURVEYOR: DAVE HOLMES

CLIENT: BOOM POWER

SURVEY DATE: 09-10/03/2022

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	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	TPO?
T41	Oak (English)	On	13	1	None	620.0	5-3-4-7	1.0	2.0	W	M	None	Heavily pruned to south east leaving unbalanced form	Good	Fair	20+	B1	7.4	174	None
T42	Sycamore	On	15	2	None	570.0	6-5-7-6	0.0	0.0	None	EM	None	Sub dominant limb to south forming cohesive crown with main stem	Good	Fair	20+	B1	6.8	147	None
T43	Sycamore	On	16	1	Yes	650.0	7-7-8-6	5.0	5.0	N	M	None	Extensive fire damage to lower stem; recommend reducing tree to habitat stem in mid to long-term	Fair	Poor	10+	C1	7.8	191	None
T44	Sycamore	On	16	1	Yes	650.0	6-8-9-7	0.0	0.0	None	M	None	Extensive bark damage to northern side of tree - possibly fire damage as per adjacent sycamore; wounds are occluding; prolific basal shoots	Good	Fair	10+	C1	7.8	191	None
T45	Sycamore	On	15	1	None	740.0	6-8-8-7	4.5	5.0	S	M	None	Pruning work to crown lift above track/land with associated decay around pruning points	Good	Fair	20+	B1	8.9	248	None
T46	Sycamore	On	7	1	None	730.0	1-1-1-1	4.5	0.0	None	M	None	Topped @7m	Poor	Fair	10+	C1	8.8	241	None
T47	Oak (English)	On	5	1	Yes	700.0	3-2-2-3	1.5	0.0	None	M	None	Topped @5m	Fair	Fair	10+	C1	8.4	222	None
T48	Sycamore	On	13	1	None	460.0	5-4-4-5	4.0	2.0	W	EM	None	Pruning work to crown lift above track/land	Good	Fair	20+	B1	5.5	96	Yes
T49	Sycamore	On	7	1	None	310.0	1-4-3-3	5.5	5.5	S	EM	None	Extensive decay to main stem; recommend reducing to habitat stem	Fair	Poor	<10	C1	3.7	43	Yes
T50	Sycamore	On	10	1	None	300.0	4-5-4-3	3.0	3.0	S	EM	None	Minor decay in upper crown/stems from historic storm damage; pruned to south west for crown lift leaving pruning pegs	Fair	Fair	10+	C1	3.6	41	Yes
T51	Sycamore	On	18	1	None	700.0	7-7-7-8	3.0	3.0	W	M	None	Pruning work to crown lift above land	Good	Fair	40+	A1	8.4	222	Yes
T52	Sycamore	On	18	1	None	760.0	7-8-6-6	1.0	1.5	W	M	None	Large 'hazard beam' to north of crown @7m	Good	Fair	20+	B1	9.1	261	Yes
T53	Sycamore	On	15	1	None	540.0	3-3-6-6	4.5	4.5	E	M	None	Suppressed by adjacent tree	Good	Fair	20+	B1	6.5	132	Yes

BS5837:2012 TREE SURVEY SCHEDULE

LOW FARM, WAKEFIELD

PROJECT NO: 4958

SURVEYOR: DAVE HOLMES

CLIENT: BOOM POWER

SURVEY DATE: 09-10/03/2022

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	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	TPO?
T54	Beech (Common)	On	14	1	None	450.0	4-7-5-6	2.0	2.0	S	EM	None	Typical for species	Good	Fair	20+	B1	5.4	92	Yes
T55	Sycamore	On	18	1	None	850.0	8-7-8-8	3.0	3.0	S	M	None	Large 'hazard beam' to north of crown @6m	Good	Fair	20+	B1	10.2	327	Yes
T56	Oak (English)	On	15	1	None	660.0	7-6-7-7	2.0	2.0	N	M	None	Forks into 2 stems @3m; pruning work to crown lift above land	Good	Fair	20+	B1	7.9	197	None
T57	Sycamore	On	16	1	None	570.0	7-6-7-7	3.0	3.0	W	M	None	Typical for species	Good	Fair	20+	B1	6.8	147	Yes
T58	Sycamore	On	12	1	None	480.0	4-4-5-6	4.0	4.0	W	EM	None	Write fence affixed to lower stem causing tourniquet effect; short extension growth throughout a sparse crown	Fair	Fair	10+	C1	5.8	104	Yes
T59	Sycamore	On	16	1	None	700.0	8-8-7-8	2.0	2.0	N	M	None	Typical for species	Good	Fair	20+	B1	8.4	222	Yes
T60	Sycamore	Off	17	1	Yes	850.0	7-9-9-8	0.0	0.0	None	M	None	Typical for species	Good	Fair	20+	B1	10.2	327	None
T61	Ash (Common)	On	18	1	None	960.0	10-11-9-8	2.0	2.0	N	M	None	Large cavity to south of main stem @2m; large wound site to west of main stem @2.5m; pocket of connective decay appears to run through main stem; inonotus brackets to 1st significant limb	Good	Fair	20+	B1	11.5	417	None
T62	Hawthorn	Off	4	1	Yes	300.0	1-1-2-2	0.0	0.0	None	EM	None	Typical for species	Good	Fair	20+	B1	3.6	41	None
T63	Sycamore	Off	17	1	Yes	950.0	8-10-10-9	0.0	0.0	None	M	None	Minor deadwood; slightly sparse crown	Fair	Fair	20+	B1	11.4	408	None
T64	Sycamore	Off	18	1	Yes	900.0	8-10-9-9	0.0	0.0	N	M	None	Typical for species	Good	Fair	20+	B1	10.8	366	None
T65	Rowan	On	4	6	None	200.0	1-2-2-1	0.0	0.0	None	SM	None	Typical for species	Fair	Fair	10+	C1	2.4	18	None
T66	Hawthorn	On	6	12	Yes	310.0	1-2-2-2	0.0	0.0	None	EM	None	Typical for species	Good	Fair	20+	B1	3.7	43	None
T67	Whitebeam	On	5	10	None	320.0	1-3-2-2	0.0	0.0	None	EM	None	Typical for species	Good	Fair	20+	B1	3.8	46	None
T68	Whitebeam	On	5	10	None	320.0	1-3-2-2	0.0	0.0	None	EM	None	Typical for species	Good	Fair	20+	B1	3.8	46	None
T69	Oak (English)	Off	15	2	Yes	710.0	8-10-9-6	2.0	2.0	N	M	None	On boundary; pruning work to crown lift leaving pruning pegs	Good	Fair	20+	B1	8.5	228	Yes

BS5837:2012 TREE SURVEY SCHEDULE

LOW FARM, WAKEFIELD

PROJECT NO: 4958

SURVEYOR: DAVE HOLMES

CLIENT: BOOM POWER

SURVEY DATE: 09-10/03/2022

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	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	TPO?
T70	Chestnut (Horse)	Off	18	1	None	1220.0	8-6-8-8	2.0	2.5	W	M	None	Large indiscriminate pruning wounds to east with associated decay; mazegill fungal brackets to east of stem around decay site; recommend tree be reduced to habitat monolith in mid to long term	Fair	Fair	<10	C1	14.6	673	Yes
T71	Sycamore	On	17	1	None	480.0	6-7-6-5	1.0	1.0	S	EM	None	Typical for species	Good	Fair	20+	B1	5.8	104	Yes
T72	Sycamore	On	18	1	None	790.0	9-10-8-7	0.0	0.0	None	M	None	Typical for species	Good	Fair	20+	B1	9.5	282	None
T73	Chestnut (Horse)	On	14	1	None	660.0	8-7-6-6	2.0	2.5	W	M	None	Indiscriminate pruning wounds to east with associated decay; decayed wound to south east of main stem @2.5m; radial cracks to bark of main stem; recommend tree be reduced to habitat monolith in mid to long term	Fair	Fair	<10	C1	7.9	197	None
T74	Beech (Common)	On	20	1	None	990.0	10-10-10-8	4.0	4.5	W	M	None	Good example of species; good stem taper; wound site to east of main stem @3.5m	Good	Fair	40+	A1	11.9	443	Yes
T75	Oak (Turkey)	On	20	1	None	990.0	9-11-10-10	4.0	4.0	W	M	None	Good example of species; heavy crown lift to clear land leaving pruning pegs throughout lower crown	Good	Fair	40+	A1	11.9	443	Yes
T76	Beech (Common)	On	20	1	None	1230.0	10-12-11-9	2.5	3.0	S	M	None	Good example of species; good stem taper; wound site to north of main stem @2.5m with small ganoderma bracket forming; pruning work to crown lift above land to north of crown	Good	Fair	40+	A1	14.8	684	Yes

BS5837:2012 TREE SURVEY SCHEDULE

LOW FARM, WAKEFIELD

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SURVEY DATE: 09-10/03/2022

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	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	TPO?
T77	Sycamore	On	20	1	None	880.0	9-9-9-8	0.0	0.0	None	M	None	Large cavity to south of main stem from root collar to 3m showing good occlusion/reactionary growth; old pruning work in past to crown lift above entranceway to north & east of lower canopy	Good	Fair	20+	B1	10.6	350	Yes
T78	Chestnut (Horse)	On	20	1	None	880.0	7-7-7-7	2.0	5.5	S	M	None	Old wound from failed limb to north of main stem @5m; recent minor bark damage to south of main stem from machinery @1.5m	Good	Fair	20+	B1	10.6	350	Yes
T79	Sycamore	On	14	1	None	380.0	5-5-6-6	5.0	5.0	S	EM	None	Heavy crown lift to clear land; multiple pruning wounds with associated decay	Good	Fair	20+	B1	4.5	65	Yes
T80	Sycamore	On	14	1	None	660.0	6-7-8-6	0.0	0.0	N	M	None	Pruning wound to north of main stem @2m with associated decay	Good	Fair	20+	B1	7.9	197	Yes
T81	Chestnut (Horse)	On	15	1	None	570.0	6-5-6-6	2.0	2.0	N	M	None	Old wound to north of main stems @2m with associated decay	Good	Fair	20+	B1	6.8	147	Yes
T82	Beech (Common)	On	20	1	None	820.0	8-9-8-7	3.0	3.0	W	M	None	Pruning wound to south of main stem @2.5m & to north @3.5m with associated decay; good stem taper	Good	Fair	40+	A1	9.8	304	Yes
T83	Sycamore	On	15	1	None	520.0	7-6-7-7	2.5	2.5	N	EM	None	Typical for species	Good	Fair	20+	B1	6.2	122	Yes
T84	Oak (English)	On	18	1	None	820.0	8-10-9-10	5.0	5.0	E	M	None	Large area of basal damage to east; various old wounds throughout crown with associated decay & woodpecker activity	Good	Fair	20+	B1	9.8	304	Yes
T85	Oak (Turkey)	On	20	1	None	1050.0	11-12-10-10	5.0	5.0	S	M	None	Good example of species; heavy crown lift to clear land leaving pruning pegs throughout lower crown; old wound to northern most scaffold limb with visible cavity @6; woodpecker activity to north of main stem @5m	Good	Fair	40+	A1	12.6	499	Yes

BS5837:2012 TREE SURVEY SCHEDULE

LOW FARM, WAKEFIELD

PROJECT NO: 4958

SURVEYOR: DAVE HOLMES

CLIENT: BOOM POWER

SURVEY DATE: 09-10/03/2022

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	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	TPO?
T86	Lime (Small-leafed)	On	20	1	Yes	1000.0	7-6-8-6	0.0	0.0	None	M	None	Dense basal shoots; debris from ploughing piled around root collar; small elder growing within canopy dripline	Good	Fair	40+	A1	12.0	452	Yes
T87	Oak (Turkey)	On	20	1	None	920.0	10-12-11-10	5.0	5.0	S	M	None	Good example of species; heavy crown lift to clear land leaving pruning pegs throughout lower crown; debris from ploughing piled around root collar	Good	Fair	40+	A1	11.0	383	Yes
T88	Sycamore	On	16	1	None	970.0	7-9-7-9	4.0	4.0	S	M	None	Old wound to south of main stem @4.5m; crown lift to clear land leaving large pruning pegs to lower stem; debris from ploughing piled around root collar; small elder growing within root plate	Good	Fair	20+	B1	11.6	426	Yes
T89	Oak (Turkey)	On	20	1	None	1120.0	8-13-11-10	5.0	5.5	S	M	None	Good example of species; heavy crown lift to clear land leaving pruning pegs throughout lower crown; debris from ploughing & deadwood piled around root collar	Good	Fair	40+	A1	13.4	567	Yes
T90	Sycamore	On	20	1	Yes	850.0	10-9-9-10	0.0	0.0	None	M	None	Dense basal shoots; debris from ploughing piled around root collar; small elder growing within canopy dripline	Good	Fair	40+	A1	10.2	327	Yes
T91	Oak (Turkey)	On	20	1	None	1030.0	10-11-10-9	5.0	6.0	W	M	None	Good example of species; heavy crown lift to clear land leaving pruning pegs throughout lower crown; debris from ploughing piled to north east of root collar	Good	Fair	40+	A1	12.4	480	Yes
T92	Elder	On	4	3	None	300.0	2-4-3-2	0.0	0.0	None	SM	None	Typical for species	Fair	Fair	10+	C1	3.6	41	None

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LOW FARM, WAKEFIELD

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Ref	Species	On / off site	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	TPO?
T93	Chestnut (Horse)	On	16	1	None	790.0	9-8-8-9	0.0	1.0	W	M	None	Bark necrosis to north of main stem from root collar to 1st union; radial cracks evident throughout scaffold limbs; consider reducing to habitat stem in mid to long term	Good	Fair	20+	B1	9.5	282	Yes
T94	Sycamore	On	12	1	None	330.0	2-2-3-2	0.0	0.0	None	SM	None	Typical for species	Fair	Fair	10+	C1	3.9	49	Yes
T95	Chestnut (Horse)	On	18	1	None	900.0	10-9-9-8	1.0	1.5	N	M	None	Old wound to north of main stem @1.5m with associated decay	Good	Fair	20+	B1	10.8	366	Yes
T96	Chestnut (Horse)	On	16	1	None	720.0	9-9-8-9	0.0	1.5	N	M	None	Occluded bark damage to north of main stem @1m	Good	Fair	20+	B1	8.6	235	Yes
T97	Oak (English)	On	4	2	None	230.0	2-2-1-1	0.0	0.0	None	SM	None	Typical for species	Good	Fair	10+	C1	2.8	24	None
T98	Oak (English)	On	5	3	Yes	700.0	4-5-3-3	0.0	0.0	None	EM	None	Topped @3m	Good	Fair	10+	C1	8.4	222	None
T99	Oak (English)	On	4	3	None	250.0	2-2-2-1	0.0	0.0	None	SM	None	2x small trees forming cohesive crown	Good	Fair	10+	C1	3.0	28	None
T100	Oak (English)	On	4	2	None	140.0	1-1-2-1	0.0	0.0	None	SM	None	Typical for species	Good	Fair	10+	C1	1.7	9	None
T101	Sycamore	On	6	7	Yes	660.0	3-3-3-3	0.0	0.0	None	EM	None	Topped @2m	Good	Fair	10+	C1	7.9	197	None

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LOW FARM, WAKEFIELD

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Barton Hyett Arboricultural Consultants

GROUPS OF TREES

Ref	Species	On / off site	Height range (m)	No. of trees	Est diam?	Max stem diam (mm)	Av. Crown radius (m)	Avg. Canopy Height (m)	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO?
G1	Elm	On	12	40	None	340	4.0	0.0	SM	None	Thicket of elm to field edge	Good	Fair	20+	B2	4.1	Yes
G2	Sycamore; oak	On	12	6	Yes	600	5.0	0.0	EM	None	Stand of 5x sycamore & 1x oak to field edge; heavily swathed in ivy	Good	Fair	20+	B2	7.2	Yes
G3	Sycamore; oak	On	13	2	None	600	5.0	0.0	EM	None	Early mature sycamore with small self seeded oak growing to west	Good	Fair	20+	B2	7.2	Yes
G4	Elm; elder; hawthorn	On	12	40	None	280	2.0	0.0	SM	None	Thicket to field edge; predominantly elm; upper crown dieback & bark necrosis	Fair	Poor	10+	C2	3.3	Yes
G5	Sycamore; oak; ash; elm	On	5 - 16	10	None	710	6.0	1.0	M	None	5x sycamore; 3x ash; 1x elm; 1x oak; stand of trees at field edge consisting of 1x mature oak & 2x mature ash with other stems early	Good	Fair	20+	B2	8.5	Yes
G6	Sycamore	Off	8 - 14	10	None	490	5.5	1.0	M	None	Stand of trees at field edge consisting of 5x mature stems & 5x early mature stems	Good	Fair	20+	B2	5.9	Yes
G7	Sycamore	Off	10 - 14	7	None	520	5.5	1.0	M	None	Stand of trees at field edge consisting of 2x mature stems & 5x early mature stems	Good	Fair	20+	B2	6.2	Yes
G8	Sycamore	Off	10 - 12	4	Yes	600	5.5	1.0	M	None	Stand of trees at field edge consisting of 2x mature stems & 2x early mature stems	Good	Fair	20+	B2	7.2	Yes
G9	Sycamore	Off	10 - 12	7	Yes	600	5.5	1.0	M	None	Stand of trees at field edge consisting of 1x mature stem & 6x early mature stems; minor crown dieback within northern most tree	Good	Fair	20+	B2	7.2	Yes
G10	Sycamore	Off	8 - 12	8	None	410	5.0	1.0	EM	None	Stand of early mature trees at field edge	Good	Fair	20+	B2	4.9	Yes
G11	Sycamore	Off	12 - 16	4	None	660	5.0	1.0	M	None	Stand of trees at field edge; 2x mature stems; 1x early mature & 1x young stem	Good	Fair	20+	B2	7.9	Yes
G12	Sycamore	Off	12	2	None	440	4.5	0.0	EM	None	Two stems at field edge; stem to west offsite; stem to west onsite	Good	Fair	20+	B2	5.3	None
G13	Sycamore; ash	On	12	3	None	150	3.0	0.0	EM	None	Three stems at field edge; re-gen from mature boles	Fair	Fair	10+	C2	1.8	None
G14	Hawthorn; oak; elder	Off	5 - 8	8	None	280	2.0	0.0	SM	None	Group of remnant parts of hedge & self seeded trees	Good	Fair	10+	C2	3.3	None
G15	Oak; sycamore; hawthorn; hazel	Off	6 - 12	15	None	710	5.0	1.0	M	None	Stand of trees at field edge	Good	Fair	20+	B2	8.5	None
G16	Hazel; holly	On	9	3	Yes	200	5.0	1.0	M	None	Group of trees spanning drainage ditch	Good	Fair	20+	B2	2.4	None
G17	Ash; hawthorn; elder	Off	1 - 11	6	Yes	350	5.0	1.0	EM	None	Offsite group in private garden	Good	Fair	20+	B2	4.2	None
G18	Goat willow; ash; hawthorn	On	1 - 11	10	None	250	3.5	0.5	SM	None	Self seeded trees colonising scrubby corner of field	Good	Fair	10+	C2	3.0	None

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LOW FARM, WAKEFIELD

PROJECT NO: 4958

SURVEYOR: DAVE HOLMES

CLIENT: BOOM POWER

SURVEY DATE: 09-10/03/2022

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)	Avg. Canopy Height (m)	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	TPO?
G19	Oak; sycamore; ash; hawthorn	On	5 - 15	5	None	460	4.0	0.0	EM	None	1x oak; 2x ash & 2x sycamore with sporadic thorn hedge; all trees multi stemmed	Good	Fair	20+	B2	5.5	None
G20	Oak; sycamore; birch; hawthorn	On	4 - 15	14	None	590	4.0	0.0	EM	None	Copse on road side/field edge with sporadic thorn hedge	Good	Fair	20+	B2	7.1	None
G21	Oak; birch; goat willow; sycamore; hawthorn; blackthorn	On	4 - 15	25	None	620	4.5	0.0	EM	None	Copse on road side/field edge	Good	Fair	20+	B2	7.4	None
G22	Oak; sycamore; ash; blackthorn	On	4 - 15	6	None	520	5.0	0.0	EM	None	Copse on road side/field edge	Good	Fair	20+	B2	6.2	None
G23	Oak; ash; sycamore; hawthorn	On	4 - 15	18	None	410	5.0	0.0	EM	None	Copse on road side/field edge	Good	Fair	20+	B2	4.9	None
G24	Sycamore; elm	On	4 - 12	5	None	250	3.0	0.0	SM	None	Copse on road side/field edge; crown dieback & bark necrosis to elm	Good	Fair	20+	B2	3.0	Yes
G25	Lime	On	16	2	Yes	600	6.0	0.0	M	None	Typical for species	Good	Fair	20+	B2	7.2	Yes
G26	Lime	On	12 - 14	2	Yes	450	4.5	0.0	EM	None	1x stem to west with extensive basal shoots; 1x multi stemmed tree to east	Good	Fair	20+	B2	5.4	Yes
G27	Elm; ash; goat willow; cypress	On	2 - 14	40	None	390	4.5	0.0	EM	None	Several dead standing elm; cypress is an unlikely choice to re-gap a rural copse/	Fair	Fair	20+	C2	4.7	Yes
G28	Elm; goat willow; ash	On	2 - 14	50	None	290	4.5	0.0	EM	None	Several dead standing elm	Fair	Fair	20+	C2	3.5	Yes
G29	Elm	Off	14	2	Yes	400	4.5	0.0	EM	None	2x multi stemmed trees	Good	Fair	20+	B2	4.8	None
G30	Ash; goat willow	Off	15	2	Yes	600	7.0	0.0	M	None	2x multi stemmed trees	Good	Fair	20+	B2	7.2	None
G31	Birch	Off	12	3	Yes	350	5.0	1.0	EM	None	Typical for species	Good	Fair	20+	B2	4.2	None
G32	Goat willow; elder	On	2 - 6	3	None	120	2.5	0.0	SM	None	2x willow; 1x elder; within Conservation Area	Fair	Fair	10+	C2	1.5	None
G33	Goat willow; birch	Off	8	6	Yes	250	3.0	0.0	EM	None	Self seeded group adjacent to existing entranceway/field edge; within Conservation	Fair	Fair	10+	C2	3.0	None
G34	Ash	On	15	2	None	490	7.0	1.0	EM	None	Typical for species; within Conservation Area	Good	Fair	20+	B2	5.9	None
G35	Ash; hawthorn	On	10 - 14	2	None	430	6.5	1.0	EM	None	2x trees forming cohesive crown; within Conservation Area	Good	Fair	20+	B2	5.2	None
G36	Ash; goat willow; hawthorn; elder	On	8 - 12	14	None	420	4.5	0.0	EM	None	Remnant sections of hedge/self seeded group; within Conservation Area	Good	Fair	20+	B2	5.0	None
G37	Oak	On	14	3	None	470	6.0	1.0	EM	None	Group forming cohesive crown; 1x tree onsite; 2x trees offsite; within Conservation	Good	Fair	20+	B2	5.6	None

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G38	Oak; sycamore; holly; hawthorn; elder	On	16	40	None	1000	7.0	1.0	M	None	Group forming cohesive crowns; flanking drainage ditch; predominantly oak & sycamore	Good	Fair	20+	B2	12.0	None
G39	Sycamore; oak; birch; hornbeam	On	16	17	None	720	6.0	1.0	M	None	Group forming cohesive crowns; predominantly oak & sycamore	Good	Fair	20+	B2	8.6	None
G40	Ash	On	15	2	None	820	7.0	2.5	M	None	Trees adjacent to flooded pit hole; hollowing to stems - basal cavity visible to east of root collar on eastern tree & visible woodpecker activity; pronounced hollowing to western most tree; upper crown of western most tree formed by re-gen from decayed bole	Good	Fair	20+	B2	9.8	None
G41	Oak; ash; hawthorn; elder	On	16	50	None	630	6.0	1.0	M	None	Group forming cohesive crowns; flanking drainage ditch; predominantly oak; ash &	Good	Fair	20+	B2	7.6	None
G42	Oak; elder	On	17	4	None	640	6.0	1.0	M	None	2x mature oak; 2x early mature elder; tree to east has been pruned leaving a large pruning peg & unbalanced crown	Good	Fair	20+	B2	7.7	None
G43	Sycamore; beech	On	12 - 16	10	None	610	5.5	1.0	EM	None	8x sycamore & 2x beech; building materials stored within plot	Good	Fair	20+	B2	7.3	Yes
G44	Sycamore; beech	On	8 - 14	3	None	510	5.0	1.0	EM	None	All 3 stems show decay to main stems	Fair	Fair	10+	C2	6.1	Yes
G45	Sycamore	On	14 - 16	2	None	700	6.0	2.0	M	None	Pruning work to crown lift above land	Good	Fair	20+	B2	8.4	Yes
G46	Oak; hawthorn	On	12	4	None	630	5.0	1.0	EM	None	2x oak with 2x remnant thorn; decay to main stem of northern most oak	Good	Fair	20+	B2	7.6	None
G47	Sycamore; elder	On	2 - 15	10	None	560	5.0	1.0	EM	None	6x sycamore with 4x elder; growing within sunken pit	Good	Fair	20+	B2	6.7	None
G48	Sycamore; oak; ash; elm; holly; elder	Off	2 - 12	14	None	390	4.0	1.0	EM	None	Sample area; scrubby end of woodland feature abutting survey site	Good	Fair	20+	B2	4.7	None
G49	Sycamore; ash	On	14	11	None	490	5.0	1.0	M	None	Stand of trees at field edge; predominantly sycamore	Good	Fair	20+	B2	5.9	None
G50	Sycamore; oak; Corsican pine; elder; rhododendron	On	2 - 14	150	None	540	5.0	1.0	M	None	Stand of trees at field edge flanking forest ride; trees occur to both sides of ha-ha wall; standing water within ditch in places; beehives to east of plot	Good	Fair	20+	B2	6.5	None
G51	Oak; birch; sycamore	Off	8 - 10	10	Yes	300	3.0	1.5	EM	None	Scrubby group of young trees on adjacent site; area appears to have been recently	Good	Fair	20+	B2	3.6	None
G52	Horse chestnut; sycamore; elder	On	2 - 16	10	None	790	6.0	1.5	M	None	Stand of trees at field edge; predominantly sycamore with 1x chestnut to south; elder occurs as understory	Good	Fair	20+	B2	9.5	Yes

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G53	Horse chestnut; sycamore; oak; beech; elder	On	2 - 16	33	None	810	6.0	1.5	M	None	Stand of trees at field edge with access track running through group; predominantly sycamore; elder occurs as understory	Good	Fair	20+	B2	9.7	Yes
G54	Ash; elm	On	10 - 12	3	None	430	5.0	0.0	EM	None	Stand of trees at field edge	Fair	Fair	20+	B2	5.2	None
G55	Oak; ash; elm	Off	8 - 14	20	None	410	6.0	0.0	EM	None	Stand of trees at field edge on adjacent site	Fair	Fair	20+	B2	4.9	None
G56	Sycamore; beech; horse chestnut; cherry; lime	On	8 - 16	30	None	980	6.0	1.0	EM	None	Stand of trees at field edge; predominantly early mature sycamore; mature beech; sycamore & chestnut (1 of each) to west of	Good	Fair	20+	B2	11.8	Yes
G57	Lime; beech; elm; elder	On	8 - 16	38	None	560	5.5	1.0	EM	None	Stand of trees at field edge/roadside; predominantly early mature lime & beech with multi stemmed elm; sporadic elder	Good	Fair	20+	B2	6.7	Yes
G58	Sycamore; beech; elm; cherry; elder	On	6 - 16	30	None	960	6.0	1.0	M	None	Stand of trees at field edge/roadside; predominantly mature sycamore; 1x mature beech to north west of plot; cherry; elm & elder occur as understory	Good	Fair	20+	B2	11.5	Yes
G59	Sycamore; horse chestnut; beech; elder	On	6 - 17	41	None	1100	6.0	1.0	M	None	Stand of trees forming avenue along access track; elder occurs as limited understory	Good	Fair	40+	A2	13.2	Yes
G60	Horse chestnut; sycamore; elder	On	2 - 16	17	None	620	6.0	1.5	M	None	Stand of trees forming avenue along access track; predominantly sycamore	Good	Fair	20+	B2	7.4	Yes
G61	Elm; goat willow	On	2 - 15	20	None	440	4.5	0.0	EM	None	Small stand of predominantly elm; dead stems to south east of plot	Fair	Fair	10+	C2	5.3	Yes
G62	Sycamore; beech; horse chestnut; elder	On	2 - 18	18	None	1000	7.0	2.0	M	None	Stand of trees forming avenue along access track; predominantly sycamore; Japanese knotweed stems within plot & to east	Good	Fair	20+	B2	12.0	Yes
G63	Sycamore; beech; cherry; horse chestnut; holly; elder	On	2 - 18	40	None	880	6.0	1.0	M	None	Stand of trees at field edge/roadside; predominantly sycamore; 1x mature horse chestnut to west of plot showing heavily decayed main stem; holly & elder occur as	Good	Fair	20+	B2	10.6	Yes
G64	Sycamore; horse chestnut; elm	On	4 - 14	3	None	600	6.0	0.0	M	None	Closely grown sycamore & chestnut forming cohesive crown; small elm growing beneath canopy dripline	Good	Fair	20+	B2	7.2	Yes
G65	Beech; sycamore; oak; ash; horse chestnut; cherry; elm; elder; hawthorn	On	2 - 18	70	None	1000	6.0	1.5	M	None	Stand of trees at field edge/roadside; predominantly sycamore & beech with elm; thorn & elder occurring as understory	Good	Fair	20+	B2	12.0	Yes
G66	Sycamore; goat willow	On	4	2	None	90	3.0	0.0	SM	None	1x multi stemmed willow & 1x sycamore which is young re-gen from old bole	Fair	Fair	10+	C2	1.1	None

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G67	Birch; goat willow; oak	On	2 - 8	11	None	150	3.0	0.0	SM	None	1x early mature multi stemmed willow; 1x semi mature birch; remaining stems made up of young willow; birch & oak	Fair	Fair	10+	C2	1.8	None

HEDGES

Ref	Species	On / off site	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; blackthorn; elder	On	4.5	2.5	90.0	0.0	EM	Outgrown hedge; sporadic gaps to west; sides flailed & top growth left unchecked	Good	Good	20+	B2	1.1
H2	Hawthorn; blackthorn; elder; hazel	On	5	3.0	80.0	0.0	EM	Outgrown hedge; sides flailed & top growth left unchecked	Good	Fair	20+	B2	1.0
H3	Hawthorn; hazel	On	4.5	2.5	90.0	0.0	EM	Outgrown hedge; sides flailed & top growth left unchecked	Good	Good	20+	B2	1.1
H4	Hawthorn	On	4	2.0	80.0	0	EM	Outgrown hedge; sides flailed & top growth left unchecked	Good	Fair	20+	B2	1.0
H5	Hawthorn; elder	On	2	1.5	90.0	0	M	Predominantly thorn; partially choked with brambles; sporadic gaps where elder occurs	Good	Fair	20+	B2	1.1
H6	Hawthorn	On	2	1.5	90	0	M	3x mature remnant stems to far west of hedge; maintained by flail	Good	Fair	40+	B2	1.1
H7	Hawthorn	On	2	1.5	70	0	EM	Maintained by flail	Good	Fair	40+	B2	0.8
H8	Hawthorn; elder	On	2	1.5	70	0	EM	Maintained by flail; predominantly thorn	Good	Fair	40+	B2	0.8
H9	Hawthorn	On	2	1.5	70	0	EM	Maintained by flail	Good	Fair	40+	B2	0.8
H10	Hawthorn; oak	On	5	5.0	90	0	EM	Remnant stems of hedgerow forming sporadic group which spans drainage ditch; 1x oak stem	Good	Fair	20+	B2	1.1
H11	Hawthorn	On	5	5.0	90	0	EM	Remnant stems of hedgerow forming sporadic group which spans drainage ditch	Good	Fair	20+	B2	1.1
H12	Hawthorn; oak; goat willow	On	5	5.0	90	0	EM	Hedge spans drainage ditch; predominantly thorn	Good	Fair	20+	B2	1.1
H13	Hawthorn; lilac	On	5	3.0	90	0	M	Remnant section of hedge at scrubby field corner	Good	Fair	20+	B2	1.1
H14	Hawthorn; holly; sycamore	On	5	3.0	90	0	M	Sides flailed & top growth left unchecked; predominantly thorn; 2x sycamore approx 7m in height	Good	Fair	20+	B2	1.1
H15	Hawthorn	On	5	3.0	90	0	M	Sides flailed & top growth left unchecked	Good	Fair	20+	B2	1.1
H16	Hawthorn	Off	6.0	4.0	110	0.0	M	Outgrown/derelict hedge; heavily swathed in ivy	Good	Fair	20+	B2	1.3
H17	Hawthorn	Off	6.0	3.0	90	0.0	M	Outgrown/derelict hedge; swathed in ivy	Good	Fair	20+	B2	1.1

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H18	Hawthorn; holly; goat willow; sycamore; ash	On	5.0	3.0	90	0.0	EM	Outgrown hedge	Good	Fair	20+	B2	1.1
H19	Hawthorn; holly; goat willow; sycamore; ash	On	5.0	3.0	90	0.0	M	Sides flailed & top growth left unchecked; predominantly thorn	Good	Fair	20+	B2	1.1
H20	Hawthorn; elder; sycamore; elm	On	4.5	2.5	70	0.0	EM	Sides flailed & top growth left unchecked; predominantly thorn; 2x small trees within west of hedge approximately 8m in height (1x sycamore & 1x elm)	Good	Fair	40+	B2	0.8
H21	Blackthorn; goat willow; hazel	On	6.0	5.0	90	0.0	EM	Outgrown hedge forming dense thicket; predominantly thorn	Good	Fair	20+	B2	1.1
H22	Hawthorn; holly; elder	On	2.0	1.5	70	0.0	EM	Maintained by flail; predominantly thorn; gaps appearing where elder is present	Good	Fair	20+	B2	0.8
H23	Hawthorn	On	1.5	1.0	70	0.0	EM	Maintained by flail; sporadic gaps	Good	Fair	20+	B2	0.8
H24	Hawthorn; elder	On	1.5	1.0	70	0.0	EM	Maintained by flail; sporadic gaps; predominantly thorn	Good	Fair	20+	B2	0.8
H25	Hawthorn; elder	On	1.5	1.0	70	0.0	EM	Maintained by flail; sporadic gaps; predominantly thorn	Good	Fair	20+	B2	0.8
H26	Hawthorn; holly	On	4.5	3.0	110	0.0	M	Remnant part of hedge; mature thorn with young thorn & holly	Good	Fair	20+	B2	1.3
H27	Hawthorn	On	3.5	2.0	220	0.0	EM	Remnant parts of derelict hedge	Good	Fair	20+	B2	2.6
H28	Hawthorn	On	1.5	1.0	50	0.0	SM	Maintained by flail; sporadic gaps	Good	Fair	20+	C2	0.6
H29	Hawthorn; elder	On	1.5	1.0	50	0.0	SM	Maintained by flail; sporadic gaps; predominantly thorn	Good	Fair	20+	C2	0.6
H30	Hawthorn	On	4.5	3.0	100	0.0	M	Remnant parts of hedge; topped to south adjacent to 11kv overhead power lines	Good	Fair	20+	B2	1.3
H31	Hawthorn	On	4.5	3.5	120	0.0	M	Remnant parts of derelict hedge	Good	Fair	20+	B2	1.5
H32	Hawthorn; sycamore	On	4.0	2.5	80	0.0	M	Remnant parts of derelict hedge	Fair	Fair	10+	C2	1.0
H33	Hawthorn; sycamore; elder	On	4.0	2.5	50	0.0	Y	Sporadic linear feature; young re-gen from early mature stems; predominantly sycamore	Fair	Fair	10+	C2	0.6

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WOODLAND

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W1	Oak; sycamore; holly; hazel; elder	On	2 - 15	80	None	690	6.0	1.0	M	None	Covert to field edge; predominantly oak with sycamore; other species occur as understory which is dominated by elder; stems to far west of plot are offsite (to west of wall); Japanese knotweed to northern boundary of plot; potential badger sett to north	Good	Fair	40+	B2	8.3	N/A	Yes
W2	Oak; Scot's pine; ash; sycamore; holly; hawthorn	On	2 - 15	500	Yes	550	5.5	1.0	EM	None	Hillhouse Wood. Predominantly oak with Scot's pine; sporadic ash & sycamore; other species occur as limited understory; buildings within plot at approximate centre; remnant sections of derelict thorn hedge around perimeter of plot	Good	Good	40+	A2	6.6	N/A	None
W3	Oak; beech; sweet chestnut; ash; birch; sycamore; elder	On	2 - 18	60	None	730	6.0	1.0	M	None	Predominantly oak; beech & chestnut; sporadic ash; birch & sycamore; elder occurs as limited understory; unmettled track to east of plot	Good	Good	40+	A2	8.8	N/A	Yes
W4	Sycamore; oak; birch ash; hawthorn; elder	On	2 - 16	500	Yes	600	5.0	1.0	M	None	Gulley Wood. Predominantly oak & sycamore; thorn & elder occurs as limited understory; old workings to north west corner of plot; Japanese knotweed at south west corner of plot; overlapped by Conservation Area	Good	Fair	40+	B2	7.2	N/A	Yes
W5	Oak; sycamore; birch; elm; hornbeam; holly; elder; rhododendron	On	2 - 18	600	None	660	6.0	1.0	EM	ASNW	Harry Royd Clough Wood. Predominantly oak & sycamore with birch; elm & hornbeam; other species occur as understory	Good	Good	40+	A2	7.9	11.0	None
W6	Sycamore; oak; birch; elm; holly; elder	On	2 - 18	50	None	630	5.0	1.0	EM	None	Predominantly sycamore with birch; elm & oak; other species occur as understory	Good	Fair	40+	B2	7.6	N/A	None
W7	Oak; sycamore; elder	On	16	65	None	750	5.0	1.0	EM	None	Predominantly oak; with elder as limited understory	Good	Fair	40+	B2	9.0	N/A	None

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W8	Oak; sycamore; birch; goat willow ; hawthorn; elder	On	16	250	None	990	6.0	2.0	EM	None	Pit Hill Plantation. Predominantly oak & sycamore with birch & willow; thorn & elder occur as limited understory; old workings within site; recent mechanical excavations; burning of detritus & storage of surplus building materials; access track direct from road (temporarily blocked)	Good	Fair	40+	B2	11.9	N/A	Yes
W9	Oak; sycamore; hornbeam; ash; elm; beech; birch; holly; elder	On	16	200	None	630	6.0	2.0	EM	None	Predominantly oak & sycamore with birch; beech; ash elm & hornbeam; holly & elder occur as limited understory	Good	Fair	40+	A2	7.6	N/A	Yes
W10	Sycamore; ash; elm; oak; sweet chestnut; holly; elder; hawthorn; yew	On	16	300	None	660	6.0	2.0	M	None	The Rookery. Predominantly oak & sycamore with sporadic sweet chestnut; holly & elder occur as limited understory; group abuts lake on northern boundary	Good	Fair	40+	A2	7.9	N/A	Yes
W11	Oak; sycamore; Scot's pine; beech; elm; blackthorn; holly; elder; rhododendron	On	16	400	None	740	6.0	2.0	M	None	Fishponds Plantation. Predominantly oak; Scot's pine; beech & sycamore; other species occur as understory; Japanese knotweed located to eastern boundary & also adjacent to ponds within plot; derelict structure to north west 'nib' of plot	Good	Fair	40+	A2	8.9	11.0	None
W12	Larch; birch; sycamore; elm; holly; elder	On	16	400	None	410	4.5	0.5	EM	ASNW	Denby Wood. Predominantly larch with birch & sycamore; other species occur as understory; sample area of group edge	Good	Fair	20+	B2	4.9	9.5	None
W13	Beech; Corsican pine; sycamore; elm; elder	On	16	250	None	480	5.0	2.0	EM	ASNW	Denby Wood. Predominantly beech & pine with occasional sycamore; other species occur as limited understory; sample area of group edge	Good	Fair	40+	B2	5.8	10.0	None
W14	Oak; sycamore; Norway spruce; Scot's pine; larch; holly; rhododendron	Off	2 - 18	400	None	640	6.0	1.0	EM	ASNW	Grange Wood. Predominantly oak; sycamore; spruce; pine & larch; other species occur as understory; ha-ha wall to southern boundary; outlying oak to south have been topped for 11kv overhead power line	Good	Good	40+	A2	7.7	11.0	None

BS5837:2012 TREE SURVEY SCHEDULE

LOW FARM, WAKEFIELD

PROJECT NO: 4958

SURVEYOR: DAVE HOLMES

CLIENT: BOOM POWER

SURVEY DATE: 09-10/03/2022

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)	Avg. Canopy Height (m)	Life Stage	Special importance	General Observations	Health & vitality	Struct. cond.	Estimated Remaining Contribution (Years)	BS5837 Category	RPA Radius (m)	ASNW Buffer	TPO?
W15	Corsican pine; Norway spruce; oak; sycamore; elder; rhododendron	On	16	400	None	410	4.5	0.5	EM	None	Predominantly pine & oak; other species occur as understory	Good	Fair	20+	**B2**	4.9	N/A	None
W16	Sycamore; birch; oak; larch; holly; rhododendron	On	16	400	None	440	5.0	2.5	EM	None	Predominantly larch with birch & sycamore; occasional oak; other species occur as understory	Good	Fair	20+	**B2**	5.3	N/A	None

IMAGE 1: A view looking northwards at W1, a covert to the western edge of field number 4.

IMAGE 2: A view looking northwards along the unmetalled track to the western edge of field number 6.

IMAGE 3: A view looking north at field number 9, showing the trees around the northern perimeter of the site.

IMAGE 4: A general view looking northwards across the site into field number 3.

IMAGE 5: A view looking north along the existing track used to access field number 1.

IMAGE 6: A view looking east into field number 1, showing the TPO'd trees T85, T86, T87, T88 & T89.

- 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

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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 Planing 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