Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

Environmental Statement

Volume 3

Appendix 20.15 - Arboricultural Survey Report

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WILD FRONTIER ECOLOGY

Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects

T045 Veteran Oak north of Hickling Lane

Volume 3, Technical Appendix 20.15: Arboricultural Report

September 2022

Report produced by	Submitted to
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The data which we have prepared and provided is accurate, and has been prepared and provided in accordance with the CIEEM's Code of Professional Conduct and the Arboricultural Association's Code of Conduct and Ethics. We confirm that any opinions expressed are our best and professional bona fide opinions.

This report conforms to the British Standard 5837:2012 *Trees in relation to design, demolition and construction - Recommendations*

Contents

GLOSSARY OF TERMS

AONB	Area of Outstanding Natural Beauty
ATI	Ancient Tree Inventory
BS	British Standard
CA	Conservation Area
DCO	Development Consent Order
DEP	Dudgeon Offshore Wind Farm Extension Project
DEFRA	Department for Environment, Food and Rural Affairs
DPD	Development Plan Document
HDD	Horizontal Directional Drill/Drilling
MAGIC	Multi-Agency Geographic Information for the Countryside
NPPF	National Planning Policy Framework
OS	Ordnance Survey
QGIS	Quantum Geographic Information System
SEP	Sheringham Shoal Offshore Wind Farm Extension Project
SPD	Supplementary Planning Document
TPO	Tree Preservation Order
WFE	Wild Frontier Ecology Ltd.

GLOSSARY OF DEFINITIONS

Term	Definition
DCO boundary	The area subject to the application for development consent, including all permanent and temporary works for SEP and DEP.
Dudgeon Offshore Wind Farm Extension Project (DEP)	The Dudgeon Offshore Wind Farm Extension site as well as all onshore and offshore infrastructure.
Horizontal directional drilling (HDD) zones	The areas within the onshore cable route which would house HDD entry or exit points.
Jointing bays	Underground structures constructed at regular intervals along the onshore cable route to join sections of cable and facilitate installation of the cables into the buried ducts.
Landfall location	The point on the coastline at which the offshore export cables are brought onshore and connected to the onshore export cables.
Offshore export cable corridor	The area which will contain the export cable between offshore substation and land fall jointing bay.
Offshore export cables	The cables which would bring electricity from the offshore substation platform(s) to the landfall. 220 – 230kV.
Onshore cable corridor	The area between the landfall and the onshore substation sites, within which the onshore cable circuits will be installed along with other temporary works for construction.
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substation. 220 – 230kV.
Onshore substation	Compound containing electrical equipment to enable connection to the National Grid.
PEIR boundary	The area subject to survey and preliminary impact assessment to inform the PEIR, including all permanent and temporary works for SEP and DEP.
Sheringham Shoal Offshore Wind Farm Extension Project (SEP)	The Sheringham Offshore Wind Farm Extension site as well as all onshore and offshore infrastructure.
Study Area	Area where potential impacts from the project could occur, as defined for each individual EIA topic. The study areas will be defined for each receptor based on relevant characteristics of the receptor and the potential range of impacts.

1 Non-technical Summary

This report summarises the results of a desk study and ground level arboricultural surveys conducted in 2021 by Wild Frontier Ecology Ltd (WFE). The study and surveys relate to parts of the Development Consent Order (DCO) boundary for a proposed onshore cable corridor in Norfolk.

Two new cables are required for the proposed Sheringham Shoal Offshore Wind Farm Extension Project (SEP) and Dudgeon Offshore Wind Farm Extension Project (DEP) (see Glossary of Terms for abbreviation definitions). The cables will link these planned extensions to the operational Dudgeon and Sheringham Shoal Offshore Wind Farms with a new substation built to the south of the Norwich Main Substation. The DCO boundary, where both cables will be installed, begins at Weybourne on the North Norfolk Coast travelling south and then eventually around the west and south sides of Norwich before connecting to the substation.

The desk study considered the presence of any known high value trees (ancient/veteran trees/woodlands or protected trees) within the DCO boundary. One woodland at Norwich Main Substation with a Tree Preservation Order (TPO) was found to just overlap with the DCO boundary. One Conservation Area (Mannington and Wolterton in North Norfolk) is within the DCO boundary. A 2010 record of one veteran beech tree was noted near the Norwich Main Substation, however, subsequent ground level surveys found this tree to be absent. No records of ancient trees or ancient woodlands were found within the DCO boundary.

This desk study, along with WFE's ecology work which identified trees with bat roost potential (which veteran and ancient trees often have), helped to refine the cable route, minimising possible impacts to veteran and ancient trees from the outset.

Ground level arboricultural surveys were then undertaken by WFE in 2021 in two areas: the section of the DCO boundary within the North Norfolk Area of Outstanding Natural Beauty (AONB) and an area around the Norwich Main Substation and proposed onshore substation site associated with SEP and DEP.

The surveys recorded a total of 219 individual trees, 49 groups of trees and nine woodlands. Of particular note is Hickling Lane, south of the Norwich Main Substation, which was found to have a concentration of veteran trees; four were recorded within the DCO boundary and a further three were recorded along the lane but outside the DCO boundary. Other significant arboricultural features around the Norwich Main Substation include mature trees along field boundaries and the bridleway south of the Norwich Main substation. Impacts to trees on Hickling Lane will be avoided through the use of trenchless crossing methods. A section of woodland on the bridleway as well as two young turkey oaks will need to be removed to facilitate a road to the new substation. The new substation will require the removal of one Category A oak and one Category B field maple.

Within the North Norfolk AONB, no veteran trees were found, although mature field boundary trees were present in the DCO boundary. The 100 metre x 50 metre section of Weybourne Woods ,targeted for clearance for a Horizontal Direction Drilling (HDD) entry/exit compound, consisted of a mixed species plantation dominated by Norway

spruce and Douglas fir. Approximately half of the trees in the proposed area were dead or dying.

This report provides an overview of the trees within parts of the DCO boundary to inform the DCO application. It is not a full arboricultural impact assessment as this could only be conducted once a full arboricultural survey of the corridor is completed and further construction details are known such as the layout of the new substation and its associated access roads. A full tree survey will also highlight any additional veteran/ancient trees which can then be avoided by micrositing/HDD. Advice on how arboricultural impacts could be avoided, mitigated and compensated for is provided in this report with the intention of informing detailed design work. Tree protection measures will need to be secured through Tree Protection Plans and an Arboricultural Method Statement.

2 Background and Objectives

2.1 Background

Equinor New Energy Limited (hereafter Equinor) is proposing to extend the existing operational Dudgeon and Sheringham Shoal Offshore Wind Farms, named the Sheringham Shoal Offshore Wind Farm Extension Project (hereafter SEP) and Dudgeon Offshore Wind Farm Extension Project (hereafter DEP). SEP and DEP will consist of a number of offshore and onshore elements including the offshore wind turbines and subsea array cables, up to two offshore substations, offshore and onshore export cables, and a new area for an onshore substation north of Hickling Lane to accommodate the connection of SEP and DEP to the transmission grid.

The corridor begins at Weybourne on the North Norfolk coast, with the corridor then running southwards and eventually around the west and south sides of Norwich, where it is to connect with a proposed onshore electricity substation, feeding into the National Grid near Norwich Main Substation. The DCO boundary passes through the jurisdictions of three local authorities: North Norfolk District Council, Broadland District Council and South Norfolk District Council. A mixture of open cut and trenchless crossing methods like Horizontal Directional Drill (HDD) are proposed to install the cables. An overview of the DCO boundary can be seen in **Figure 1**, below.

In 2021, WFE was commissioned by Equinor to undertake an arboricultural desk study of the DCO boundary for the onshore cable corridor. The desk study would check for known protected and high value trees within the entire DCO boundary such as trees with a Tree Preservation Order, in a Conservation Area and veteran/ancient trees.

WFE was also commissioned to undertake arboricultural surveys in two areas: the North Norfolk Area of Outstanding Natural Beauty (AONB) and the area around the Norwich Main Substation. The AONB was targeted for survey due to the sensitivity of this designated landscape to arboricultural impacts. The Norwich Main Substation area was targeted for survey as there is expected to be a concentration of impacts in this area from construction of the new substation and its associated access roads; the substation would also be the only permanent, above-ground feature of the onshore elements of SEP and DEP.

2.2 Objectives

The objectives of this Arboricultural Report are to:

- Summarise the relevant legislation and national and local policies that relate to the protection of trees, hedgerows and woodlands;
- Provide the results of the desk study within the entire DCO boundary;
- Provide the results of the arboricultural surveys within the North Norfolk AONB and Norwich Main Substation areas. The results of these surveys can then feed into detailed design work, landscape impact assessments and a future Arboricultural Impact Assessment, Tree Protection Plans and Arboricultural Method Statement; and

- Advise on how arboricultural impacts can be avoided through sensitive detailed design and best practice construction methods. If impacts cannot be avoided then general advice on mitigation (such as on-site tree protection) and compensation (replacement tree planting) will be provided in addition to any legislative barriers to tree work.

Please note that this report is not an arboricultural impact assessment.

Figure 1: DCO Boundary

3 Relevant Legislation and Policy

3.1 Legislation

3.1.1 Tree Preservation Order (TPO)

A TPO is an order made to protect trees which bring significant amenity benefit to an area. It is a written order which, in general, makes it a criminal offence to cut down, top, lop, uproot, wilfully damage or wilfully destroy a tree and its roots specified by that order, or to cause or permit such actions, without the authority's permission.

All types of tree can be protected by a TPO. A TPO can cover a single tree, a group of trees or a woodland. When applied to woodlands, all trees of whatever size and species are protected, including understorey trees and saplings. Work to TPO trees must normally be done with the consent of the local authority. However, there are exceptions to this including any works necessary to implement a Planning Permission. However, advice should be sought on the extent of this exemption at specific sites before any tree work is undertaken.

3.1.2 Conservation Area

Similar TPO procedures apply if a tree is in a Conservation Area. A six-week notification of tree work to be submitted to the local authority prior to any works (including root pruning) being undertaken on protected trees.

3.1.3 Felling Licences

In any calendar quarter, if more than 5 cubic metres of growing trees need to be felled then a felling licence may be required under The Forestry Act 1967. Felling Licences are administered by the Forestry Commission.

Felling licences are generally not required for the felling of trees within gardens, orchards, churchyards and public open spaces. Trees outside of these areas may also meet other exemptions from the felling licence requirement. Felling licences are most often required in woodland habitats.

If felling more than 5 cubic metres of trees on a site, it is advised to contact the Forestry Commission which administers felling licences and can provide site specific advice.

3.1.4 The Hedgerow Regulations 1997

The Hedgerow Regulations protect important hedgerows in the countryside by controlling their removal through a system of notification. Hedgerows can be protected where they are:

- more than 20m in length;
- on or adjacent to land used for agriculture, forestry, common land, the breeding or keeping of horses or donkeys, village greens, Sites of Special Scientific Interest or Local Nature Reserves; and

- greater than 30 years old and meet the criteria for being an 'important' hedgerow.

Protected hedgerows require a Hedgerow Removal Notice to be submitted to the local authority six weeks prior to removal. Exemptions from the requirement to submit a Hedgerow Removal Notice include full planning permission. Where an exemption does not apply, failure to submit a Hedgerow Removal Notice prior to hedgerow removal is a criminal offence and can lead to a fine.

3.2 Policy

3.2.1 National Policy

Under paragraph 131 of the National Planning Policy Framework[1] (NPPF), the local authority has a statutory duty to ensure that existing trees are retained wherever possible and opportunities are taken to incorporate trees elsewhere in developments. The policy recognises the important contribution of trees to the character and quality of urban environments and their ability to help humans mitigate and adapt to climate change.

Paragraph 180 part c) pertains specifically to the protection of ancient and veteran trees. It states "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". Exceptional reasons include infrastructure projects (including Nationally Significant Infrastructure Projects, orders under the Transport and Works Act and hybrid bills), where the public benefit would clearly outweigh the loss or deterioration of habitat.

There are also two National Policy Statements of relevance. The Overarching National Policy Statement for Energy (EN-1)[2] and the National Policy Statement for Renewable Energy Infrastructure (EN-3)[3]. In regards to trees, EN-1 reiterates the NPPF's above policy on ancient and veteran trees and EN-3 promotes the use of tree planting to soften the visual intrusion of above ground infrastructure.

3.2.2 Broadland District Council Policy

Broadland District Council has no specific policies within its Development Management Development Plan Document (DPD)[4] pertaining directly to trees. As an important part of the ecosystem, trees are inherently covered by Policy EN1 - Biodiversity and Habitats and as part of the landscape they are also indirectly referenced as 'natural features' in Policy EN2 - Landscape. Sections of these policies most relevant to trees are underlined.

Policy EN1 – Biodiversity and Habitats

Development proposals will be expected to protect and enhance the biodiversity of the district, avoid fragmentation of habitats, and support the delivery of a co-ordinated green infrastructure network throughout the district.

Where harmful impacts occur, it should be adequately demonstrated that:

i. The development cannot be located where it would cause less or no harm;

ii. That adequate mitigation is incorporated, including specific mitigation requirements to address impacts upon international wildlife sites (Natura 2000 sites); and,

iii. That the benefits of the development clearly outweigh the impacts.

Policy EN2 – Landscape

In order to protect the character of the area, development proposals should have regard to the Landscape Character Assessment SPD [Supplementary Planning Document] and, in particular, consider any impact upon as well as seek to protect and enhance where appropriate:

i. Gaps between settlements;

ii. Visually sensitive skylines, hillsides and valley sides and important views including the setting of the Broads Area;

iii. Nocturnal character;

iv. Conservation Areas;

v. Scheduled Ancient Monuments;

vi. Historic Parks and Gardens; and,

vii. Green spaces including natural and semi-natural features which make a significant contribution towards defining the character of an area.

3.2.3 South Norfolk District Council Policy

South Norfolk District Council's Development Management Policies Document[5] contains Policy DM 4.8 as follows:

Policy DM 4.8 Protection of Trees and Hedgerows

The Council will promote the retention and conservation of significant trees, woodlands and traditional orchards and will serve Tree Preservation Orders (TPOs) where necessary.

The Council will presume in favour of the retention of 'important' hedgerows as defined by the Hedgerows Regulations 1997.

The Council will safeguard and promote the appropriate management of protected and other significant trees and hedgerows, unless the need for, and benefits of, a development clearly outweigh their loss.

3.2.4 North Norfolk District Council Policy

North Norfolk District Council has no specific policies within its Core Strategy[6] pertaining solely to trees.

Trees are mentioned as part of Policy EN 2 below.

Policy EN 2 Protection and Enhancement of Landscape and Settlement Character

Proposals for development should be informed by, and be sympathetic to, the distinctive character areas identified in the North Norfolk Landscape Character Assessment and features identified in relevant settlement character studies.

Development proposals should demonstrate that their location, scale, design and materials will protect, conserve and, where possible, enhance:

- the special qualities and local distinctiveness of the area (including its historical, biodiversity and cultural character);
- gaps between settlements, and their landscape setting;
- distinctive settlement character;
- the pattern of distinctive landscape features, such as watercourses, woodland, trees and field boundaries, and their function as ecological corridors for dispersal of wildlife;
- visually sensitive skylines, hillsides, seascapes, valley sides and geological features;
- nocturnal character;
- the setting of, and views from, Conservation Areas and Historic Parks and Gardens; and
- the defined Setting of Sheringham Park.

3.3 Standing Advice on Veteran/Ancient Trees

Guidance on the protection of ancient and veteran trees is provided in Standing Advice[7] from the Forestry Commission and Natural England. Standing Advice is a material consideration for decision makers.

The guidance is comprehensive and provides definitions for ancient and veteran trees, their weight in planning decisions, how to assess impacts on these trees and mitigation options.

Crucially, the guidance states that all ancient/veteran trees must have a 'buffer zone' which is 15 times larger than the stem diameter of the tree or 5 metres (m) greater than the maximum canopy spread, whichever is larger. This represents additional protection to that offered by BS5837:2012 whereby Root Protection Areas are 12 times larger than the stem diameter and capped at 15 metres.

4 Methods

4.1 Desk Study

4.1.1 Scope and Definitions

The desk study collates data on the presence of known 'high value trees' within the entire DCO boundary. Definitions for the different types of high value trees considered in the study are provided in **Table 1** below.

Table 1: Definitions of High Value Trees

Term	Definition
Veteran tree	A tree which, because of its age, size and condition, is of exceptional biodiversity, cultural or heritage value (taken from NPPF).
Ancient tree	All ancient trees are veteran trees. Not all veteran trees are old enough to be ancient. Ancient trees are old relative to other trees of the same species. Very few trees of any species reach the ancient life-stage (taken from NPPF[1]).
TPO	A TPO is an order made by a local authority in England to protect specific trees, groups of trees or woodlands in the interests of amenity (taken from Government Guidance[8]).
Conservation Area	Conservation Areas protect the special historic interest of a place. Trees in a Conservation Area that are not protected by a TPO are protected by the provisions in section 211 of the Town and Country Planning Act 1990 (taken from Government Guidance[8]).
Ancient Woodland	An area that has been continuously wooded since at least 1600AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (taken from Standing Advice[7]).

4.1.2 Data Sources

Existing data on the location of 'high value trees' was obtained from a number of sources.

Data on known ancient and veteran trees in Norfolk was obtained via a data request in July 2021 to the Ancient Tree Inventory (ATI)[9]. Use of this data source is advised in Natural England and Forestry Commission Standing Advice (see paragraph 3.3).

Data on ancient woodland locations was also provided by Royal HaskoningDHV. Ordnance Survey (OS) maps, satellite imagery and the Department of

Environment, Food and Rural Affairs' (DEFRA) Multi-Agency Geographic Information for the Countryside (MAGIC) map were also reviewed to locate ancient woodlands.

Data on the locations of TPOs and Conservation Areas was provided in August 2021 through Royal HaskoningDHV, which in turn received the data from Broadland District Council, South Norfolk District Council and North Norfolk District Council.

4.1.3 Analysis

Data on the above high value trees was overlaid onto the DCO boundary. All data was analysed using Quantum Geographic Information System (QGIS) software[10]. The DCO boundary was analysed for overlaps or proximity to high value trees.

Trees within or close to the corridor are highlighted in Section 5.2. **Figure 2** and **Figure 3** were also produced in QGIS showing the sections of the DCO boundary which overlap or adjoin 'high value trees'.

4.1.4 Constraints to the Desk Study

ATI data is by no means an exhaustive list of all ancient and veteran trees, and is updated regularly as new records are submitted. The incompleteness of ancient and veteran tree data has most recently been demonstrated by a 2021 study focusing on wood pasture habitats in England which modelled that there could be over 100,000 undiscovered ancient trees in wood pastures[11]. This is around 10 times the number of current ancient tree records.

4.2 Arboricultural Survey

4.2.1 Tree Survey Scope

The aim of the survey was to record the number, location and quality of trees currently present within the DCO boundary in the North Norfolk AONB and around the Norwich Main Substation.

Part of the DCO boundary in the AONB passes through Weybourne Woods. HDD will be used to avoid most of the trees in Weybourne Woods. WFE was therefore asked to survey only two specific areas in the woods. The first was the centre of the woods where the entry/exit compound for the drill will be located and the second area was along the access road where a cut-through will be needed to facilitate access to the arable field south of Weybourne Woods for the drill exit point. The remainder of Weybourne Woods, whilst inside the DCO boundary and AONB, was not surveyed as no impacts are expected there.

At the Norwich Main Substation, an area larger than the DCO boundary was surveyed. This was to allow for trees in the wider landscape to be considered as part of a Landscape Visual Impact Assessment.

4.2.2 Tree Survey Methods

A detailed survey was undertaken by Alexander Lowe BSc MArborA and assisted by Jenny Donelan BSc MSc and Alex Brighten BSc MSc in August and September 2021. The survey was carried out in accordance with BS 5837: 2012 '*Trees in*

Relation to Design, Demolition and Construction – Recommendations'. The survey was undertaken at ground level. Stem measurements were taken with a Diameter at Breast Height tape, whilst height and canopy spreads were measured using a TruPulse 200 Rangefinder Laser. Stem locations were based on aerial imagery and GPS with an accuracy of +/- 3 metres.

The survey recorded all trees, groups of trees, and woodland on or adjacent to the site with a stem diameter of more than 75mm at a height of 1.5m. The information contained within Annex 1 Tree Survey Schedule, was collected for each individual tree where possible. Groups were recorded where trees formed cohesive arboricultural features either aerodynamically, visually or culturally in accordance with BS5837:2012. Canopy extents for groups were based on aerial imagery, where groups were next to roads, the extent of overhang was often measured and recorded in Annex 1.

All features were given a unique reference number. References for individual trees begin with a T (i.e. T1, T2 etc), groups of trees begin with a G (i.e. G1, G2 etc) and woodlands begin with a W (i.e. W1, W2 etc).

Definitions of all columns in Annex 1 Tree Survey Schedule is provided in Annex 2 Definitions for Tree Survey Schedule. Where ash trees were recorded, an estimate of the percentage of the canopy affected by ash dieback *Hymenoscyphus fraxineus* was recorded.

Hedgerows were not surveyed as hedgerow locations were provided by Royal HaskoningDHV. Hedgerows had also been previously surveyed and considered in WFE's Extended Phase 1 Habitat Survey Report[12]. Hedgerow locations are shown as orange lines on the Tree Constraints Plans.

Norfolk County Council's Historic Maps of Norfolk[13] online tool was used to verify the long-term presence of suspected veteran trees and long-established woodlands.

4.2.3 Tree Constraints Plans

Twenty-two Tree Constraints Plans have been produced (**Figure 4** to **Figure 25**). Together, these plans show all the recorded trees, groups, woodlands and hedges. Trees are numbered to correspond with the Tree Survey Schedule and colour-coded according to their value category (A, B, C and U).

The Constraints Plan demonstrates the two types of constraints posed by the trees:

Above ground constraints: the current canopy spread of the tree based on canopy spread measurements at four cardinal points. Shading pattern is not shown as it is not relevant to this type of development.

Below ground constraints: the Root Protection Area (RPA) of the tree 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 is treated as a priority. RPAs are calculated by multiplying the stem

diameter of each tree by a factor of 12 and capping the maximum radius of an RPA at 15 metres.

Veteran Tree Buffer Zones are provided for veteran and ancient trees in accordance with Forestry Commission and Natural England's Standing Advice[5]. The radius of the buffer is calculated by multiplying the stem diameter by 15 or by adding 5 metres onto the maximum canopy spread, whichever is the larger.

4.2.4 Survey Constraints

The stems of some trees were inaccessible due to various factors including being situated within hedgerows or dense vegetation. Where estimations have been made, a ~ symbol has been used in the Tree Survey Schedule in Annex 1.

This is a ground level visual assessment only. The assessment is for the purposes of planning and development. No internal decay detection tools have been used in this assessment; therefore, this is not a full health and safety assessment.

Trees are dynamic organisms; their condition can change over time particularly if site conditions change or if there has been an extreme weather event. A re-survey may be required if circumstances have substantially altered since this survey was undertaken.

A topographical survey was not provided and therefore stem positions are accurate to +/-3m.

5 Results

5.1 Survey Area Descriptions

5.1.1 North Norfolk Area of Outstanding Natural Beauty

The North Norfolk AONB section of the DCO boundary is approximately 5km long. Starting at the landfall area on Weybourne beach, it then progresses southwards through an arable field to the east of the Muckleburgh Military Collection. Access routes to the beach and the fields use the existing road leading to the Collection.

The corridor then passes the A149 into another arable field accessed from a track off the A149. The corridor curves to the east past Holgate Hill/Holt Road into more arable fields with trees and hedgerows on the boundaries. The corridor passes Station Road into an arable field north of Weybourne Station.

Once past the railway line, the corridor progresses southwards under Weybourne Woods which consists of a mixed broadleaf and coniferous plantation in active timber management. The corridor re-appears to the south of Weybourne Woods and east of Sandy Hill Lane in an arable field. The corridor continues south-east though more agricultural fields with trees and hedgerows along their boundaries until reaching the edge of the AONB along the A148.

5.1.2 Norwich Main Substation

Norwich Main Substation lies west of the A140, approximately 3km to the south of Norwich.

Adjacent to the A140, and north-east of the Norwich Main Substation, is a large area of woodland known as Dunston Hills Wood and which appears on the first Ordnance Survey map (dated 1879-1886)[13]. Immediately to the south of the Norwich Main Substation is a public bridleway. On the south side of the bridleway are mature field boundary trees whilst to the north of the bridleway there is a mix of more recently planted woodland which cannot be seen on aerial imagery from 1946-1960 but is present on aerial imagery from 1988[13].

Approximately 500m south of the bridleway is Hickling Lane, a public footpath with a number of mature trees, wooded areas and ponds along it. Many of these features appear on the first Ordnance Survey map including a larger area of woodland called Sprow's Pits (recorded as W3 in the Tree Survey Schedule).

Between the bridleway and Hickling Lane and surrounding the Norwich Main Substation are arable fields with boundaries consisting of hedgerows and trees.

5.2 Desk Study

Table 2 below shows a summary of the data received from the data sources listed in paragraph 4.1.2 and how many of these trees were found within the DCO boundary.

Two maps (**Figure 2** and **Figure 3**) have been produced showing the location of high value trees.

Table 2: Summary of High Value Trees within DCO Boundary

Data Source	Type of High Value Tree	Data Received	Number of high value trees/features within DCO boundary
Ancient Tree Inventory	Ancient and veteran trees	5,343 trees in Norfolk	1 (Note: this tree was found to be absent during ground level surveys)
North Norfolk District Council, South Norfolk District Council and Broadland District Council (via Royal Haskoning DHV)	Trees protected by a TPO	North Norfolk District Council: 547 features* South Norfolk District Council: 2,065 features Broadland District Council: 1,211 polygon features and 3,148 point features *refers to number of features contained in the shapefile provided, does not necessarily correspond to number of trees or number of TPOs.	North Norfolk District Council: 0 South Norfolk District Council: 1 Broadland District Council: 0
Royal HaskoningDHV	Conservation Areas Ancient Woodlands	48 Conservation Areas in Norfolk 994 features across Norfolk and Suffolk	1 Conservation Area No Ancient Woodlands

5.2.1. Ancient and Veteran Trees

There is one veteran beech *Fagus sylvatica* tree within the DCO boundary. This tree is located east of the Norwich Main Substation. It had a measured stem girth of 4.56m and a height of 1.3m (ATI identification number: 49416). The location of the tree is shown in **Figure 3**. During ground level surveys of the same area, this tree was found to be absent. It is possible that as the record dates from 2010 that the tree has since been removed.

No other ancient or veteran trees from the ATI data were found within the DCO boundary.

5.2.2. Tree Preservation Orders

The following TPO (shown in **Figure 3**) has minor overlaps with the DCO boundary:

- South Norfolk District Council TPO 1967 No.4 – this pertains to woodland to the east and west of the access road leading to the Norwich Main Substation.

5.2.3 Conservation Areas

The DCO boundary overlaps with one Conservation Area as shown by **Figure 2**:

- North Norfolk District Council – Mannington and Wolterton Conservation Area.

5.2.4 Ancient Woodlands

The DCO boundary does not overlap with any ancient woodlands.

5.3 Survey Results

In total, the ground level arboricultural survey recorded 219 individual trees, 49 groups of trees and nine woodlands on and immediately adjacent to the AONB and Norwich Main Substation survey areas. The assessment breakdown can be seen in **Table 3** below.

The results of the tree survey are shown in full in Annex 1 Tree Survey Schedule, and in the Tree Constraints Plans provided in **Figure 4** to **Figure 25**. Trees, groups or woodlands protected by a Tree Preservation Order are given an * symbol following their reference number, for example T001* Oak. Tree photos are provided in Annex 3.

Table 3: Quality Assessment of Recorded Trees and Groups

Category	Number			Quality and value	
	Tree	Group	Woodland		
A	48	1	3	High	Suitable for retention
B	115	35	6	Moderate	
C	47	13	0	Low or Young*	
U	9	0	0	Trees with projected lifespan of <10 years, or those that are already dead	Can be considered suitable for removal

*stem diameter is less than 150mm when measured at 1.5m height

Figure 2: Desk Study

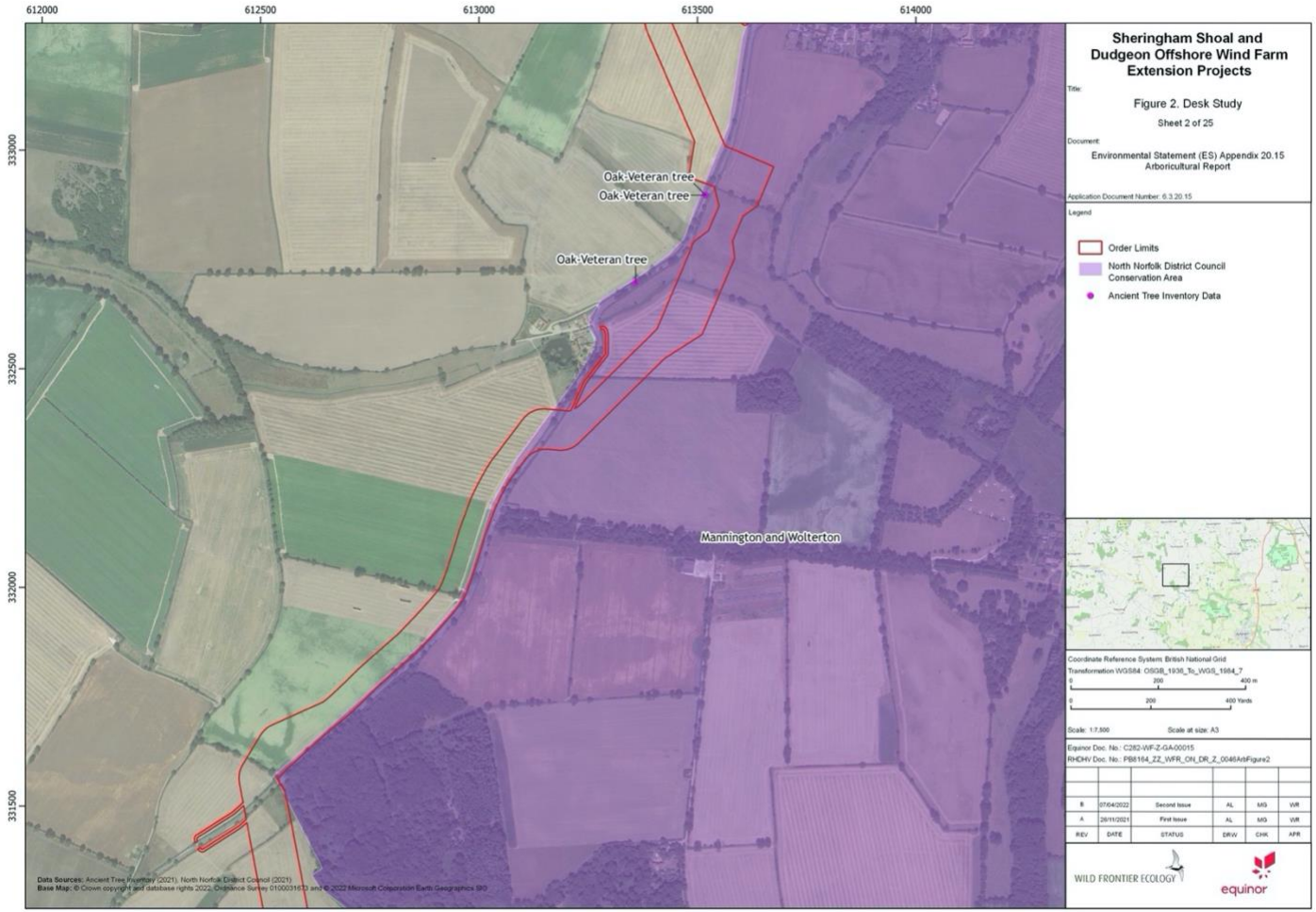


Figure 3: Desk Study

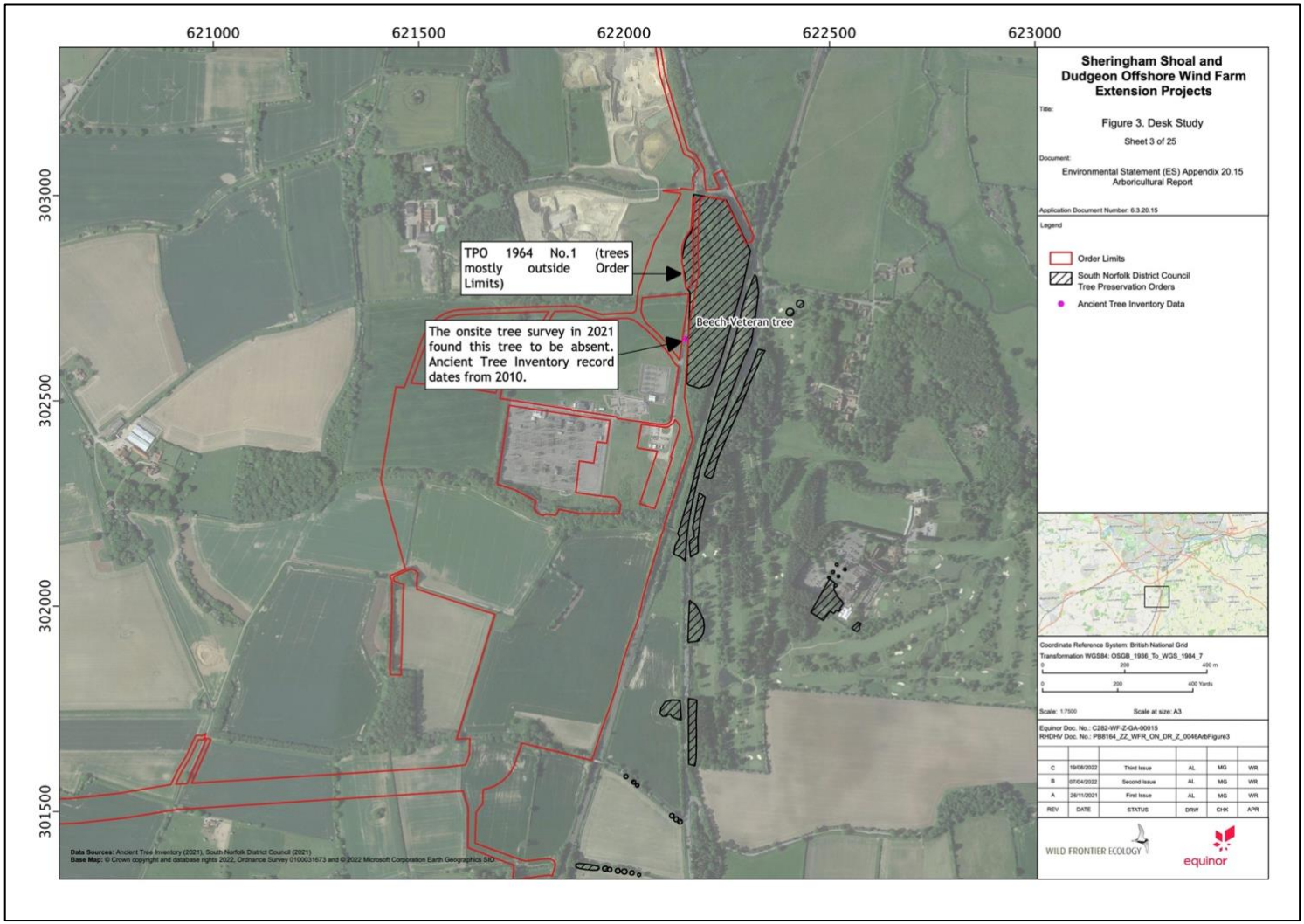


Figure 4: Tree Constraints Plan (AONB)

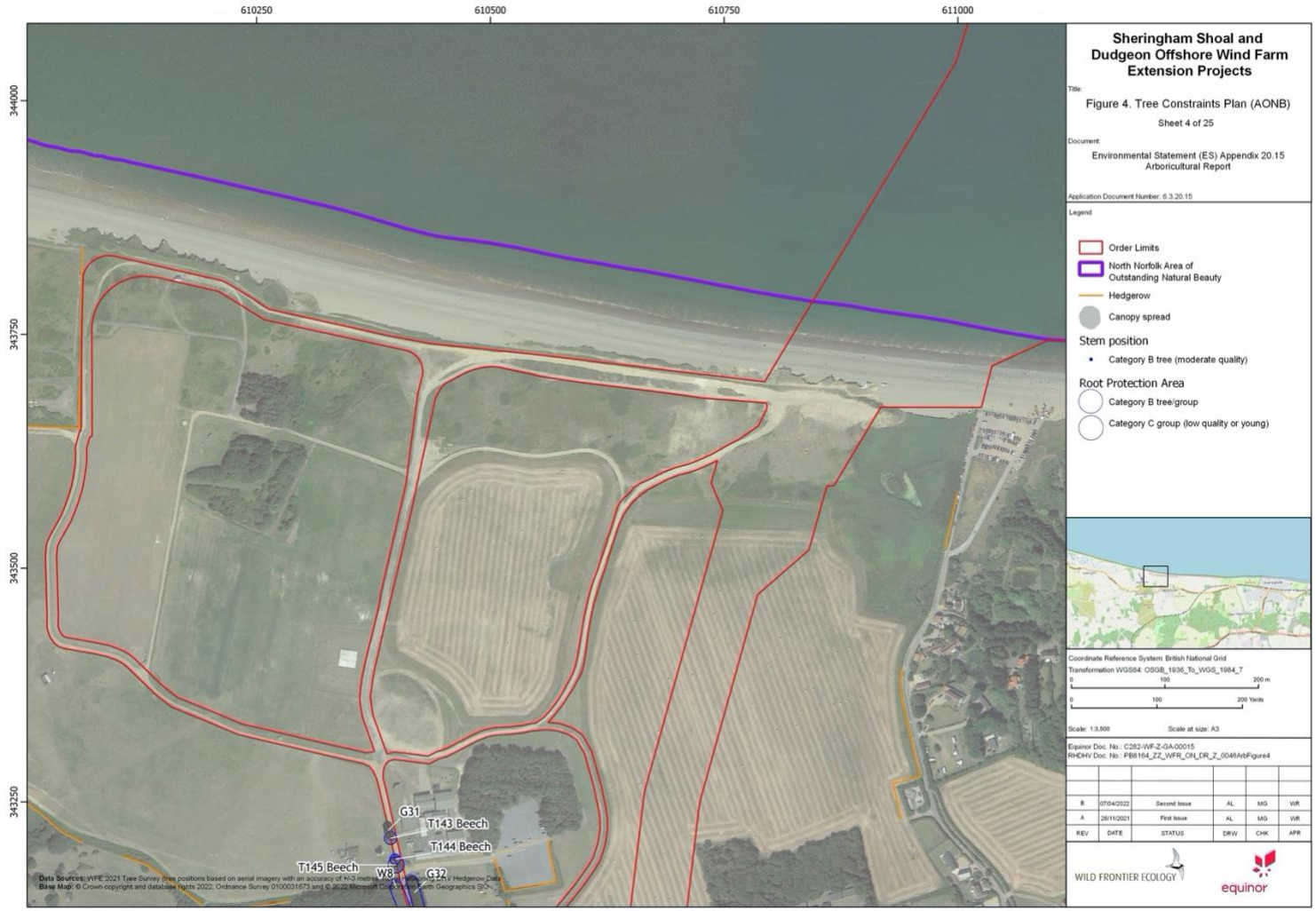


Figure 5: Tree Constraints Plan (AONB)

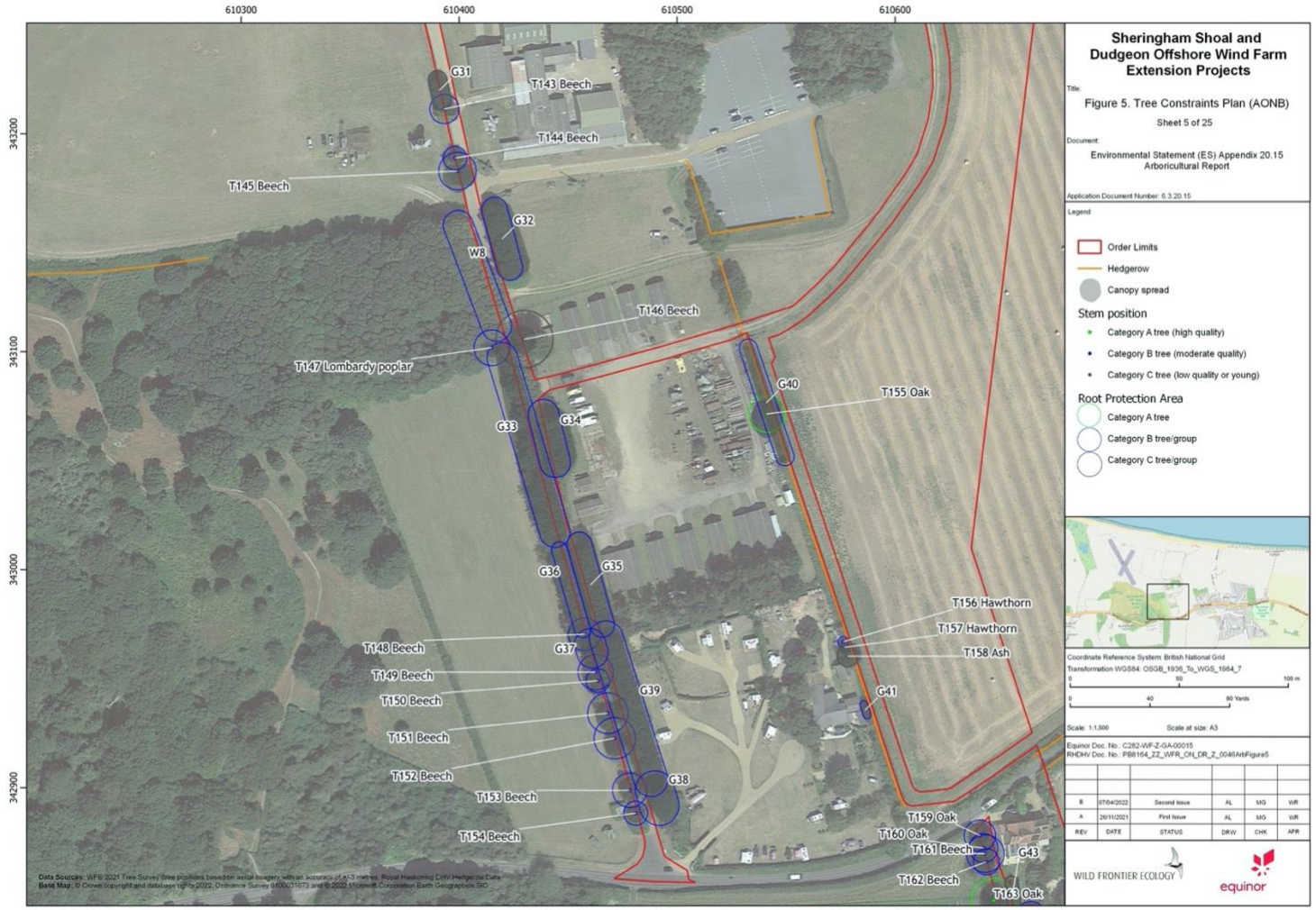


Figure 6: Tree Constraints Plan (AONB)

Figure 7: Tree Constraints Plan (AONB)

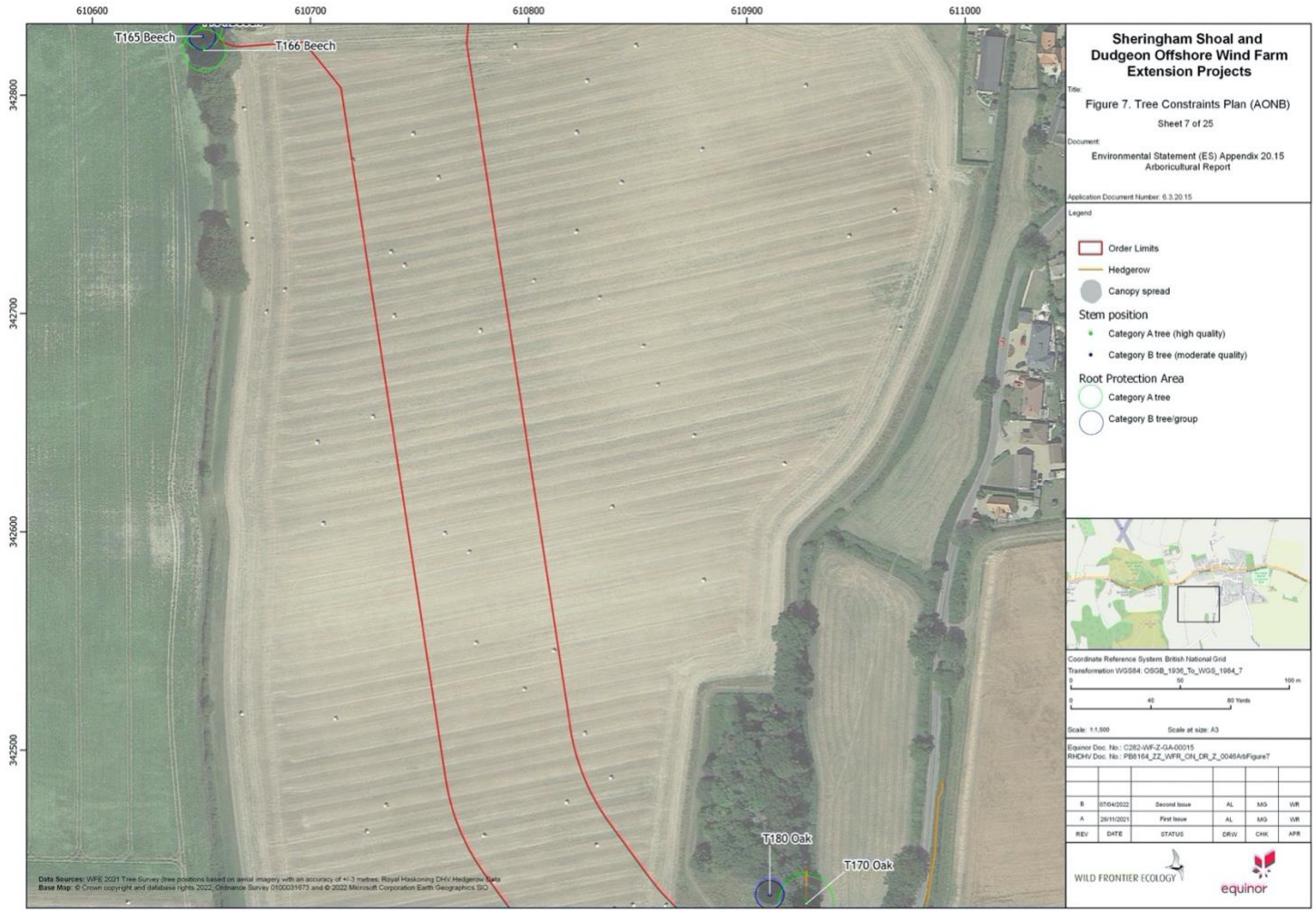


Figure 8: Tree Constraints Plan (AONB)

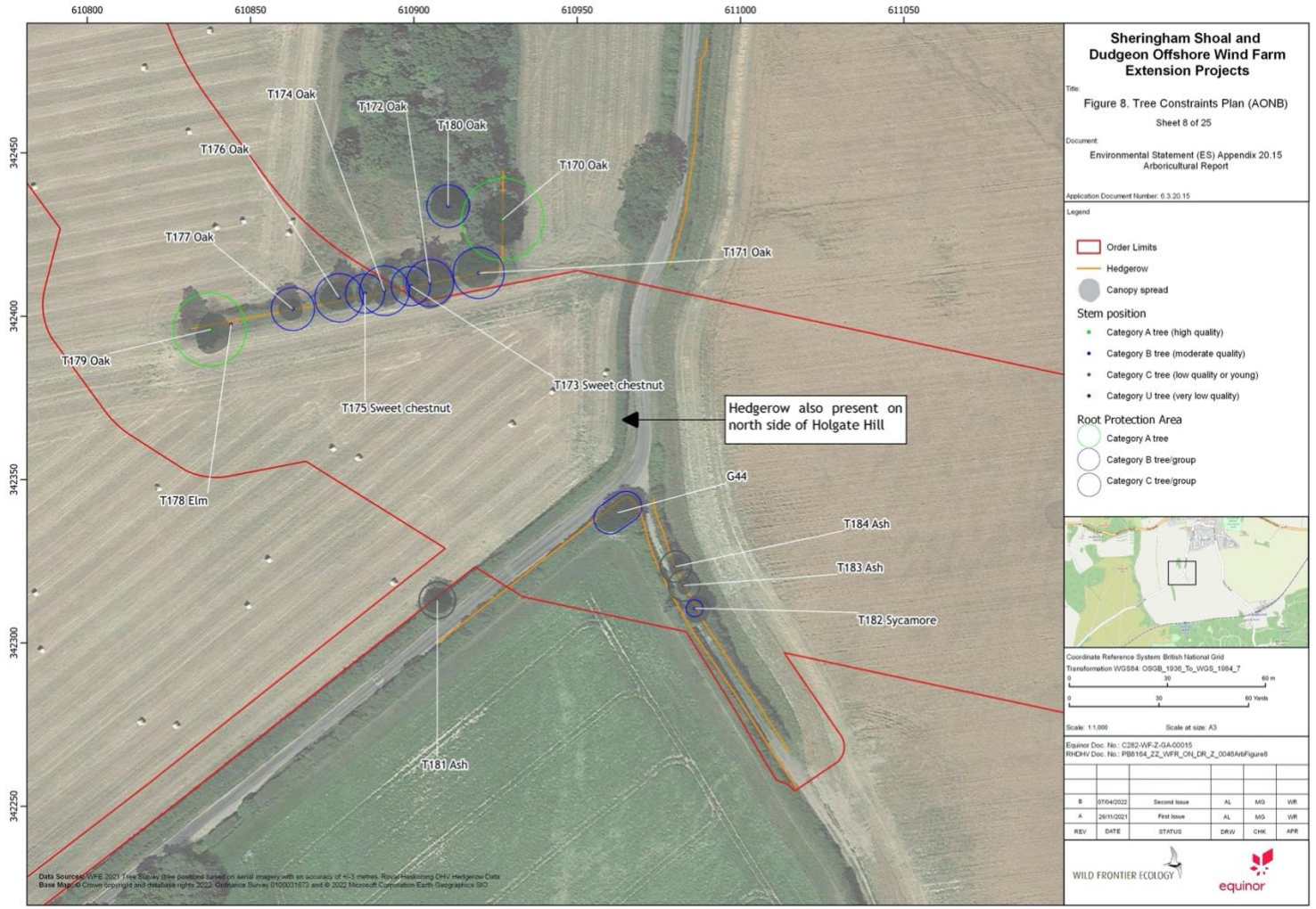


Figure 9: Tree Constraints Plan (AONB)

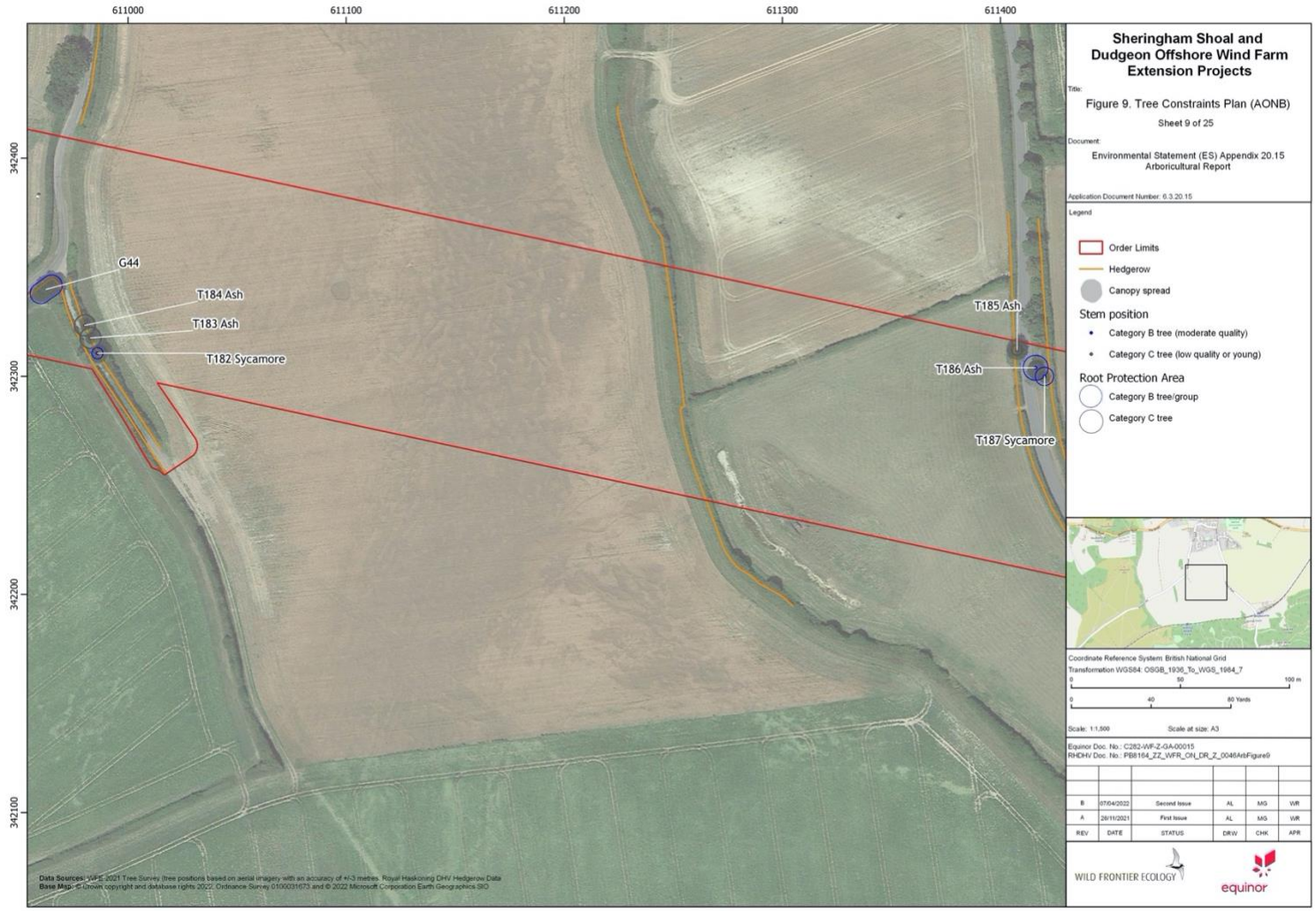


Figure 10: Tree Constraints Plan (AONB)

Figure 11: Tree Constraints Plan (AONB)

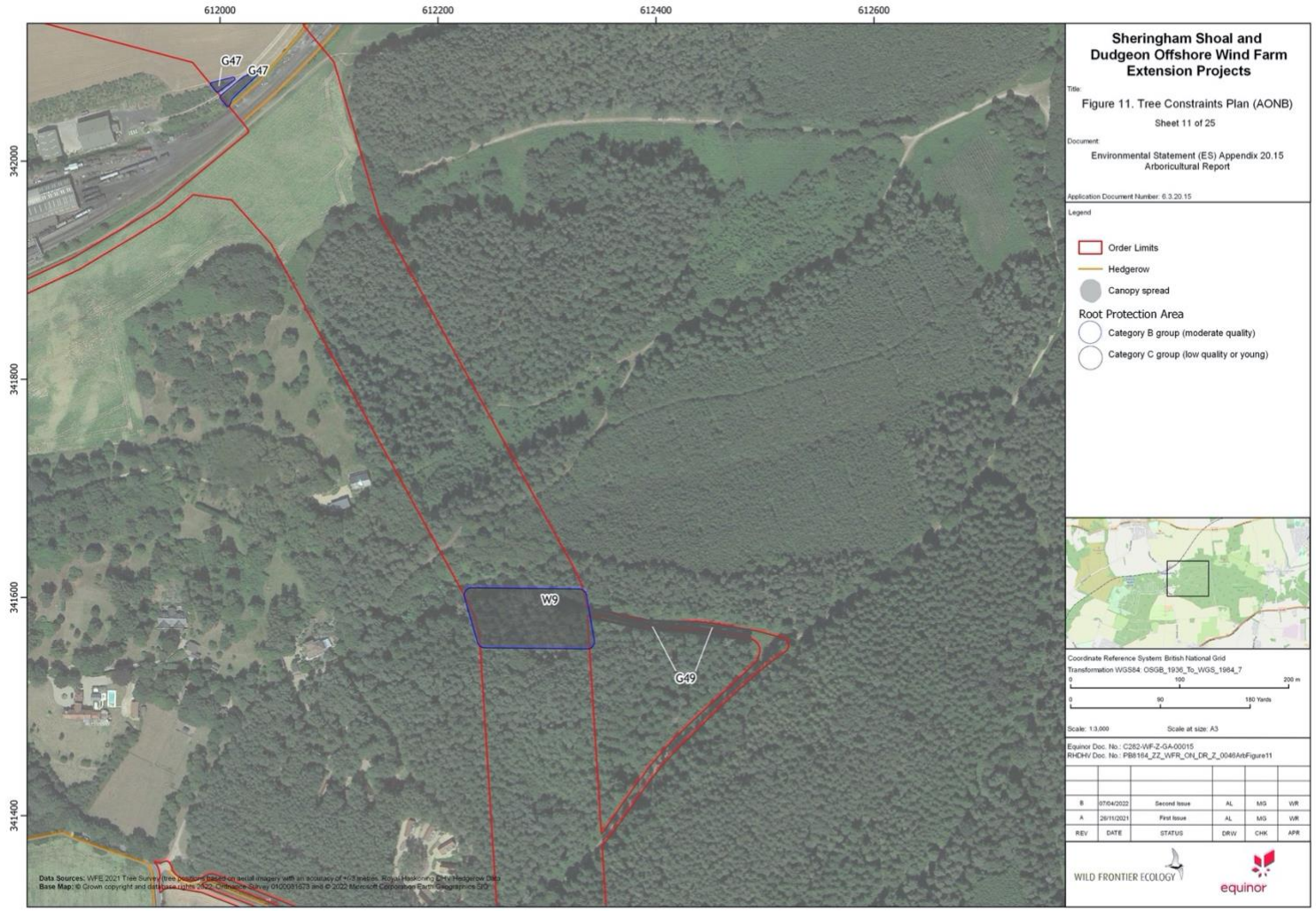


Figure 12: Tree Constraints Plan (AONB)

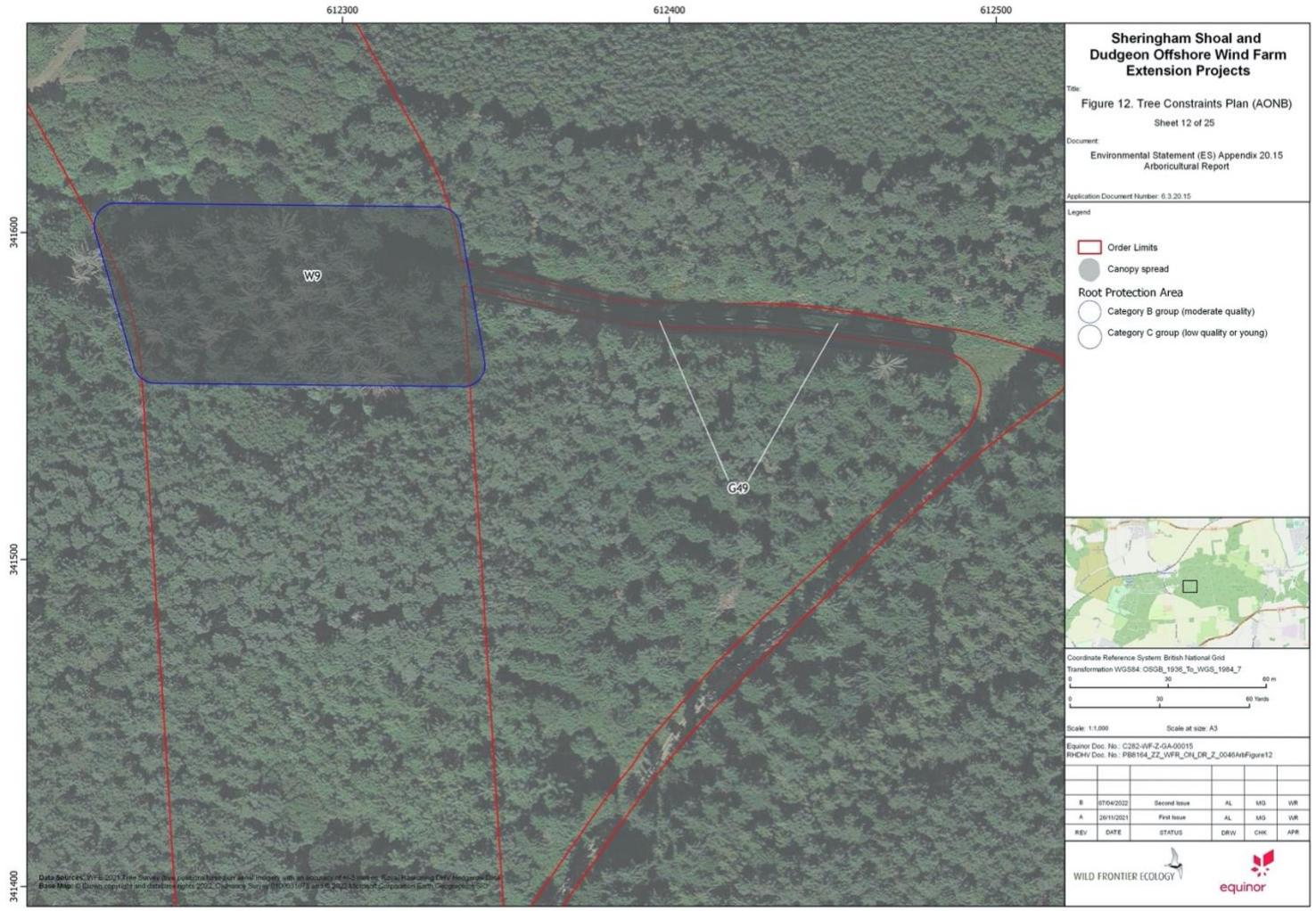


Figure 13: Tree Constraints Plan (AONB)

Figure 14: Tree Constraints Plan (AONB)

Figure 15: Tree Constraints Plan (AONB)

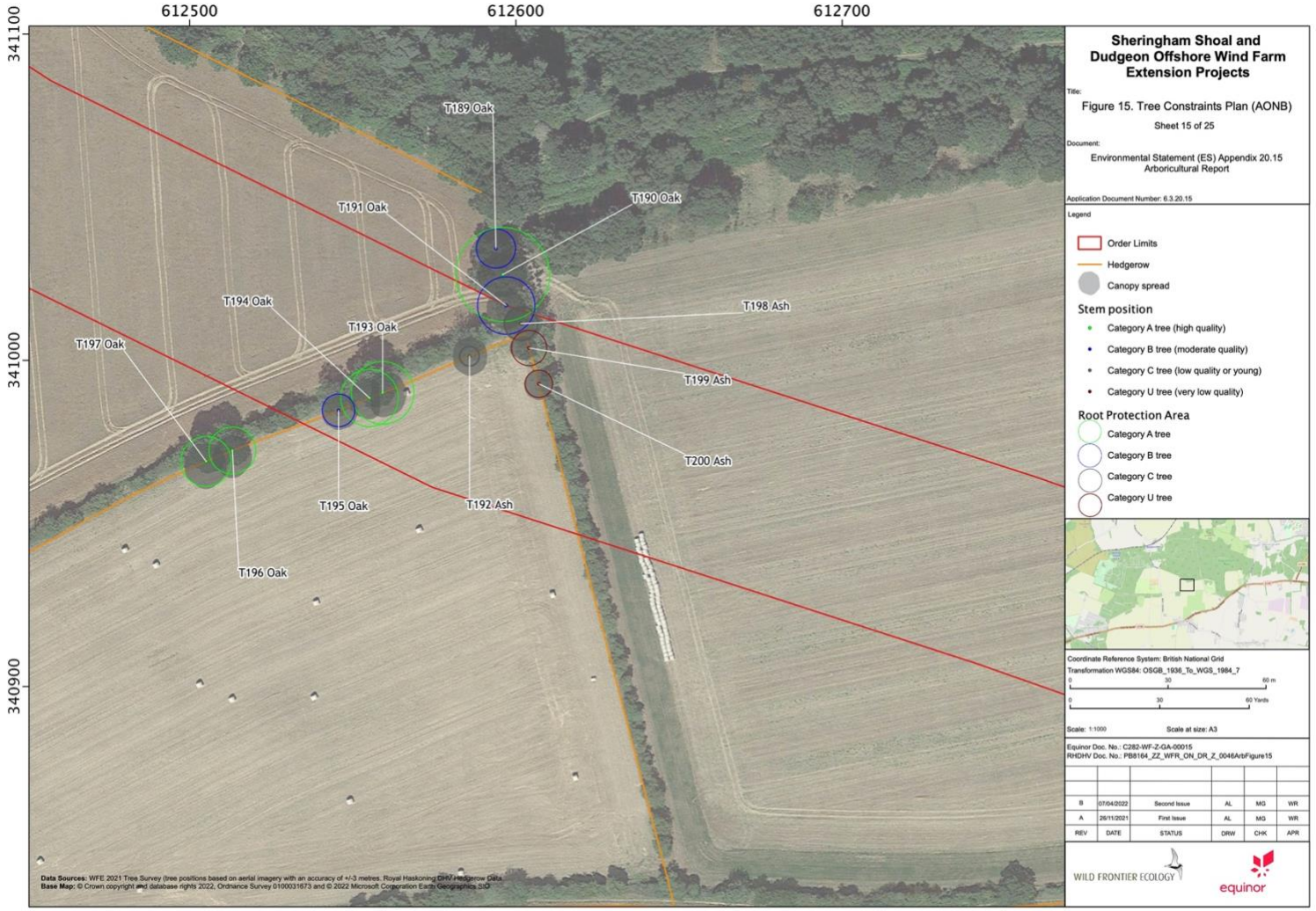


Figure 16: Tree Constraints Plan (AONB)

Figure 17: Tree Constraints Plan (AONB)

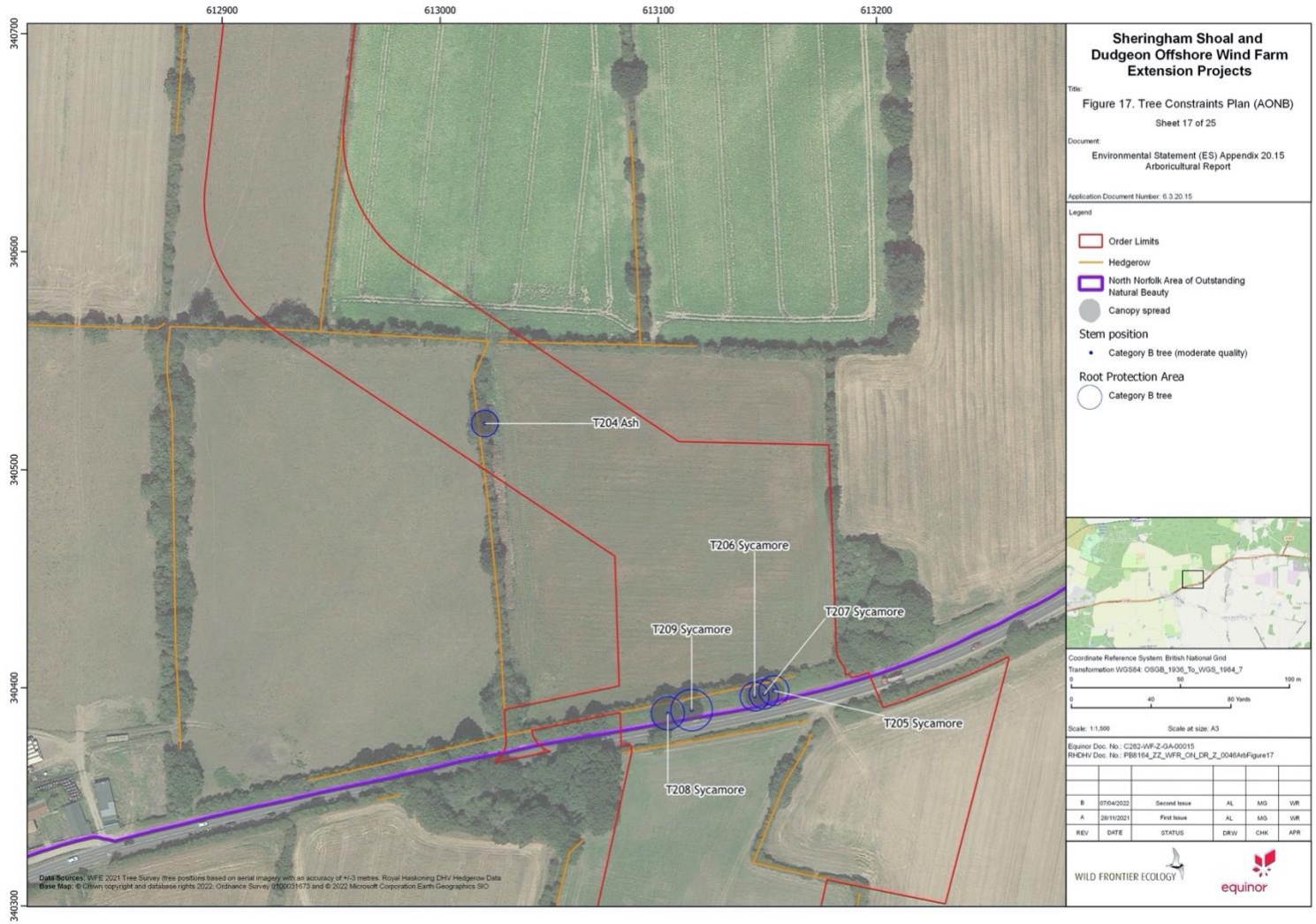


Figure 18: Tree Constraints Plan (Norwich Main Substation)

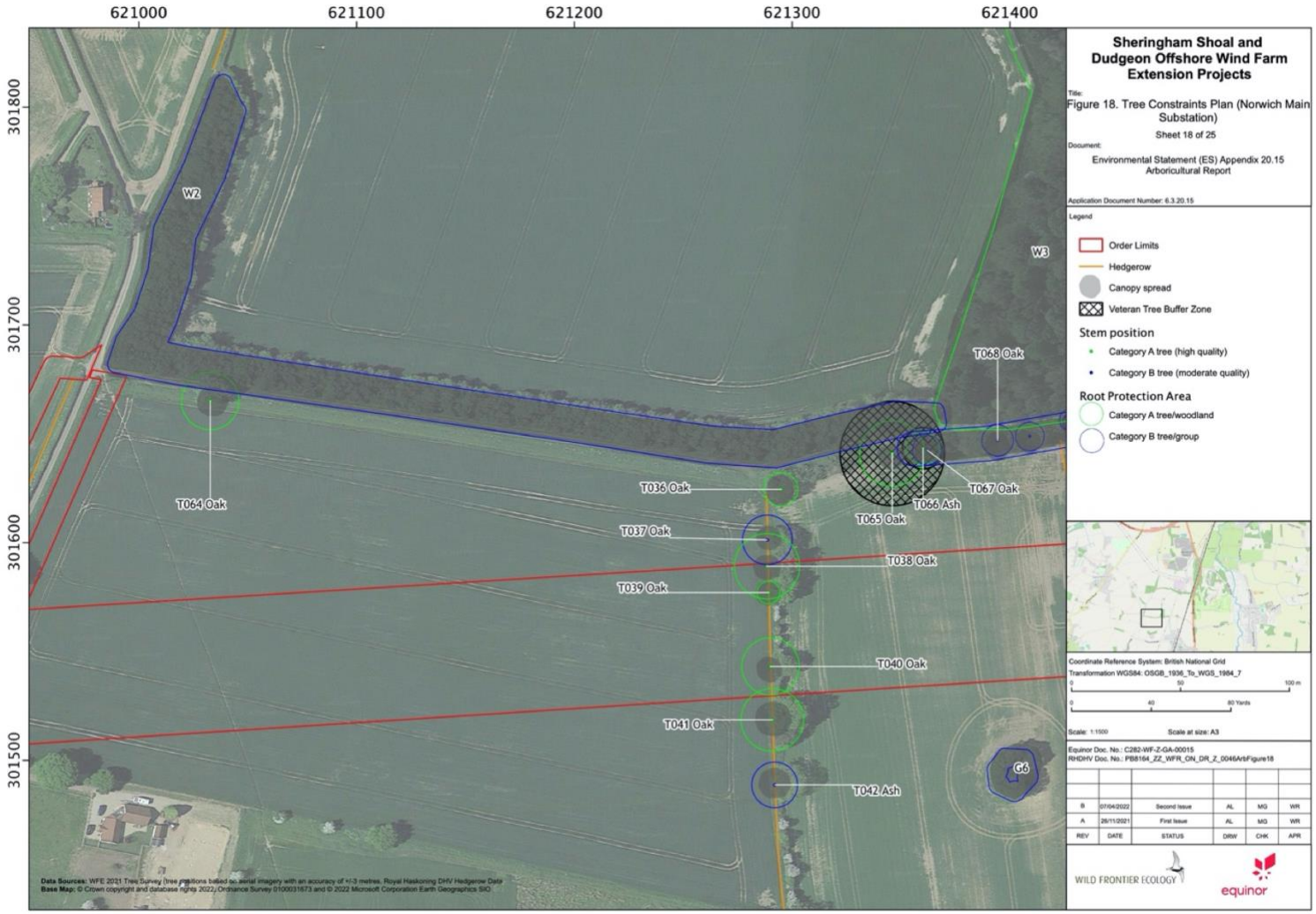


Figure 19: Tree Constraints Plan (Norwich Main Substation)

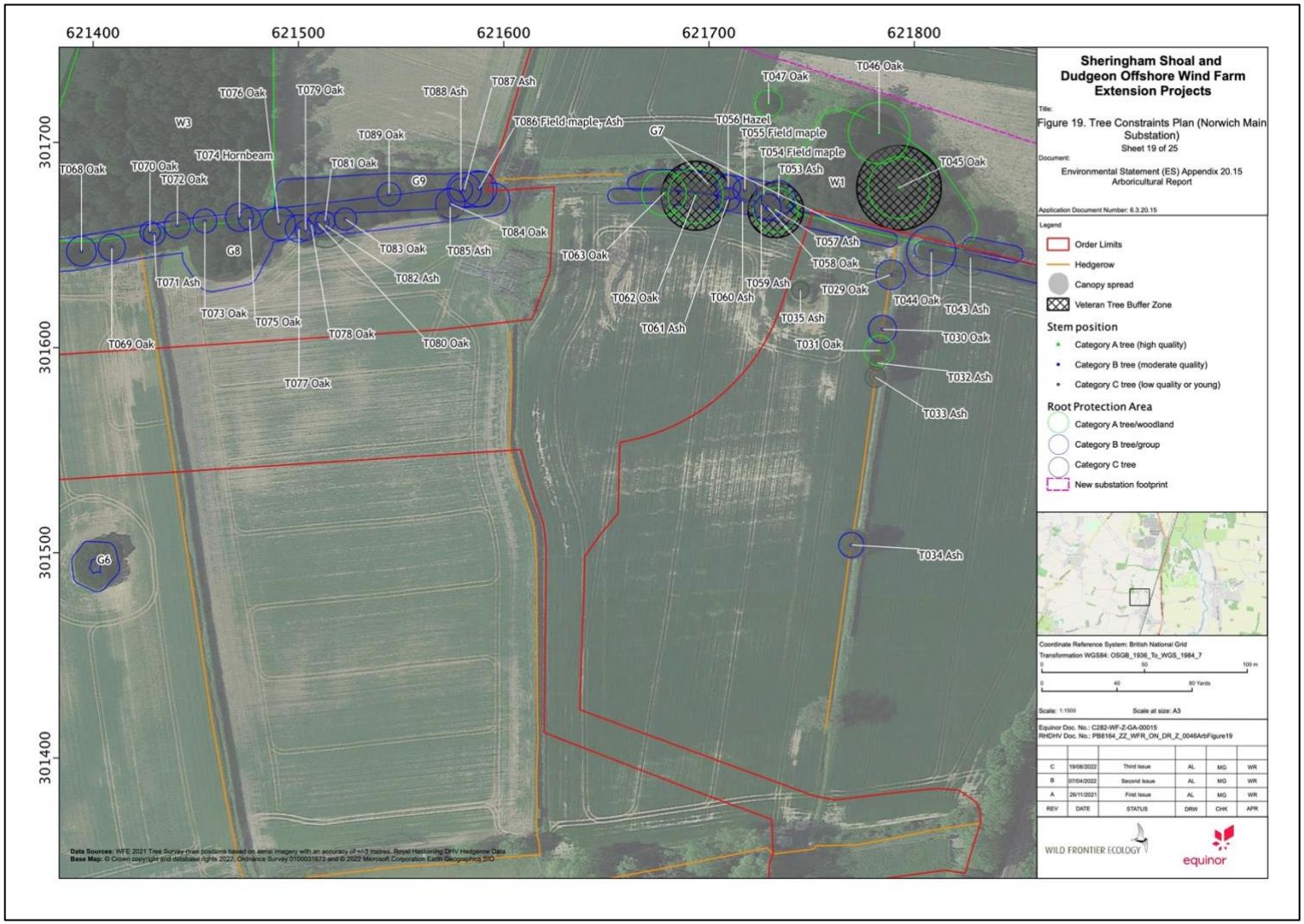


Figure 20: Tree Constraints Plan (Norwich Main Substation)

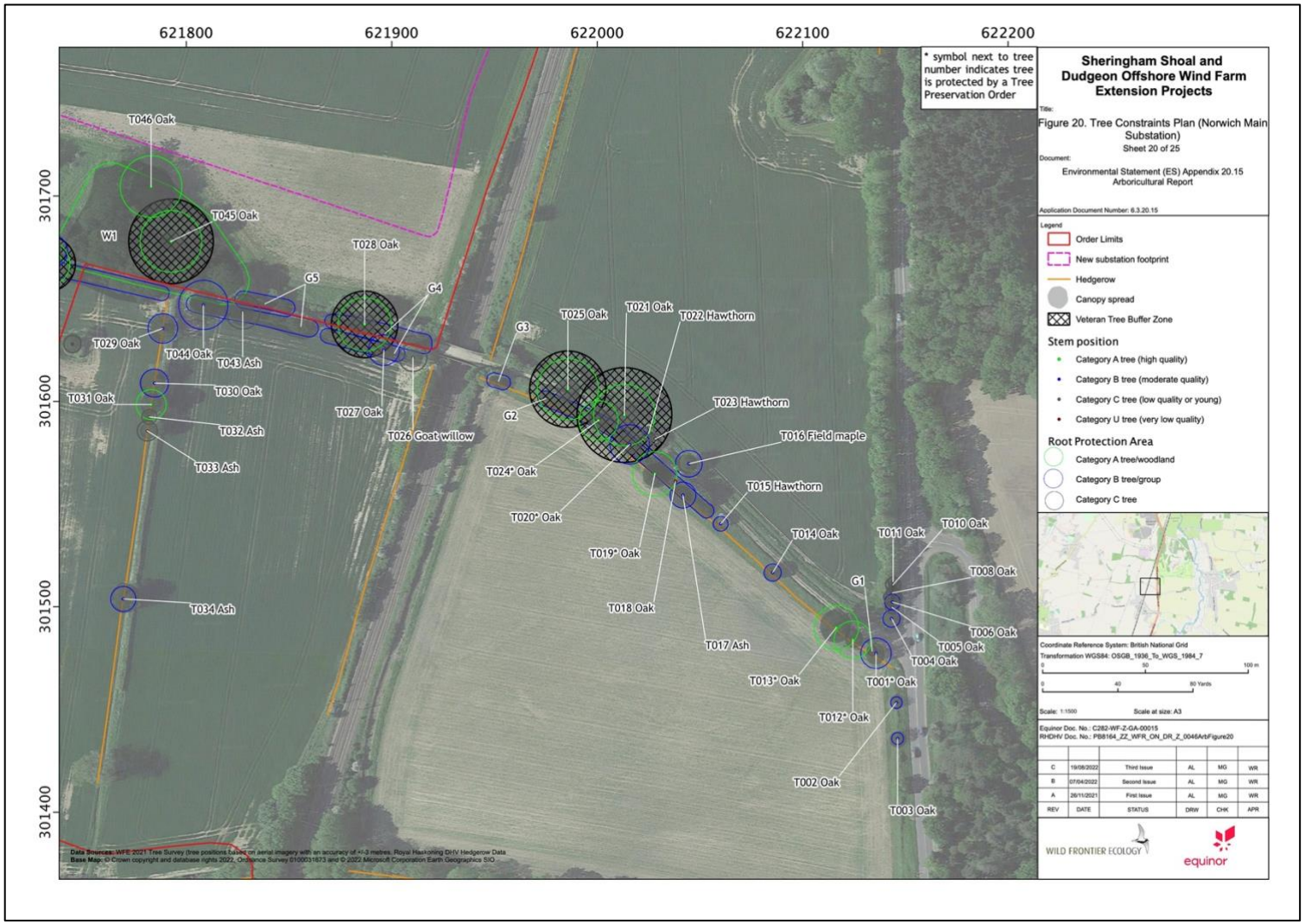


Figure 21: Tree Constraints Plan (Norwich Main Substation)

Figure 22: Tree Constraints Plan (Norwich Main Substation)

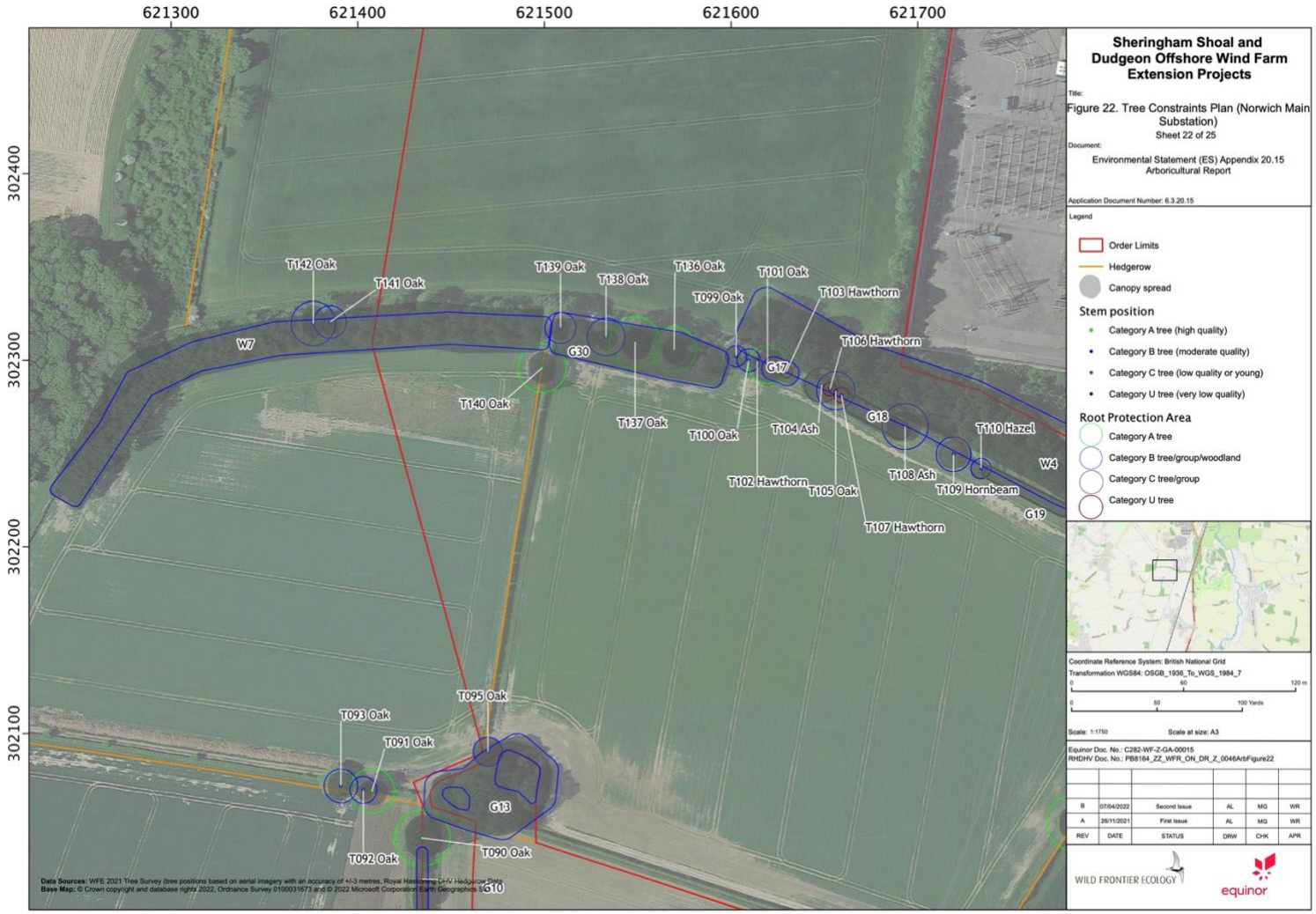


Figure 23: Tree Constraints Plan (Norwich Main Substation)

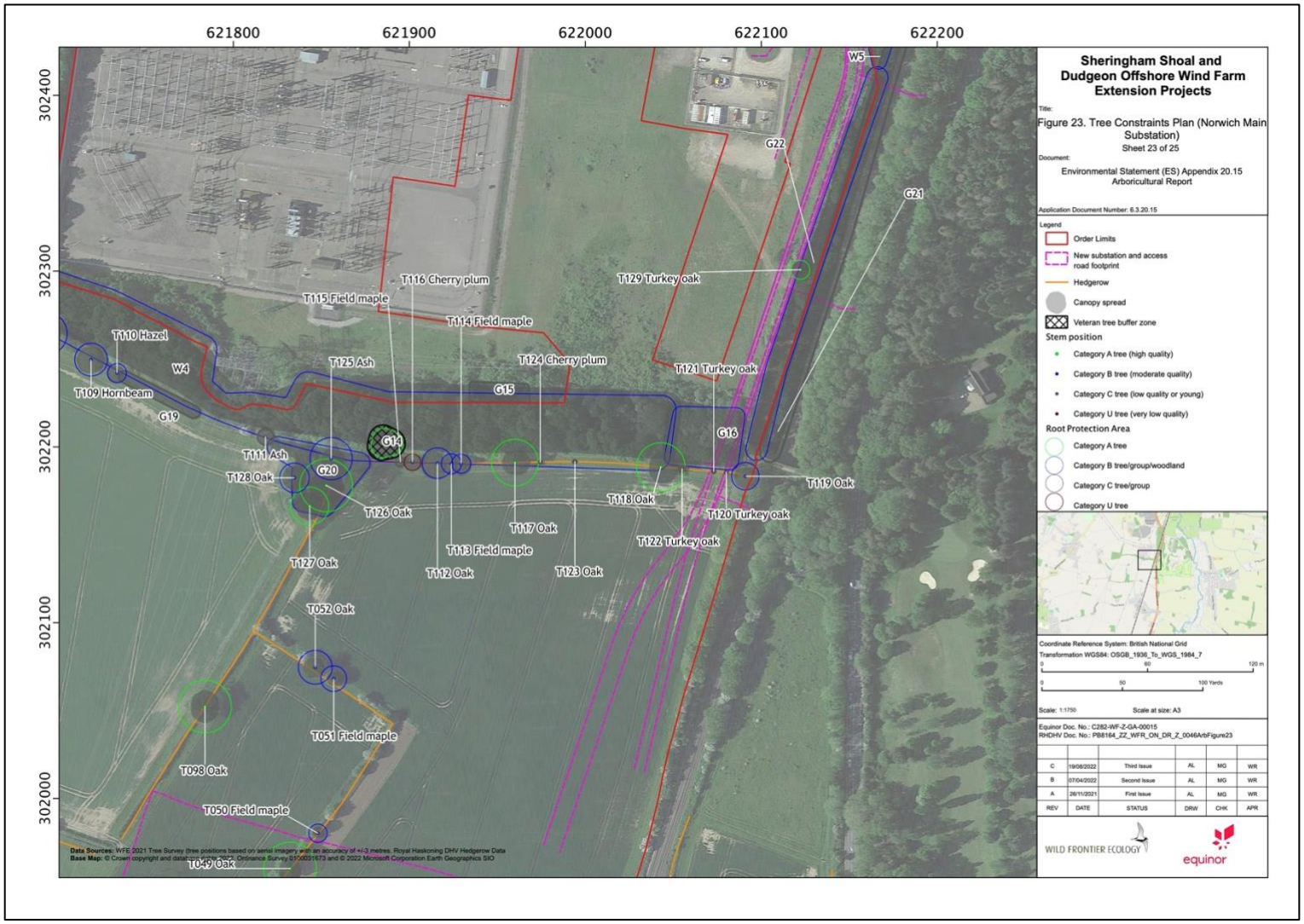


Figure 24: Tree Constraints Plan (Norwich Main Substation)

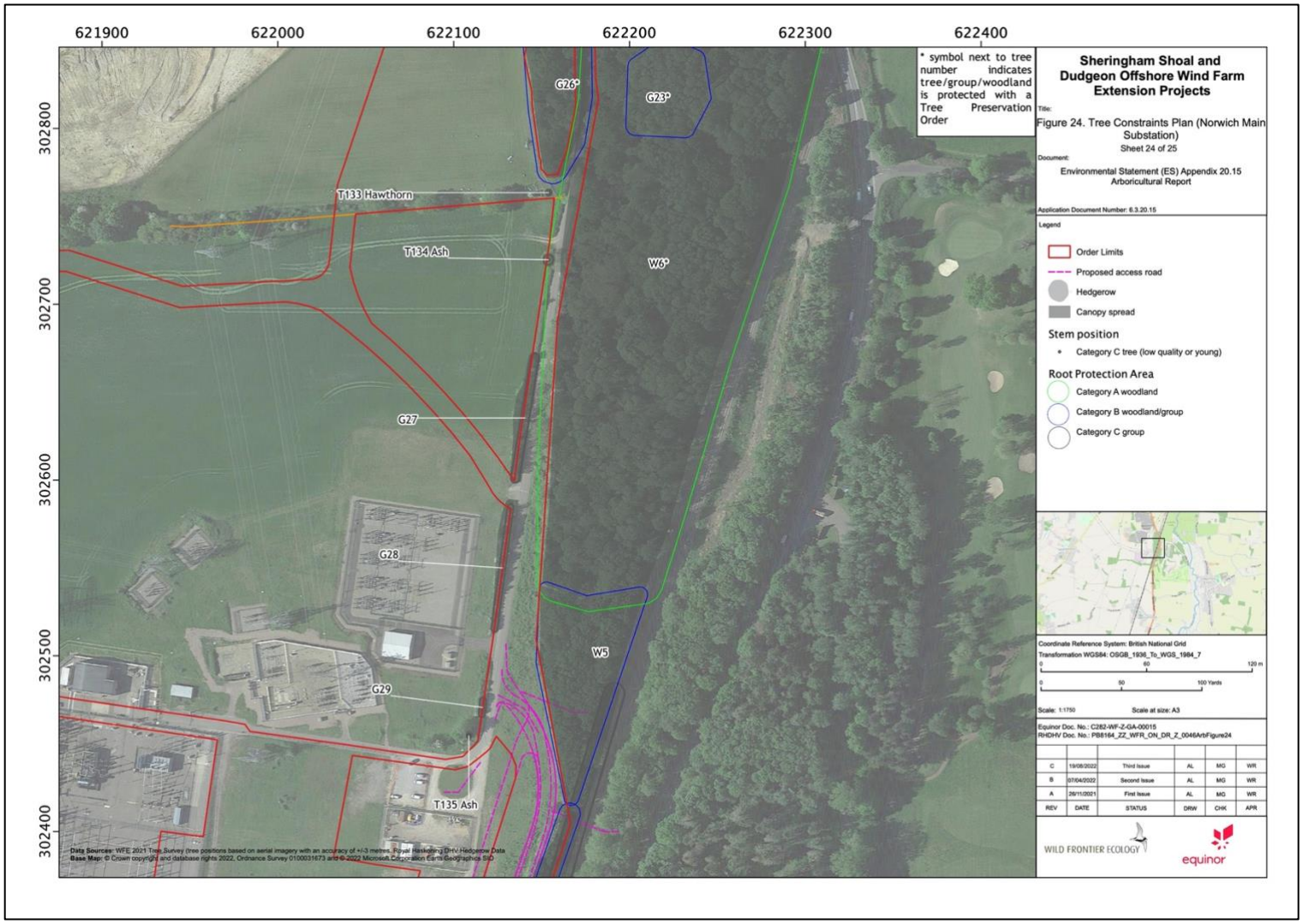
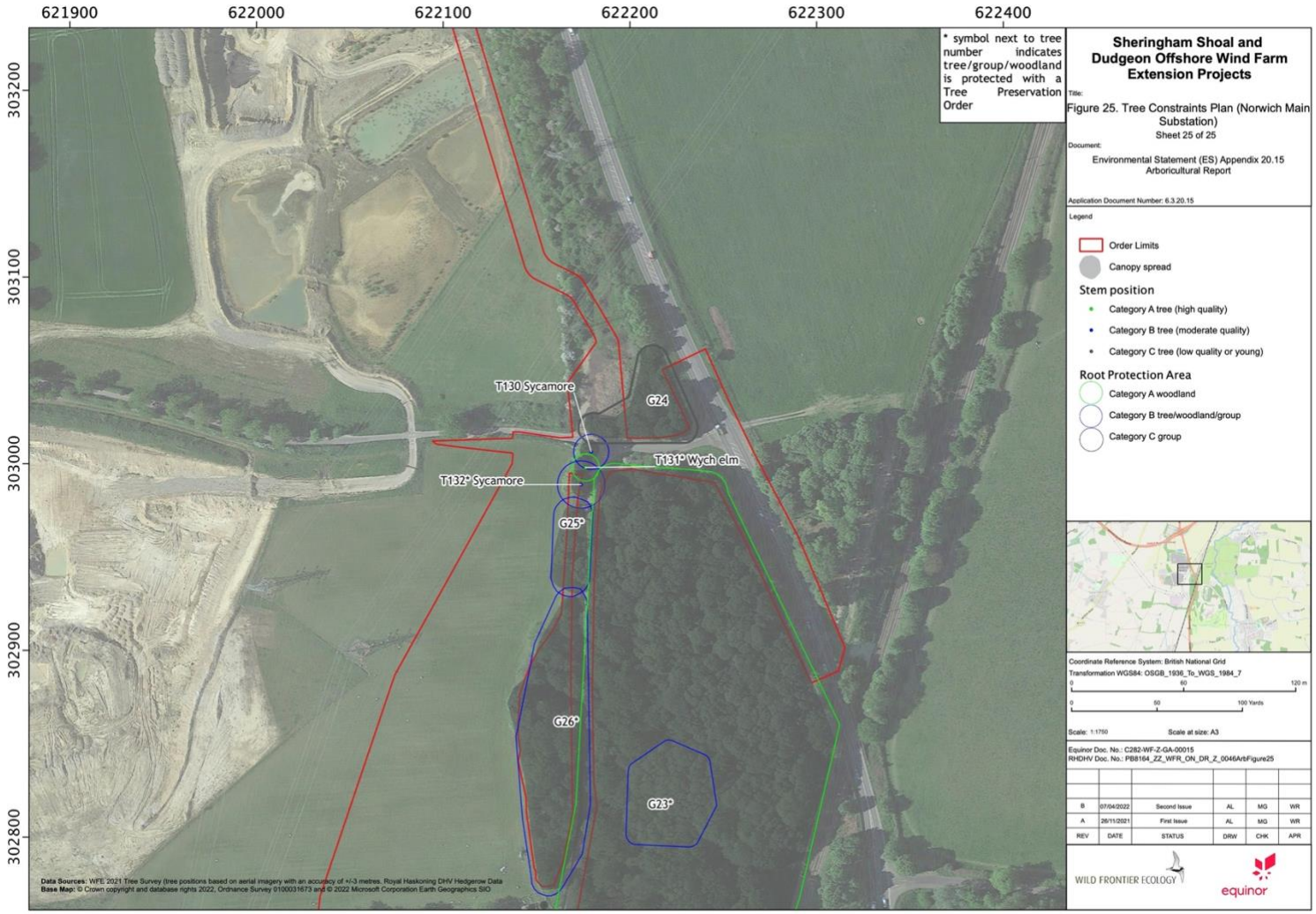


Figure 25: Tree Constraints Plan (Norwich Main Substation)



6 Potential Impacts and Design Recommendations

Whilst this report does not constitute a full arboricultural impact assessment, a number of potential arboricultural impacts can be anticipated at this stage. This section therefore explores some of the potential arboricultural impacts and how they could be avoided, mitigated and compensated for in that order of priority.

6.1 Possible Sources of Arboricultural Impacts

6.1.1 Cable Installation (General)

The installation of the cables will be through a mixture of open cut trenching and trenchless crossing methods such as Horizontal Directional Drilling underneath roads, railways, waterbodies and other selected areas. The DCO boundary is 60m wide where open cut trenching will be used and 100m wide for HDD sections.

For both trenchless and open cut methods, vehicles, machinery and personnel will need to access the DCO boundary and may have to pass near or under trees such as near T159 – 166 (**Figure 6**). Trees with low canopy clearances may need to be pruned to allow vehicles to pass underneath. Extensive pruning of tree canopies can lead to a decrease in the visual amenity value of an individual tree. It would also lead to the creation of wounds that are susceptible to infection by decay pathogens which may then infect other parts of the tree, shortening its overall lifespan.

The passage of machinery within the RPAs of retained trees may lead to soil compaction which may directly crush roots and/or impede the ability of roots to access air and water within the compacted soil. Water stressed trees are more susceptible to pathogens and tree lifespans can be shortened as a result of compaction.

6.1.2 Cable Installation (Open Cut Sections)

Open cut trenching may require the removal of trees and hedgerows within the DCO boundary. This may have an impact on landscape visual amenity and the integrity of habitat corridors. Whilst generally the DCO boundary is 60m wide, at intersections with hedgerows it is expected that the working corridor will be narrowed to approximately 20m to reduce the amount of hedgerow removal. Reduced working corridors could be threaded between individual trees, although this may not always be possible and some trees may need to be removed.

Root damage to retained trees is also possible from trenching close to stems and within RPAs. Excavation within RPAs may damage and sever roots. Root severance can lead to reduced uptake of water and nutrients leading to a decline in tree health. Root wounds can also become infected by decay pathogens leading to a shortening of tree lifespan. Severance of large structural roots (>25mm in diameter) close to a tree's stem can lead to tree instability and the premature removal of a tree on safety grounds.

6.1.3 Cable Installation (Trenchless Crossing Sections)

The main anticipated impact from trenchless crossings at this stage is in Weybourne Woods where a 100m x 50m area of woodland will require clearance for a drill entry/exit compound. Trees will need to be removed and not replaced in situ due to the future need to access this area for maintenance. The majority of the trees in this commercial woodland area (recorded as W9) are Norway spruce, around 60% of which appear to be suffering from great spruce bark beetle *Dendroctonus micans* (suspected) and have already died. More generally along the corridor, trenchless crossings may incur root damage where drill entry and exit points are within the RPAs of trees to be retained. Impacts to trees on Hickling Lane and the bridleway south of the Norwich Main Substation will be avoided by using trenchless crossing techniques.

6.1.4 Substation and Access Road Construction

A new substation will be built south of the existing Norwich Main Substation and north of Hickling Lane. A footprint has been provided and is shown in **Figure 19** to **Figure 21**. T049 oak (a Category A tree with a large stem girth) and a Category B tree T048 field maple would need to be removed for the substation. A new permanent road as well as a temporary construction road will also be needed to connect to the new infrastructure requiring further tree or hedgerow loss. In particular, the bridleway south of Norwich Main Substation will be crossed for a new road and would likely lead to the loss a section of Category B G16 as well as two young Category C Turkey oaks (T120 and T121). Widening of any existing roads near trees may cause root severance and loss, impacting the life expectancy of adjacent trees.

6.1.5 Possible Impacts to Veteran and Ancient Trees

During the site selection and cable routing process, aerial imagery was used to avoid significant trees wherever possible. WFE's ecology work also identified trees with bat roost potential along the entire DCO boundary and these were avoided wherever possible. These steps will have minimised possible impacts to veteran and ancient trees which will often also have bat roost potential. However, to confirm that no ancient/veteran trees will be impacted, mitigation will be required as stated in Table 4 below. This will include a full tree survey of the entire DCO boundary prior to construction to highlight any ancient/veteran trees to avoid and then using micro-siting and HDD to avoid these trees.

Table 4: Summary of Possible Arboricultural Impacts, Mitigation and Compensation Options

Construction Element	Possible Impact	Avoidance Options	Mitigation Options	Compensation Options
Open cut trenching for cables	Removal of trees and hedgerow	Full DCO boundary tree survey prior to construction to plot RPAs. Reduce working corridor to 20m and thread between tree RPAs.	Prioritise the retention of Category A and B trees over Category C and U trees	Replacement tree and hedgerow planting

Construction Element	Possible Impact	Avoidance Options	Mitigation Options	Compensation Options
		Use trenchless crossings – this will done for Hickling Lane		
	Root severance/loss from trenching within RPAs of retained trees	See above	Maximise distance between stem and excavation so only smaller roots are severed (roots taper down in size with distance from tree). Hand digging/air spade excavation within RPAs under Arboriculturist supervision	-
Trenchless crossing methods for cables	Removal of approximately 100m x 50m area of Weybourne Woods (W9 – Category B3)	-	-	Replacement tree planting elsewhere within DCO boundary
	Root severance/loss from trenchless crossings' entry/exit points being situated within RPAs of retained trees	Full tree survey within DCO boundary to plot all RPAs. Ensure trenchless crossings' entry/exit points are at least 15m from the stems of any retained trees and outside of any veteran tree buffer zones	-	-
General work within DCO boundary	Compaction of soil in RPAs from vehicle/pedestrian movements	Ensure all work and vehicle movements avoid unsurfaced ground within RPAs, particularly that of trees protected by a Conservation Area of TPO where root damage would constitute an offence	Use temporary tree protection fencing to prevent access into RPAs. If access is required over RPAs, use suitable ground protection specified by an Arboriculturist within RPAs to prevent soil compaction	-`
	Damage to stems or branches from close-by vehicle movements	Ensure all work and vehicle movements take place away from canopies	Professional tree surgeon to prune small tertiary branches in accordance with BS3998:2010 Tree Work – Recommendations to provide clearance. Protect stems with fencing or Trunk	-

Construction Element	Possible Impact	Avoidance Options	Mitigation Options	Compensation Options
			Protecta® by Green Grid Systems	
Substation and access road construction	Removal of T049 oak and T048 field maple	Locate all new infrastructure outside of RPAs	Prioritise retention of veteran, protected trees and Category A and B trees above Category C and U trees	Replacement tree and hedgerow planting
	New roads to substation, particularly through G16, T120 and T121	Locate all new roads (permanent or temporary construction roads) outside of RPAs	Minimise incursions into RPA. Specify no-dig road constructions where there are significant RPA incursions or use root pruning for more minor RPA incursions	Replacement planting for any removed trees/ hedgerows
All	Impacts to ancient/veteran trees	Full tree survey of whole DCO boundary prior to construction commencing to identify trees to avoid.	Micro-siting of trenching works around identified veteran/ancient trees or HDD under ancient/veteran trees.	None possible – ancient/veteran trees are irreplaceable habitat so avoidance or mitigation is required.

6.2 Principles for Avoiding Arboricultural Impacts

Table 4 above has shown that there is scope for avoiding arboricultural impacts when installing the cables, accessing the DCO boundary and constructing the new substation and access road. The following paragraphs expand on **Table 4** to provide principles to apply in order to avoid arboricultural impacts.

Principle 1: Maximise Tree Retention

Tree Constraints Plans have been provided for the AONB and Norwich Main Substation areas. These should be used to guide working corridors within the DCO boundary and the design of the new substation respectively in a way that maximises tree retention. Further tree surveys are advised (see paragraph 6.5) in the un-surveyed DCO boundary sections to guide working corridors.

Veteran and ancient trees must be prioritised for retention given their weight in the planning process (see paragraph 3.3) and important biodiversity, historical and cultural value. No construction activities should take place within veteran tree buffer zones (see Tree Constraints Plans).

Trees protected by TPO or Conservation Area designations as well as Category A and B trees should be prioritised next for retention, followed by trees in BS5837:2012 categories C and U. Category C trees which have a stem diameter of less than 150mm and good structural and physiological condition (and are therefore young and have future potential) should be prioritised for retention over those trees assessed as Category C due to their limited life expectancy.

Whilst outside the scope of an arboricultural report, it is important to note that tree retention priorities may also be influenced by the presence of a bat roost; see WFE's report titled 6.3.20.10 Bat (Roosting) Survey Report[14].

Principle 2: Avoid Root Impacts

BS5837:2012 paragraph 5.3.1 states that 'the default position should be that structures are located outside the RPAs of trees to be retained'.

In the first instance, it is therefore advised that the cable corridor, vehicle access routes and substation infrastructure are all located outside of the RPAs of retained trees (as informed by the current and pre-construction tree surveys). As in Principle 1, priority should be given to avoiding the RPAs of veteran trees, protected trees and Category A and B trees.

Work compounds during construction must also be sited outside of RPAs.

6.2.3 Avoid Stem/Canopy Impacts

The existing canopy spreads of all the recorded trees can be viewed on the Tree Constraints Plans. In addition, the Tree Survey Schedule in Annex 1 also provides the ground clearance underneath tree canopies and the height and direction of the first major branch.

All works and vehicle routes should be sited outside of tree canopies to avoid the need for pruning, especially where tall vehicles/machinery are needed.

6.3 Preliminary Mitigation and Compensation Options

Where impacts cannot be avoided, mitigation and compensation measures will be required. Detailed mitigation and compensation measures can only be specified in Tree Protection Plans and an Arboricultural Method Statement once a full tree survey and arboricultural impact assessment has been completed. Nevertheless, options for mitigation and compensation have been mentioned in **Table 4** and are expanded on below.

Mitigation options include:

- Temporary tree protection fencing (Heras fencing) around RPAs of trees close to where cable installation or substation/road construction is occurring. This will create a Construction Exclusion Zone around trees preventing vehicles/machinery/materials coming into contact with stems/branches and preventing soil compaction;

- Ground protection over RPAs (where fencing is not feasible) - allowing access for pedestrians and vehicles over RPAs whilst preventing soil compaction. Stems can then be protected from collisions by Trunk Protecta® by Green Grid Systems;

- Hand digging or air spade excavation under the supervision of an Arboriculturist where excavation must take place in RPAs. Maximise the distance between excavation and tree stem to minimise the risk of large roots (>25mm in diameter) being damaged. Prune small roots cleanly to

the edge of the trench using secateurs if required and thread cables under roots;

- If tree canopies prevent the access of tall vehicles/machinery, a professional tree surgeon should be used to prune back small tertiary branches to secondary growth points in accordance with BS3998:2010 Tree Work – Recommendations to achieve the required vertical clearance height. Avoid allowing vehicles to directly come into contact with branches and cause breakages; and

- No-dig hard surfacing (i.e. laid on or above existing ground levels) where proposed new roads will intersect with the RPAs of retained trees. This would require input from an engineer and an Arboriculturist to ensure the road can be built on top of the existing ground level and can bear the weight of the heaviest vehicles anticipated to use the road.

Compensation will consist of:

- Replacement tree and hedgerow planting. It must be noted that the loss of veteran and ancient trees cannot be compensated for by planting new young trees as these are not of equivalent habitat value, hence veteran and ancient trees should always be retained. Replacement of Category A or B trees will require more compensatory planting than Category C or U trees. Importantly, any replacement planting must have appropriate post-planting care to ensure they successfully establish and achieve the intended compensation outcome. Post planting care for 10 years will need to be secured with relevant landholders within the DCO boundary.

6.4 Legal Considerations for Tree Work

Articles 34 and 35 of the Draft DCO (document 3.1) grant authority to the undertakers in terms of the DCO to fell or lop, or cut back the roots of, any tree or shrub within or overhanging land within the Order limits or near any part of the authorised project if the undertaker reasonably believes it to be necessary to do so to prevent the tree or shrub from obstructing or interfering with the construction, maintenance or operation of the authorised project or any apparatus used in connection with the authorised project.

These articles include authority to undertake such works to trees protected by a Tree Preservation Order that are within the Order limits. The authority given by article 35(1) of the Draft DCO (document 3.1) constitutes a deemed consent under the relevant tree preservation order.

Tree removal and potentially significant tree pruning may also affect protected species such as bats. WFE's 6.3.20.10 Bat (Roosting) Survey Report[13] summarises the confirmed bat roosts in trees within the DCO boundary and steps that must be followed to avoid a legal offence in the case where such a tree requires removal. Trees within groups and woodlands (such as W4 and G16 near Norwich Main Substation) have not been surveyed for bats and will need to be checked for bat roosting potential prior to felling.

Nesting birds are also legally protected by the Wildlife and Countryside Act 1981 (as amended) and nests must not be disturbed.

6.5 Further Advised Arboricultural Input

A tree survey within the entire DCO boundary will be needed prior to work on the onshore cables commencing.

Once the tree survey has been complete, and full details are available on the layout of the new substation and where the working corridor for the onshore cables can be threaded between trees, an arboricultural impact assessment can be completed.

The impact assessment can then inform an Arboricultural Method Statement and Tree Protection Plans for areas where work will be taking place close to trees and mitigation is required. These elements could be incorporated into a wider Construction Environmental Management Plan. These two documents will detail specifications for tree protection measures such as temporary tree protection fencing and ground protection and show where they are needed. It will show when and where arboricultural supervision may be required, and how any specialist construction methods within RPAs will be undertaken.

The impact assessment can also inform compensation requirements, including the location, quantity, species, size and after-care of replacement tree and hedgerow planting.

Annex 1. Tree Survey Schedule

~ symbol indicates where an estimation has been made. N/A = not available. * = tree protected with a Tree Preservation Order.

Tree Reference	Common Name	Scientific Name	Height (m)	Canopy spread (m)				Ground Clearance (m)	Height and Direction of First Branch (m)	Stem Diameter (mm)	Age Class	Structural Condition	Physiological Condition	Estimated Remaining Contribution (years)	BS5837:2012 Category	Root Protection Area (m^2)	Root Protection Area radius (m)	Veteran Tree Buffer Radius (m)	Comments
				N	E	S	W												
T001*	Oak	*Quercus robur*	9.5	5	4	5.5	5	1.5	2:NE	620	Semi Mature	Good	Fair	40+	B2	174	7.4	0.0	Dead section cut ivy. Minor deadwood in crown. *Protected by a Tree Preservation Order
T002	Oak	*Quercus robur*	6.5	4	~3	3.5	3	1	2.5:N	230	Semi Mature	Good	Good	40+	B2	24	2.8	0.0	
T003	Oak	*Quercus robur*	8.5	3.5	~4.5	4.5	4	0	2:NW	240	Semi Mature	Good	Good	40+	B2	26	2.9	0.0	
T004	Oak	*Quercus robur*	8	4	4.5	4.5	4.5	0	1.5:S	350	Semi Mature	Good	Good	40+	B2	55	4.2	0.0	
T005	Oak	*Quercus robur*	6.5	~2	4	3	4	0	1:S	270	Semi Mature	Fair	Good	40+	C3	33	3.2	0.0	
T006	Oak	*Quercus robur*	10	0	~4	4	4	0	1:S	320	Semi Mature	Good	Good	40+	B2	46	3.8	0.0	Supressed by T007, growing to the south.
T007	Oak	*Quercus robur*	10	3	~5	4	5	3	3:E	350	Semi Mature	N/A	Fair	20-40	C2	55	4.2	0.0	Minor deadwood throughout crown leaves eaten.
T008	Oak	*Quercus robur*	8.5	2.5	~4.5	1.5	3	1.5	1:W	~248 combined	Semi Mature	Fair	Fair	20-40	C2	28	3.0	0.0	Supressed and multi stem.
T009	Field maple	*Acer campestre*	8	1	~2	2	3	0	N/A	~150 combined	Semi Mature	Fair	Good	20-40	C2	10	1.8	0.0	Dead stem

Tree Reference	Common Name	Scientific Name	Height (m)	Canopy spread (m)				Ground Clearance (m)	Height and Direction of First Branch (m)	Stem Diameter (mm)	Age Class	Structural Condition	Physiological Condition	Estimated Remaining Contribution (years)	BS5837:2012 Category	Root Protection Area (m^2)	Root Protection Area radius (m)	Veteran Tree Buffer Radius (m)	Comments
				N	E	S	W												
T010	Oak	*Quercus robur*	8.5	1	~3.5	~2	2.5	0	N/A	~300 combined	Semi Mature	Fair	Good	20-40	C2	41	3.6	0.0	Supressed
T011	Oak	*Quercus robur*	8.5	2.5	~1	2	3	0	1:N	200	Semi Mature	N/A	Good	40+	C2	18	2.4	0.0	Ivy on stem.
T012*	Oak	*Quercus robur*	15.5	5.5	5	4	3.5	3	3.5:W	760	Early mature	Fair	Good	40+	A2	261	9.1	0.0	Some minor decay at base, and large branch broken to south. *Protected by a Tree Preservation Order
T013*	Oak	*Quercus robur*	16	9	7	7.5	8	3	2.5:S	900	Early mature	Fair	Good	40+	A2+3	366	10.8	0.0	Bat roost potential, two areas of bark exudation, stem wounds at 5m east, minor deadwood in crown. *Protected by a Tree Preservation Order
T014	Oak	*Quercus robur*	7.5	3.5	4	4.5	4.5	0	1.5:S	350	Semi Mature	Fair	Good	40+	B3	55	4.2	0.0	Twisted at base.
T015	Hawthorn	*Crataegus monogyna*	4	~3	4	~3	4.5	0	N/A	300	Mature	N/A	Good	20-40	B3	41	3.6	0.0	
T016	Field maple	*Acer campestre*	10.5	~4.5	4	4.5	6	0	N/A	~542 combined	Mature	Fair	Good	20-40	B3	133	6.5	0.0	Multi stem at base.
T017	Ash	*Fraxinus excelsior*	14	~4.5	4	6.5	6	2.5	2:W	523 combined	Early mature	N/A	Good	20-40	B3	124	6.3	0.0	Ivy on stem, twin stem at 1m. Fungal bracket at 1m.

Tree Reference	Common Name	Scientific Name	Height (m)	Canopy spread (m)				Ground Clearance (m)	Height and Direction of First Branch (m)	Stem Diameter (mm)	Age Class	Structural Condition	Physiological Condition	Estimated Remaining Contribution (years)	BS5837:2012 Category	Root Protection Area (m^2)	Root Protection Area radius (m)	Veteran Tree Buffer Radius (m)	Comments
				N	E	S	W												
T018	Oak	*Quercus robur*	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Dead	N/A	N/A	N/A	U	0	0.0	0.0	Good habitat value.
T019*	Oak	*Quercus robur*	15.5	~5	8	6.5	6	1.5	4:W	900	Early mature	N/A	Good	40+	A2	366	10.8	0.0	Ivy on stem. *Protected by a Tree Preservation Order
T020*	Oak	*Quercus robur*	14	7	~6	4.5	~6	4	4:E	~800	Early mature	N/A	Fair	40+	B2	290	9.6	0.0	Canopy thin. *Protected by a Tree Preservation Order
T021	Oak	*Quercus robur*	12	~7	7	7.5	7	0.5	2:W	1540	Veteran	Fair	Good	40+	A3	707	15.0	23.1	Pollard form. Big branch over the path and hollow inside containing beefsteak fungus.
T022	Hawthorn	*Crataegus monogyna*	4.5	~3	3.5	2	3.5	0	N/A	~264 combined	Early mature	Fair	Good	20-40	C3	32	3.2	0.0	Multistem, ivy on stem.
T023	Hawthorn	*Crataegus monogyna*	4.5	2.5	1.5	1	3	0	N/A	~212 combined	Semi Mature	Fair	Fair	20-40	C3	20	2.5	0.0	Ivy on stem, multistem decay at base.
T024*	Oak	*Quercus robur*	9.5	6.5	6	5	5	1	1.5:S	~800	Early mature	Fair	Good	40+	A3	290	9.6	0.0	Cavity at 2.5m. *Protected by a Tree Preservation Order
T025	Oak	*Quercus robur*	7.5	5	6	6.5	6	0	4:SW	1240	Mature and Veteran	Fair	Good	40+	A3	696	14.9	18.6	Stag headed, beefsteak fungus *Fistulina hepatica* and other decay species. Signs of

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				N	E	S	W												
																			hollowing, and standing and fallen deadwood.
T026	Goat willow	*Salix caprea*	9.5	4	~5	5	5	1	N/A	564 combined	Mature	Fair	Good	20-40	C3	144	6.8	0.0	Multistem
T027	Oak	*Quercus robur*	9.5	4.5	4.5	~7	5	0	1.5:S	626 combined	Semi Mature	Fair	Good	40+	B3	177	7.5	0.0	Hollow twin stem. Beefsteak fungus present.
T028	Oak	*Quercus robur*	12	6.5	5.5	5	8	1	3:E	1080	Mature and Veteran	Fair	Good	40+	A3	528	13.0	16.2	Hollow
T029	Oak	*Quercus robur*	14.5	7	~6	7	6	4	4:S	600	Early mature	N/A	Poor	20-40	B3	163	7.2	0.0	Ivy on stem, in hedgerow. Canopy thin.
T030	Oak	*Quercus robur*	14	7	~5	7	7.5	4	4:S	570	Early mature	N/A	Poor	20-40	B3	147	6.8	0.0	Ivy on stem, in hedgerow. Canopy thin.
T031	Oak	*Quercus robur*	14	5.5	5	5	5.5	3.5	4.5:E	610	Early mature	N/A	Good	40+	A2	168	7.3	0.0	Ivy on stem, tree in hedgerow.
T032	Ash	*Fraxinus excelsior*	11	3	~3	3	3	5	N/A	~300 combined	Semi Mature	N/A	Fair	10-20	C2	41	3.6	0.0	<25% ash dieback, ivy on stem, tree in hedge. Multistem.
T033	Ash	*Fraxinus excelsior*	12	4	~4.5	4	3.5	4	N/A	~406 combined	Semi Mature	N/A	Fair	10-20	C2	75	4.9	0.0	<25% ash dieback, ivy on stem, tree in hedge. Multistem.

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				N	E	S	W												
T034	Ash	*Fraxinus excelsior*	15	8	8	7	5	5	4:S	~505 combined	Early mature	N/A	Good	40+	B2	115	6.1	0.0	Multistem at the base, ivy on stem and tree in hedge.
T035	Ash	*Fraxinus excelsior*	10.5	5.5	4.5	4	4.5	2	2.5:W	350	Semi Mature	Good	Good	10-20	C2	55	4.2	0.0	
T036	Oak	*Quercus robur*	10	~7	5.5	8	6.5	5	2.5:N	650	Early mature	Good	Good	40+	A2	191	7.8	0.0	Cavity at base, beefsteak fungus.
T037	Oak	*Quercus robur*	10.5	6.5	6.5	4.5	5	0	2:S	950	Early mature	Good	Fair	40+	B2	408	11.4	0.0	Ivy on stem, canopy slightly thin.
T038	Oak	*Quercus robur*	13.5	5	6.5	6.5	6.5	0	3:S	1390	Mature	Fair	Fair	40+	A2	707	15.0	0.0	Deadwood throughout canopy, cavity at 2 meters.
T039	Oak	*Quercus robur*	10.5	5.5	~6	6	6	5	N/A	~430 combined	Early mature	N/A	Good	40+	A2	84	5.2	0.0	Twin stem.
T040	Oak	*Quercus robur*	8.5	4	~5	7.5	6.5	4	3:N	1100	Mature	Good	Good	40+	A2	547	13.2	0.0	Cavity at base.
T041	Oak	*Quercus robur*	17	8.5	9	7.5	8	5	2:S	1200	Mature	N/A	Good	40+	A2	651	14.4	0.0	Ivy covering base of tree.
T042	Ash	*Fraxinus excelsior*	12.5	8	7.5	6	7.5	4.5	N/A	~877 combined	Mature	Poor	Fair	20-40	B2	348	10.5	0.0	Multistem cavities where stems join.
T043	Ash	*Fraxinus excelsior*	13	8	5	~7	6.5	4	3:N	700	Early mature	Fair	Fair	10-20	C2	222	8.4	0.0	Decay at base, ash dieback present.
T044	Oak	*Quercus robur*	12.5	7.5	8	8.5	6.5	5	3:N	1000	Early mature	N/A	Good	40+	B2	452	12.0	0.0	Ivy on stem.
T045	Oak	*Quercus robur*	20	5.5	6.5	3.5	5	6	6:S	1370	Mature and Veteran	Poor	Good	40+	A3	707	15.0	20.6	Hollow, deadwood and decay. Fungal bracket in hollow,

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				N	E	S	W												
																			deadwood in crown.
T046	Oak	*Quercus robur*	18	10	11	15	9.5	1	4:S	1500	Mature	Good	Good	40+	A2	707	15.0	0.0	Ivy on stem, Open grown tree.
T047	Oak	*Quercus robur*	12	7.5	6.5	8	6	3	3:S	540	Semi Mature	Good	Good	40+	A2	132	6.5	0.0	
T048	Field maple	*Acer campestre*	11.5	5	6	5	5	5	N/A	598 combined	Mature	Fair	Good	40+	B2	162	7.2	0.0	Multistem, tight union with included bark.
T049	Oak	*Quercus robur*	12.4	6	6	8.5	6	0	4:W	1900	Mature	N/A	Good	40+	A3	707	15.0	0.0	Ivy on stem.
T050	Field maple	*Acer campestre*	11.5	4	~4	~2.5	3	0	N/A	~437 combined	Mature	Fair	Good	20-40	B2	86	5.2	0.0	In hedgerow, multistem.
T051	Field maple	*Acer campestre*	10	4	6	4	4	1	N/A	~607 combined	Mature	Fair	Good	40+	B3	167	7.3	0.0	Flailed, part of hedgerow, multistem.
T052	Oak	*Quercus robur*	12.5	5.5	5.5	6	7	0	N/A	~800	Early mature	N/A	Fair	40+	B2	290	9.6	0.0	Flailed, part of hedgerow, ivy, deadwood present and canopy a little thin.
T053	Ash	*Fraxinus excelsior*	21	9.5	4	7	6	3	0.5:S	~688 combined	Early mature	Fair	Good	40+	B2	214	8.3	0.0	Multistem, ivy.
T054	Field maple	*Acer campestre*	11.9	5	4	~3	2.5	4	2:N	340	Over mature	Poor	Poor	10-20	C3	52	4.1	0.0	Decayed at base, leaning east, Ivy.
T055	Field maple	*Acer campestre*	16.5	5.5	5	2	6	1	N/A	480 combined	Mature	Fair	Good	20-40	B3	104	5.8	0.0	Multistem
T056	Hazel	*Corylus avellana*	9	4	4	6	6	0	N/A	~500	Mature	Fair	Good	20-40	B3	113	6.0	0.0	Coppice form.

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				N	E	S	W												
T057	Ash	*Fraxinus excelsior*	15.5	4	7	4.5	1.5	6	N/A	~900	Veteran	Poor	Poor	10-20	A3	366	10.8	13.5	Ivy, 50% ash dieback, hollow.
T058	Oak	*Quercus robur*	17.5	4.5	6	6	6	4	4:W	540	Semi Mature	Good	Good	40+	B2	132	6.5	0.0	
T059	Ash	*Fraxinus excelsior*	16.8	8	4.5	~5	4	7	N/A	438 combined	Semi Mature	Fair	Fair	10-20	C2	87	5.3	0.0	Multistem at base, deadwood in stem.
T060	Ash	*Fraxinus excelsior*	~17	3.1	4	6	1	10	N/A	194 combined	Semi Mature	Fair	Fair	10-20	C2	17	2.3	0.0	Twin stem lots of deadwood, thin canopy.
T061	Ash	*Fraxinus excelsior*	20	8	5.5	~8	4	6	6:S	470	Semi Mature	N/A	Good	20-40	B2	100	5.6	0.0	Ivy
T062	Oak	*Quercus robur*	15.7	7	9	5.5	8	2.5	4:S	1120	Mature and Veteran	Poor	Good	40+	A3	567	13.4	16.8	Lightning strike, ivy, hollowing, deadwood on ground.
T063	Oak	*Quercus robur*	18.3	4.5	6	8	6	4	4:E	900	Early mature	N/A	Good	40+	A2	366	10.8	0.0	Ivy
T064	Oak	*Quercus robur*	18.2	6.5	8.5	7	6	2.5	4.5:NW	1100	Mature	N/A	Good	40+	A2	547	13.2	0.0	Dead ivy and lots of bramble, thick burring.
T065	Oak	*Quercus robur*	11	3	5.5	7.5	7	2.5	2:N	1600	Mature and Veteran	Fair	Good	40+	A3	707	15.0	24.0	Hollow.
T066	Ash	*Fraxinus excelsior*	13	3	~1	5.5	5	~8	3:W	631	Semi mature and Veteran	Poor	Good	20-40	A3	180	7.6	9.5	Hollow; signs of nests inside stem.
T067	Oak	*Quercus robur*	15	1	8	8	5.5	3.5	3:W	570	Semi Mature	Good	Good	40+	B2	147	6.8	0.0	Ivy
T068	Oak	*Quercus robur*	16	4	4.5	9.5	5	5	5:S	600	Semi Mature	Good	Good	40+	B2	163	7.2	0.0	

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				N	E	S	W												
T069	Oak	*Quercus robur*	17	1	4	~8	6	4	4.5:W	550	Semi Mature	Good	Good	40+	B2	137	6.6	0.0	Ivy on stem, crown suppressed to the north.
T070	Oak	*Quercus robur*	~15	0	1	6.5	4.5	8	8:S	420	Semi Mature	Fair	Fair	20-40	B2	80	5.0	0.0	Very close to path, suppressed to the north.
T071	Ash	*Fraxinus excelsior*	~18	4.5	5	4.5	4	~10	8:N	440	Semi Mature	Good	Good	40+	B2	88	5.3	0.0	On path.
T072	Oak	*Quercus robur*	~18	5.5	5.5	6.5	3	6	6:S	530	Semi Mature	Good	Good	40+	B2	127	6.4	0.0	On path; exposed and damaged roots on path.
T073	Oak	*Quercus robur*	~20	2.5	5.5	6.5	3.5	13	10:S	480	Semi Mature	Good	Good	40+	B2	104	5.8	0.0	Root damage next to path, minor damage.
T074	Hornbeam	*Carpinus betulus*	20	7	7.5	9	6.5	2	N/A	567 combined	Early Mature	Fair	Good	40+	B2	145	6.8	0.0	Multi-stem coppice form. Path to north and pond to south.
T075	Oak	*Quercus robur*	15.5	5.5	5.5	6	4	~10	6:NE	460	Semi Mature	Good	Fair	40+	B2	96	5.5	0.0	
T076	Oak	*Quercus robur*	18	6	5.5	~8	~8	~8	7:NW	678 combined	Semi Mature	Fair	Good	40+	B2	208	8.1	0.0	Triple stem, tight union with included bark.
T077	Oak	*Quercus robur*	~20	6.5	2	3	6.5	7	7:N	550	Semi Mature	Good	Good	40+	B2	137	6.6	0.0	
T078	Oak	*Quercus robur*	~18	5	4.5	~10	4	5	5:S	490	Semi Mature	Fair	Fair	20-40	C2	109	5.9	0.0	Basal cavity at south side; 1.5m long cavity.
T079	Oak	*Quercus robur*	~12	0	1	8.5	3	0	5.5:S	410	Semi Mature	Fair	Fair	40+	B2	76	4.9	0.0	Convoluted top, suppressed.

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				N	E	S	W												
T080	Oak	*Quercus robur*	21	8	6	2	3	5.5	5.5:N	430	Semi Mature	Good	Fair	20-40	B2	84	5.2	0.0	Ivy on stem, suppressed, epicormic growth, leaves eaten.
T081	Oak	*Quercus robur*	12	2	0	~6	4	8	7:S	400	Semi Mature	Fair	Fair	20-40	B3	72	4.8	0.0	Ivy on stem; abundant deadwood in canopy, suppressed with little foliage.
T082	Ash	*Fraxinus excelsior*	~22	9	6.5	7.5	7.5	6	N/A	895 combined	Mature	Fair	Fair	10-20	C2	362	10.7	0.0	Multistem, ash dieback likely present, *Inonotus hispidus* bracket on ground beside tree, ivy on stem.
T083	Oak	*Quercus robur*	15	5	6	~5	4	5	5:S	450	Semi Mature	Fair	Fair	20-40	B3	92	5.4	0.0	Ivy on stem, crack and decay on stem to north.
T084	Oak	*Quercus robur*	20	~5	7	3	7.5	6	4.5:E	600	Semi Mature	Good	Fair	40+	B2	163	7.2	0.0	
T085	Ash	*Fraxinus excelsior*	~18	3	~4	8	~7	4	4.5:S	515 combined	Semi Mature	Good	Fair	10-20	C2	120	6.2	0.0	Canopy thin, multistem.
T086	Field maple, Ash		14	8	5	5.5	4	1.5	N/A	728 combined	Mature	Fair	Good	20-40	B3	240	8.7	0.0	All grown together as a coppice.
T087	Ash	*Fraxinus excelsior*	18.5	9	4.5	8.5	4	N/A	N/A	691 combined	Early Mature	Fair	Fair	20-40	B3	216	8.3	0.0	Four stems at base, next to a ditch.
T088	Ash	*Fraxinus excelsior*	18.5	6	0	6.5	5	16	N/A	475 combined	Semi Mature	Fair	Fair	20-40	B3	102	5.7	0.0	Next to ditch, four stems

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				N	E	S	W												
T089	Oak	*Quercus robur*	14.5	4.5	3	4.5	7	5	3:S	472 combined	Semi Mature	Fair	Good	20-40	B3	101	5.7	0.0	Right next to path, cavity in branch to the north, two stems.
T090	Oak	*Quercus robur*	19	12.5	11	11.5	8.5	0	6:E	1470	Mature	Good	Good	40+	A1	707	15.0	0.0	Fox den at base.
T091	Oak	*Quercus robur*	17.5	6	8.5	8	7	4	4:W	1000	Early Mature	N/A	Fair	40+	A2	452	12.0	0.0	Deadwood in crown. Ivy on stem.
T092	Oak	*Quercus robur*	11	1	5.5	5.5	3.5	4	4:W	600	Early Mature	N/A	Good	40+	B3	163	7.2	0.0	Ivy on stem, possible lightning strike.
T093	Oak	*Quercus robur*	13	8	7	8	7	5	2.5:W	~750	Early Mature	N/A	Good	40+	B2	254	9.0	0.0	Ivy on stem.
T094	Oak	*Quercus robur*	16	3.5	6.5	6	9	2	4:W	560	Semi Mature	Good	Good	40+	B2	142	6.7	0.0	Ditch to the east.
T095	Oak	*Quercus robur*	18	7.5	9	8	8	4	4:E	650	Semi Mature	N/A	Good	40+	B2	191	7.8	0.0	
T096	Oak	*Quercus robur*	10	~4	6.5	~4	6	5	N/A	~250 combined	Semi Mature	Fair	Fair	10-20	C2	28	3.0	0.0	Very early ash dieback. 8 x ash stems on ditch edge.
T097	Sycamore	*Acer pseudoplatanus*	10	~4	~4	~4	~3	4	N/A	~491 combined	Semi Mature	N/A	Good	40+	C2	109	5.9	0.0	Growing on south side of ditch, can't access stem, 3 stems.
T098	Oak	*Quercus robur*	15	9.5	8	9.5	8	4	3:S	1300	Mature	Good	Fair	40+	A2	707	15.0	0.0	Canopy a bit thin, Ivy on stem, deadwood in crown.

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				N	E	S	W												
T099	Oak	*Quercus robur*	13.5	5	0	7	5	1	1:W	470	Semi Mature	Fair	Good	40+	B2	100	5.6	0.0	Cavity in base, pair with T100.
T100	Oak	*Quercus robur*	13.5	4	2	7	3.5	4	4:E	514 combined	Semi Mature	Fair	Good	40+	B2	120	6.2	0.0	Twin stem, cavity in base.
T101	Oak	*Quercus robur*	20	~8	9.5	11.5	6.5	0	2:S	850	Early mature	Good	Good	40+	A2	327	10.2	0.0	
T102	Hawthorn	*Crataegus monogyna*	4	2.5	3	1	1	0	N/A	143 combined	Semi Mature	Fair	Poor	10-20	C3	9	1.7	0.0	Multistem
T103	Hawthorn	*Crataegus monogyna*	4	~2	~2	~2	~2	N/A	N/A	~271 combined	Semi Mature	Poor	Poor	<10	U	33	3.3	0.0	Almost dead, multistem.
T104	Ash	*Fraxinus excelsior*	15	5.5	7	9	11	0	N/A	763 combined	Semi Mature	Fair	Poor	10-20	C2	263	9.2	0.0	Thin, multistem, coppice form at base, 50% ash dieback.
T105	Oak	*Quercus robur*	16	5	9.5	8	8.5	1	N/A	849 combined	Semi Mature	Fair	Fair	20-40	B2	326	10.2	0.0	Multistem, lots of epicormic growth.
T106	Hawthorn	*Crataegus monogyna*	~5	2	~3	1.5	~3	N/A	N/A	~300 combined	Early Mature	Poor	Poor	<10	U	41	3.6	0.0	Multistem
T107	Hawthorn	*Crataegus monogyna*	7	5	4	2	3.5	0	N/A	~338 combined	Mature	Poor	Poor	<10	U	52	4.1	0.0	Multistem
T108	Ash	*Fraxinus excelsior*	18	~8	9	~8	10	N/A	N/A	~1023 combined	Early Mature	Fair	Fair	20-40	B2	473	12.3	0.0	Multistem, early ash dieback, eaten leaves and fungus on base.
T109	Hornbeam	*Carpinus betulus*	13.5	7.5	8	~8	8.5	0	N/A	775	Mature	Fair	Fair	40+	B3	272	9.3	0.0	Lots of decay at base.
T110	Hazel	*Corylus avellana*	6.5	4.5	4	~6	6	0	N/A	~450 combined	Mature	Fair	Good	20-40	B3	92	5.4	0.0	Multistem form.
T111	Ash	*Fraxinus excelsior*	13	6	6	5.5	4	3	N/A	381 combined	Semi Mature	N/A	Good	10-20	C2	66	4.6	0.0	Multistem

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				N	E	S	W												
T112	Oak	*Quercus robur*	17	6	3.5	9.5	10	5	N/A	726 combined	Semi Mature	Fair	Good	40+	B2	238	8.7	0.0	Multistem
T113	Field maple	*Acer campestre*	10.5	6	0	7	4	N/A	N/A	476 combined	Early Mature	Fair	Good	40+	B3	103	5.7	0.0	Grown as pair with T114, multistem.
T114	Field maple	*Acer campestre*	10.5	5	6	~7	~4	N/A	N/A	449 combined	Early Mature	Fair	Good	40+	B3	91	5.4	0.0	Grown as pair with T113, multistem.
T115	Field maple	*Acer campestre*	8	3	4	3	3	N/A	N/A	223 combined	Semi Mature	Fair	Good	40+	C2	22	2.7	0.0	Multistem
T116	Cherry plum	*Prunus cerasifera*	7	~3	7	~4	6	0	N/A	393 combined	Over Mature	Poor	Poor	<10	U	70	4.7	0.0	Multistem
T117	Oak	*Quercus robur*	19	7	9	7	7.5	0	3:N	1110	Mature	Good	Good	40+	A2	557	13.3	0.0	
T118	Oak	*Quercus robur*	18	~8.5	10.5	9.5	6	1	4:N	1150	Mature	Good	Good	40+	A2	598	13.8	0.0	Cavity at base.
T119	Oak	*Quercus robur*	10.5	4.5	7.5	7	6.5	N/A	4:N	650	Early Mature	N/A	Fair	40+	B2	191	7.8	0.0	Lots of deadwood to the north.
T120	Turkey oak	*Quercus cerris*	4	~1.5	~1.5	~1.5	~1.5	0.5	0.5:E	80	Young	Good	Good	40+	C2	3	1.0	0.0	
T121	Turkey oak	*Quercus cerris*	4	~1.5	~2	~1.5	~2	0	1.5:E	90	Young	Good	Good	40+	C2	4	1.1	0.0	
T122	Turkey oak	*Quercus cerris*	9	2.5	4	~2.5	3	0	1.5:E	150	Young	Good	Good	40+	C2	10	1.8	0.0	
T123	Oak	*Quercus robur*	4	~1.5	~2	~1.5	~2	0.5	0.5:E	90	Young	Fair	Fair	20-40	C2	4	1.1	0.0	Canopy suppressed by neighbours.
T124	Cherry plum	*Prunus cerasifera*	3.5	~1.5	~2.5	~1.5	~1.5	0	N/A	78 combined	Semi Mature	Good	Good	20-40	C2	3	0.9	0.0	Multistem
T125	Ash	*Fraxinus excelsior*	~20	6	~8	~8	5	7	7:N	1000	Mature	N/A	Fair	20-40	B2	452	12.0	0.0	Ivy on stem, canopy thin.
T126	Oak	*Quercus robur*	15	7.5	10	~10	10	4	2:NE	1260	Mature	Good	Good	40+	A2	707	15.0	0.0	Ivy on stem.
T127	Oak	*Quercus robur*	~18	~8	~8	~8	~8	5	3:W	900	Early Mature	Good	Good	40+	A2	366	10.8	0.0	

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				N	E	S	W												
T128	Oak	*Quercus robur*	16.5	7	~7	~7	7	4	5:W	700	Early Mature	Good	Fair	40+	B2	222	8.4	0.0	Canopy thin, lots of deadwood + ivy.
T129	Turkey oak	*Quercus cerris*	16.5	5.5	~7	6	5	3.5	4:N	450	Semi Mature	Good	Good	40+	A2	92	5.4	0.0	Just north of path.
T130	Sycamore	*Acer pseudoplatanus*	15.5	6.5	4	3	6	0	N/A	782 combined	Early mature	Fair	Good	40+	B2	277	9.4	0.0	Multistem, tar spot.
T131*	Wych elm	*Ulmus sp(p)*	17	6.5	4	3	6	0	3.5:W	610	Early mature	Good	Good	40+	A1	168	7.3	0.0	Epicormic at base. *Protected by a Tree Preservation Order
T132*	Sycamore	*Acer pseudoplatanus*	23	8	6	7	5	0	4:W	1060 combined	Early mature	Fair	Good	40+	B2	508	12.7	0.0	Multistem. *Protected by a Tree Preservation Order
T133	Hawthorn	*Crataegus monogyna*	4	~2	~2	~2	~2	0	N/A	~150	Semi Mature	Good	Good	40+	C2	10	1.8	0.0	
T134	Ash	*Fraxinus excelsior*	8.3	4	4	4	3.5	1.5	1.5:S	230	Semi Mature	Good	Good	40+	C2	24	2.8	0.0	Next to fence, pushing into fence
T135	Ash	*Fraxinus excelsior*	7	3	2.5	1.5	1.5	1	0:N	120	Young	N/A	Good	40+	C2	7	1.4	0.0	
T136	Oak	*Quercus robur*	17	6.5	7	8	6	2	2.5:E	990	Early mature	Good	Good	40+	A2	443	11.9	0.0	
T137	Oak	*Quercus robur*	19	7	9.5	9.5	6.5	2	4:N	1140	Early Mature	Good	Good	40+	A2+3	588	13.7	0.0	Potential bat roost features on SW- woodpecker holes, old broken branch holes.
T138	Oak	*Quercus robur*	13	4	~6	7.5	~5	4.5	1.5:N	840 combined	Early Mature	Fair	Good	40+	B2	319	10.1	0.0	Twin stem, tight union with

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				N	E	S	W												
																			included bark, natural bracing.
T139	Oak	*Quercus robur*	15	5	4	7	6.5	4	3:S	693 combined	Semi Mature	Fair	Good	40+	B2	217	8.3	0.0	Two stems at base.
T140	Oak	*Quercus robur*	18	9	~7	8.5	7	0	2:S	1080	Mature	Fair	Good	40+	A2	528	13.0	0.0	Minor basal decay on east side. Moderate deadwood. Retrenched at top.
T141	Oak	*Quercus robur*	15.5	~7	6.5	7	4.5	0	1.5:E	729 combined	Semi Mature	Fair	Good	40+	B2	240	8.7	0.0	Singe stem at base, multistem from 1 metre up. On side of ditch.
T142	Oak	*Quercus robur*	14	~10	5	8	~5	2	3:N	991 combined	Early Mature	Fair	Good	40+	B2	444	11.9	0.0	Two stems, one of which split into two. Fused at base.
T143	Beech	*Fagus sylvatica*	8.5	N/A	6.5	N/A	N/A	5	N/A	555 combined	Semi Mature	Fair	Good	20-40	B3	139	6.7	0.0	Multistem; lots of tight unions.
T144	Beech	*Fagus sylvatica*	9	5	4.5	2	3	3.5	N/A	446 combined	Semi Mature	Fair	Good	20-40	B3	90	5.4	0.0	Multistem, tight unions, lots of pruning wounds.
T145	Beech	*Fagus sylvatica*	9	1	7	10	6	3.5	N/A	~714 combined	Semi Mature	Fair	Good	20-40	B3	231	8.6	0.0	Multistem
T146	Beech	*Fagus sylvatica*	15.5	6	5	7	7.5	4	N/A	1092 combined	Mature	Poor	Good	10-20	C2	539	13.1	0.0	Multistem, wound wood and crack on south branch, water filled

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				N	E	S	W												
																			pocket and tight fork.
T147	Lombardy poplar	*Populus nigra 'Italica'*	21.5	0	3.5	4.5	~3	7	5:S	680	Early Mature	Good	Good	20-40	B2	209	8.2	0.0	Edge of W8.
T148	Beech	*Fagus sylvatica*	16	4	6.5	9	8.5	2.5	N/A	625 combined	Early Mature	Fair	Good	40+	B2	177	7.5	0.0	Multistem, tight unions, lots of pruning wounds.
T149	Beech	*Fagus sylvatica*	~18	5.5	4.5	2.5	~7	4	2:N	676 combined	Semi Mature	Fair	Good	40+	B2	207	8.1	0.0	Triple stem.
T150	Beech	*Fagus sylvatica*	~18	0	4	6.5	~7	4	2:S	450	Semi Mature	Good	Good	40+	B2	92	5.4	0.0	
T151	Beech	*Fagus sylvatica*	~18	6	5	8	~5	3	0	779 combined	Early Mature	Good	Fair	40+	B2	275	9.3	0.0	Multistem, cup unions, natural bracing.
T152	Beech	*Fagus sylvatica*	16	5	5	8	~5	4	4:N	792 combined	Early Mature	Fair	Good	40+	B2	284	9.5	0.0	Two stems at base, tight union.
T153	Beech	*Fagus sylvatica*	17.5	6	5.5	5	~5	5	N/A	660 combined	Early Mature	Fair	Good	40+	B2	197	7.9	0.0	Multistem, tight cup union.
T154	Beech	*Fagus sylvatica*	15.5	4	4.5	4.5	~4.5	4	4:S	460	Semi Mature	Good	Good	40+	B2	96	5.5	0.0	
T155	Oak	*Quercus robur*	10	7	6.5	11	~7	1	3.5:N	~700	Early Mature	N/A	Good	40+	A2	222	8.4	0.0	
T156	Hawthorn	*Crataegus monogyna*	6	~2	~2	~2	~2	3	4:S	~200	Early Mature	N/A	Fair	20-40	B3	18	2.4	0.0	Canopy thin.
T157	Hawthorn	*Crataegus monogyna*	6	~2	~2	~2	~2	4	N/A	~200	Early Mature	N/A	Poor	10-20	C3	18	2.4	0.0	Ivy on stem covering most of stem.
T158	Ash	*Fraxinus excelsior*	13.5	7	6.5	~4	~5	3	2.5:S	~400	Semi Mature	N/A	Fair	10-20	C2	72	4.8	0.0	Ash dieback present.

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				N	E	S	W												
T159	Oak	*Quercus robur*	9.5	7	4.5	3	5	3	3:N	~600	Early Mature	N/A	Good	40+	B2	163	7.2	0.0	Ivy on stem, growing on bank.
T160	Oak	*Quercus robur*	12.5	6.5	4.5	1	3	1.5	2:N	~550	Early Mature	N/A	Fair	40+	B2	137	6.6	0.0	Ivy on stem, growing on bank. *Low branch may need trimming for access.
T161	Beech	*Fagus sylvatica*	15	4	4	6	7	2	6:N	~720	Early Mature	Fair	Good	20-40	B3	235	8.6	0.0	Big cavity on stem 2m height to east, dysfunctional bark, decay, cankers on scaffold limbs.
T162	Beech	*Fagus sylvatica*	19	2	3	6	5	3	N/A	~500	Semi Mature	N/A	Good	40+	B2	113	6.0	0.0	Stem covered in ivy.
T163	Oak	*Quercus robur*	15.5	8.5	~7	7	6.5	3	2:N	~850	Early Mature	Good	Good	40+	A2	327	10.2	0.0	Ivy on stem, small amount defoliation from mildew. Some potential bat roost features: dead wood.
T164	Beech	*Fagus sylvatica*	17.5	6	11.5	5.5	7.5	2	4:E	~780	Early Mature	Good	Good	40+	A2	275	9.4	0.0	Ivy on stem.
T165	Beech	*Fagus sylvatica*	17.5	1	4	3	7.5	6	4:N	~500	Semi Mature	Good	Good	40+	B2	113	6.0	0.0	Ivy on stem.
T166	Beech	*Fagus sylvatica*	18.5	6	10	7.5	8	1.5	5:E	~800	Early Mature	Good	Good	40+	A2	290	9.6	0.0	Ivy on stem.
T167	Oak	*Quercus robur*	18	~8	6	6	9	4	3:E	~700	Early Mature	N/A	Good	40+	B2	222	8.4	0.0	Leaning south. Branches

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				N	E	S	W												
																			overhanging possible track.
T168	Oak	*Quercus robur*	6.5	2.5	4	~5	4	1	N/A	~500	Semi Mature	N/A	Fair	20-40	B3	113	6.0	0.0	Ivy on stem, ditch to south.
T169	Ash	*Fraxinus excelsior*	11	~5	6.5	4.5	6	4.5	N/A	~500 combined	Semi Mature	N/A	Fair	10-20	C2	113	6.0	0.0	Ivy on stem, growing in hedgerow. Signs of ash dieback, multistem.
T170	Oak	*Quercus robur*	14	8	6.5	8	6	2	2:E	~1050	Early Mature	Good	Good	40+	A2	499	12.6	0.0	On edge of ditch, ivy on stem.
T171	Oak	*Quercus robur*	9	8.5	6	4	6.5	2	3.5:E	~650	Semi Mature	N/A	Good	40+	B3	191	7.8	0.0	Ivy on stem, major deadwood (on 1 stem, with basal cavity to the south linking to dead stem), on edge of ditch.
T172	Oak	*Quercus robur*	16	6	7.5	8	6	4	3.5:W	~600	Semi Mature	N/A	Fair	40+	B3	163	7.2	0.0	Ivy on stem, moderate deadwood.
T173	Sweet chestnut	*Castanea sativa*	9	5	1.5	3.5	2	1	7:S	~500	Semi Mature	N/A	Fair	40+	B3	113	6.0	0.0	Ivy on stem, branch breakouts abundant.
T174	Oak	*Quercus robur*	10	3	5	5	3.5	1	N/A	~630	Semi Mature	Good	Good	40+	B3	180	7.6	0.0	Ivy on stem.
T175	Sweet chestnut	*Castanea sativa*	9.5	3	2.5	3.5	3	0	3:W	~500	Semi Mature	Fair	Fair	20-40	B3	113	6.0	0.0	Dying back, stag headed, formed a lower crown.

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				N	E	S	W												
T176	Oak	*Quercus robur*	11	4.5	5	3	6	1	1.5:W	~620	Semi Mature	Good	Fair	40+	B3	174	7.4	0.0	Moderate deadwood, canopy a bit thin.
T177	Oak	*Quercus robur*	7	3	3	3.5	4.5	1.5	N/A	~550	Semi Mature	N/A	Fair	40+	B3	137	6.6	0.0	Powdery mildew. Ivy on stem.
T178	Elm	*Ulmus sp(p)*	9	N/A	N/A	N/A	N/A	N/A	N/A	0	Dead	N/A	N/A	N/A	U	0	0.0	0.0	
T179	Oak	*Quercus robur*	13	5	6.5	7.5	3	4.5	2:S	~930	Early Mature	Good	Good	40+	A2	391	11.2	0.0	
T180	Oak	*Quercus robur*	11.5	6	7	3.5	5.5	1	1.5:NE	540	Semi Mature	Good	Good	40+	B3	132	6.5	0.0	
T181	Ash	*Fraxinus excelsior*	11	4	4.5	4	4.5	2	N/A	~469 combined	Semi Mature	N/A	Fair	10-20	C2	100	5.6	0.0	In hedge. Early stages of ash dieback. Ivy on stem. Multistem.
T182	Sycamore	*Acer pseudoplatanus*	8.5	4	5	4.5	~2	5	N/A	219	Semi Mature	Fair	Good	40+	B2	22	2.6	0.0	Twin stem.
T183	Ash	*Fraxinus excelsior*	6.5	3	2	3	~2	5	N/A	~400 combined	Semi Mature	N/A	Fair	10-20	C3	72	4.8	0.0	25% ash dieback, multistem at base.
T184	Ash	*Fraxinus excelsior*	7	4	2	2.5	~2	5	N/A	~400 combined	Semi Mature	N/A	Fair	10-20	C3	72	4.8	0.0	25% ash dieback, multistem at base.
T185	Ash	*Fraxinus excelsior*	9	5.5	5	4.5	5	4.5	3:S	212	Semi Mature	N/A	Good	10-20	C2	20	2.5	0.0	Early stage of ash dieback and ivy on stem. In hedgerow, twin stem.
T186	Ash	*Fraxinus excelsior*	9	3.5	4.5	5.5	3.5	4.5	N/A	472 combined	Semi Mature	N/A	Good	20-40	B2	101	5.7	0.0	Covered in ivy. Multistem and decay at the base.

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				N	E	S	W												
T187	Sycamore	*Acer pseudoplatanus*	9	2.5	~3	3	~3	2	3:N	352	Semi Mature	Good	Good	40+	B2	56	4.2	0.0	Ivy on stem.
T188	Ash	*Fraxinus excelsior*	9	3	5	5	3	2	N/A	441 combined	Semi Mature	N/A	Good	20-40	B3	88	5.3	0.0	Ivy on stem 5% ash dieback in canopy multistem at base and hollow in centre.
T189	Oak	*Quercus robur*	13	6	5	4.5	6.5	1	N/A	500	Early Mature	Good	Good	40+	B3	113	6.0	0.0	Ivy on stem.
T190	Oak	*Quercus robur*	18.5	6	7.5	7	8	2	2.5:N	1200	Mature	Good	Good	40+	A2	651	14.4	0.0	Ivy on stem. Large cracked out limn with bat roost potential. Deadwood.
T191	Oak	*Quercus robur*	17.5	4	6	7.5	6	1	3.5:S	730	Early Mature	Fair	Fair	20-40	B3	241	8.8	0.0	Thinning canopy. Potential bat roost features, stem bleeds, no D shaped holes in stem
T192	Ash	*Fraxinus excelsior*	13.5	6	5.5	6	5	1.5	N/A	250	Semi Mature	N/A	Fair	10-20	C2	28	3.0	0.0	Thinning canopy and ivy on stem. Single stem with thick epicormic growth.
T193	Oak	*Quercus robur*	18.5	6.5	7.5	7.5	2	3	3:W	800	Early Mature	Fair	Good	40+	A2	290	9.6	0.0	Grown as pair with T194, bulging base with possible decay, dead

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				N	E	S	W												
																			branch and ivy on stem.
T194	Oak	*Quercus robur*	18.5	6	0	6.5	6.5	3	4:W	730	Early Mature	Good	Good	40+	A2	241	8.8	0.0	Grown as pair with T195, ivy on stem, canopy a bit thin, supressed by neighbouring tree.
T195	Oak	*Quercus robur*	11	5	6	6	5	2.5	3:W	420	Semi Mature	Good	Good	40+	B3	80	5.0	0.0	Ivy on stem.
T196	Oak	*Quercus robur*	13	4.5	5.5	8.5	5.5	4	5:W	600	Semi Mature	N/A	Good	40+	A2	163	7.2	0.0	Ivy on stem and leaning west.
T197	Oak	*Quercus robur*	14	5.5	6	8.5	6.5	2.5	3.5:SW	640 combined	Semi Mature	Good	Good	40+	A2	185	7.7	0.0	Potential bat roost feature in cracked dead limb, concealed by foliage. Twin stem, and ivy on stem.
T198	Ash	*Fraxinus excelsior*	13	5	6.5	5.5	5.5	3	3:SW	427 combined	Semi Mature	N/A	Poor	10-20	C3	82	5.1	0.0	Multistem at base, ivy on stem 50% ash dieback.
T199	Ash	*Fraxinus excelsior*	8.5	3	2.5	3	6	3	3:S	450	Semi Mature	N/A	Poor	<10	U	92	5.4	0.0	75% ash dieback. Ivy on most of tree.
T200	Ash	*Fraxinus excelsior*	8.5	4	4.5	5	4.5	2.5	3:S	~350	Semi Mature	N/A	Poor	<10	U	55	4.2	0.0	75% ash dieback, heavy ivy on tree.
T201	Ash	*Fraxinus excelsior*	9.5	6	5.5	7.5	4	1	N/A	~572 combined	Semi Mature	Fair	Fair	10-20	C2	148	6.9	0.0	Ash dieback 50%. Ivy on stem and triple stem grown into fence.

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				N	E	S	W												
T202	Ash	*Fraxinus excelsior*	8	5	6	4.5	6.5	1	N/A	434 combined	Early Mature	Fair	Fair	10-20	C2	85	5.2	0.0	Multistem, ivy on s tem and ash dieback present.
T203	Ash	*Fraxinus excelsior*	10.5	5.5	7	4.5	~6.5	1	1:E	476 combined	Early Mature	Fair	Fair	10-20	C2	103	5.7	0.0	Basal cavities, twin stem. Wire in stem, ivy on stem, 25% ash dieback.
T204	Ash	*Fraxinus excelsior*	13	5.5	7	5	~6	1	0.5:E	505 combined	Early Mature	Good	Fair	20-40	B3	115	6.1	0.0	25% ash dieback present, twin stem.
T205	Sycamore	*Acer pseudoplatanus*	10.5	4	5	5.5	3.5	0	1:S	568 combined	Early Mature	Good	Good	40+	B2	146	6.8	0.0	Tar spot, large stem wound. Twin stem.
T206	Sycamore	*Acer pseudoplatanus*	9	~5	3.5	5.5	4	1	1.5:E	550	Early Mature	Fair	Good	40+	B2	137	6.6	0.0	Tar spot, tight union with included bark.
T207	Sycamore	*Acer pseudoplatanus*	11.5	5	4	~6	5	2	1.5:N	558 combined	Early Mature	Fair	Good	40+	B2	141	6.7	0.0	Tar spot, twin stem one stem with a tight union and included bark
T208	Sycamore	*Acer pseudoplatanus*	10	7	6	8	7.5	1	1:N	632 combined	Early Mature	Good	Good	40+	B2	181	7.6	0.0	Multistem at 1.5m, ivy on stem.
T209	Sycamore	*Acer pseudoplatanus*	12	5	5.5	5	5	1	1:S	792 combined	Early Mature	Fair	Good	40+	B2	284	9.5	0.0	Twin stem, tight union with included bark, ivy on stem.
T210	Field maple	*Acer campestre*	10	7	7	5	4	1	N/A	686 combined	Mature	Fair	Good	20-40	B3	213	8.2	0.0	Multistem and ivy, hollowing at 1st stem.

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				N	E	S	W												
T211	Hawthorn	*Crataegus monogyna*	7	~2.5	2	3	2	0.5	N/A	330	Mature	Poor	Poor	10-20	C3	49	4.0	0.0	Mostly ivy, decay at base.
T212	Hawthorn	*Crataegus monogyna*	7	1.5	4	3	3	1	1.5:W	320	Mature	Good	Good	20-40	B3	46	3.8	0.0	
T213	Hazel	*Corylus avellana*	4	5.5	3.5	2.5	3.5	0.5	N/A	~300 combined	Mature	Fair	Good	20-40	B3	41	3.6	0.0	Multistem.
T214	Hawthorn	*Crataegus monogyna*	7	3.5	3.5	2	2	0.5	1:S	314	Early Mature	Good	Good	40+	B3	45	3.8	0.0	Grown as pair with T215, ivy on stem.
T215	Field maple	*Acer campestre*	10.5	0	3.5	5	2.5	0.5	1:W	300	Early Mature	Good	Good	40+	B3	41	3.6	0.0	Grown as pair with T214.
T216	Field maple	*Acer campestre*	10	5.5	5	4	3.5	0.5	N/A	390 combined	Mature	Good	Good	40+	A2	69	4.7	0.0	Triple stem at base, Ivy on stem.
T217	Oak	*Quercus robur*	14	6	5	5	6	0.5	1.5:S	400 combined	Semi Mature	Good	Good	40+	B2	72	4.8	0.0	Twin stem at base, ivy on stem, line of cut logs between T217 and T218.
T218	Ash	*Fraxinus excelsior*	7	0	3.5	3	2	1	N/A	283 combined	Semi Mature	Fair	Fair	<10	U	36	3.4	0.0	Multi stem, 25% ash dieback. Failed on south side, supressed by oak T217.
T219	Sycamore	*Acer pseudoplatanus*	14.5	5	5	3.5	5	0.5	3:NE	400	Semi Mature	Fair	Good	40+	B2	72	4.8	0.0	Some included bark on stem.
W1	Ash, Field maple, Hawthorn, Blackthorn, Oak, Holly, Elder, Elm		22	N/A	N/A	N/A	N/A	N/A	N/A	1000	Mix of mature oaks, early mature ash and semi to early-	Mix	Good and Fair	40+	A2+3	452	12.0	-	Pit in centre and fly tipping.

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				N	E	S	W												
											mature understorey								
W2	Ash, Scots pine, Hazel, Oak, Wild cherry, Field maple, Goat willow, Bird cherry, Sweet chestnut, Dogwood, Alder, Grey willow, Hawthorn, Guelder rose		11	N/A	N/A	N/A	N/A	0	N/A	340	Semi Mature and young.	Mix	Mix	40+	B2+3	52	4.1	-	Recently planted mix of native species 7 rows deep, 2m between rows. Some individuals dead from shading, some still have plastic guards
W3	Hazel, Scots pine, Beech, Ash, Elm, Small leaved lime, Oak, Elder, Hawthorn, Holly, Field maple, Hybrid black poplar, Wild cherry,		15	N/A	N/A	N/A	N/A	N/A	N/A	800	Semi-mature, early mature, mature	Mix	Mix	40+	A2+3	290	9.6	-	Ring of hybrid black poplar around man-made pond (rectangular). Lots of coppiced multistemmed small leaved lime. Pockets of wild cherry. Ditches throughout. Pockets of Scots pine. Overstorey

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				N	E	S	W												
	Sycamore, Wych elm																		dominated by ash, lime, Scots pine
W4	Wild cherry, Oak, Sycamore, Elder, Hawthorn, Wych elm, Ash, Field maple, Elm, Hazel, Horse chestnut		18	N/A	N/A	N/A	N/A	N/A	N/A	690	Semi-mature, early mature	Mix	Mix	40+	B2	215	8.3	-	Few dead sycamore and wild cherry. Overstorey is semi-early mature sycamore and cherry. Scattered oaks. Understorey of field maple, elder, elm, hawthorn. Southern boundary is fenced with footpath beyond. Northern boundary has internal fence 7m into wood, north of fence is scrub, planted in scattered rows.
W5	Horse chestnut, Sycamore, Elder, Hawthorn, Elm, Wych elm, Oak		15	N/A	N/A	N/A	N/A	N/A	N/A	350	Semi Mature	Mix	Fair	40+	B2	55	4.2	-	Planted in rows, very little understorey, sycamore with tar spot, horse chestnut with leaf miner moth, many trees with bark damage, abundant

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				N	E	S	W												
																			fallen deadwood. Fence to west side and railway fence continues past.
W6*	Oak, Elder, Hazel, Ash, Sycamore, Beech, Hawthorn, Holly, Sweet chestnut, Elm, Scots pine, Hornbeam		16	N/A	N/A	N/A	N/A	N/A	N/A	940	Early mature, mature	Mix	Mix	40+	A2+3	400	11.3	-	Ash dieback present. Varied topography, slopes down to road, dead tree stumps. *Protected by a Tree Preservation Order
W7	Hybrid black poplar, Ash, Oak, Hazel, Field maple, Blackthorn, Elder, Goat willow, Wild cherry, Sycamore		18	N/A	N/A	N/A	N/A	N/A	N/A	280	Semi Mature	Good	Good	20-40	B2	35	3.4	-	Plantation - six rows of mostly semi mature hybrid black poplar, frequent cherry and oak and some goat willow. Path to north, few larger oaks along ditch to north - plotted as individuals.
W8	Sycamore	*Acer pseudoplatanus*	15	N/A	10.5	N/A	N/A	5	N/A	573 combined	Mature	Fair	Good	40+	B2	149	6.9	-	Only surveyed trees that were overhanging road,

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				N	E	S	W												
																			multistem, lapsed coppice.
W9	Western hemlock, Douglas fir, Norway spruce, Holly, Western red cedar, Sweet chestnut, Sycamore, Rowan, Elm, Downy birch.		35	N/A	N/A	N/A	N/A	N/A	N/A	576 combined	Early Mature and young	Good	Mix	40+	B3	150	6.9	-	Approximately 80% of the mature trees in W9 are Norway spruce. Other 20% are Douglas fir. 60% of Norway spruce are dead, most like spruce bark beetle given resin runs, some with holes in stems, epicormic growth on stems, loose bark. Understorey of young western hemlock and holly and rowan. Rough density from 20x20m sample square: 17 trees, therefore there is estimated to be 200 trees in W9.
G01	Hawthorn	*Crataegus monogyna*	4	3m wide				0	N/A	150	Semi Mature	Fair	Fair	20-40	C3	10	1.8	-	Group of 3 hawthorn

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				N	E	S	W												
G02	Elm, Blackthorn, Elder, Hawthorn		9	N/A	N/A	N/A	N/A	0	N/A	300	Young, semi mature, early mature and mature	N/A	Good and Fair	20-40	B3	41	3.6	-	Ditch through middle of group
G03	Field maple x 3	*Acer campestre*	9	3	N/A	N/A	N/A	0	N/A	300	Early mature	Fair	Good	20-40	B3	41	3.6	-	
G04	Blackthorn, Hawthorn, Hazel, Elder, Field maple, Elm		6.5	N/A	N/A	N/A	N/A	0	N/A	300	Semi mature and mature	Good	Good	40+	B3	41	3.6	-	
G05	Field maple, Hawthorn, Elder, Blackthorn, Hazel, Elm, Ash		6.5	N/A	N/A	N/A	N/A	N/A	N/A	350	Young, semi mature, early mature	Fair	Good	20-40	B3	55	4.2	-	
G06	Crack willow, Ash, Elder, Field maple, Hazel, Grey willow, Blackthorn		14.6	N/A	N/A	N/A	N/A	0	N/A	400	Semi mature	Fair	Good	40+	B3	72	4.8	-	Group in field, pond in middle
G07	Field maple, Elder, Hawthorn, Blackthorn,		13.5	N/A	N/A	N/A	N/A	N/A	N/A	300	Semi mature and mature	Fair	Good and fair	20-40	B3	41	3.6	-	

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				N	E	S	W												
	Hazel, Elm, Ash, Holly																		
G08	Elder, Hawthorn, Elm, Field maple, Blackthorn, Ash, Hornbeam, Oak, Hazel, Holly		17	N/A	N/A	N/A	N/A	N/A	N/A	300	Young, semi mature, early mature, mature.	Mix	Mix	40+	B2+3	41	3.6	-	
G09	Ash, Hawthorn, Blackthorn, Elm, Field maple, Sycamore, Aspen, Oak, Grey alder, Guelder rose, Crab apple, Oak		17	N/A	N/A	N/A	N/A	N/A	N/A	430	Young, semi mature, early mature, dead.	Mix	Mix	40+	B3	84	5.2	-	Few dead individuals. Scrub. Ditch through centre of group
G10	Hazel, Field maple, Blackthorn		8	N/A	N/A	N/A	N/A	0	N/A	250	Semi mature, early mature	Good	Good	40+	B3	28	3.0	-	
G11	Grey willow, Ash, Oak, Hazel, Hawthorn,		12	N/A	N/A	N/A	N/A	N/A	N/A	900	Semi mature, early mature	Mix	Mix	40+	B2+3	366	10.8	-	Early mature oak scattered around pond. Semi mature ash with

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				N	E	S	W												
	Holly, Wild cherry																		heavy ash dieback. Ditch along east side.
G12	Field maple, Hazel, Hawthorn, Blackthorn		5.5	N/A	N/A	N/A	N/A	N/A	N/A	500	Early mature and mature	Mix	Good	40+	B3	113	6.0	-	Ditch to the east. Mature field maple to the south of T94.
G13	Ash, Oak, Blackthorn, Hawthorn, Elder, Grey willow		20	N/A	N/A	N/A	N/A	N/A	N/A	700	Semi mature, early mature	Mix	Mix	40+	B2+3	222	8.4	-	Early mature oaks around pond. Semi mature ash with ash dieback. Scrubby hawthorn, blackthorn, grey willow understorey
G14	Sycamore	*Acer pseudoplatanus*	11.5							570	Semi mature and Veteran	Fair	Good	40+	A3	147	6.8	-	Group of 3 sycamore, all hollowing, adjacent to path
G15	Sycamore	*Acer pseudoplatanus*	11.5							130	Young	Good	Good	40+	C2	8	1.6	-	Young sycamores, very dense
G16	Hazel, Hawthorn, 1 x Crack willow		8							400	Mature	Fair	Good	20-40	B3	72	4.8	-	Hazel coppice with scattered hawthorn which are being shaded out. Hazel planted in rows.
G17	Hawthorn x 5, Field maple x3		10.5	4.5	N/A	N/A	N/A	2	N/A	535	Semi mature and	Fair	Good	20-40	B3	129	6.4	-	2m over path ground clearance.

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				N	E	S	W												
											early mature								
G18	Elder, Sycamore, Ash, Blackthorn		11	N/A	N/A	N/A	N/A	N/A	N/A	404	Semi Mature	Mix	Fair	20-40	C2	74	4.8	-	1 sycamore, 1 ash, multistem, decay at base, some dead trees
G19	Cherry	*Prunus avium*	8.5	N/A	N/A	N/A	N/A	N/A	N/A	282	Semi mature and young	Fair	Good	40+	C2	36	3.4	-	Large surface roots on path
G20	Sycamore, Hazel, Elder, Field maple, Cherry plum, Hawthorn, Ash		18	N/A	N/A	N/A	N/A	N/A	N/A	500	Young, semi mature, early mature, mature	Mix	Mix	20-40	B3	113	6.0	-	Two ponds, trees on banks of ponds, canopies flailed on field side
G21	Blackthorn, Crab apple, Horse chestnut, Ash, Sycamore, Hawthorn, Oak, Field maple, Hazel, Elder, Turkey oak		17	N/A	N/A	N/A	N/A	N/A	N/A	500	Semi Mature	Fair and Poor	Mix	40+	C2	113	6.0	-	Trees on railway bank, scattered, large gaps, fence separating G21 and G22. Self-seeded. Clearance work damage to trees. Lots of brash and log piles left from previous tree works

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				N	E	S	W												
G22	Horse chestnut, Field maple, Hawthorn, Elm, Sycamore, Wych elm, Turkey oak, Blackthorn, Western balsam poplar, Oak, Ash		16.5	N/A	N/A	N/A	N/A	N/A	N/A	510	Semi Mature	Mix	Mix	40+	B2	118	6.1	-	Denser than G21, mostly semi mature, self-seeded. Log piles and brash. 8m cleared "path" separating G21/G22 up to south side of compound. Trees battered/damaged by previous tree works. Upright form to most trees. Some ash dieback present.
G23*	Sweet chestnut, Sycamore, Silver birch, Horse chestnut		18	N/A	N/A	N/A	N/A	N/A	N/A	450	Semi mature and Young	Good and Fair	Good	40+	B3	92	5.4	-	Mix age semi-mature sweet chestnut, young sycamore. Plantation in rows. Earthballs with *Pseudoboletus parasiticus*. *Protected by a Tree Preservation Order

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				N	E	S	W												
G24	Ash, Oak, Sycamore, Blackthorn, Wych elm, Hawthorn		16.5	N/A	N/A	N/A	N/A	N/A	N/A	695	Semi Mature	Good and Fair	Good and Poor	20-40	C2	219	8.3	-	Semi-mature ash with ash dieback. Self-seeded sycamore and some scrub and bramble.
G25*	Sycamore, Hawthorn, Oak, Ash		20	N/A	N/A	N/A	N/A	7	N/A	870	Early mature and semi mature	Mix	Mix	40+	B2	342	10.4	-	On bank beside road. *Protected by a Tree Preservation Order
G26*	Sycamore, Elder, Ash, Crack willow, Elm, Hawthorn, Oak, Holly, Hazel, Wych elm, Field maple		19.5	N/A	N/A	N/A	N/A	5	N/A	740	Early mature	Mix	Good and ash (poor)	20-40	B2+3	248	8.9	-	*Protected by a Tree Preservation Order
G27	Ash, Sycamore, Hawthorn, Elder		12	N/A	N/A	N/A	N/A	N/A	N/A	200	Semi Mature	Fair	Fair and poor	10-20	C2	18	2.4	-	Early ash dieback
G28	Ash, Sycamore, Hawthorn, Oak		6	N/A	N/A	N/A	N/A	N/A	N/A	150	Semi Mature	Good and Fair	Mix	10-20	C3	10	1.8	-	Some dead ash, tangle of young ash, sycamore and hawthorn
G29	Hawthorn	*Crataegus monogyna*	6	5	5	5	5	0	N/A	150	Early mature	Fair	Good	40+	C3	10	1.8	-	Multistem

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				N	E	S	W												
G30	Cherry plum, Hawthorn, Hazel, Oak, Wild cherry, Elder, Hybrid black poplar, Ash		16.5	N/A	N/A	N/A	N/A	N/A	N/A	430	Mature, semi mature, and young.	Good	Good	20-40	B2	84	5.2	-	Mature hawthorn. Couple of rows of hybrid black poplar on south boundary (semi-mature), young oak plantings. Planted next to possible old hawthorn hedgerow.
G31	Beech	*Fagus sylvatica*	9	N/A	4.5	N/A	N/A	6	N/A	361	Young and semi mature	Fair	Mix	20-40	C3	59	4.3	-	Salt damage evident, 8 individuals, standing in brambles.
G32	Sycamore	*Acer pseudoplatanus*	13	N/A	N/A	N/A	7	5	N/A	490	Young and semi mature	Fair	Good	40+	B2	109	5.9	-	Multistem at base, tar spot, 5m ground clearance over road.
G33	Beech, Sycamore	*Fagus sylvatica, Acer pseudoplatanus*	17	N/A	6.5	N/A	N/A	4.5	N/A	583	Semi mature and early mature	Fair	Good	40+	B2	154	7.0	-	Mostly row, double row towards north end of group, possibly old grown out hedge, multistem.
G34	Beech	*Fagus sylvatica*	17.5	N/A	N/A	N/A	6.5	5	N/A	590	Early Mature	Good and Fair	Good	40+	B2	157	7.1	-	7x beech. 3x multistem with tight unions, some with water

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				N	E	S	W												
																			pockets (in multistem)
G35	Beech	*Fagus sylvatica*	15	N/A	N/A	N/A	5.5	4	N/A	479	Semi Mature	Good and Fair	Good	40+	B2	104	5.7	-	Tightly packed possibly old grown out hedge. Multistem
G36	Beech	*Fagus sylvatica*	18	N/A	4.5	N/A	N/A	4	N/A	300	Semi Mature	Good and Fair	Good	40+	B2	41	3.6	-	Tightly packed possibly old grown out hedge. Multistem.
G37	Beech	*Fagus sylvatica*	18	N/A	4.5	N/A	N/A	5	N/A	597	Semi Mature	Good and Fair	Good	40+	B2	161	7.2	-	3x beech, mixed structural condition.
G38	Beech	*Fagus sylvatica*	20	N/A	N/A	N/A	5.5	4.5	N/A	756	Young, semi mature, early mature	Good	Good	40+	B2	259	9.1	-	6 individual Beech, 2 multistem with tight unions.
G39	Beech	*Fagus sylvatica*	18	N/A	N/A	N/A	7	4	N/A	650	Semi Mature	Good and fair	Good	40+	B2	191	7.8	-	Tightly packed probably outgrown hedge, ivy on stem
G40	Hawthorn	*Crataegus monogyna*	5	N/A	N/A	N/A	N/A	N/A	N/A	354	Mature	Mix	Mix	40+	B3	57	4.2	-	Scattered hawthorn either side of oak
G41	Holly, Horse chestnut		8	N/A	N/A	N/A	N/A	N/A	N/A	150	Young and semi mature	N/A	Good	40+	B3	10	1.8	-	
G42	Ash	*Fraxinus excelsior*	8	N/A	N/A	N/A	N/A	N/A	N/A	250	Semi Mature	N/A	Fair	10-20	C2	28	3.0	-	Ash dieback present

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				N	E	S	W												
G43	Laburnum	*Laburnum anagyroides*	5	N/A	N/A	N/A	2.5	2	N/A	250	Semi Mature	N/A	Good	20-40	C2	28	3.0	-	In private garden, boundary hedge. Multistem, ivy on stems
G44	Field maple, Hawthorn		6.5	N/A	4.5	N/A	N/A	4.5	N/A	400	Mature	Good	Good	20-40	B3	72	4.8	-	Four trees behind hedgerow, three mature field maple, one mature hawthorn, few cavities, lots of ivy.
G45	Sycamore, Hawthorn, Ash		8	N/A	N/A	N/A	4.5	1.5	N/A	464	Semi Mature	Mix	Good	40+	B2	97	5.6	-	Lots of ivy on stems, footpath estimated 1.5m from stems. Nearly all sycamore, hedgerow to east of treeline. No branches extend over the hedge into field.
G46	Field maple, Scots pine, Ash, Oak, Sweet chestnut, Sycamore		4.5	N/A	N/A	N/A	N/A	0	N/A	150	Young	Good	Good	40+	B3	10	1.8	-	Plantation
G47	Scots pine, Oak, Sweet		5	N/A	N/A	N/A	N/A	0	N/A	130	Young	Good	Good	40+	B3	8	1.6	-	Plantation

Tree Reference	Common Name	Scientific Name	Height (m)	Canopy spread (m)				Ground Clearance (m)	Height and Direction of First Branch (m)	Stem Diameter (mm)	Age Class	Structural Condition	Physiological Condition	Estimated Remaining Contribution (years)	BS5837:2012 Category	Root Protection Area (m^2)	Root Protection Area radius (m)	Veteran Tree Buffer Radius (m)	Comments
				N	E	S	W												
	chestnut, Hawthorn, Field maple, Ash, Small leaved lime																		
G48	Hawthorn, Spindle, Field maple, Hazel, Elder, Ash		6.5	5.5	N/A	N/A	N/A	0.5	N/A	403	Mature	Good	Good	40+	B3	73	4.8	-	
G49	Western hemlock	*Tsuga heterophylla*	6.5	N/A	3	N/A	3	0	N/A	150	Young	Good	Good	40+	C2	10	1.8	-	2m gap between canopies of the two rows of trees.

Annex 2. Definitions for Tree Survey Schedule

Column	Notes
Tree reference	Individual trees are numbered T1, T2, etc. Groups of trees G1, G2 etc. Woodlands W1, W2 etc. Hedges (where appropriate) H1, H2 etc. Tree numbers correspond with those shown on the Tree Constraints Plan and Tree Protection Plans when included.
Species	Common name and scientific name
Height	In metres, to the nearest half metre
Stem diameter	In millimetres, to nearest 10mm. Usually measured at 1.5m height or in line with Annex C of British Standard 5837:2012.
Branch spread at four cardinal points	In metres, to the nearest half metre. Canopy spread usually measured to North South East and West.
Canopy clearance	In metres, to the nearest half metre. Distance from the lowest branch to ground level.
Height and direction of first branch	In metres, to the nearest half metre. Height and direction of first significant branch. Direction relates to four cardinal points.
Life stage	Young = Recently planted tree with a diameter less than 150mm at 1.5m Semi mature = An established tree but with some growth left before reaching its maximum potential size, within first third of its lifespan. Early mature = A tree reaching its ultimate potential height, growth rate is slowing down but crown spread and stem diameter will still continue to increase. Tree in second third of lifespan. Mature = Tree at its maximum size with limited potential to increase in height or canopy spread. Tree in final third of expected lifespan. Over-mature = A declining or moribund specimen of low vigour within final third of lifespan. May have sufficient structural defects to pose safety and duty of care implications. Veteran = Specimens exhibiting biological, cultural or aesthetic value that are characteristic of, but not exclusive to, individuals surviving beyond the typical age range for the species. Ancient = specimens surviving beyond the typical age range for the species. Dead = no viable buds or leaves.
Structural condition	The condition of the woody parts of the tree in regards to their structural integrity and strength. Good = few minor defects of little significance or rectifiable such as physical damage or suppressed branches. No adverse risk of failure. Fair = tree may require work to remove or mitigate a defect. This could include a major defect at an early life stage or minor defects such as: major deadwood, co-dominant stems, weak branch attachments, storm damage/limb failure wounds, cavities, decay. Tree may improve over time (self-optimisations) or with recommended works.

	Poor = a tree with major structural defects such as advanced decay or root damage. Works to the tree can be expected.
Physiological condition	The condition of the photosynthetic parts of the trees i.e. leaves or needles Good = in good health, good vitality, sufficient leaf cover/size appropriate to species and age. Tree will likely have minor deadwood. Fair = tree showing signs of stress such as dieback of branches, crown thinning, discolouration of leaves, typical leaf/branch pest or disease. Tree may recover in time or with recommendations, recommendations unlikely to be a significant health and safety priority. Poor = tree showing signs of physiological decline/stress such as extensive crown dieback, stag heading, sparse foliage, pest infestation, unlikely to return to good health with work or in time.
Estimated remaining contribution	In years, based on species, tree age and condition. <10 years, 10-20 years, 20-40 years, 40+ years.
British Standard Category	U = trees with serious, irremediable, structural defect such as their early loss is expected. Dead trees or trees infected with pathogens of significant to health or safety. A = tree of high quality with an estimated life expectancy of at least 40 years. Particularly good examples of their species, especially if rare or unusual or those that are essential components of groups or formal/semi-formal arboricultural features (e.g. avenues). B = trees of moderate quality with a life expectancy of at least 20 years. Tree could be included in Category A but downgraded due to impaired condition such that they are unlikely to be retained for more than 40 years or lack the special quality necessary to merit Category A designation. C = tree of low quality with a life expectancy of at least 10 years or with a stem diameter less than 150mm. Unremarkable trees of very limited merit or with impaired condition that does not quality it for a higher Category. Subcategory: 1 = mainly arboricultural qualities 2= mainly landscape qualities 3 = mainly cultural values, including conservation
Root Protection Area radius	In metres. Calculated by multiplying the stem diameter of the tree by 12, capped at 15 metres. Gives a theoretical spread of the root system of the tree from the stem.
Root Protection Area	In square metres. 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 is treated as a priority.
Veteran Tree Buffer Zone Radius	A buffer zone to protect individual ancient/veteran trees. It must be at least 15 times the stem diameter or 5 metres beyond the canopy edge, whichever is greater.

Annex 3. Photographs

Photo 1. T037 – 042 mix of oak and ash along a field boundary south of Norwich Main Substation

Photo 2. T45 veteran oak within woodland W1

Photo 3. G8 (left) and G9 (right) along Hickling Lane

Photo 4. T065 veteran oak

Photo 5. W2 (right) and T064 oak in the distance along Hickling Lane

Photo 6. W3 woodland with small leaved lime

Photo 7. T090 oak

Photo 8. View north towards T048-052 oak and field maple

Photo 9. G16 dominated by hazel with scattered hawthorn - south of the Norwich Main Substation

Photo 10. G15 dense young sycamore

Photo 11. G14 group of semi mature veteran sycamore

Photo 12. W4

Photo 13. T137 oak and G30

Photo 14. T140 oak with G30 on the right

Photo 15. W7 inside

Photo 16. G21 on railway bank and G22

Photo 17. W5 horse chestnut and sycamore plantation east of Norwich Main Substation

Photo 18. W6 east of Norwich Main Substation

Photo 19. Evidence of ash dieback in W6

Photo 20. View north towards G24

Photo 21. Existing access road to Norwich Main Substation with G26 and W6

Photo 23. W8 lapsed sycamore coppice opposite the Muckleborough Collection, North Norfolk AONB

Photo 23. G33 and G34 multi stem beech along road to Muckleborough Collection

Photo 24. G40 scattered hawthorn with T155 oak

Photo 25. T159 oak and entrance to land south of A149

Photo 26. T163 oak with T164 beech behind and G43 laburnum

Photo 28. T170 – 179 oak and sweet chestnut

Photo 28. T182 sycamore and T183-184 ash

Photo 29. T185 ash and T186 ash and T187 sycamore

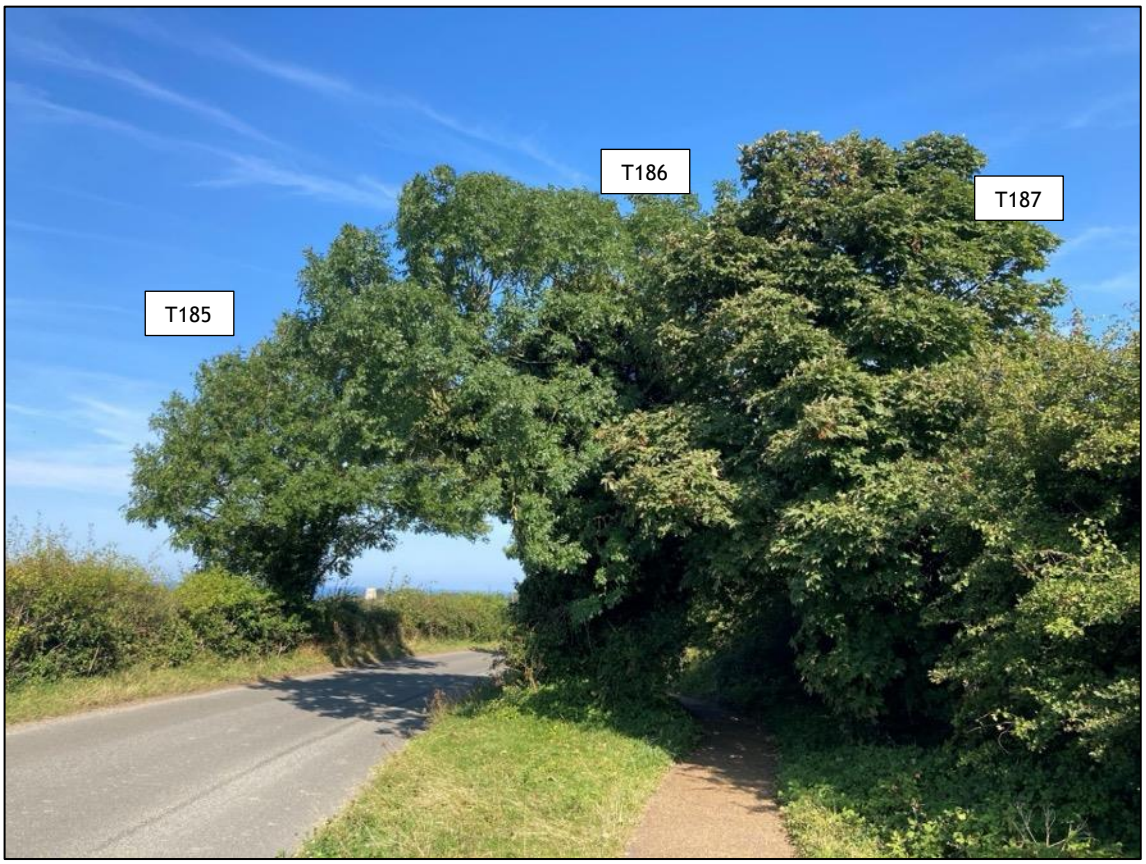

Photo 30. View north along G45 sycamore

Photo 31. G46 young mixed plantation

Photo 32. Path through middle of G47 young mixed plantation

Photo 33. View east with T210 field maple, turning point in Weybourne Woods

Photo 34. T216 field maple and T217 oak

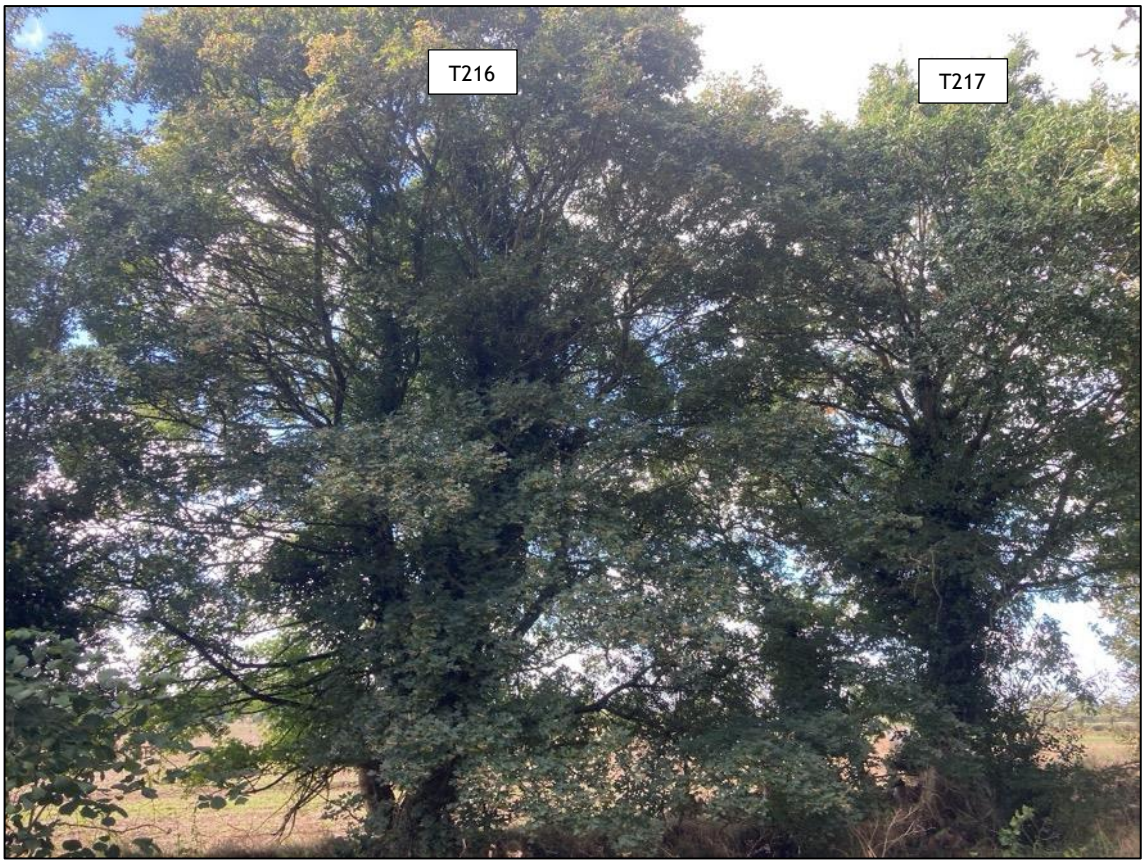

Photo 35. G49 young western hemlock

Photo 36. View west towards entrance to W9

Photo 37. Dead Norway spruce with flaking bark in W9

Photo 38. View of W9

Photo 39. Left to right T189, T190 and T191 oak

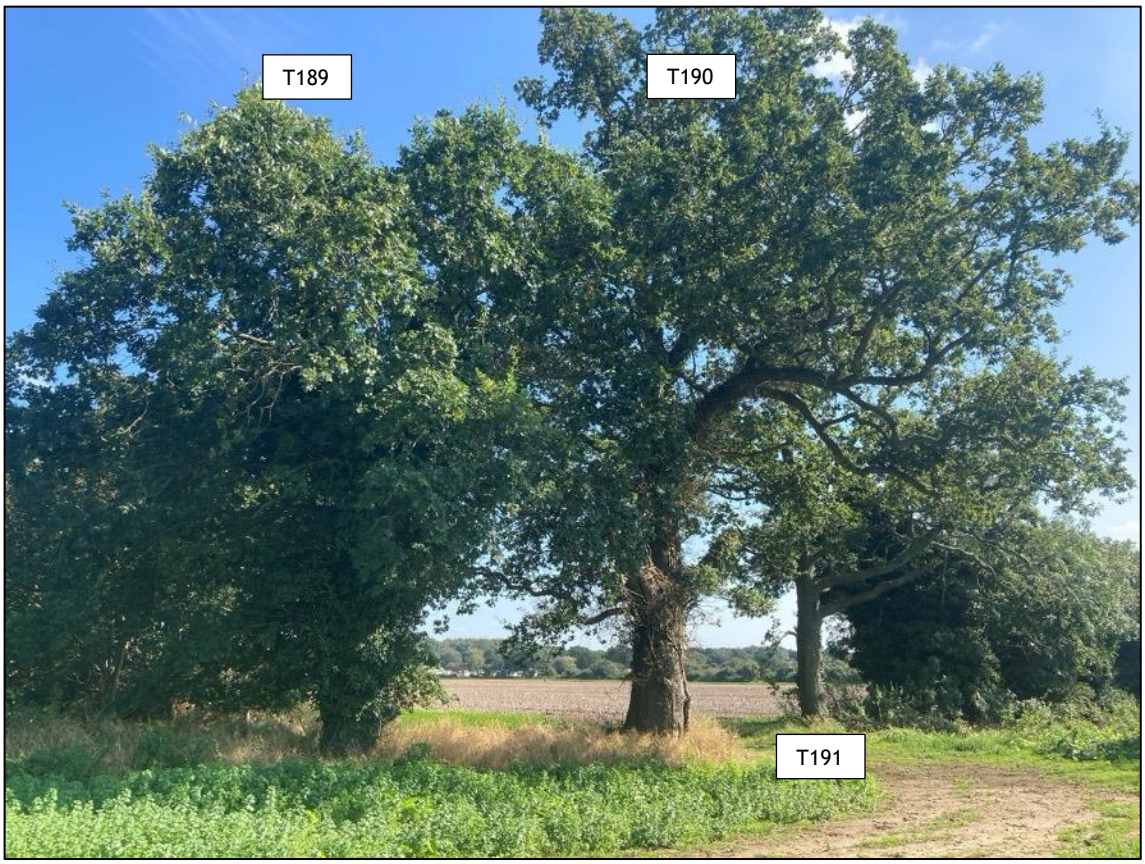

Photo 40. Left to right T192-197 mix of ash or oak

Photo 41. T202 ash

Photo 42. T205-207 sycamore

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