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Proposed Grid Supply Point Substation off the A131

Environmental Appraisal
Appendix 5: Arboricultural Assessment
April 2022

nationalgrid

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Appendix 5: Arboricultural Assessment

1. Introduction

1.1 Scope of Report

1.1.1 The purpose of this appendix is to identify all trees which may be affected by the proposed GSP substation, and to provide information on their locations, quantity, and quality. The information on tree constraints has informed the design development process.

1.1.2 This arboricultural report comprises a desk study search for baseline information on arboricultural statutory designations, and results of walkover surveys. The first survey followed British Standard BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (BS 5837), with a subsequent survey to assess the woodland resilience to climatic and biotic factors to address a pre-application request from Braintree District Council to undertake a negative condition survey.

1.2 Limitations

1.2.1 Trees are dynamic organisms which are influenced by a variety of environmental variables and whose health and condition can rapidly change. Because of this, any recommendations made within this report are valid for a period of 24 months from the date of survey, when any site conditions change or pruning or other works unspecified in the report are carried out to, or affecting, the subject trees, whichever is the sooner.

1.2.2 The location of woodland edge trees was identified in a topographic survey. Away from the edge, the location of arboricultural features has been recorded using in-field handheld GPS device and the locations of trees within the woodland are therefore approximate.

1.2.3 This report does not constitute a health and safety survey. Where concerns for tree health and safety exist, then necessary and appropriate tree inspections should be carried out.

1.3 Relevant Legislation, Policy and Guidance

1.3.1 This report has been compiled with reference to the following legislation, policy, and guidance:

- National Planning Policy Framework (revised 20 July 2021); and
- British Standards Institute. BS 5837: 2012 Trees in relation to design, demolition and construction – Recommendations. London: BSI.

Ancient Woodland and Planning

1.3.2 The National Planning Policy Framework refers to ancient woodland. Ancient woodland has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland mainly made up of trees and shrubs native to the area, usually arising from natural regeneration or plantations on ancient woodland sites. Equally, it includes woodland replanted with conifer or broadleaved trees but retaining ancient woodland features, such as undisturbed soil, ground flora and fungi.

1.3.3 UK Government standing advice in relation to ancient woodlands determines that planning authorities should make decisions on planning applications in line with paragraph 175c of the National Planning Policy Framework, as follows:

“You should refuse planning permission if development will result in the loss or deterioration of ancient woodland, ancient trees and veteran trees unless:

- *there are wholly exceptional reasons*
- *there’s a suitable compensation strategy in place”.*

1.3.4 Government guidance in relation to development in the vicinity of ancient woodlands, advises the need for a buffer zone of at least 15 metres to avoid root damage and that where assessment shows other impacts are likely to extend beyond this distance, then a larger buffer zone is needed. However, BS5837 recognises that it is appropriate to take account of factors, including the morphology and disposition of the roots, when influenced by past or existing site conditions, including topography and drainage.

2. Methods

2.1 Study Area

2.1.1 The study area comprises the site shown on Figure 2 of the Environmental Appraisal and a buffer of up to 15m. The purpose of the 15m buffer is comply with BS 5837 which recommends that all arboricultural features whose Root Protection Areas (RPAs) may be impacted are identified, surveyed, and included within the assessment. The 15m buffer is based on a capped maximum RPA radius within BS5837.

2.2 Baseline Data Collection

2.2.1 Baseline data collection has been undertaken with reference to BS 5837 and has been undertaken using the following data sources:

- an arboricultural desk study; and
- walkover surveys of arboricultural features within the study area.

Desk Study

2.2.2 A desk study was undertaken as a means of identifying any statutory and non-statutory arboricultural constraints which may apply to arboricultural features within the study area.

2.2.3 This included a review to establish the following arboricultural constraints:

- Tree Preservation Orders (TPOs);
- Conservation Areas;
- Ancient woodland; and
- Records of ancient or veteran trees.

Walkover Survey

2.2.4 A walkover survey of trees within the study area was undertaken in May 2021. The survey was undertaken to comply with BS 5837. Details of the method used are presented in Annex 1 of this Appendix. The recommended approach within BS5837 is to assess the woodlands collectively as group features. The groups were surveyed in this way but additionally, a selection of individual trees at the woodland boundaries were individually surveyed to capture greater detail. This focussed particularly on larger, high-quality trees but also identified potential tree hazards.

2.2.5 A subsequent survey, in October 2021, examined the woodland species composition and structure within Butler’s Wood and Waldegrave to consider their resilience to biotic and climatic disturbances.

2.3 Arboricultural Survey Findings

2.3.1 The desk study found that:

- The proposed GSP substation is not within a Conservation Area, determined using Braintree District Council’s interactive map (Braintree District Council, 2022).
- There are TPOs at Butler’s Wood and Waldegrave Wood, determined using Braintree District Council’s TPO register (Braintree District Council 2022b).
- Butler’s Wood and Waldegrave Wood are ancient woodlands, identified within the Ancient Woodland Inventory of England (Defra, 2022).
- There are no records of ancient or veteran trees within the ancient woodland or locally, within the Ancient Tree Inventory of the Woodland Trust.

2.4 Walkover Survey Findings

The proposed GSP substation is within agricultural land between Butler’s Wood and Waldegrave Wood. The arboricultural survey, therefore, considered principally the edge trees, with a subsequent more general appraisal of the woodlands to determine its resilience to tree pests and diseases and climatic stresses.

An arboricultural survey schedule is presented in Annex 2 in which details of the trees in the study area are itemised. The locations of the arboricultural features are shown on the Tree Constraints Plan in Annex 3.

The walkover survey did not identify any previously unrecorded ancient or veteran trees.

2.4.1 A summary of tree quality categories is in Table 2.1, the majority of arboricultural features are moderate and low quality.

Table 2.1 Summary of Tree Quality Categories

BS 5837 Category	Quality	Woodland	Individual Trees	Linear Groups	Totals
Category A	High	2	16	1	19
Category B	Moderate	0	8	3	0
Category C	Low	0	3	0	0
Category U	Very low	0	1	0	0
Totals		2	28	4	34

Butler’s Wood

2.4.2 Butler’s Wood is a mixed broadleaf woodland with oak as the principal canopy species. Other species include ash, birch, field maple and small-leaved lime with hazel frequent in the understorey.

- 2.4.3 The largest edge trees on the southern boundary of Butler's Wood are of oak with stem diameters in the range 550-930mm (measured at 1.5m height). The RPA of boundary trees is confined within the woodland because of the presence of the deep boundary ditch.
- 2.4.4 The largest trees are almost exclusively oak to a maximum height of 26m and canopy spread to 10m (that is extending to a maximum 8m beyond the ditch into the neighbouring agricultural field). The majority are healthy and are typically structurally sound. Some of the oak show minor symptoms of physiological decline with thin crowns and small areas of stem bleeding. Stem bleeding is a symptom of Acute Oak Decline, for which there is no single causal agent. It proceeds relatively quickly and can result in tree death. However, there are other causal factors of stem bleeding and only minor bleeds were observed.
- 2.4.5 Occasional tall ash trees match the height of the oaks but present considerably smaller stem diameter of 350 mm. Were the neighbouring oaks to be thinned/ removed some of these 'drawn' ash trees may become particularly vulnerable to windblow, that is become unstable and topple. There was no evidence of ash dieback during the in May.
- 2.4.6 The intimate mixture of species and structural diversity, combining high canopy species, and species of smaller stature makes the woodland resilient to climatic and biotic stresses. It is suited to small coupe felling and management under a continuous cover system. The decline of oak trees is not yet a notable concern. Ash dieback has yet to develop but is anticipated to establish in the woodland within 10 years because of development of the disease locally. However, the rate of subsequent dieback of ash is not predictable.

Waldegrave Wood

- 2.4.7 Waldegrave Wood is of similar species composition to Butler's Wood with aspen evident at the field edge.
- 2.4.8 Fewer large trees were present at the woodland edge than at the edge of Butler's Wood. These occasional oak trees were to 780mm stem diameter and to a similar maximum height of 26m. Applying the metrics within BS5837, the maximum stem diameter presents a theoretical calculated maximum RPA of 9.4m but these larger trees are set back from the woodland edge and ditch. The woodland edge included only smaller tree species, particularly aspen, hazel and hawthorn, which have a theoretical RPA of the order 3-4 m but similarly would not present roots below or beyond the ditch line.
- 2.4.9 The tree canopies do not extend beyond the ditch into the neighbouring agricultural field and is structurally appropriate in proximity to the existing overhead line whereby the trees are periodically trimmed to maintain clearances to the overhead line.
- 2.4.10 The western woodland edge of Waldegrave Wood is made up of a series of linear groups of oak, separated by smaller tree species, particularly aspen. The oaks have stem diameters in the range 600-680mm and reach heights to 24m. The theoretical RPA is to a maximum 8.2m, which was broadly similar to the extent of canopy spread.
- 2.4.11 Some of the oak trees on the boundary of Waldegrave Wood have particularly thin crowns but are otherwise structurally sound, with no stem bleeding observed. The condition Chronic Oak Decline (which proceeds less aggressively than Acute Oak Decline, referenced in relation to Butler's Wood) may be a factor. There is no single causal agent of Chronic Oak Decline.

- 2.4.12 In the same way as Butler's Wood, the intimate mixture of species and structural diversity makes the woodland resilient to climatic and biotic stresses.

2.5 Tree Constraints Plan

General

- 2.5.1 The location of the surveyed arboricultural features is shown on the Tree Constraints Plan (TCP) which is included in Figure A5.1 in Annex 3 of this appendix.
- 2.5.2 The purpose of the TCP is to visually identify the current constraints imposed by the existing arboricultural features in terms of their quality, stem, and roots. This information was considered during design development leading to moving the proposed GSP substation approximately 3m further south from Butler's Wood and repositioning of security fencing, to provide a greater buffer to tree canopies in Butler's Wood.
- 2.5.3 The TCP shows the position of each feature including its stem/extent and its RPA. The features have been colour-coded based upon the quality category within which they have been placed.

Location/Extent

- 2.5.4 Arboricultural features have been positioned using topographical survey of individual trees and using the mapped boundary of the woodland features for collective woodland areas. The greater precision of the topographical survey results in trees erroneously appearing to be located beyond the woodland boundary. The reality is that these are woodland trees at the true woodland edge.

Root Protection Areas (RPA)

- 2.5.5 Notwithstanding, the presence of deep, steep-sided ditches separating the woodlands from their neighbouring agricultural land, the shape of the indicative RPAs shown on the TCP have not been modified. In practice, the ditches serve as barriers to root growth.

3. Arboricultural Impact Assessment

3.1 Proposed GSP Substation

- 3.1.1 In Butler's Wood the calculated RPA for the largest tree is illustrated as a circular area of radius 11.2m. However, BS5837 invites consideration of factors that might lead to restricted or preferential rooting whereby the RPA is not symmetrical. For example, a steep-faced ditch of over 1m depth is between the woodland edge and the open field. It is highly unlikely that roots extend beneath the ditch. The ditch offers justification for the RPA to be preferentially located within the woodland. The agricultural field is also subject to cultivation. Notwithstanding the restriction to rooting beyond the ditch, the design of the proposed GSP design has evolved to maximise separation from the woodland canopy.
- 3.1.2 A goat willow of 320mm stem diameter was growing within the ditch, indicating that there had been incomplete maintenance.
- 3.1.3 Tree T12 is of standing deadwood. It is beyond the development boundary but its retention near to the proposed GSP substation presents a potential safety issue. It is advised that agreement is reached for it to be felled, and material retained in situ within the woodland.
- 3.1.4 Tree T24 at the south eastern corner of Butler's Wood and T25 a field boundary tree at the eastern boundary of the proposed GSP substation, adjacent to the A131 are not impacted by construction of access to the site. The trees may be retained without felling but canopy lifting of lower branches may be required for the new access.
- 3.1.5 The northern boundary of Waldegrave Wood mirrored Butler's Wood in being bounded by a large ditch between the woodland and agricultural field. It had been recently (within the last 12 months) cleaned to a depth of more than 1m with tree roots exposed on the upper portion of the cut ditch face. The ditch clearance provided strong evidence that tree roots do not extend to the full depth of the ditch nor pass beneath it.
- 3.1.6 Similarly, underground 132kV cables which do not form part of the planning application will not have adverse impacts on trees within Waldegrave Wood.
- 3.1.7 There are no impacts to trees subject to a TPO.

3.2 Single Circuit Cable Sealing End Compound

- 3.2.1 Whilst the ditch continues around the western woodland edge of Waldegrave Wood it is typically shallower than the ditch to the northern boundary. There is a possibility, therefore, of root development beyond it into the adjoining land. The woodland is separated in this location from the adjoining agricultural land by a permanent unmade track that is not part of the cultivated area.
- 3.2.2 It is considered likely that there was also preferential rooting within the woodland but where the ditch is relatively shallow or where the ditch is filled to present an access point to the woodland the RPA is less restricted. However, the track is compacted resulting in poor soil aeration and limited infiltration of water and it is considered that the RPA is likely to again be modified and not extend beyond the woodland edge.
- 3.2.3 There are no impacts to trees subject to a TPO.

4. Arboricultural Method Statement

- 4.1.1 The need for tree protection measures, typically provided to afford protection from plant or storage, within a root protection area is unnecessary because of the topographical protection provided by deep wide ditches. These ditches offer equivalent protection as fencing as they prevent vehicular access and storage of materials within the woodlands.
- 4.1.2 Tree T12 is standing deadwood and should, with landowner agreement be felled to ground within the woodland and material retained.
- 4.1.3 A hanging branch from tree T14 should be removed, for reasons of safety, requiring access beyond the development boundary. Material may be stacked within the woodland or used to create a deadwood pile within planting proposed as part of the proposed GSP substation.
- 4.1.4 Tree T25 is separate from the woodlands at the eastern boundary of the site, adjacent to the A131. Its root protection area would not overlap the new site access point from the A131. A proposed soil mound is at the periphery of T25 but does not adversely affect soil aeration or infiltration of the RPA. Some crown reduction may be required for the new access. This would follow best practice guidelines contained within *BS3998: 2010 Recommendations for Tree Work*. The provision of tree protection fencing is not required given the location of this tree.

5. Conclusions

- 5.1.1 A total of 34 arboricultural features, consisting of 28 individual trees, four linear group and two woodland groupings of trees were surveyed. Most of the individual arboricultural features are contained within the woodland groupings, the exceptions being trees adjacent to the A131. Many of the arboricultural features are of high quality, including the woodlands considered as a whole.
- 5.1.2 Land use differentiation between woodland and agriculture is marked and, whilst the underlying geology is the same, soils have developed separately. Deep ditches between land uses create hydrological separation and reinforce habitat differentiation. The physical separation presented by deep ditches suggests that preferential rooting of trees at the woodland edge is confined to the woodland and does not extend into the neighbouring agricultural areas, where the proposed GSP substation would be located.
- 5.1.3 Roots are not anticipated to extend below and beyond substantial ditches that mark the boundaries of the ancient woodlands of Butler's Wood and Waldegrave Wood. The application of a standard buffer distance to ancient woodland, in relation to rooting, is unnecessary in the face of this topographical evidence.
- 5.1.4 Canopy spread can be a further consideration in relation to the buffer. The buffer would then additionally extend to 5m beyond the canopy. This minimum separation is maintained from the tree canopy at its closest point.
- 5.1.5 Similarly, the RPAs of trees at the western edge of Waldegrave Wood, closest to the single circuit cable sealing end compound are locally restricted. It remains probable that there is also strong preferential rooting within the woodland but at this location the ditch includes parts that are relatively shallow or filled. However, a compacted permanent track at the field edge affords further inhibition to rooting.
- 5.1.6 The retained trees will be protected through construction by the presence of the ditches, preventing access to woodlands by plant and materials. Additional security fencing to the site will exclude the woodlands. The principles of tree protection fencing, and ground protection are typically contained in an Arboricultural Method Statement and Tree Protection Plan but the topographical features provide the necessary protection.
- 5.1.7 Some evidence of decline was observed of individual oak trees within the woodlands. However, this had not developed significantly and was not considered notable in relation to the resilience of the woodland to climatic and biotic stresses. The intimate mixture of tree species reinforces the resilience of the woodlands to individual tree losses and the affected trees were irregularly scattered and there was no clear evidence of disease. Evidence of decline may lead to retrenchment of the tree crown (a natural and positive reduction in the extent of live growth to extend tree longevity). Minimal increase in tree height and canopy spread of the mature edge trees is anticipated.

References

Braintree District Council (2022) <https://www.braintree.gov.uk/planning-building-control/conservation-areas> accessed March 2022

Braintree District Council (2022b) <https://www.braintree.gov.uk/directory/73/tree-protection-orders-tpo> accessed March 2022

British Standard (BS 5837:2012): Trees in Relation to Design, Demolition and Construction – Recommendations.

British Standard (BS3998: 2010): Recommendations for Tree Work.

Multi-Agency Geographic Information for the Countryside [Magic Map Application \(defra.gov.uk\)](https://defra.gov.uk/magic-map) accessed March 2022

Annex 1 – BS5837 Survey Methodology

1.1 Introduction

- 1.1.1 The BS5837 survey was undertaken in accordance with the following criteria:
- Arboricultural features have been recorded as individual trees or tree groups where this has been deemed appropriate. Tree groups have been recorded on the basis that they form distinct arboricultural features either aerodynamically, visually or because they contain trees of similar cultural and biodiversity value.
 - The trees have been visually inspected from ground level only.
 - No tissue samples were taken nor was any internal investigation of the subject trees undertaken.
 - Tree heights and crown spreads have been estimated to the nearest 1m.
 - Notes have been recorded where they relate to the quality of the arboricultural feature.
- 1.1.2 Stem diameters have been measured in accordance with Annex C of BS 5837. Diameters of single stem trees on level ground have been measured at 1.5m above ground level. The diameters of other commonly encountered stems have been measured as per the guidance. The combined stem diameters for multi-stemmed trees have been calculated in accordance with BS 5837 paragraph 4.6.1.
- 1.1.3 BS5837 identifies that Root Protection Areas (RPAs) are calculated as an area equivalent to a circle with a radius 12 times the stem diameter.

1.2 Quality Assessment

- 1.2.1 The quality of arboricultural features has been determined in accordance with BS 5837 Table 1. A copy of this is provided in Table A1.1. The purpose of the quality assessment is to enable informed decisions to be made regarding the removal and retention of arboricultural features in the context of development. For an arboricultural feature to be included within a particular quality category it should accord with the description provided.
- 1.2.2 The quality of each arboricultural feature may be further defined based on its sub-category. Sub-categories carry equal weight, do not influence retention priority, and are simply included to indicate the primary value associated with each surveyed item. Sub-categories 1, 2 and 3 are intended to reflect arboricultural, landscape and cultural values, respectively. They have not been applied.
- 1.2.3 The quality assigned to each arboricultural feature are identified within the Arboricultural Survey Schedule included in Annex 2 of this Appendix.

Table A1.1 - Cascade Chart for Tree Quality Assessment reproduced from BS5837

Category and Definition	Criteria (including subcategories where appropriate)
Category U Those in such a condition that they cannot realistically be retained as	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g., where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning)

Category and Definition	Criteria (including subcategories where appropriate)		
living trees in the context of the current land use for longer than 10 years	<ul style="list-style-type: none"> • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low-quality trees suppressing adjacent trees of better quality NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve		
	1 Mainly arboricultural qualities	2 Mainly landscape qualities	3 Mainly cultural values
Category A Trees of high quality with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g., the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g., veteran trees or wood-pasture)
Category B Trees of moderate quality with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C Trees of low quality with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

1.3 Notes and Limitations

1.3.1 Arboricultural survey data is of a preliminary nature and has been collected based on a walkover survey.

- 1.3.2 Only defects visible from the ground have been noted and each individual feature may not have been inspected closely due to access difficulties, the presence of dense ivy, other vegetation, or safety constraints. Safety related features have not been recorded on the basis that the arboricultural features will be subject to a normal programme of tree hazard assessment and only those features which materially affect the quality of the feature or pose a real and immediate safety concern have been recorded.
- 1.3.3 Arboricultural survey data is typically valid for a period of two years unless otherwise stated. Notable environmental events (such as extreme weather conditions) or changes within the study area may render it invalid within a shorter timescale.
- 1.3.4 Whilst arboricultural surveys are not seasonally limited it is the case that certain pests and diseases may be more or less evident at different times of the year. This is especially true of certain wood decaying fungi such as the Giant Polypore (*Meripilus giganteus*) where fruiting bodies are short-lived, and the early stages of root decay may not result in other identifiable symptoms. Walkover survey data is therefore based upon observations made at the time of the site visit and may be subject to change should further or more detailed inspections be undertaken.

Annex 2 – Arboricultural Survey Schedule

Key – Arboricultural Survey Schedule

Reference Abbreviations

- LG – Linear Group
- T – Tree
- W - Woodland

Measurements

Height is estimated to provide a relative indication of tree size.

Stem Diameter measurements are in accordance with BS 5837.

Crown spread for individual trees was estimated in the four cardinal points.

LCH is the lowest canopy height. It is an estimate of the lowest point of foliage above ground level of the tree indicating the clearance below the tree.

LBH is the lowest branch height and is the height above ground level of the first branch union.

Assessments

Life stage:

- Young – <15% estimated life expectancy
- Semi-mature – <25% estimated life expectancy
- Early Mature – < 50% estimated life expectancy
- Mature – >50% estimated life expectancy

Physiological condition – Good, Fair, Poor or Dead

Structural condition – Good, Fair, Poor or Unstable

Estimated remaining contribution - <10 years, 10+ years, 20+ years or 40+ years.

BS 5837 Category – A, B, C or U with a single sub-category recorded as 1, 2 or 3.

Root Protection Area

RPA radius is the radius of a circular Root Protection Area associated with the tree as measured from the centre of the stem. For arboricultural features where more than one stem diameter is recorded, the RPA radius is calculated using the largest dimension.

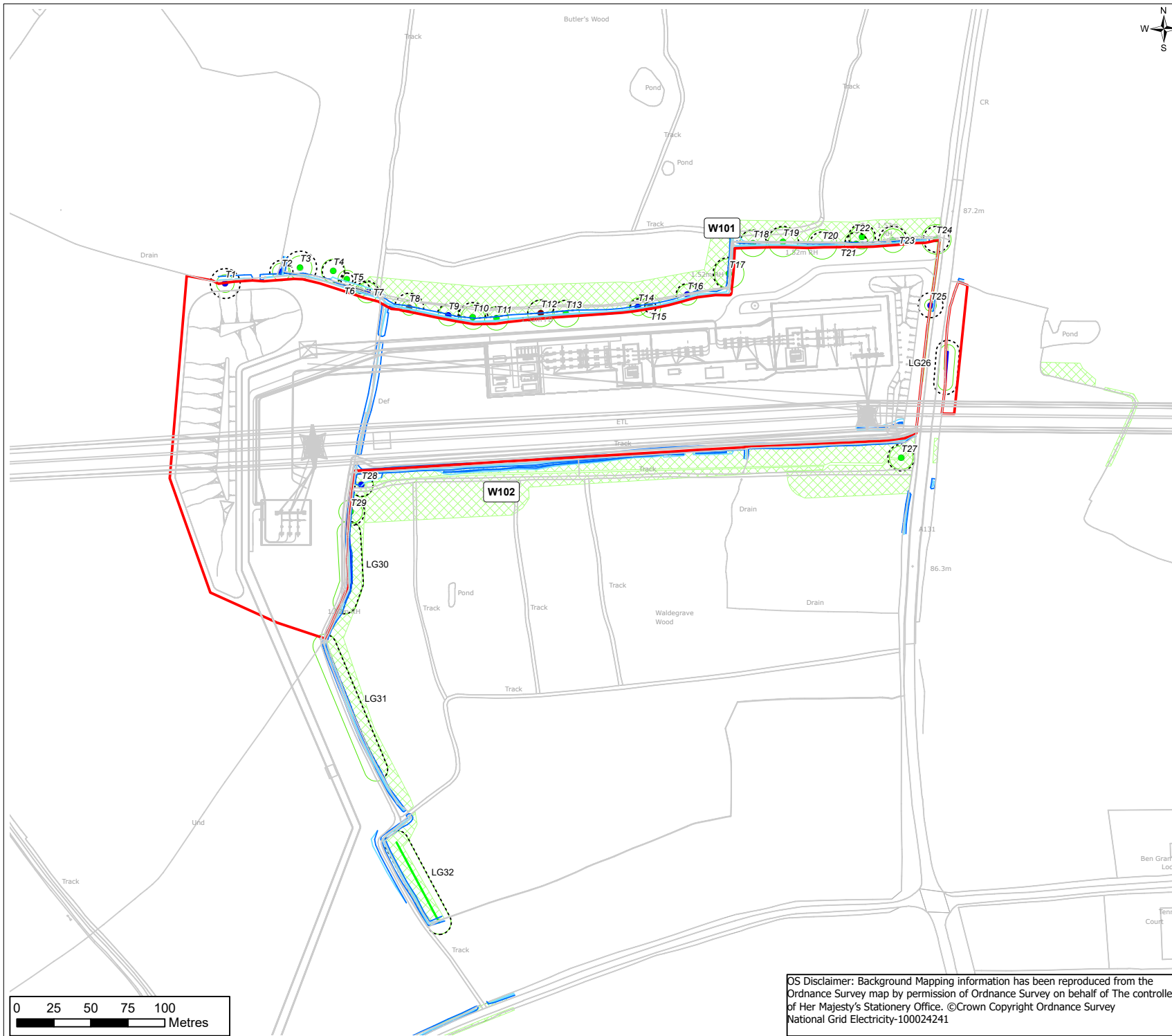
Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N, E, S, W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	RPA Area (m2)	Estimated Remaining Contribution	BS5837 Category
T1	Oak	17	840	6 - 6 - 6 - 6	1	3	Mature (Early)	G	G	Minor deadwood in crown	10.1	320	20+	B
T2	Oak	22	650	6 - 6 - 6 - 6	2	3	Mature (Early)	G	F	Old damage to base of trunk. partly occluded	7.8	191	20+	B
T3	Oak	26	930	8 - 8 - 8 - 8	6	3	Mature (Late)	F	G	Minor stem bleeds	11.2	394	40+	A
T4	Oak	24	620	8 - 8 - 8 - 8	8	6	Mature (Early)	G	G	Minor deadwood branching	7.4	172	40+	A
T5	Ash	28	350	6 - 6 - 6 - 6	8	8	Mature (Early)	G	G	Very tall drawn specimen	4.2	55	40+	A
T6	Oak	18	550	4 - 4 - 4 - 4	10	10	Mature (Early)	P	F	Very sparse crown but no physiological indication why	6.6	137	10+	C
T7	Oak	20	650	7 - 7 - 7 - 7	5	5	Mature (Early)	F	G	Multiple minor stem bleeds	7.8	191	20+	B
T8	Oak	16	820	5 - 5 - 5 - 5	4	4	Mature (Late)	F	P	Top blown out	9.8	302	10+	C
T9	Oak	24	640	7 - 7 - 7 - 7	4	4	Mature (Late)	P	G	Very thin crown	7.7	186	20+	B
T10	Oak	26	840	8 - 8 - 8 - 8	4	4	Mature (Late)	G	G	n/a	10.1	320	40+	A
T11	Oak	26	640	8 - 8 - 8 - 8	5	5	Mature (Late)	G	G	n/a	7.7	186	40+	A
T12	Oak	20	750		0	0		N/A	P	Pair of dead oak. Structurally stable.	9	254	<10	U
T13	Oak	26	750	9 - 9 - 9 - 9	4	4	Mature (Late)	G	G	n/a	9	254	40+	A
T14	Aspen	20	430	6 - 6 - 6 - 6	6	1	Mature (Early)	F	F	Branch break and hanging into field	5.2	85	20+	B
T15	Oak	20	630	7 - 7 - 7 - 7	3	3	Mature (Early)	F	G	Thinning crown	7.6	181	20+	B

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N, E, S, W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	RPA Area (m2)	Estimated Remaining Contribution	BS5837 Category
T16	Goat Willow	12	320	7 - 7 - 7 - 7	1	1	Semi-Mature	F	F	Growing within the ditch at woodland edge. leaning to south.	3.8	45	10+	C
T17	Oak	26	900	10 - 10 - 10 - 10	6	8	Mature (Late)	G	G	n/a	10.8	366	40+	A
T18	Oak	24	750	9 - 9 - 9 - 9	6	8	Mature (Late)	G	F	Some crown deadwood and crown a little thin	9	254	40+	A
T19	Oak	26	870	10 - 10 - 10 - 10	6	6	Mature (Late)	G	G	Fine older specimen. no veteran features	10.4	340	40+	A
T20	Oak	26	700	10 - 10 - 10 - 10	5	6	Mature (Late)	G	G	n/a	8.4	222	40+	A
T21	Oak	26	630	8 - 8 - 8 - 8	3	3	Mature (Late)	G	G	n/a	7.6	181	40+	A
T22	Oak	26	750	8 - 8 - 8 - 8	4	6	Mature (Late)	G	G	n/a	9	254	40+	A
T23	Oak	24	810	8 - 8 - 8 - 8	2	2	Mature (Late)	G	G	n/a	9.7	296	40+	A
T24	Oak	26	730	10 - 10 - 10 - 10	2	2	Mature (Late)	G	G	n/a	8.8	243	40+	A
T25	Oak	15	700	4 - 4 - 4 - 4	1	2	Mature (Late)	G	G	n/a	8.4	222	20+	B
LG26	Oak	18	600	7 - 7 - 7 - 7	2	2	Mature (Early)	G	G	Line 3 roadside oak, estimated from safe location on opposite roadside	7.2	163	20+	B
T27	Oak	26	750	8 - 8 - 8 - 8	8	8	Mature (Late)	G	G	Estimated from field edge	9	254	40+	A
T28	Oak	22	640	8 - 8 - 8 - 8	3	5	Mature (Early)	F	G	Thinning canopy with no obvious cause. Some	7.7	186	20+	B

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N, E, S, W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	RPA Area (m2)	Estimated Remaining Contribution	BS5837 Category
										deadwood in crown				
T29	Oak	24	780	8 - 8 - 8 - 8	1	1	Mature (Late)	G	G	n/a	9.4	278	40+	A
LG30	Oak	24	650	10 - 10 - 10 - 10	1	2	Mature (Late)	F	G	Best trees are potentially A-category but others showing thin crowns with no evident physiological reason. B category on basis cannot ascribe 40+ useful life	7.8	191	20+	B
LG31	Oak	24	650	10 - 10 - 10 - 10	1	2	Mature (Late)	F	G	Some thin crowns with other trees currently healthy but cannot guarantee 40+ years of useful life	7.8	191	20+	B
LG32	Oak, aspen	22	680	10 - 10 - 10 - 10	2	2	Mature (Late)	G	G	Healthy oak with aspen shrub layer	8.2	211	40+	A
W101	Oak, ash, birch, field maple, small-leaved lime, hazel	26	930	10 - 10 - 10 - 10	0	0	Mature	G	G	n/a	11.2	394	40+	A
W102	Oak, ash, birch, field maple,	26	780	10 - 10 - 10 - 10	0	0	Mature	G	G	n/a	9.4	278	40+	A

Ref.	Species	Height (m)	Stem Dia. (mm)	Crown Spread N, E, S, W	LCH (m)	LBH (m)	Life Stage	Physiological Condition	Structural Condition	Tree Condition Notes & Observations	RPA Rad. (m)	RPA Area (m2)	Estimated Remaining Contribution	BS5837 Category
	aspen, hazel													

Annex 3 – Arboricultural Constraints Plan



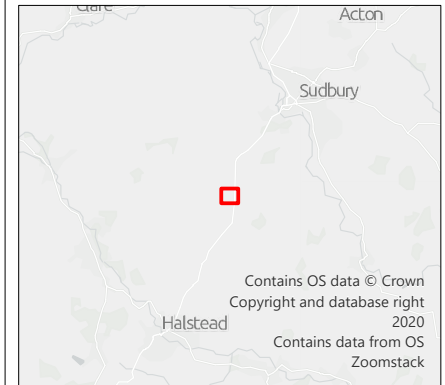
FIGURE

Legend

BS5837 Category

- A - High Quality
- A - High Quality
- B - Moderate Quality
- C - Low Quality
- U - Very Low Quality

- Woodland Group
- Root Protection Area
- Red Line Boundary
- Top of Bank
- Bottom of Bank



1	04/2022		SB	EB		
Rev.	Date	Purpose of revision	Drawn	Check'd	Rev'd	Appr'd

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Project
Proposed Grid Supply Point Substation off the A131

Drawing Title
Arboricultural Constraints Plan

Drawing Status
 Scale @ A3 1:2,500 DO NOT SCALE

Jacobs No.
 Client No.
 Drawing No. **Figure A5.1**

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