



**Tree Survey and Arboricultural Impact Assessment
In Accordance with BS 5837:2012**

Project No 11438	Singleton Birch Quarry, Barnetby		
Client:		Centrica PLC	
Date of Report:	08/01/2026	Revision:	B
Prepared by:	Lewis Alexander	Checked by:	DCM

Hayden's Arboricultural Consultants Ltd, Units 3-5 Moseley's Farm Business Centre
Fornham All Saints, Bury St Edmunds, Suffolk IP28 6JY

Telephone: 01284 765391 Email: info@treesurveys.co.uk
www.treesurveys.co.uk

Summary

In this circumstance it is intended to construct a hydrogen plant to power kilns at Singleton Birch Quarry, Barnetby, which includes a new access from the A18 Road, and pipework crossing a trainline. The arboricultural related implications of the proposal are summarised in Tables 1 and 2 below, and detailed where necessary within the report.

All trees and landscape features that are to remain as part of the development should suffer no structural damage provided that the findings within this report are complied with in full.

Table 1 - Construction and ongoing constraints from an arboricultural perspective (subject to necessary tree surgery being completed):

Potential Design/Build Constraints	Arboricultural Impact?	Comments/Solution
Construction Access	No	
Demolition	N/A	
New Structures	No	
New Hard Surfaces	No	
Services	Yes	Connecting pipework must be installed using directional drilling or similar trenchless construction methods. See section 4.1.1
Compound	No	
Phasing	Yes	Please see item 4.4

Table 2 - Tree surgery and felling necessary to facilitate the proposal:

Feature No	Surgery or Fell	Reason for Works	BS Category
A005 (part of)	Fell all tree stems within hatched area shown on plan. Following this, lift any remaining canopy within hatched area to 5.5m height †	Conflict with proposed site access. To achieve the required vehicle visibility splay.	B
Off-site tree (unnumbered)	Fell †	Conflict with proposed site access.	*

* This tree has not been subject to detailed inspection, see section 1.2.5

† Written permission must be obtained by the landowner prior to commencement of works



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1.0 Introduction

1.1 Purpose

1.1.1 As part of the United Kingdom planning process, applicants are required to supply local planning authorities with a detailed evaluation of how their proposals will impact trees. The nationally recognised procedure for doing this is laid out in *BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations"*. In summary, this must include the following information as a minimum: -

- A Tree Survey and Tree Constraints Plan.
- An Arboricultural Impact Assessment of sufficient detail to confirm the feasibility of the design from a tree perspective.
- A scaled Tree Retention and Removal drawing showing retained trees and their root protection area on the proposed layout.

1.1.2 This report has been prepared to ensure that this information is provided to the Local Planning Authority in a straightforward and clear way so that they can make an informed decision about how (if at all) trees are affected.

1.1.3 When planning permission is granted it is typically the case that the Local Planning Authority will require specific conditions to be fulfilled. This means that a subsequent detailed Arboricultural Method Statement and Tree Protection Plan may be required. This will be detailed on the Local Planning Authority's decision notice.

1.2 Scope

1.2.1 In accordance with the above, Centrica PLC have commissioned Hayden's Arboricultural Consultants to prepare a Tree Survey and Constraints Plan, Arboricultural Impact Assessment and scaled Tree Retention and Removal drawing for the existing trees at Singleton Birch Quarry, Barnetby.

1.2.2 Unless stated within the survey, all trees were inspected from ground level with no climbing inspections undertaken. As such, the findings are of a preliminary nature. It is not always possible to access every tree and therefore some measurements may have to be estimated.

1.2.3 The trees were inspected on the basis of "*Visual Tree Assessment*" (Mattheck & Breloer - 1994) and "*Common Sense Risk Management of Trees*" National Tree Safety Group guidance – 2011.

1.2.4 Whilst this is an arboricultural report, comments relating to non arboricultural matters are given, such as built structures and soil data. Any opinion thus expressed should be viewed as provisional and confirmation from an appropriately qualified professional sought. Such points are clearly identified within the body of the report.

1.2.5 Subsequent to the tree survey, plans have been produced which impact an off-site tree. This tree has not been subject to detailed inspection. Information has been taken from the available topographical survey and is shown on drawing 11438-D-AIA rev B. Assessment of impacts has been based on this, and photographic imagery available online.



1.3 Documentation

1.3.1 The following documentation was provided prior to the commencement of the production of this report:

- Purchase order 4900037674 dated 19/12/2024, from Centrica Energy Storage Limited
- Further instruction from Andrew Fillmore dated 09/12/2025
- Definition of site boundary, description of requirements/deadlines.
- Topographical survey (Ref No 51214_2D).
- Site Access Design '65216055-SWE-XX-ZZ-D-TP-0002-P03'
- Landscape and Ecological Proposals Plan 65216371_SWE_XX_XX_D_L_0001

2.0 The Site

2.1 Overview

2.1.1 The site is at Singleton Birch Quarry, Barnetby. The site comprises a field accessed from the south via the A18 Road. The field was used for mineral extraction and has been subsequently filled. Also within the redline boundary is a connection point to the processing plant running north, intersecting with a trainline.

2.2 Soils

2.2.1 The (native) soils type commonly associated with this site are freely draining lime-rich loams. They are of moderate fertility and mainly support herb-rich chalk and limestone pastures, and lime-rich deciduous woodland type habitats. This soil type constitutes approximately 3.7% the total English land mass.

2.2.2 The data given was obtained from a desktop study which provides indications of likely soil types. By definition, this information is not comprehensive and therefore any decisions taken with regards the management, usage or construction on site should be based on a detailed soil analysis.

2.2.3 Further to item 2.2.2, this report provides no information on soil plasticity. It may be necessary for practitioners in other disciplines (e.g. engineers considering foundation design) to obtain this data as required.

2.3 Statutory Tree Protection

2.3.1 Information on any Local Planning Authority or Forestry Commission controlled statutory tree protection (Tree Preservation Orders, Conservation Areas and Felling Licenses etc) is recorded on the attached drawing no. 11438-D-AIA rev B.

2.3.2 Further details regarding any existing Statutory Tree Protection is recorded at Appendix B.



3.0 Tree Survey

- 3.1 The tree survey was carried out on 28/01/2025 in accordance with *BS5837:2012 "Trees in relation to design, demolition and construction – Recommendations"*, the relevant qualitative and quantitative tree data was recorded in order to assess the condition of the existing trees and their constraints upon the proposed development.
- 3.2 A topographical survey was provided which showed the position of the trees on site. It should be noted however that topographical surveys are not always comprehensive and sometimes it is considered appropriate to record details of trees and landscape features omitted from or beyond the scope of the plan. If this circumstance occurs, the location of the individual tree or landscape feature is estimated. The position of each tree is shown on the attached drawing no. 11438-D-AIA rev B.
- 3.3 In order to provide a systematic, consistent and transparent evaluation of the trees included within this survey, they have been assessed and categorised in accordance with the method detailed in item 4.3 of *BS5837:2012 "Trees in Relation to Design, Demolition and Construction - Recommendations"*. For further information, please see the attached Explanatory Notes.
- 3.4 The detailed assessment of each tree and its work requirements with priorities are listed in the attached Schedule of Trees.
- 3.5 In accordance with item 4.2.4 (c) of BS5837:2012, the items inspected and detailed within this report have been selected for inclusion due to the likely influence of any proposed development on the trees, rather than strictly adhering to the curtilage of the site. However, it must be understood that there may be trees beyond the site and not included in this survey which may exert an influence on the development. Where works for cultural, health and safety, quality of life, or development purposes have been recommended on trees outside the ownership of the site, these can only progress with the agreement of the owner, except where it involves portions of the trees overhanging the boundary.

4.0 Arboricultural Impact Assessment (Additional or Specific Comments)

4.1 Construction

4.1.1 Pipeline connection across Railway

The construction of pipework under the railway is required. This activity has the potential to affect trees of A001 and H001. Trenchless insertion methods must be used, with entry and retrieval pits (if required) being sited outside the RPA. It is concluded that no other form of construction for this service is possible given the constraint posed by the railway. Given the level changes present on site, it is anticipated that no direct interaction between roots and excavation is likely to occur. Therefore, major adverse tree impacts are not considered reasonably foreseeable, however, to ensure this, detailed designs and specifications should be developed in conjunction with an arboriculturalist.



4.1.2 **Proposed access from A18**

Tree removal is specified to provide 4 metres of clearance from the proposed access road's kerb edging. This is to provide adequate working space for the construction process. Detailed planting plans should be developed to mitigate the reduction of visual amenity at the southern boundary.

4.2 **Services**

Full details of service routes are not available. However, it is important to establish the principle that wherever possible, all underground service runs will be placed outside the Root Protection Areas (RPA) of the trees on or adjacent to the site. Where it is not possible to do this, any infringement must be addressed by hand digging or trenchless technology. Similarly, all routes for overhead services will aim to avoid the trees and where this is not possible, any necessary tree work must be agreed with the Local Planning Authority.

4.3 **Excavation and Soil Profiling**

This assessment is based on an assumption that level changes will not occur within the RPA of trees that are shown to be retained. On this site, embankments and undulations exist. If such activity is necessary, a reappraisal of the arboricultural implications will be required.

4.4 **Phasing and Monitoring**

The proposal involves the integration of several complex aspects that affect tree protection (e.g. – but not exclusively – the movement of materials and the installation of services). For this reason, the project must be carefully phased and monitored to ensure the highest level of protection is maintained for retained trees. As part of a detailed Arboricultural Method Statement & Tree Protection Plan, Hayden's Arboricultural Consultants can produce an in-depth phasing recommendation to cover the major operations on site as they affect retained trees.



5.0 Limitations & Qualifications

Tree inspection reports are subject to the following limitations and qualifications.

General exclusions

Unless specifically mentioned, the report will only be concerned with above ground inspections. No below ground inspections will be carried out without the prior confirmation from the client that such works should be undertaken.

The validity, accuracy and findings of this report will be directly related to the accuracy of the information made available prior to and during the inspection process. No checking of independent third-party data will be undertaken. Hayden's Arboricultural Consultants Limited will not be responsible for the recommendations within this report where essential data are not made available or are inaccurate.

This report will remain valid for one year from the date of inspection subject to the recommendations specified within being adhered to. It must also be appreciated that recommendations proposed within this report may be superseded by extreme weather, or any other unreasonably foreseeable events.

Tree surgery should be completed as detailed in the Schedule of Trees. Where this has been identified for reasons other than to permit development, this work should be completed within the advised timescales irrespective of any development proposals.

Tree surgery works may also be proposed as part of this Survey to mitigate any identified problems that may be caused by trees in close proximity to the proposed development. To this end, should these recommendations be overruled, this Survey stands as the opinion of Hayden's Arboricultural Consultants Limited, and therefore any damage or injury caused by trees recommended by this practice for felling or tree surgery works, to which the proposed schedule of works has been altered or the tree has been requested to be retained by the Local Planning Authority, cannot be the responsibility of this practice.

Moreover, if any additional alterations to the property or soil levels are carried out and/or further tree works undertaken other than specified within the report, it will become invalid and a new tree inspection required.

It will be appreciated, and deemed to be accepted by the client and their insurers, that the formulation of the recommendations for the management of trees will be guided by the following: -

1. The need to avoid reasonably foreseeable damage.
2. The arboricultural considerations - tree safety, good arboricultural practice (tree work) and aesthetics.

The client and their insurers are deemed to have accepted the limitation placed on the recommendations by the sources quoted in the attached report. Where sources are limited by time constraints or the client, this may lead to an incomplete quantification of the risk.

Signed:



January 2026

For and on Behalf of Hayden's Arboricultural Consultants Limited



6.0 References

British Standards Institute. (2010). *Recommendations for Tree Work BS3998:2010* BSI, London.

British Standards Institute. (2012). *Trees in Relation to Design, Demolition and Construction – Recommendations BS5837:2012* BSI, London.

Ministry of Housing, Communities & Local Government. (2014). *Tree Preservation Orders and trees in conservation areas*. London: Ministry of Housing, Communities & Local Government.

Mattheck & Breloer, H. (1994). *Research for Amenity Trees No.4: The Body Language of Trees*, HMSO, London.

NHBC Standards (2007) *Chapter 4.2 'Building Near Trees'*. National House-Building Council.

NJUG 4 Guidelines for the planning, installation and maintenance of utility apparatus in proximity to trees. Issued 16 November 2007.

Forestry Commission (2007). *Tree Felling – Getting Permission*. Country Services Division, Forestry Commission, Edinburgh.

Lonsdale, D. (1999). *Research for Amenity Trees No 7: Principles of Tree Hazard Assessment and Management*, HMSO, London.

National Tree Safety Group (2011). *Common Sense Risk Management of Trees*. Forestry Commission.



7.0 Appendices

Appendix	A	Species List & Tree Problems
Appendix	B	Statutory Tree Protection Advice & Tree Preservation Order Enquiry/Response
Appendix	C	Schedule of Trees
Appendix	D	Preliminary Schedule of Works to Allow Development
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Appendix	F	Advisory Information & Sample Specifications
		1. BS 5837:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care
		2. European Protected Species and Woodland Operations Checklist (v.4)
Appendix	G	Drawing No 11438-D-AIA rev B.



Appendix A - Species List & Tree Problems

Species List:

Ash

Fraxinus excelsior

Hawthorn

Crataegus monogyna

Norway Maple

Acer platanoides

Sycamore

Acer pseudoplatanus


Whitebeam

Sorbus Aria



Tree Problems:

This gives a brief description of the problems identified in the attached Tree Survey.

Name: Deadwood	
Symptoms/damage type and cause:	This relates to dead branches in the crown of the tree. In the majority of cases, this is caused by the natural ageing process of the tree or shading due to its close proximity to neighbouring trees. However, in some situations, it may be related to fungal, bacterial or viral infection.
Consequence:	Depending upon the location and mass of dead wood removal of the affected tissue may be necessary to prevent harm to persons or property as the wood will become unstable as it decays and in some circumstances is likely to fall from the tree with little or no warning.
Control:	Detailed monitoring should be undertaken on those trees showing signs of excessive deadwood production to identify the underlying cause.
Species affected:	Most tree species.
Images:	



Appendix B - Statutory Tree Protection Advice & Tree Preservation Order Enquiry/Response

Statutory Tree Protection Advice

Hayden's Arboricultural Consultants Limited have been informed that at the *date of the tree inspection* the trees concerned were not located within a Conservation Area or the subject of a Tree Preservation Order. As such, no written permission would be required from the Local Planning Authority prior to commencing works to trees. It should be noted however, that the Local Planning Authority have the power to serve Tree Preservation Orders very rapidly, and therefore it is incumbent upon owners, managers or any persons wishing to undertake work to any trees to contact the Local Planning Authority prior to commencing works to ensure that the situation has not changed.

This information was sourced using the Local Planning Authority's Online Mapping System (as instructed by them) and to our best knowledge was current and accurate at the time the information was accessed. We would advise it prudent that before any tree work commences, this is checked directly with the Local Planning Authority to confirm that their online mapping system is definitive.

Felling Licence

All trees within the United Kingdom are protected under the Forestry Acts. In All trees within the United Kingdom maybe subject to protections under the Forestry Acts (principally the Forestry Act 1967). In general, anyone felling more than 5 cubic metres of timber in any calendar quarter requires a Felling Licence from the Forestry Commission. There are exemptions however and these are as follows:-

A Felling Licence is not required in the following instances:

- To fell trees in a garden, an orchard, a churchyard, or a designated open space (Commons Act 1899 and Section 9 of the Forestry Act 1967).
- To carry out surgery operations such as pruning, reduction, dead wooding or pollarding.
- To fell less than 5 cubic metres in a calendar quarter. (Please note that not more than 2 cubic metres in a calendar quarter may be sold).
- To fell trees that are 8 centimetres or less in diameter when measured 1.3 metres from the ground. Trees removed for thinning may have a diameter of up to 10 centimetres and trees managed under a coppice regime may have a diameter of up to 15 centimetres.
- To fell trees previously approved for removal under a Dedication Scheme, or where Detailed Planning Permission has been granted.
- To fell trees to prevent danger or abate a legal nuisance.
- To fell trees in compliance with any obligation imposed by or under an Act of Parliament.
- To fell trees at the request of an electricity operator, because the trees are or will be in such close proximity to installed or about to be installed electric line or electrical plant in accordance with paragraph 9(1)(a) or (b) of Schedule 4 to the Electricity Act 1989.

Substantial fines exist for not complying with the requirements of a Felling Licence.



Hedgerow Regulations and Inclosure Act

Certain hedgerows within the United Kingdom are protected under The Hedgerow Regulations 1997. The regulations apply to any hedgerow growing in, or adjacent to, any common land, protected land (local nature reserves and SSSIs), or land used for agriculture, forestry or the breeding or keeping of horses, ponies or donkeys, if it: (a) has a continuous length of, or exceeding 20m; or (b) it has a continuous length of less than 20m and, at each end, meets another hedgerow. The regulations do not apply to hedgerows within the curtilage of, or marking a boundary of the curtilage of, a dwelling house.

Anybody wishing to remove or destroy a hedge must apply to the Local Planning Authority for consent. Substantial fines exist for not complying with the requirements of The Hedgerow Regulations.

Older hedges could be protected by old Inclosure Acts. These Acts may require that hedges are retained and managed in perpetuity.

It is recommended professional legal advice be sought before removing hedgerows to determine whether the hedgerow might be protected by the Inclosure Act. Details of the Inclosures Act are held by the Local Records Office.



Tree Preservation Order / Conservation Area Online Mapping Extract

NORTHLINCS.GOV.UK

Search for a location:

DN38 6AE

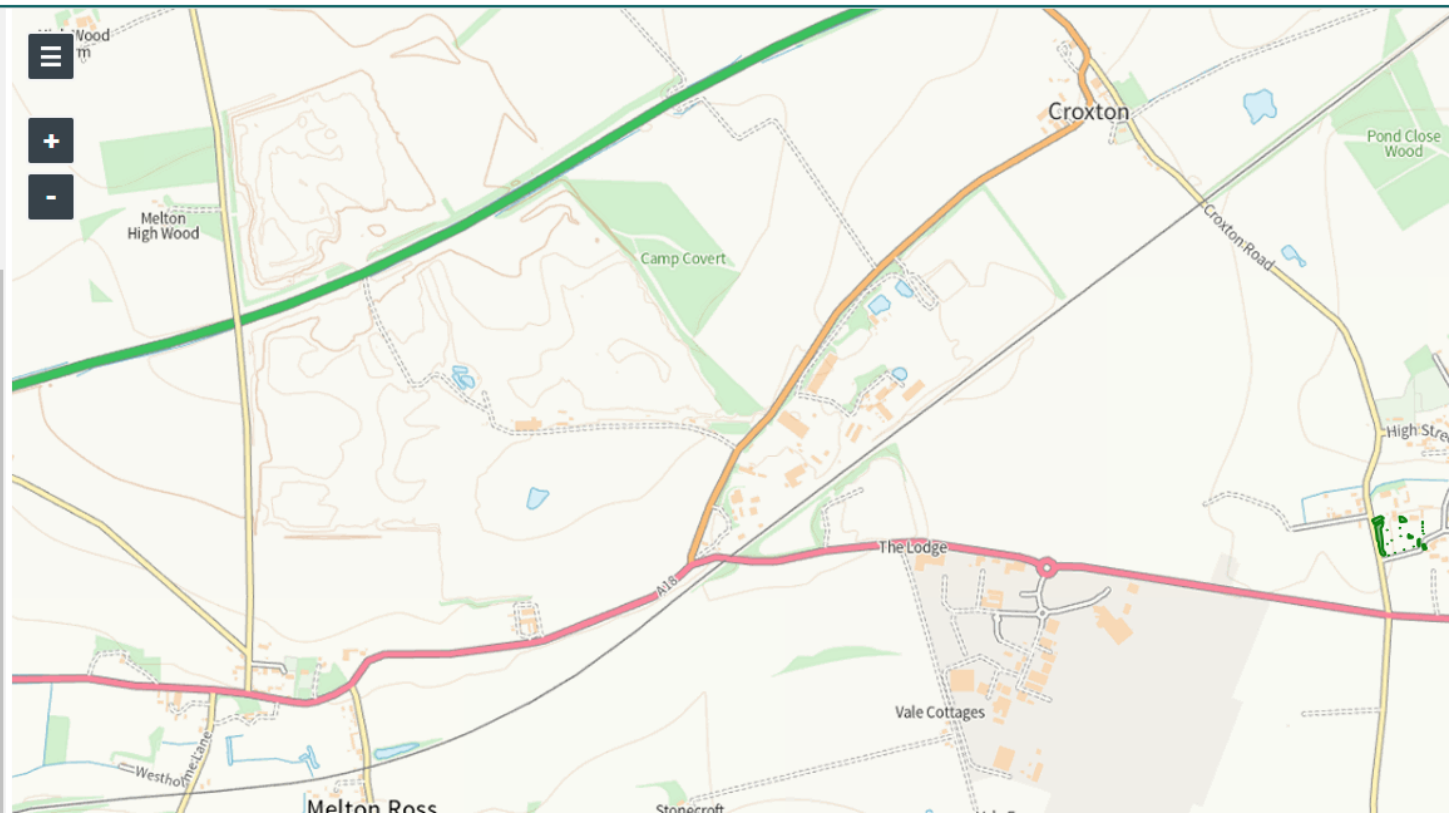
Find

Records 1 to 2 of 2

- Singleton Birch, Brigg Road, Melton Ross, DN38 6AE

* Clear search

+ Council	0/15	<input type="checkbox"/>
+ NHS Choices	0/5	<input type="checkbox"/>
+ Police and Crime	0/4	<input type="checkbox"/>
- Environment	2/11	<input checked="" type="checkbox"/>
Conservation Area		<input checked="" type="checkbox"/>
Listed Buildings		<input type="checkbox"/>
Tree Preservation Orders		<input checked="" type="checkbox"/>
Public Rights of Way		<input type="checkbox"/>
Section 15s		<input type="checkbox"/>
Section 31s		<input type="checkbox"/>
Section 31 footpaths		<input type="checkbox"/>
Local Nature Reserves		<input type="checkbox"/>
Smoke Control Areas		<input type="checkbox"/>
Article 4 Direction		<input type="checkbox"/>
Scheduled Monuments		<input type="checkbox"/>
+ Highways	0/5	<input type="checkbox"/>



Appendix C

Schedule of Trees

SCHEDULE OF TREES (AIA) , Barnetby,

Surveyed By: Lewis Alexander Date: 28/01/2025

Managed By: Lewis Alexander

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
		RPA (m ²)	Aspect	Aspect	SULE	Ground Cover						
A001	Hawthorn, Ash, Norway Maple, Whitebeam	200	9.5		Moderate	N4, E4, S4, W4	A mixed species feature at the northern boundary, comprised predominantly of Hawthorn. Located on an embankment by a railway. Stems are within 1 metre of a cut face. Ground disturbance has severed rooting material and may have casued these trees to be structurally unstable, though currently there are no targets. If site usage changes it may become necessary to fell selected specimens as a precaution. Trees appear to be of generally fair form and condition- dieback of some Ash specimens obaserved and occasional deadwood is present in crowns.	C2	No work required.	4		
		2.4	0.5		SM	High						
Yes		18.1			20+ years	Bare earth, Light undergrowth						
A002	Hawthorn	80	4		Low	N2, E2, S2, W2	Hawthorn on an embankment at the north boundary. Fair condition.	C2	No work required.	4		
		0.96	0.5		SM	High						
Yes		2.9			10+ years	Bare earth, Light undergrowth						
A003	Pine Spp, Ash, Hawthorn	350	14		Moderate	N5, E5, S5, W5	A mixes species boundary feature at northern corner of the site. Located on an embankment by a railway. Not possible to access, so surveyed at distance only. Dense screening quality. Appear to be of generally good form and condition.	B2	No work required.	4		
		4.2	1		SM	Moderate						
Yes		55.4			10+ years	Dense undergrowth						
A004	Sycamore, Ash, Hawthorn	300	8.5		Moderate	N3.5, E3.5, S3.5, W3.5	A linear boundary feature atop an embankment at east of site. Homogeneous in appearance. Semi-mature trees of good condition.	B2	No work required.	4		
		3.6	1		SM	Moderate						
Yes		40.7			20+ years	Light undergrowth						
A005	Sycamore, Ash	300	8.5		Moderate	N3.5, E3.5, S3.5, W3.5	A linear boundary feature atop an embankment at the south of site. Homogeneous in appearance. Semi-mature trees of good condition.	B2	No work required.	4	Fell all tree stems within hatched area shown on plan. Following this, lift any remaining canopy within hatched area to 5.5m height.	0
		3.6	1		SM	Moderate						
Yes		40.7			20+ years	Light undergrowth						

TreeNo	Species	DBH	Height		Visual	Crown Spread	Problems / Comments	BS Cat	Work Required (TS)	Priority (TS)	Work Required (AIA)	Priority (AIA)
		Min Dist	Crown Base	Lowest Branch	Age	Water Demand						
		RPA (m²)	Aspect	Aspect	SULE	Ground Cover						
H001	Hawthorn	100	2		Low	N1.5, E1.5, S1.5, W1.5	Sporadic hedge at top of a steep embankment. Many gaps. Fair condition.	C1	No work required.	4		
		1.2	0.1		EM	High						
Yes		4.5			10+ years	Bare earth						
H002	Hawthorn	200	5		Moderate	N3, E3, S3, W3	Mature Hawthorn, possibly a long lapsed hedge. Atop an embankment at east of site. Good form and condition.	B2	No work required.	4		
		2.4	0.5		M	High						
Yes		18.1			20+ years	Light undergrowth, Bare earth						
T001	Sycamore	400	10		Moderate	N4.5, E4.5, S4.5, W4.5	A large within the northern boundary feature. Larger and possibly older than those around it. Located on the north face of the embankment. Appears to be of good form and condition	B2	No work required.	4		
		4.8	1		SM	Moderate						
Yes		72.4			20+ years	Bare earth						
T002	Pine Sp	430	14		Moderate	N5, E5, S5, W5	A twin-stemmed tree within the northern boundary feature. Larger and possibly older than those around it. Located on the north face of the embankment. Appears to be of fair form and good condition	C2	No work required.	4		
		5.16	4		EM	Moderate						
Yes		83.6			10+ years	Dense undergrowth						

Appendix D

Schedule of Works to Allow Development

SCHEDULE OF WORKS (AIA)

, Barnetby,

Surveyed By: Lewis Alexander
Surveyed: 28/01/2025
Managed By: Lewis Alexander

Tree No.	Species	Work required	Priority
A005	Sycamore, Ash	Fell all tree stems within hatched area shown on plan. Following this, lift any remaining canopy within hatched area to 5.5m height.	0



Appendix E

Explanatory Notes

Explanatory Notes

Categories

No	Identifies the tree on the drawing.
Species	Common names are given to aid understanding for the wider audience.
BS 5837 Main Category	<p>Using this assessment (BWS 5837:2012, table 1), trees can be divided into one of the following simplified categories, and are differentiated by cross-hatching and by colour on the attached drawing.</p> <p>Category A - Those of high quality with an estimated remaining life expectancy of at least 40 years;</p> <p>Category B - Those of moderate quality with an estimated life expectancy of at least 40 years;</p> <p>Category C - Those of low quality with an estimated remaining of at least 10 years, or young trees with a stem diameter below 150 mm;</p> <p>Category U - Those trees in such condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.</p>
BS 5837 Sub Category	<p>Table 1 of BS 5837:2012 also requires a sub category to be applied to the A, B, C, and U assessments. This allows for a further understanding of the determining classification as follows:</p> <p>Sub Category 1 - Mainly arboricultural qualities;</p> <p>Sub Category 2 - Mainly landscape qualities;</p> <p>Sub Category 3 - Mainly cultural values, including conservation.</p> <p>Please note that a specimen or landscape feature may fulfil the requirements of more than one Sub Category.</p>
DBH (mm)	Diameter of main stem in millimetres at 1.5 metres from ground level. Where the tree is a multi-stem, the diameter is calculated in accordance with item 4.6.1 of BS 5837:2012.
Height	Recorded in metres, measured from the base of the tree.
Crown Base	Recorded in metres, the distance from ground and aspect of the lowest branch material.
Lowest Branch	Recorded in metres, the distance from ground and aspect of the emergence point of the lowest significant branch.

Age	<p>Recorded as one of seven categories:</p> <p>Y Young. Recently planted or establishing tree that could be transplanted without specialist equipment, i.e. less than 150 mm DBH.</p> <p>S/M Semi-mature. An established tree, but one which has not reached its prospective ultimate height.</p> <p>E/M Early-mature. A tree that is reaching its ultimate potential height, whose growth rate is slowing down but if healthy, will still increase in stem diameter and crown spread.</p> <p>M Mature. A mature specimen with limited potential for any significant increase in size, even if healthy.</p> <p>O/M Over-mature. A senescent or moribund specimen with a limited safe useful life expectancy. Possibly also containing sufficient structural defects with attendant safety and/or duty of care implications.</p> <p>V Veteran. A tree considered a 'survivor' having endured injury, disease and/or decay, developing important habitat features such as decay, trunk hollowing, deadwood, fungal fruiting bodies (plus others) not solely as a consequence of time. Veteran trees are afforded additional protection within the planning system where they may be influenced by change.</p> <p>A Ancient. A tree that has the features of a Veteran tree but has also surpassed the typical lifespan for its species. These trees may differ in appearance from a Veteran tree, such as having a thick/wide trunk and a small crown. Ancient trees are usually considered to have exceptional cultural significance. Ancient trees are afforded additional protection within the planning system where they may be influenced by change.</p>
Safe Useful Life Expectancy (SULE)	<p>Relates to the prospective life expectancy of the tree and is given as 4 categories:</p> <p>1 = 40 years+;</p> <p>2 = 20 years+;</p> <p>3 = 10 years+;</p> <p>4 = less than 10 years.</p>
Crown Spread	<p>Indicates the radius of the crown from the base of the tree in each of the northern, eastern, southern and western aspects.</p>
Minimum Distance	<p>This is a distance equal to 12 times the diameter of the tree measured at 1.5 metres above ground level for single stemmed trees and 12 times the average diameter of the tree measured at 1.5 metres above ground level tree for multi stemmed specimens. (BS 5837:2012, section 4.6).</p>
RPA	<p>This is the Root Protection Area, measured in square metres and defined in BS5837:2012 as "a layout design tool indicating the minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability, and where the protection of the roots and soil structure is treated as a priority". The RPA is shown on the drawing.. Ideally this is an area around the tree that must be kept clear of construction, level changes of construction operations. Some methods of construction can be carried out within the RPA of a retained tree but only if approved by the Local Planning Authority's tree officer.</p>
Water Demand	<p>This gives the water demand of the species of tree when mature, as given in the NHBC Standards Chapter 4.2 "Building Near Trees".</p>

Visual Amenity	Concerns the planning and landscape contribution to the development site made by the tree, hedge or tree group, in terms of its amenity value and prominence on the skyline along with functional criteria such as the screening value, shelter provision and wildlife significance. The usual definitions are as follows:
Low	An inconsequential landscape feature.
Moderate	Of some note within the immediate vicinity, but not significant in the wider context.
High	Item of high visual importance.
Problems/ Comments	May include general comments about growth characteristic, how it is affected by other trees and any previous surgery work; also, specific problems such as deadwood, pests, diseases, broken limbs, etc.
Works Required (TS)	Identifies the necessary tree work to mitigate anticipated problems and deal with existing problems identified in the "Problems/comments" category.
Work Required (AIA)	Identifies the tree work specifically necessary to allow a proposed development to proceed.
Priority	This gives a priority rating to each tree allowing the client to prioritise necessary tree works identified within the Tree Survey. <ul style="list-style-type: none"> 1 Urgent – works required immediately; 2 Works required within 6 months; 3 Works required within 1 year; 4 Re-inspect in 12 months, 0 Remedial works as part of implementation of planning consent.

BS 5837:2012 Terms and Definitions

Access Facilitation Pruning	One-off tree pruning operation, the nature and effects of which are without significant adverse impact on tree physiology or amenity value, which is directly necessary to provide access for operations on site.
Arboricultural Method Statement	Methodology for the implementation of any aspect of development that is within the root protection area, or has the potential to result in loss of or damage to a tree to be retained.
Arboriculturist	Person who has, through relevant education, training and experience, gained expertise in the field of trees in relation to construction.
Competent Person	Person who has training and experience relevant to the matter being addressed and an understanding of the requirements of the particular task being approached. NOTE - a competent person is expected to be able to advise on the best means by which the recommendations of this British Standard may be implemented.
Construction	Site-based operations with the potential to affect existing trees.
Construction Exclusion Zone	Area based on the root protection area from which access is prohibited for the duration of a project.
Root Protection Area (RPA)	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.
Service	Any above or below ground structure or apparatus required for utility provision. NOTE - examples include drainage, gas supplies, ground source heat pumps, CCTV and satellite communications.
Stem	Principal above ground structural component(s) of a tree that supports its branches.
Structure	Manufactured object, such as a building, carriageway, path, wall, service run, and built or excavated earthwork.
Tree Protection Plan	Scale drawing, informed by descriptive text where necessary, based upon the finalized proposals, showing trees for retention and illustrating the tree and landscape protection measures.

Veteran/Ancient Tree Buffer

A diagrammatic representation of the additional protection measures afforded to Veteran and Ancient Trees by the imposing of a geographical 'buffer' space between the Veteran/Ancient Trees and any potential activity such as construction, that may affect the trees. The buffer zones are calculated as follows:

For ancient woodlands, the proposal should have a buffer zone of at least 15 metres from the boundary of the woodland to avoid root damage (known as the root protection area). Where assessment shows other impacts are likely to extend beyond this distance, the proposal is likely to need a larger buffer zone. For example, the effect of air pollution from development that results in a significant increase in traffic.

For ancient or veteran trees (including those on the woodland boundary), the buffer zone should be at least 15 times larger than the diameter of the tree. The buffer zone should be 5 metres from the edge of the tree's canopy if that area is larger than 15 times the tree's diameter. This will create a minimum root protection area.

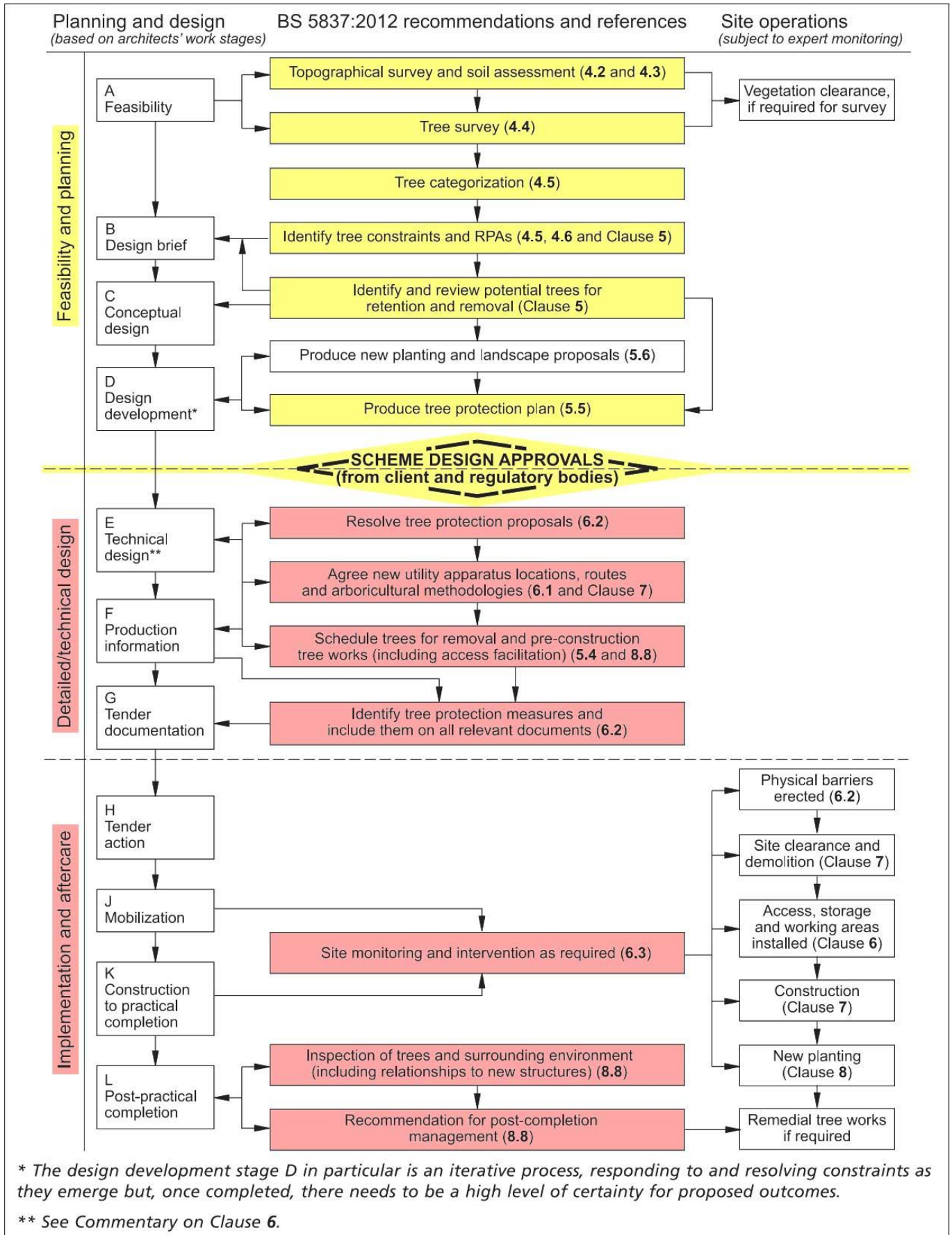
Where assessment shows other impacts are likely to extend beyond this distance, the proposal is likely to need a larger buffer zone.

Source: Natural England; The Forestry Commission; The UK Government Dept. for The Environment.

Appendix F

Advisory Information & Sample Specifications

1. BS 5837:2012 Figure 1 - Flow Chart – Design and Construction & Tree Care



2.

European Protected Species and woodland operations. (V4)
Complete all sections of the Checklist

Checklist		Details												
1	<p>Are you within, or close to, the known mapped range of any of the protected species OTHER THAN BATS which are potentially everywhere? Tick any that apply. See distribution maps in the Good Practice Guidance for each species -</p> <p><input type="checkbox"/> Dormice <input type="checkbox"/> Otters <input type="checkbox"/> Great crested newts <input type="checkbox"/> Sand lizards <input type="checkbox"/> Smooth snakes</p>	<p>Name of Wood:</p> <hr/> <p>Grid Reference:</p> <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> </tr> </table> <p>Area: (ha)</p> <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> </tr> </table> <p>Date of Assessment:</p> <table border="1" style="width: 100%; height: 20px;"> <tr> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> </tr> </table> <p>Name of Assessor:</p> <hr/>												
2	<p>Does your wood contain any of the following habitats? Tick any that apply.</p> <p><input type="checkbox"/> Old trees with holes and crevices which might be used bats <input type="checkbox"/> Species rich scrub/coppice, early growth stage plantations and forest interfaces <input type="checkbox"/> Rivers on which otters might be found <input type="checkbox"/> Ponds which might be occupied by great crested newts <input type="checkbox"/> Open areas on heathy soils</p>													
3	<p>Have any of the protected species been recorded in this wood or on adjoining sites? Tick any that apply. Indicate which sources of information you have checked:</p> <p><input type="checkbox"/> National Biodiversity Network (www.nbn.org.uk) <input type="checkbox"/> Local Biological Records Centre <input type="checkbox"/> Local Wildlife Trust <input type="checkbox"/> Other <i>Specify Other:</i></p>													
4	<p>Have your inspections or any expert surveys found any of the following signs or evidence? Tick any that apply.</p> <p><input type="checkbox"/> Signs (e.g. otter spraint, nuts gnawed by dormice, leaves folded by newts) <input type="checkbox"/> Sightings (or echo-location) <input type="checkbox"/> Potential breeding or roosting sites (e.g. veteran trees, old trees with crevices, riverside hollow trees, ponds, timber stacks, large fallen deadwood) <input type="checkbox"/> Confirmed breeding or roosting sites (i.e. evidence of sites actually being used) <i>Details:</i></p>													
CHECK POINT	<p>If you have answered NO to ALL of the above then only bats need to be considered in your operations.</p> <p>If you have answered YES to any of the above then the species concerned must be considered as well as bats.</p>	Notes												
5	<p>Do the operations comply with Good Practice for bats and any other species found (or likely to be found in your wood) or can the operations be modified to do so? <i>Details: Use reverse of form to expand as required:</i></p>	<p>A licence is not required but continue to sections 6 and 7 below</p> <p>You will need to obtain a licence BEFORE carrying out the work (see EPS Licence Application Forms and Notes)</p>												
6	<p><u>Whether or not a licence is required...</u> Has the information been communicated to operators (including the location of breeding sites and sensitive areas)? Tick any that apply.</p> <p><input type="checkbox"/> Included in documentation (e.g. contract, letter of instruction, site assessment or other management plan) <input type="checkbox"/> Shown to operators and/or their supervisor <input type="checkbox"/> Marked with paint or hazard tape <input type="checkbox"/> Shown on the site plan <i>Other means:</i></p>	<p>You may commit an offence if you do not tell your operators about the protected species in your wood.</p>												
7	<p>Have arrangements for supervision been made to ensure Good Practice guidance is complied with during the operations? <i>Details:</i></p>	<p>You may commit an offence if you do not take steps to ensure that your operators comply with the Good Practice guidance.</p>												

Appendix G

Haydens Drawing

- Arboricultural Impact Assessments ●
- Arboricultural Method Statements ●
- Tree Constraints Plans ●
- Arboricultural Feasibility Studies ●
- Shade Analysis ●
- Picus Tomography ●
- Arboricultural Consultancy for Local Planning Authority ●
- Quantified Tree Risk Assessment ●
- Health & Safety Audits for Tree Stocks ●
- Tree Stock Survey and Management ●
- Mortgage and Insurance Reports ●
- Subsidence Reports ●
- Woodland Management Plans ●
- Project Management ●
- Ecological Surveys ●



Telephone
01284 765391
Email
info@treesurveys.co.uk
Website
www.treesurveys.co.uk

5 Moseley's Farm
Business Centre
Fornham All Saints
Bury St Edmunds
Suffolk
IP28 6JY