arbtech

Arboricultural Impact Assessment to BS5837:2012

Natural England

Beal Station,
Beal,
Berwick-upon-Tweed,
TD152PB

10 October 2022

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1. Introduction

Arbtech Consulting Limited (Arbtech) received written instruction on 29th July 2022 from Natural England to attend Beal Station, Beal, Berwick-upon-Tweed, TD15 2PB; grid reference, NU 06181 42636 (site) to undertake an arboricultural survey a to BS5837:2012 guidance to assess trees, hedges and major shrub groups growing on and within influencing distance of the site and to produce a Schedule of Trees and a Tree Constraints Plan. Arbtech received instruction from Steven Bero of DEFRA to undertake and Arboricultural Impact Assessment.

2. Executive Summary

This report describes the extent and effect of the proposed development at Beal Station, Beal, Berwick-upon-Tweed, TD15 2PB ("site") on individual trees and groups of trees within and adjacent to the site.

Trees within the site were surveyed; using a methodology guided by British Standard 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' ("BS5837").

Subsequently, this report has been produced, balancing the layout of the proposed development against the competing needs of trees. This report comprises all of the requisite elements of an arboricultural implications assessment, method statement and supporting plans.

Figure 1: Aerial Image of site with approximate red line boundary (Bing Maps)

Checklist for Submission to Local Planning Authority

Tree survey	✓
Tree constraints plan	✓
Arboricultural impact assessment	✓

This report and its appendices follow precisely the strategy for arboricultural appraisal intended to provide local planning authorities with evidence that trees have been properly considered throughout the development process.

It is the conclusion of this report that the overall quality and longevity of the amenity contribution provided for by the trees and groups of trees within and adjacent to the site will not be adversely affected as a result of the local planning authority consenting to the proposed development.

3. General Information

Client: Natural England

Site: Beal Station, Beal, Berwick-upon-Tweed, TD15 2PB

Brief proposal description: Erection of a single unit to the north west of the site.

Planning application reference: N/A

Table 1: Documents referred to.

Document	Reference No.
Topographical / Site survey drawing	11476_T:200:1:1
Proposed layout drawing	7185-03
British Standard 5837:2012	"BS5837"
Arboricultural Impact Assessment	Arbtech AIA 01

4. Tree Survey

Survey: An arboricultural survey to BS5837 of all trees within impacting distance of the site was undertaken by Charlie Moore on 22th of August 2022.

A total of 8No. individual trees, 3No. groups of trees, 0No. hedges and 0No. major shrub groups were surveyed. Details for each of the trees surveyed are provided in the Schedule of Trees (see Appendix 1).

Table 2: Documents upon which this tree survey has been based.

Document	Originator	Reference Number	Title
Topo	Formby Surveys	11476_T:200:1:1	Topographical Survey

Limitations: The survey was made at ground level using visual observation only. Detailed examinations, such as climbing inspections and decay detection equipment were not employed, though may form part of the survey's management recommendations. Measurements were taken using specialist tapes, laser and GPS devices. Where this was not possible, measurements are estimated.

Scope: Pre-development tree surveys make arboricultural management recommendations based exclusively upon the individual tree or group of trees condition relative to their present context (*i.e., not in relation to the proposed development*).

Legal Status: No statutory protection check has been performed. BS5837 does not draw any distinction between trees subject to statutory protection, such as a Tree Preservation Order ("TPO"), and those trees without. This is principally because a detailed planning consent overrides any TPO protection. Consequently, we do not seek to offer any comparison between or infer any difference in the quality or importance of TPO trees and other trees.

* For more information on the surveyed trees please see Arbtech Consulting Ltd, Tree Survey Schedule (Appendix 1), Tree Survey Report and Tree Constraints Plan.

5. Arboricultural Impact Assessment

Table 3: Documents upon which this assessment has been based.

Document	Originator	Reference Number	Title
Topo	Formby Surveys	11476_T:200:1:1	Topographical Survey
Site Plan	First Associates Ltd	7185/03	Site Plan
Elevations	First Associates Ltd	7185/05	Elevations

There are a number of issues that may need to be addressed in an arboricultural impact assessment between the trees and the proposed development, these are as follows:

- The effect and extent of the proposed development within the root protection areas (RPAs) of retained trees;
- The potential conflicts of the proposed development with canopies of retained trees; and
- The likelihood of any future remedial works to retained trees beyond which would have been scheduled as a part of usual management.

Table 4: Impacts upon the RPAs of retained trees.

Tree Number	Species	Proposed structure
G02	Various	Building

The footprint of the proposed building falls within the notional RPA of group G02. Due to the negative elevation change of up to 2m at the site boundary, site investigations will be carried out to confirm the presence of any roots within the footprint of the proposed building. The findings of the investigations will inform the foundation design.

These impacts can be seen on the Arboricultural Impact Assessment drawing number Arbtech AIA 01.

Trees to be removed

A total of 1No. group requires removal to facilitate the proposed scheme.

A breakdown of all tree removals and pruning works can be seen in Table 7: Summary of Tree Works

Table 5: Number of individual trees to be removed.

U	A	B	C
0	0	0	0

Table 6: Number of groups to be removed.

U	A	B	C
0 (0)	0 (0)	0 (0)	1 (0)

() = partial removal of a group

Tree Works

For reasons of public safety, all tree works referred to herein must be carried out prior to any site personnel commencing works or any building materials being delivered.

Table 7: Summary of Tree Works.

No.	Species	Works	Category
G01	Various	Fell to ground level, grind stumps	C2
G02	Various	Prune; crown lift overhanging branches to 5.5m above ground level to achieve construction access.	B2
T01	Common Ash	Prune; northern crown to achieve 1m clearance from proposed building.	C1

Notes

All tree work is to be undertaken in accordance with British Standard BS 3998:2010, Recommendations for tree work. All arising's are to be removed and the site is to be left as found. Care is to be taken of the ground around retained trees to make sure that it does not become compacted as a result of tree surgery operations. No equipment or vehicles such as timber Lorries, tractors, excavators or cranes shall be parked or driven beneath the crowns of any retained trees, to prevent subsequent compaction and root death.

Tree removal

A tree should be felled in one piece only when there is no significant risk of damage to people, property or protected species (see Annex A).

Where restrictions (e.g., lack of space, buildings, other features, land ownership or use, or other trees which are to be retained) cannot be overcome, trees should be dismantled in sections.

This also applies where a tall stump is being retained but where branches are to be removed/pruned.

Extensively decayed trees can be unpredictable when they are being felled, and special precautions should therefore be taken, such as the use of a winch to guide the direction of fall.

Stump removal – stump grinding

Stump grinding should be to a minimum of 300mm deep or to extend through the base of the stump leaving the major roots disconnected if the intention is to reduce the potential for the spread of Honey fungus.

The grinding residue should be treated as arising's and removed from site.

NOTE: Mechanical destruction of a stump-by-stump grinding is less disruptive to the site than digging out.

The hole left by stump removal, should be filled with soil or other material. The filling should be appropriate for future site usage, and for any surface treatment that is to be installed.

Where future plant growth is desired, the backfill material should be firmed in 150 mm layers by treading, avoiding excessive compaction and destruction of the soil structure.

After stump removal

The hole left by stump removal, whether by digging out or grinding, should be filled with soil or other material. The filling should be appropriate for future site usage and for any surface treatment that is to be installed.

Where future plant growth is desired, the back fill material should be firmed in 150mm layers by treading, avoiding excessive compaction and destruction of the soil structure.

Protected Species

Conservation Status of British Bats

The general consensus in Britain and Europe is that virtually all bat species are declining and vulnerable. Our understanding of population status is poor as there is very little historical data for most bat species. Certain species, such as the horseshoe bats, are better understood and have well documented contractions in range and population size.

Given this general picture of decline in UK Government within the UK Biodiversity Action Plan has designated five species of bats as priority species (greater and lesser horseshoe bats, barbastelle, Bechstein's and pipistrelle). These plans provide an action pathway whereby the maintenance and restoration of the former populations levels are investigated.

Legal Status of British Bats

Given the above position all British bats as well as their breeding sites and resting places enjoy national and international protection.

All bat species in the UK are fully protected under the Wildlife and Countryside Act 1981 (as amended) through inclusion in Schedule 5. All bats are also listed on Annex IV (and some on Annex II) of the EC Habitats Directive giving further, European protection. Taken together the act and Conservation of Habitats and Species Regulations 2012 (as amended)* make it an offence to; intentionally or deliberately kill, injure or capture (take) bats;

- Deliberately disturb bats (whether in a roost or not);
- Damage, destroy or obstruct access to bat roosts;
- Possess or transport a bat or any part of a bat, unless acquired legally;
- Sell, barter or exchange bats, or parts of bats

The legislation although not strictly affording protection to foraging grounds does protect roost sites. Bat roosts are protected at all times of the year whether or not bats are present. Any disturbance of a roost due to development must be licenced.

**the regulations that delivered by the UK's commitments to the Habitats Directive.*

Breeding birds

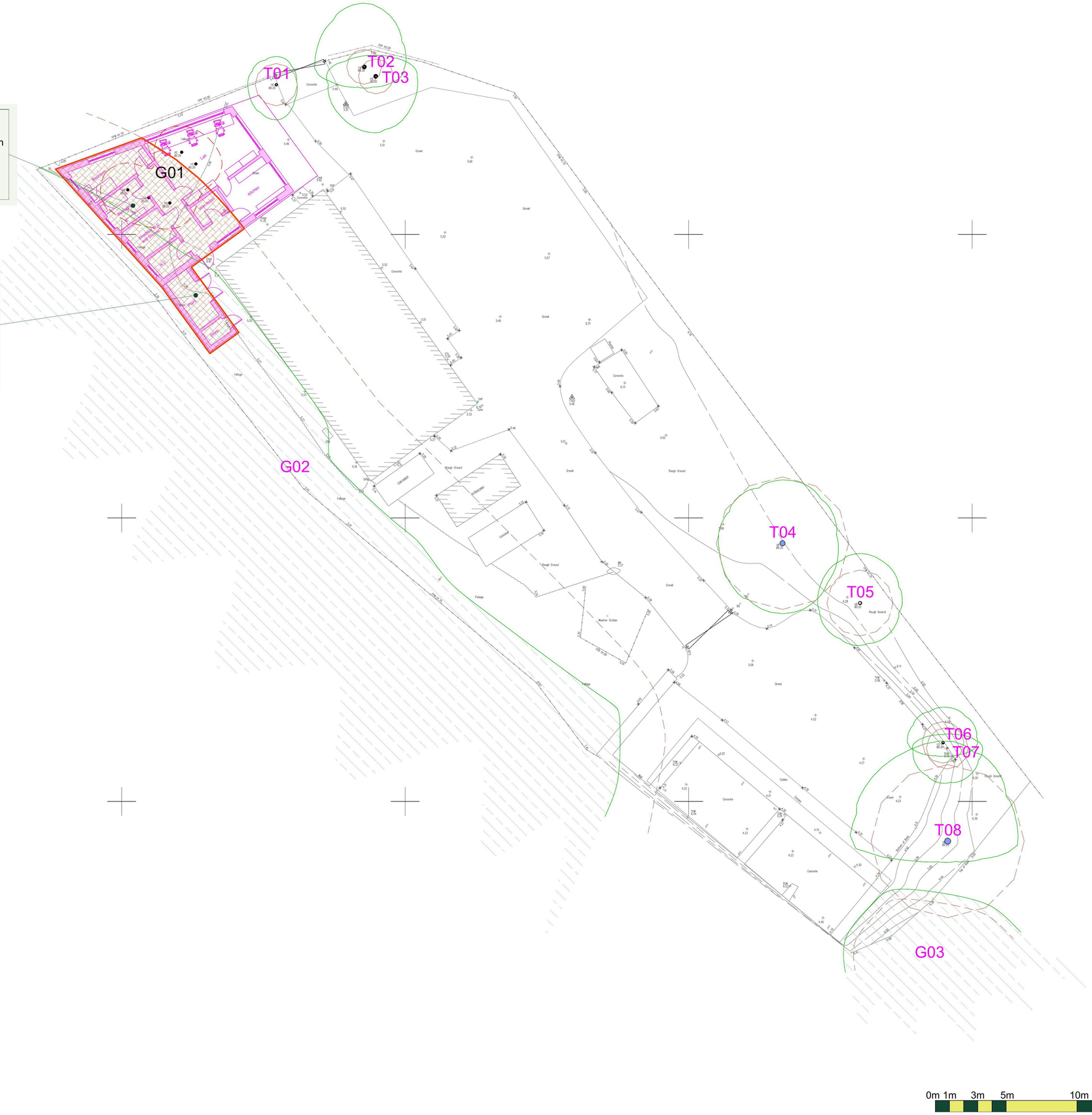
All nesting birds are protected under the Wildlife and Countryside Act (as amended) 1981, which makes it an offence to intentionally kill, injure or take any wild bird or take, damage or destroy its nest whilst in use or being built, or take or destroy its eggs. Furthermore, a number of birds enjoy further protection under that Act and are listed on Schedule 1 of the Act. These further protected birds are also protected from disturbance and it may be necessary to operate "no-go" buffer zones around such nests – typically out to 100m.

Planning policy guidance on the treatment of species identified as priorities under the biodiversity action programme suggests that local authorities should take measures to protect the habitats of these species from further decline through policies in local development documents and should ensure that they are protected from the adverse effects of development, where appropriate, by using planning conditions or obligations. The conservation of these species should be promoted through the incorporation of beneficial biodiversity designs within developments.

Appendix 1: Arboricultural Impact Assessment

Issue: Proposed building situated within the RPA of group G02.
Solution: Foundation design to be based upon the findings of site investigations to determine the presence of any roots, to an engineering specification in conjunction with arboricultural advice.

Issue: Proposed building situated within influencing distance of the canopies of group no. G02. Roof and surfaces will be subject to seasonal nuisance from falling debris such as leaves, small branches and guano.
Solution: Roof and rainwater management to be designed to minimise nuisance and enable ease of maintenance by the use of gutter guards, rodding points etc.



Arboricultural Impacts

Impacts	Nos. of trees
Trees to be removed	0
Groups / Hedges to be removed (Partial removal of groups)	1 (0)
Trees with proposed incursions into RPAs	0
Groups / Hedges with proposed incursions into RPAs	1
Trees that will require pruning	1
Groups / Hedges that will require pruning	1
Trees to be transplanted	0
Groups / Hedges to be transplanted	0

No.	Species	Proposed structure	Incursion
G02	Various	Building	RPA

Tree Work Schedule

No.	Species	Works	Category
G01	Various	Fell to ground level, grind stumps	C2
G02	Various	Prune, crown lift overhanging branches to 5.5m above ground level to achieve construction access	B2
T01	Common Ash	Prune, northern crown to achieve 1m clearance from proposed building	C1

All tree work is to be undertaken in accordance with British Standard BS 3998:2010 Tree work - Recommendations.
All arising's are to be removed and the site is to be left as found.
Care is to be taken of the ground around retained trees to make sure that it does not become compacted as a result of tree surgery operations. No equipment or vehicles such as timber lorries, tractors, excavators or cranes shall be parked or driven beneath the crowns of any retained trees, to prevent subsequent compaction and root death.

No. of individual trees to be removed

U	A	B	C
0	0	0	0

No. of groups / hedges to be removed

U	A	B	C
0 (0)	0 (0)	0 (0)	1 (0)

( ) = Partial removal of a groups

Site investigations

Site investigations are to be undertaken within the RPAs of retained trees to determine the size, depth and location of any roots that may be present for the purpose of informing foundation design.

All excavation within the RPAs are to be initially undertaken to a minimum depth of 800mm deep for any excavation or to the full depth of the proposed foundations, hard surfacing or underground services. The soil is to be loosened with the use of a fork or pick and then cleared with the aid of an air-spade and air-vac using a specialist arboricultural contractor; If an air-spade is not used and all excavations are to be undertaken using hand tools (forks, shovel, trowel, brush). Soil will be loosened with the aid of a fork or trowel and the spoil removed from with the aid of a shovel. Where an air spade or specialist arboricultural contractor is not employed, all excavations are to be undertaken under direct arboricultural supervision. All roots are to be retained in situ and the project arborist will visit the site to recorded and photograph the depth, location, and size of any roots present; during this visit the project arborist may be able to cut specific roots with the use of a hand saw or secateurs. The edge of the excavation closest to the retained trees and all uncovered roots will be covered over with a minimum of two layers of damp hessian to prevent drying out, and where necessary be shuttered to prevent soil collapse or contamination. If appropriate soil beneath the depth of 800mm may be sheet piled with any deeper excavations being undertaken by a machine with an appropriate bucket under direct arboricultural supervision. If a decision is made for a machine to be used it must work from outside of the RPA or have appropriate ground protection in place to move and work upon.

Upon the completion of the site investigations all trial excavations are to be back filled with the original material or inert fill. It may be suitable to insert a root barrier in locations where the proposed roots are not present or are beginning to enter to prevent root activity within areas deemed to be root free.

Utility apparatus

Underground utility apparatus
Mechanical trenching for the installation of underground apparatus and drainage severs any roots present and can change the local hydrology in a way that adversely affects the health of the tree. For this reason, particular care should be taken in the rout and methods of installation of all underground apparatus. Wherever possible, apparatus should be routed outside of RPAs. Where this is not possible, it is preferable to keep apparatus together in common ducts, all inspection chambers should be sited outside of the RPAs.
Where underground apparatus is to pass within the RPAs, detailed plans showing the proposed route should be drawn up in conjunction with the project arboriculturist. In such cases trenchless insertion methods should be used with entry and retrieval pits being located outside of the RPAs. If this option is not feasible and providing roots can be retained and protected excavations should be undertaken using hand held tools (air-spade, forks, shovels) or a combination of trenchless and manual excavation (broken trench).
Any design and installation should be undertaken in accordance with the National Joint Utilities Guidelines (NJUG).
Above-ground utility apparatus
Above-ground apparatus(including CCTV cameras and lighting) should be sited to avoid the need for detrimental tree pruning, as such the current and future crown size of the tree should be assessed.
Tree branches can be pruned back with care to provide space, though it is not appropriate for repetitive and significant tree work to bean initial design solution unless this is a suitable management outcome for the tree. Any pruning should be undertaken in accordance with BS3998:2010

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Project:
Beal Station,
Beal,
Berwick-upon-Tweed,
TD15 2PB

Client:
Natural England

Drawing:
Arboricultural Impact Assessment

Based on:
7185 - 03

Drawing No:		Rev:
Arbtech AIA 01		
Date: Oct 2022	Scale: 1:100 @ A0	Drawn: EK

Key:

Tree Nos.:	T01	Tree Canopies:		Trunks:	
RPAs:		Category 'B' trees:		Category 'B' groups:	
Category 'C' trees:		Category 'C' groups:		Trees to be removed:	G01
Existing Site Topo):		Proposed site:		Site investn.:	

All dimensions should be checked on site. No dimensions are to be scaled from this drawing.
Please notify us of any discrepancies found. Arbtech Consulting Ltd. cannot be held responsible for inaccuracies in the base drawing in which this plan is based.
This drawing is to be designed to reflect the principles of the layout or design only, and relates only to the protection of retained trees.
This drawing is not to be read as a definitive part of the engineering or construction designs or method statement. Arbtech Consulting Ltd. cannot be held responsible for any inaccuracies in the base drawing in which this plan is based, and for any standards or regulatory requirements relating to proposed structures, hard surfacing or underground services.
This drawing was produced in colour - a monochrome copy should not be relied upon.

Appendix 2: Tree Survey Schedule

BS5837:2012 Tree Survey

Client: Natural England
Project: Beal Station, Beal, Berwick-upon-Tweed, TD15 2PB
Survey Date: 22/08/2022
Surveyor: Charlie Moore

Arbtech Consulting Ltd
Unit 3, Well House Barns
Chester Road
Chester
Cheshire
CH4 0DH
Phone: 01244661170

Tree and Tag No / Species	Hght (m)	Stems No	Stems Ø (mm)	Crown Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations / Survey Comment	Cat ERC
G01										Estimated Measurements	
Various *See comments for details*	6.5	1	190	N 2.5 E 2.5 S 2.5 W 2.5	1 1 1 1	EM	A: 16.3 R: 2.27	Good	C: Good S: Not visible B: Not visible	Group comprised of 9 individual single and multi stemmed trees; species include ash, sycamore and hawthorn; recorded dimensions denote the maximum measurements for the group - stems between 190mm and 80mm, heights between 6.5m and 3m.	C.2 40+ yrs
G02										Estimated Measurements	
Various *See comments for details*	13	1	800	N 5 E 5 S 5 W 5	0 0 0 0	M	A: 289.6 R: 9.6	Good	C: Good S: Not visible B: Not visible	Large broken offsite group of mature trees with a dense shrub and herb layer protruding within the site boundary; species include Wych elm, ash and sycamore; recorded dimensions denote the maximum measurements for the group - stems between 800mm and 240mm.	B.2 40+ yrs
G03										Estimated Measurements	
Various *See comments for details*	6	1	230	N 3.5 E 3.5 S 3.5 W 3.5	0 0 0 0	M	A: 23.9 R: 2.75	Good	C: Good S: Not visible B: Not visible	Offsite group of trees, with a dense shrub and herb layer; recorded dimensions denote the maximum measurements for the group - stems between 230mm and 80mm, heights between 6m and 3m; species include Wych elm, ash, and blackthorn.	B.2 20+ yrs
T01										Estimated Measurements	
Common Ash *Fraxinus excelsior*	5	3	121 (Eq)	N 2 E 1.5 S 2.5 W 2	2 2 2 2	SM	A: 6.7 R: 1.46	Good	C: Good S: Good B: Not visible	Located in grassland; multi stemmed from base; unable to thoroughly inspect the base of this tree due to grass.	C.1 40+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No / Species	Hght (m)	Stems No	Stems Ø (mm)	Crown	Spread (m)	Crown Clear (m)	Age	RP A (m²) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations / Survey Comment	Cat ERC
T02											Estimated Measurements	
Goat Willow *Salix caprea*	5	1	100	N E S W	4.5 3 1.5 3.5	1 1 1 1	EM	A: 4.5 R: 1.19	Good	C: Good S: Good B: Not visible	Located in shrubs; multi stemmed from base - recorded stem diameter denotes average at 1.5m; asymmetrical crown distribution due to neighbouring companion tree.	C.1 20+ yrs
T03											Estimated Measurements	
Goat Willow *Salix caprea*	5	1	100	N E S W	1.5 3 4 3.5	1 1 1 1	EM	A: 4.5 R: 1.19	Good	C: Good S: Good B: Not visible	Located in shrubs; multi stemmed from base - recorded stem diameter denotes average at 1.5m; asymmetrical crown distribution due to neighbouring companion tree.	C.1 20+ yrs
T04												
Sycamore *Acer pseudoplatanus*	13	1	380	N E S W	4.5 4 5 4.5	1 1 1 2	M	A: 65.3 R: 4.55	Good	C: Good S: Good B: Good	Located in shale; exposed roots around the base consistent with soil erosion; pruning to the southern side of main stem from approximately 2m - wound approximately 130mm diameter, no occlusion visible from ground level; recent groundworks approximately 4m to the south.	B.1 40+ yrs
T05												
Common Ash *Fraxinus excelsior*	5	1	190	N E S W	3.5 3 3 3	0 0 0 0	EM	A: 16.3 R: 2.27	Good	C: Good S: Good B: Not visible	Located in a bank; recent groundworks approximately 3m to the west; unable to thoroughly inspect the base due to ground flora.	C.1 20+ yrs
T06											Estimated Measurements	
Common Hawthorn *Crataegus monogyna*	4.5	1	120	N E S W	2.5 2.5 1 2.5	3 3 3 3	M	A: 6.5 R: 1.43	Good	C: Good S: Ivy B: Not visible	Located atop a retaining wall approximately 1.5m above ground level; wall is giving way with root mass from the tree visible; unable to thoroughly inspect the stem and base due to coverage with ground ivy; asymmetrical crown distribution due to neighbouring companion tree.	C.1 10+ yrs

Age Classifications: N Newly planted; Y Young; SM Semi-mature; EM Early Mature; M Mature; OM Over Mature

Condition: C Crown; S Stem; B Basal area

Stems: Ø Diameter; (Eq) Equivalent stem diameter using BS5837:2012 definition

ERC: Estimated Remaining Contributio

Tree and Tag No Species	Hght (m)	Stems No	 Ø (mm)	Crown Spread (m)	 Clear (m)	Age	RP A (m^2) R (m)	Phys Condition	Structural Condition	Preliminary Recommendations Survey Comment	Cat ERC
T07											Estimated Measurements
Common Hawthorn *Crataegus monogyna*	4.5	1	120	N 1 E 2.5 S 2.5 W 2.5	3 3 3 3	M	A: 6.5 R: 1.43	Good	C: Good S: Ivy B: Not visible	Located atop a retaining wall approximately 1.5m above ground level; wall is giving way with root mass from the tree visible; unable to thoroughly inspect the stem and base due to coverage with ground ivy; asymmetrical crown distribution due to neighbouring companion tree; multi stemmed from base, recorded stem diameter denotes average at 1.5m.	C.1 10+ yrs
T08											
Wych Elm *Ulmus glabra*	8	1	440	N 7 E 5 S 1.5 W 7	2 0 2 2.5	M	A: 87.6 R: 5.28	Good	C: Good S: Ivy B: Not visible	Located in a raised bank; ivy from base to 6m; unable to thoroughly inspect the stem and base due to ivy; asymmetrical crown distribution due to neighbouring trees, now removed.	B.1 20+ yrs

Age Classifications:	N	Newly planted	EM	Early Mature	**Condition:**	C	Crown	**Stems:**	Ø Diameter
	Y	Young	M	Mature		S	Stem		(Eq) Equivalent stem diameter using BS5837:2012 definition
	SM	Semi-mature	OM	Over Mature		B	Basal area	**ERC:**	Estimated Remaining Contributio

Appendix 3: Contact Details

Name	Position	Company	Contact
	Client		
	Agent / Project Manager		
	Tree Officer		
	Arboricultural Consultant	Arbtech Consulting Ltd.	01244 661170 https://arbtech.co.uk
	Site Manager		
	Main contractor		

Document Production Record

Document number	Editor	Signature	Position	Issue number	Date
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