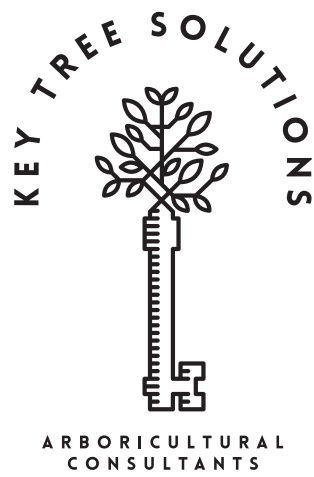




BS 5837: 2012 Arboricultural Survey & Impact Assessment

Site Address:	4 West View, Beacon Hill, Silkstone Common S75 4QE	Client:	F.A.O Chris Race
Report Ref:	WVBH02-23	Report Date & Revision:	26th of June 2023 Revision: I
Author:	Laurence Smith BSc (Hons) Arb, M Arbor A	Signed:	<i>Laurence Smith</i>

Terms of Reference

Key Tree Solutions has been commissioned by Chris Race, to undertake an arboricultural survey in accordance with the British Standard BS 5837:2012 'Trees in Relation to Design, Demolition and Construction – Recommendations' (BS5837). This report has been conducted in support of a planning application to modify the existing building by developing a two-storey extension to the northern aspect of the dwelling. The proposed development layout is shown in the Arboricultural Impacts Plan (AIP) under Appendix: D which indicates the impact of the proposal on the existing site trees.

Laurence Smith, BSc (Hons) Arb, M Arbor A, an Arboricultural Consultant, carried out the arboricultural survey. Laurence has a degree in Arboriculture and a BTEC National Diploma in Forestry and Arboriculture. He is a professional member of the Arboricultural Association with over a decade of experience within the arboricultural industry, initially as an arborist and for the last seven years as a consultant.

Summary

Six Tree Preservation Orders (TPOs) are listed as being within and adjacent to the site, however, during the survey only three of these trees were observed. These trees have been highlighted on the site plans.

The development proposal is to extend the existing building north with a two-story extension and surrounding patio. This development proposal will not require the removal of any trees, however, a number of Root Protection Areas (RPAs) are at risk of damage during the development.

Where regions of the RPAs exist that are not already covered by hard standing, they should be protected during development by way of temporary ground protection. This should consist of interlinked ground protection boards placed on top of a compression-resistant layer such as 150mm of wood chip laid onto a geotextile membrane.

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1 Introduction

1.1 Arboricultural Report

This report comprises an arboricultural survey and Arboricultural Impact Assessment (AIA). It categorises and reports on the trees within and adjacent to the site boundary along with providing detail of the development proposal and how this will impact the arboricultural elements. These impacts have been shown in the Arboricultural Impacts Plan included in Appendix D, which acts as a visual aid for the proposal.

1.2 Proposed Works

The works proposal is to modify the existing building by developing a two-storey extension to the northern aspect.

The proposal's layout has been overlaid with the arboricultural constraints plan to determine the impacts of the works on the existing tree stock.

1.3 Scope of Works

This report presents arboricultural information captured on the 19th of June 2023 by Laurence Smith BSc (Hons) Arb, M Arbor A. The scope of work includes:

- Survey of arboricultural elements potentially impacted by the scheme.
- A map showing any statutory protection which may affect the site.
- Constraints plan to show the location and quality of existing features.
- An Arboricultural Impact Assessment (AIA).
- An Arboricultural Impact Plan (AIP).

2. Methodology

2.1 General

This tree survey has been undertaken and compiled in line with BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations (BS5837). This document contains guidance and recommendations on the relationship between trees and the design, demolition, and construction processes, providing an overview of the principles and procedures to ensure a harmonious and lasting relationship between trees and structures.

BS5837:2012 does not provide explicit parameters for measuring an arboricultural resource's sensitivity, nor does it assess the impact of a proposed development on trees (other than listing the number of trees that would have to be removed or pruned for the undertaking). By using the parameters specified in the British Standard, Arboriculturalists can determine the quality of all trees and other arboricultural features that may be affected by a development.

While the BS categories may be interpreted differently, the cascade chart in BS5837:2012 provides guidance on defining a tree's qualities so that the design process can determine how to retain the higher-quality trees.

2.2 Spatial Scope

In some instances, trees may be located outside the site boundary but still have the potential to impact any development, for example, overhanging branches and root protection areas. In these instances, they have been included in the survey. However, some data is likely to have been estimated so as not to trespass. Trees on access routes are not part of this survey unless specifically requested.

2.3 Data Gathering

Data has been collected in accordance with BS 5837, as outlined in Appendix A within this report. The tree categorisation method applied by the arboriculturist is to identify the quality and value (in a non-fiscal sense) of the existing tree stock, allowing informed decisions about which trees should be removed or retained if development occurs.

For a tree to qualify under any given category, it should fall within the scope of that category's definition as defined in Appendix A (categories U, A, B, C) and, for trees in categories A to C, it should qualify under one or more of the three sub-categories (1, 2, 3). Sub-categories 1, 2 and 3 are intended to reflect the arboricultural, landscape and cultural values, respectively.

Trees were recorded as individual specimens and groups. Where trees were recorded as groups, measurements were typically taken from the largest tree within the group. This survey level meets the requirements of BS 5837:2012, which states that "trees growing as groups or woodland should be identified and assessed as such". The British Standard defines the term group as "trees that form cohesive arboricultural features either aerodynamically (e. g. trees that provide companion shelter), visually (e.g. avenues or screens) or culturally including for biodiversity (e.g. parkland or wood pasture)".

In all reasonable circumstances, tree diameters were measured via a specialist measuring tape at 1.5m from ground level. Where access was not possible, measurements have been estimated and indicated with an asterisk (*) on the arboricultural data sheets. The crown spread of the surveyed trees was measured in each of the four cardinal points using a laser distometer or paced out if access was not feasible. This survey level is deemed sufficient by the arboriculturist to establish the extent of the crown spread. All crown spread measurements should be taken from the arboricultural data sheet (Appendix B of this report).

The trees were assessed using the Visual Tree Assessment (VTA) methodology devised by Mattheck and Breloer (1994). VTA is a ground-level visual assessment of a tree, carried out to identify obvious mechanical defects, signs of ill health, potential mechanical failure and the suitability of a tree to a site.

2.4 Survey

The approach to the survey involved a ground-level walk assessment with tree and vegetation locations estimated by the surveyor and plotted over the site plan provided by S75 Design. No checking of this document was undertaken, and any comments are given on the assumption that this supplied document is correct.

Tree locations have been estimated via a handheld GPS device and aerial photography. Given this lack of topographical data, Key Tree Solutions can not be held responsible for any inaccuracies in asset location.

Survey elements have been prefixed with a descriptive letter which can include Trees (T), Groups (G), Shrub Groups (SG), Woodlands (W) and Hedges (H).

2.5 Limitations to Survey

Where access was permitted, trees were identified and inspected from ground level only and were not climbed. No invasive examination techniques (such as increment boring or internal decay detection) were carried out. As such, no assessment of the internal condition of the wood of these trees can be given.

The tree survey is not intended to be a risk management survey targeting safety-related issues. However, where specific hazards have been identified, these have been recorded, and management recommendations provided and are detailed within the tree survey schedule (see Appendix B of this report).

BS 5837:2012 does not include arguments for or against the development or the removal or retention of trees. Where development is to occur, the standard guides how to decide which trees are most appropriate for retention.

The reliability of the tree locations relates directly to the accuracy of the supplied topographical data, if applicable, available aerial imagery and in-field plotting. As such, tree locations are potentially open to discrepancies, and their exact locations may need verifying.

The report does not comment on the possible effects of trees on neighbouring properties, including in relation to subsidence or heave or with regard to potential hazards presented by trees surveyed.

Trees are living organisms which constantly adapt to their surroundings and are often subject to changes outside human control including harsh or unexpected weather conditions including heavy storms. Changes to groundwater or damage to underground structures may also impact tree health and safety. As such the findings within this report are only valid for a period of twelve months.

While this report aims to highlight any potential issues it cannot guarantee against pest and disease attacks or weather-related failures.

3. Existing Site Conditions

3.1 Existing Land Use

The site is a private dwelling with the property being a modest semi-detached building made from stone in keeping with the surrounding properties.

3.2 Existing Trees

Given the size of the property's garden, there are a high number of trees, these are predominantly ornamental conifers but also include a mature Ash, Rowan and Japanese maple.

3.3 Site Topography

The property is sat aloft of the surrounding garden which steps down forming a somewhat terrace garden.

3.4 Soil Assessment

No soil assessment was carried out on site by the Arboriculturist. However, baseline data from the British Geological Survey states that the area's underlying bedrock is considered part of the Pennine Lower Coal Measures Formation.

Further information collected from the Cranfield Soil and Agrifood Institute shows that the site is considered to have "Freely draining slightly acid loamy soils with a loamy texture".

Where clay-based soils are present, the ground may be susceptible to volumetric changes resulting from the uptake and release of moisture by tree roots, which may influence any potential foundation development.

3.5 Statutory Protection

Local Planning Authorities (LPAs) have the power to preserve selected trees and woodlands by making Tree Preservation Orders (TPOs). Similarly, special provision is provided to trees located within a Conservation Area (CA) which are not the subject of a TPO. The LPA's powers to do this are provided by the following Act of Parliament and its associated regulations:

- Town and Country Planning Act 1990
- Town and Country Planning (Determination of Appeals by Appointed Persons) (Prescribed Classes) (Amendment) (England) Regulations 2008
- Town and Country Planning (Trees) (Amendment) (England) Regulations 2012

The principal effect of a TPO is to prohibit the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of trees without first obtaining the consent of the relevant local authority. Where works to trees within a CA are proposed, the relevant LPA must first give six weeks' notification. Unauthorised works on trees protected by a TPO or those within a CA could result in an unlimited fine.

The interactive map on the Barnsley Council's website visited on the 27th of June 2023, states that there are five TPO designations within the property with one further TPO designation within the neighbouring garden. However, during the survey, only two of the five TPO trees were observed along with the tree from the neighbouring property. The TPO trees have been highlighted on the site plans. The results from this search are given in Appendix C and illustrated in the supplied plans.

Trees should be checked for protected species before work is undertaken where tree works are necessary. While it is outside of the scope of this tree survey to comment on the actual or likely presence of protected animal species, it is against the law to disturb bats or their roosts under the Conservation of Habitat and Species Regulations (2010). Likewise, nesting birds are protected by the Wildlife and Countryside Act (1981) (as amended) and Badgers by the Protection of Badgers Act (1992). If protected species are discovered, works should cease immediately, and Natural England should be contacted for advice.

Alongside these animal protections, landscape features may also be protected under the following acts and regulations.

- The Hedgerow Regulations 1997
- Countryside and Rights of Way Act 2000
- Natural Environment and Rural Communities Act 2006 & Environment (Wales) Act 2016

4. Arboricultural Impact Assessment

4.1 General

This report considers the trees adjacent to the proposed works and assesses their condition and suitability for retention. The report is supplemented by the AIP (Appendix D of this report), which presents in graphic form the trees recorded as part of the survey, their specific reference numbers and any impact the proposed development will have upon them.

The arboricultural data sheets within Appendix B of this report cover all the trees recorded as part of this assessment in line with the *BS 5837:2012* guidance.

4.2 Root Protection Areas

The Root Protection Area (RPA), as defined in *BS 5837:2012*, is 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. This area should be protected from disturbance "in order to avoid unacceptable damage to the tree as a result of severance or asphyxiation of the root system".

The recommended minimum area (m²) to avoid potentially harmful disturbance has been calculated and entered into the tree schedule (see Appendix B of this report) for all trees. The RPA for each individual tree has been illustrated on the site plans as a pink dashed circle centred on the tree's stem.

4.3 Utilities and services

No information has currently been made available regarding the locations of drainage and underground utility runs.

Any new subsurface utilities should be directed away from or around existing RPAs.

4.4 Level Changes

No information has been made available regarding level changes in regard to a retained tree.

It should be noted that any changes in levels such as +/- 100mm can be detrimental to underground structures.

4.5 Scheme Details

The proposed works are illustrated on the AIP and are as described in Section 1.3.

4.6 Arboricultural Impacts and Mitigation

The proposal's impacts are listed in Table 1, along with recommendations for mitigation.

Table 1.

Group / Tree No.	Age & Species	Cat.	Removal due to:		Mitigation required for		Details of how proposed build layout affects trees and recommendations for mitigation.
			Cons.	Cond.	Canopy	RPA	
T1	Mature Ash (<i>Fraxinus</i>)	B2				✓	Proposal in close proximity to RPA. Protect unmade ground with temporary ground protection.
T3/G4	Early Mature Cypress (<i>cupressus</i>)	B2/C2				✓	hard landscaping around the proposal impacts over the RPA, however, impact is likely to be negligible due to a change in levels between stem location and development. No mitigation considered necessary.

Group / Tree No.	Age & Species	Cat.	Removal due to:		Mitigation required for		Details of how proposed build layout affects trees and recommendations for mitigation.
			Cons.	Cond.	Canopy	RPA	
T7, T8, T9, T10, T12	Mix	N/A				✓	Soil rooting volumes which are not already covered by hard standing should be protected during the development by way of temporary ground protection. Fencing is not considered suitable for this project as it would significantly limit the workspace within the site.
Group / Tree No. - ID referenced within the arboricultural survey. Age & Species - Age classification and common name for specimen. Cat - BS 5837 category rating. Removal due to - 'Cons' = Construction. 'Cond' = Condition. Mitigation required for - Canopy or for RPA (Root Protection Area).							

The impacts of the proposals have been quantified as accurately as possible, given the information available at this time.

4.7 Preliminary Management Recommendations

The arboricultural data sheets (see Appendix B) show management recommendations for those trees that were identified as requiring management intervention at the time of the survey.

As part of a duty of care, the property owner is responsible for ensuring the health, safety and management of all trees within the boundary. As such, monitoring should be an ongoing process with periodical inspections by a qualified arborist where applicable.

4.8 Mitigation Measures

The development proposal would require the removal of no trees and as such no mitigation measures have been recommended.

4.9 Protection For Retained Trees

Trees that are to be retained will require protective measures during the development, typically involving temporary fencing around the RPA securely anchored to the ground, however, this method of protection is not necessarily suitable for this site due to the limited space.

A more reasonable approach would be protection via the use of temporary ground protection, utilising interlinked ground protection boards placed on top of a compression-resistant layer such as 150mm of wood chip laid onto a geotextile membrane.

No material storage is permitted within the RPA of retained trees unless confirmed to be acceptable by the consulting arboriculturalist. The exact details and location of protective measures should be included within the AMS however, guidance has been given on the AIP.

Positioning of any site compound, including office, facilities, toilets and storage of materials, should be carefully considered and, where possible, be located away from trees and their associated RPAs.

Appendix A: Key & British Standard BS5837:2012 Survey Table

A1. Survey Key

Column Heading	Description
ID	Each surveyed element has been given a unique reference number as shown on the survey drawings. Each number is prefixed with a letter to represent the element type. (T) Tree, (G) Group, (H) Hedge, (W) Woodland.
Age Class	The tree is described as Young, Semi Mature, Early Mature, Mature, Over Mature, Veteran or Dead.
Species	The English common name has been used. In some instances the botanical name is also given in <i>italics</i> .
Height (m)	An indication of the tree's height measured in metres.
Stem Diameter (mm)	The diameter of the tree stem when measured at 1.5 metres from ground level.
Branch Spread (m) N E S W	The distance the live crown extends in each of the four cardinal directions.
First Main Branch Height (m) / Direction	Height given in meters that the first significant branch extends from the stem and the direction of which it points towards.
Canopy Height (m)	Height given in metres of the lowest part of the canopy.
Vitality	A quick reference guide to the trees overall health and condition. Given as Good, Fair, Poor or Dead Good – a tree with little or no obvious physiological defects; leaf density and colour are typical for the species, bud, flower and fruit production are good and there are no signs of dieback at any point throughout the crown. Fair – a tree with moderate physiological defects may have some or all of the following factors; leaf density is less than typical for the species, leaf cover is chlorotic, bud, flower or fruit production are deficient, there are signs of minor dieback within the crown, there is a moderate degree of deadwood within the crown. Poor – a tree with major or multiple physiological defects; evidence of extensive crown thinning, bud, flower or fruit production is poor or missing, there are signs of advanced dieback throughout the crown, there is extensive or major deadwood throughout the crown. Dead – a tree that has died due to either old age, drought, disease, pest infestation, physical damage to the main stem or rooting system, or a combination of these factors.
General Observations	Narrative comment on the general condition including significant defects and overall appearance.
Preliminary Management Recommendations	Any works recommended in order to minimise risk, improve form or maintain a high value.
Estimated Remaining Contribution	An estimation of how long the feature will contribute to its surroundings in the current landscape context. Recorded in bands of either 10< years, 10> years, 20> years and 40> years.
Category Grading	The trees are graded to the categories prescribed within BS5837:2012 (U, A, B & C). These letters are suffixed with a number which gives an indication of how the tree sits within the landscape. More information on these values is given in the cascade chart in A2.
Root Protection Area Radius (m)	The minimum area around a tree deemed to contain sufficient roots and rooting volume to maintain the tree's viability.

A2. BS5837 : 2012 Cascade Chart

Trees to be considered for retention	(1) Mainly arboricultural qualities	(2) Mainly landscape qualities	(3) Mainly cultural values, including conservation.	Identification on plan
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)	Light Green
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	Mid Blue
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	Grey
Trees unsuitable for retention				
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years.	- 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). - Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline. - Tree infected with pathogens of significant to 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.			Red

Appendix B: Arboricultural Survey Data

ID	Age Class	Species	Height (m)	Stem Diameter (mm)	Branch Spread (m) N E S W	First Main Branch Height (m) / Direction	Canopy Height (m)	Vitality	General Observations	Preliminary Management Recommendations	Estimated Remaining Contribution	Category Grading	Root Protection Area Radius (m)
T1	Over Mature	Ash	21	1210	9, 12, 12, 13	6 W	5	Fair	Significant tree with a wide spreading canopy located off-site. Early signs of Ash Dieback infection with minor deadwood at the extremity's.	None	20>	B1	14.5
T2	Semi Mature	Lawson's Cypress	4	150*	2, 1.5, 1.5, 1.5	N/A	Ground Level	Normal	Suppressed with some limbs subsiding.	Unsuitable for longterm retention.	10>	C1	2
T3	Early Mature	Cypress	11.5	410	2.5, 2.5, 2.5, 2.5	2 E	1.5	Normal	Ornamental cypress tree in good condition.	None	20>	B2	5
G4	Early Mature	Cypress	5-7	100- 150	1, 1, 1, 1	N/A	Ground Level	Fair	Upright in form with some limbs subsiding.	Unsuitable for longterm retention.	10>	C2	2
H5	Semi Mature	Beech	2	N/A	N/A	N/A	Ground Level	Normal	Managed Beech hedge.	None	10>	C2	Constrained within canopy
T6	Semi Mature	Cypress	5	160	1, 1, 1, 1	N/A	2	Normal	Canopy raised with height reduced for utility clearance. Tree of limited merit.	None	10>	C2	2
T7	Early Mature	Birch	10.5	350	1.5, 3, 10, 4	4 E	2.5	Fair	Tree was previously suppressed by a now removed Ash tree. Upper canopy has a number of twisted and distorted limbs.	None	10>	C2	4
T8	Mature	Rowan	15	300	5, 5, 6, 2	N/A	3	Fair	High volumes of internal deadwood with parts of the canopy in poor condition due to heavy suppression.	None	10>	B2	3.5
T9	Mature	Japanese maple	5	100, 90	2, 4, 2.5, 2	2 E	1.5	Normal	Heavily suppressed but generally good condition.	None	20>	B2	1.5
T10	Mature	Sessile Oak	18	660	5.5, 8, 5.5, 6	5.5 W	2	Normal	Hollowing stem with minor open cavity at the base on the north an aspect. Southern aspect of the canopy has been suppressed by now removed tree. Located 1.5m back from wall and 3.3m away from driveway opening.	None	20>	B2	8
G11	Mature	Sycamore & Ash	18	410, 440	5, 6, 7, 5	5.5 E	5	Normal	Group of four upright stems in close proximity with minor deadwood in the lower canopy. 7.8m away from external wall.	None	20>	B2	6

ID	Age Class	Species	Height (m)	Stem Diameter (mm)	Branch Spread (m) N E S W	First Main Branch Height (m) / Direction	Canopy Height (m)	Vitality	General Observations	Preliminary Management Recommendations	Estimated Remaining Contribution	Category Grading	Root Protection Area Radius (m)
T12	Mature	Sycamore	20.5	1000	7, 8, 8, 7	2.5 S	5	Normal	Tree located off site. Good physiology and structure. Tree set 5.7m away from wall	None	40>	A1	12
SG13	Young	Mixed	<1.5	N/A	N/A	N/A	Ground Level	Normal	Mixed shrubs and young cypress trees with diameters <75mm.	None	10<	U	N/A

Appendix C: Statutory Protection

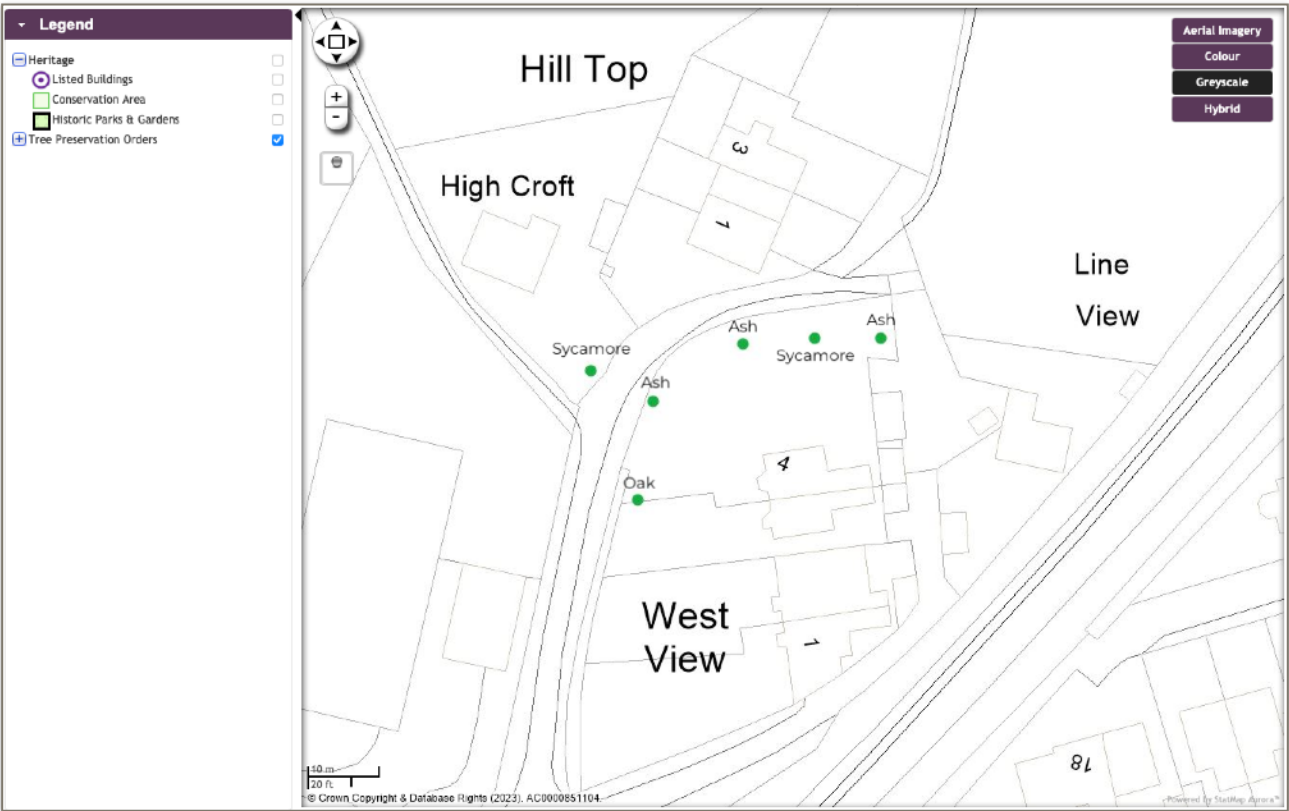
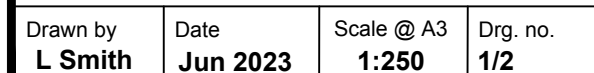
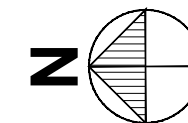
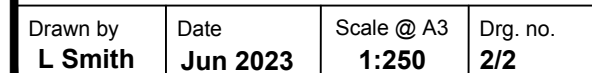


Figure 1. A screenshot taking from the Barnsley Council's Website showing the property (no.4) in relation to the surrounding TPO designations.





Appendix E: Images



Figure 1. T1 covered by a TPO. Ash stump in the foreground previously a further TPO tree.



Figure 2. T1 in the background with T2 in the foreground.



Figure 3. The view from the proposed development site looking towards the driveway.



Figure 4. Stems of T3/G4 located below the proposed development site.



Figure 5. H5.



Figure 6. T6



Figure 7. Trees from left to right: T10, T9 and G11 on the opposing side of the road.



Figure 8. The view of the property from the main entrance road.



Figure 9. T12.