

The Larches Tree Condition Report

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Glossary

1 Instruction

The following report collates the findings of a full tree survey undertaken on the 25th of July 2022 by JK Forestry and Arboricultural Services. The principal objective of the survey was to evaluate the overall health, vigour and structural integrity of the mature trees, primarily concentrating on the trees protected by **Richmondshire District Council Tree Preservation Order 2008/02**, within the property boundary of The Larches, Hunton Road, Scotton, North Yorkshire, DL9 3NN.

2 The scope of the report-methodology and limitations

This Survey was carried out on the request of Karin Elliot.

The survey was undertaken by Jez Kalkowski. The inspection consisted of a detailed ground level based visual inspection of each mature tree on site. The conclusions are based on my own observations, qualifications and experience in arboriculture and tree management. No soil assessments have been undertaken. The weather during the inspection was clear and dry and did not impact on the fieldwork. Several of the mature trees are covered with significant Ivy growth which limits the ability to carry out a full detailed visual assessment of the tree structure.

The recommendations provided in the report are based upon best arboricultural practices as recommended in BS: 3998 (2010) *Tree work- Recommendations*

Trees are dynamic structures and as such their condition and health may change in a short period of time, particularly in relation to changes in their immediate environment and circumstances.

Any age related or extremes of external influences upon the trees i.e. weather conditions, environmental issues or manmade factors cannot easily be predicted and liabilities regarding tree stability cannot be accepted in connection with those factors. It is not possible to entirely remove the risk posed by a tree and guarantees cannot be given the trees will remain safe under all conditions.

Typical significant defects that are identified can be referred to in "Hazards from Trees, a general guide, "Principals of tree hazards and management" both by David Lonsdale and "The body language of trees" by Claus Mattheck published by the Forestry Commission and the Department of the Environment respectively. Trees are dynamic structures and as such their condition and health may change in a short period of time, particularly in relation to changes in their immediate environment and circumstances.

For the purposes of this survey the following details have been listed for individual the individual tree. **(See Appendix 1)**

Species: The botanical name and common name the tree.

Tree Tag Number: Individual identification number.

Please Note: Only the trees mature trees covered by the Tree Preservation Order where individually tagged.

Diameter at Breast Height (DBH): The diameter of the tree, or stem as measured in centimetres at 1.5 metres above the root collar, or immediately above the root flare if impracticable.

Age Class: The tree has graded according to the following categories: Young, Semi-mature, Mature, Over-mature, Veteran.

Condition: The physiological condition of the tree has been ascertained as a result of evaluating vitality, and graded within the following categories:

Good: Normal vitality including leaf size, bud growth, density of crown and wound wood development and or no significant structural defects.

Reasonable: Lower than normal vitality, reduced crown density and reduced response to wounds and or structural defects which cannot be resolved via remedial works.

Poor: Low vitality, low development and distribution of buds, discoloured leaves, low crown density, little extension growth for the species and or structural defects which cannot be resolved via remedial works.

Dead: Whole tree dead.

Likelihood of structural failure:

Failure Potential:

Identifies the most likely failure and rates the likelihood that the structural defect will result in failure.

Ratings:

1: low - minor defects (e.g. dieback, attached minor hangers, wounds without decay, cavities <10% circum),

2: medium – defects present and obvious (e.g. moderate deadwood, free hangers, wounds with decay, cavities 10-25% circum, co-dominant stems),

3: high – numerous or significant defects (e.g. Significant deadwood, multiple wounds with decay, cavities 25-50% circum, split co-dominant stems),

4: severe – extensive defects (e.g. dead, major decay, cavities >50% circum, major structural failure)

Life Expectancy: The anticipated life expectancy of the tree has been ascertained as a result of evaluating the following: species, condition and prevailing site factors, and graded, in years, within the following bands: 0, <10, 10-20, 20-40, 40+.

Likelihood of Bats: Assessed as High, Medium, Low

Comments and Observations:

An assessment has been given on the current status of the tree.

Preliminary Management Recommendation

A preliminary management recommendation has been provided for the tree based on the arboricultural tree health requirement and to fulfil any legal obligations for the property owner.

Priority

The identified works have been assessed as **LOW**, **MEDIUM** or **HIGH** (See Tree Risk Management)

LOW	Works are routine, with no specific completion time although may become more critical with time.
MEDIUM	Works to be completed within 12 months unless a more specific timetable is given
HIGH	Works to be completed within 1 month unless a more specific timetable is given
Urgent	Work to be carried out as soon as possible.

3 Legal Constraints

Trees subject to statutory controls in England under the **Town and Country Planning Act 1990** and the **Town and Country Planning (tree Preservation) regulations 2012** and **Forestry Act 1967**.

All the trees inspected in this report are covered by **Richmondshire District Council Tree Preservation Order 2008/02**.

Unfortunately, the information in the original TPO schedule is dated and the trees specified in the official TPO documentation does not fully correspond with the trees currently on site. This is due to some tree deaths and authorised tree removal.

Where possible the TPO identification numbers have been included in the inspection schedule summary in Appendix 1

If the tree is covered by a tree preservation order or in a conservation area it will be necessary to consult the council before any pruning works other than certain exemptions can be carried out.

An application for consent to the cutting down, topping, lopping or uprooting of any tree subject to a Tree Preservation Order (TPO) can be made in writing to the Local Planning Authority using a form published by the Secretary of State for that purpose or can be made electronically, on a form published electronically by the Secretary of State. All applications must include:

- (a) the particulars specified in the form;
- (b) be accompanied, whether electronically or otherwise, by:
 - (i) a plan which identifies the tree or trees to which the application relates;
 - (ii) such information as is necessary to specify the work for which consent is sought;
 - (iii) a statement of the applicant's reasons for making the application; and

(iv) if appropriate evidence describing any structural damage to property or in relation to tree health or safety, as applicable.

Statutory wildlife obligations: **The wildlife and Countryside Act 1981** as amended by the **Countryside and Rights of Way Act 2000** and the **Conservation of Habitats and Species Regulations 2017** provides statutory protection to birds, bats and other species that inhabit trees.

In England, Scotland and Wales the law protecting bats is more detailed than for most other animals. All bat species have been for some time protected under 5 of the Wildlife & Countryside Act 1981 however since 2007 the effective protection for bats now comes from Schedule 2 of the **Conservation (Natural Habitats &c) Regulations 2017**, which defines "European protected species of animals". Changes to legislation, and devolution, mean the law is difficult to summarise succinctly across the UK, but the strong legal protection for bats and roosts remains.

All tree work operations are covered by these provisions and advice from an ecologist or the work to be carried out by an arboricultural contractor qualified in assessing and dealing with potential bat habitat must be obtained before undertaking any works that might constitute an offence

There is a **presumption under the Forestry Act (1967)** that any felling of living trees will require a Felling Licence unless an exemption applies. Licences are free and are issued by the Forestry Commission. If you do not obtain a Felling Licence where one is required, you may face legal action.

4 Occupiers Legal Obligations

Where a tree is hazardous because of decay or structural weakness and shows external signs of being in such a condition, the occupier of the land on which it stands is normally liable under UK laws for any personal injury or other damage it causes by breaking or falling. This liability arises from provisions by which the occupier has a common duty of care to others who enter the land or its vicinity.

The duty is only "to take reasonable care" or, as it is defined in the Occupiers Liability Acts 1957 and 1984, "such care as in all the circumstances of the case is reasonable..." Reasonable refers to the definition of negligence in *Blythe v Birmingham Waterworks*

Liability of Tree Owners: Occupiers must take reasonable steps to manage and reduce risk and these steps include regular inspections of trees to identify those that might cause injury or place property at risk. When hazardous trees are identified, suitable remedial action must be taken to reduce risk.

The Courts expect owners in control of places where the public has access to take greater care than those in control of more remote woodland.

Recent case law has confirmed and clarified the responsibilities (*Poll v Viscount Asquith 2006*). A motorcyclist suffered serious injuries when they collided with a fallen tree. The landowner was found liable even though they had hired a forestry inspector. But it was held that the contractor was not sufficiently experienced. He had relied on "drive by inspections" and not carried out a closer inspection of a tree that clearly should have received one.

Under UK law, an occupier who fails to carry out remedial works to prevent a risk of harm to people or property can be empowered to carry out the work either through a Court Injunction or through a notice served on the occupier by the Local Authority under the Local Government (Miscellaneous Provisions) Act or Highways Act.

The purpose of inspections is to determine whether a tree could foreseeably cause harm by virtue of its size and physical condition.

There cannot, therefore, be a hard and fast distinction between sites where inspection is essential and where it is entirely unnecessary. Occupiers must decide what is reasonable, because the Courts expect them to take 'reasonable steps' to inspect their trees and to remove or reduce hazards to people and property.

The key consideration is foreseeability; if it can be reasonably foreseen that anyone (guest or trespasser) could be at risk, the occupier has a duty of care to reduce that risk within reason.

It is essential that a planned inspection programme is established which ensures trees are inspected as often as is necessary. Inspections must only be undertaken by a suitably experienced and competent person and should lead to the carrying out of a risk assessment.

5 Summary and management recommendations.

General Comments

The **13x** individual mature trees and the mature groups of Scots pine that were surveyed within the grounds of the Larches are all protected with **Tree Preservation Order 2008/02.**

The **9x** mature ash surveyed are all showing moderate to severe symptoms of ash dieback infection.

Ash Dieback Overview

The Disease *Hymenoscyphus fraxineus* is an Ascomycete fungus that causes ash dieback, a chronic fungal disease of ash trees throughout Europe being characterised by leaf loss and crown dieback in infected trees. The fungus was first scientifically described in 2006 under the name *Chalara fraxinea*. Four years later it was discovered that *Chalara fraxinea* was only the asexual (anamorphic) stage of a fungus that was subsequently named *Hymenoscyphus pseudoalbidus* and then renamed as *Hymenoscyphus fraxineus*.

Initially, small necrotic spots occur on stems and branches. These lesions then enlarge on the branches causing wilting and premature shedding of leaves and particularly evident in the top of the crown. Below the bark, necrotic lesions frequently extend to the xylem and the mycelium can pass through the simple pits thus perforating the middle lamella. The disease is often chronic and lethal. It is particularly destructive of young ash plants, killing them within one growing season of symptoms becoming visible. Older trees can survive initial attacks but tend to succumb eventually after several seasons of infection. Larger trees can withstand the disease for longer but are structurally weakened and soon start shedding limbs once infected. Unlike many trees, ash timber becomes inherently weak once dead, soon resulting in catastrophic structural failure. Ash dieback has caused widespread

damage in continental Europe and is now widely established in the UK. Current research has shown that around 99% of the UK ash will eventually succumb to this disease. There are currently no effective strategies for managing or preventing the disease, and most countries which have tried to control its spread have failed. The removal of trees in infected areas has little effect as the fungus lives and grows on leaf litter on the forest floor.

The management options for the infected trees are limited and it is recommended that some of the trees are removed due to condition and location (adjacent to public roads and footpaths).

The remaining ash trees on site will need to be regularly monitored for ash dieback, and an assessment made of their condition, to ensure the trees do not deteriorate to a stage where they are a H&S risk. It is not possible to predict the speed at which the trees will succumb, however at some point the decision will need to be made on how to deal with the problem.

The options available will be to deal with the individual trees on a reactive basis, removing them as they die. The second option is a phased removal, and subsequent replanting, before their condition reaches a stage where conventional felling may not be an option. Unfortunately as ash trees die, they become structurally weak, and extremely dangerous climb and section down, or to fell from the ground.

The remaining trees on site are in reasonable or good condition, although the young self-seeded ash trees across the site all show signs of ash dieback.

Please note: Several of the mature trees are covered with significant Ivy growth which limits the ability to carry out a full detailed visual assessment of the tree structure. I recommend that the ivy is removed where possible.

Management recommendations

Individual work prescriptions for each tree have been summarised in the inspection schedule in **Appendix 1**

High Priority Works

Tree No 430 (TPO No1)

This mature oak is infected with *Inonotus dryadeus* (Weeping oak bracket) which results in stem and root decay. The tree has produced significant buttressing, although this is no guarantee that the tree will not be weakened by this fungus. I strongly recommend that the tree has its crown reduced by at least 30% including a crown lift over the public road. This will help reduce the overall weight and wind sale effect of the crown, subsequently reducing the pressure and weight loading on the root system. The tree also need to be monitored regularly for any significant reduction in condition.

Tree Group A

There is a large dead Goat willow growing within this group of protected Scots pine trees. As the tree is dead, with significant amounts of deadwood over the footpath and public road it needs to be removed as soon as possible. Although this tree would have grown after the Scots pine group were protected, it would be prudent to inform the Planning Department in writing that the tree will be felled as soon as possible due to its condition.

Ash Trees

Tree No 433 (TPO No T5)

Single stem tree showing advanced signs of ash dieback. Significant crown dieback and deadwood. **Fell to ground level**

Tree No 437a (No TPO number on TPO Plan)

Single stem tree with crown spread at 2.5 metres. Ivy prevents full detailed survey. Some evidence of ash dieback. **High prune over the public footpath.**

Tree No 438 (TPO No T9)

Single stem tree reasonable form poor vitality and in decline due to ash dieback. Crown thinning and crown dieback evident. Medium diameter deadwood over footpath. **Fell to ground level or monolith at 5 metres.**

Tree no 439 (TPO No10)

Single stem tree reasonable form poor vitality and in decline due to ash dieback. Crown thinning and crown dieback evident. **Fell to ground level or monolith at 5 metres.**

Tree no 441 (TPO No 11)

Single stem tree reasonable form poor vitality and in decline due to ash dieback. Crown thinning and crown dieback evident. Large diameter dead branch over footpath. **Remove dead branch as soon as possible. Fell to ground level or monolith at 5 metres.**

Tree No 443 (TPO No 13)

Originally 2x codominant stems, southern stem failed several years ago resulting in significant decay in stem union with remaining stem. Poor vitality with significant signs of advanced ash dieback. **Fell to ground level**

Tree No 444 (TPO No14)

Large mature tree growing over the southern boundary. Large asymmetrical crown with significant lateral growth to the south over the neighbouring property and public footpath. Loss of large limb on northern side at 3 metres, good response to the injury. Scaffold limb unions optimised although some evidence of reaction wood production. Signs of ash dieback present with some reduction in vitality, crown thinning and small/medium diameter deadwood over footpath. **Crown lift and crown reshape over the public foot path to reduce lateral growth. 30% overall crown reduction.**

A handwritten signature in black ink, appearing to read 'Jez Kalkowski', is centered on the page.

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Forestry and Arboriculture Services
25/7/2022**

Appendix 1

Inspection Schedule

Culloden Mews Tree Condition Report Data											
Tree Number	Species	DBH (Diameter at 1.5 m)	Height (Metres)	Age Class	Condition	Likelihood of structural failure	Life Expectancy	Likelihood of bats	Comments and observations	Management Recommendations	Priority
430 TPO No T1	Oak (Quercus spp.)	150+cm	20	Mature	Reasonable	3	40+	High	Large mature oak with 2x codominant stems at 1.7m. Optimised union with some reaction growth on stem unions evident. Good overall form with moderate vitality. Reasonable root buttressing with extensive desiccated fungal fruiting bodies of Inonotus dryadeus (Weeping oak bracket) around the northern and western root buttress. Decay and cavitation	Crown lift over the road, reduce lateral side growth over the road back to the main stem. 40% Crown reduction to reduce weight and loading on the weakened	High

									evident on the northern and western side of the tree characteristic with this type of fungal infection. Although the main root buttress appears to be solid there will be a central decay column which will significantly weaken the structural integrity of the tree. Some evidence of crown thinning. Significant lateral side growth over the road. Overall balanced crown. Small/medium diameter deadwood.	stem. Remove deadwood. Remove ivy. Reinspect within 12 months. Monitor for reduction in vitality and overall condition. Work to be carried out within 3 months.	
431 TPO No T3	Sycamore (<i>Acer pseudoplatanus</i>)	56cm	18	Mature	Reasonable	2	40+	Med	Single stem tree reasonable form with good vitality. Slight lean to the east. Significant bark callousing. Ivy growth on main stem. Minor small diameter deadwood.	No work required. Reinspect within 12 months	Low
432 TPO No T4	Ash (<i>Fraxinus excelsior</i>)	Average 30cm	20	Mature	Reasonable but in decline	3	<10	Low	4x codominant stems at ground level, optimised unions forming a bundle of trees. Clean stems to	Reinspect within 12 months. Monitor for	Medium

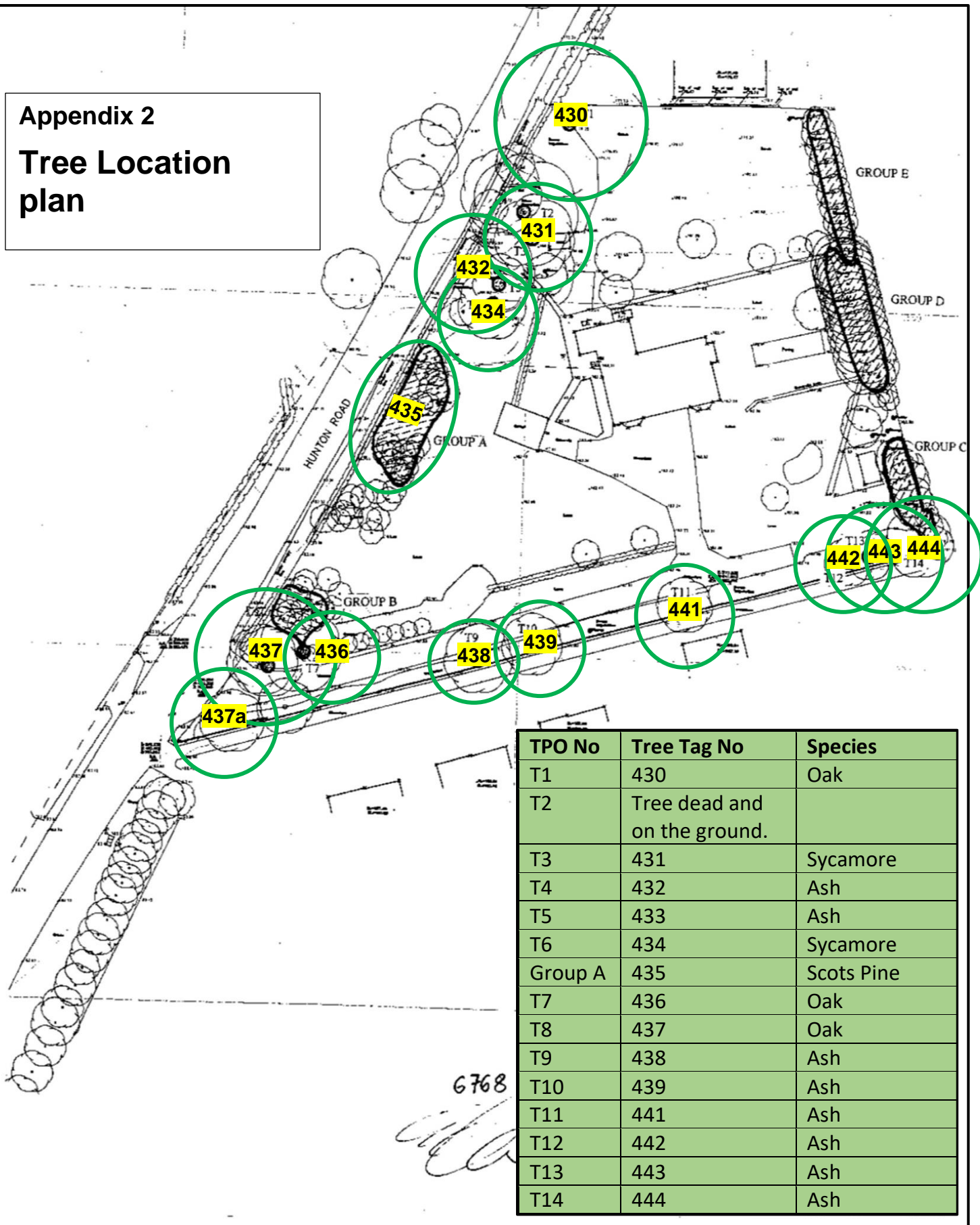
									17m. Some evidence of ash dieback with reduced vitality and crown thinning. Small diameter deadwood.	signs of worsening health or ash die back.	
433 TPO No T5	Ash (Fraxinus excelsior)	30cm	20	Mature	Poor	3	<5	Low	Single stem tree showing advanced signs of ash dieback. Significant crown dieback and deadwood.	Fell to ground level. Remove within 3 months	High
434 TPO No T6	Sycamore (Acer pseudoplatanus)	Average 27cm	18	Mature	Reasonable	2	40+	Low	4x codominant stems from ground level, optimised stem unions. Significant ivy growth prevents full detailed inspection. Good group form and vitality. Significant build-up of grass cutting around the base.	No work required. Reinspect within 12 months.	Low
435 TPO Group A	Group of Scots pine	n/a	n/a	Mature	Good	2	40+	low	Group of mature Scots pine with mixed broadleaf understory. No issues identified on the pines although there is a large dead goat willow on the boundary.	Fell dead goat willow as soon as possible. Tree should not be protected by the group TPO.	Urgent

435a TPO Group B	Group of Scots pine	n/a	n/a	Mature	Good	2	40+	low	No issues identified.	No work required.	Low
436 TPO No T7	Oak (Quercus spp.)	Average 30cm	17	Mature	Good	2	40+	low	5x codominant stemmed tree, good overall form and vitality. No issues identified.	No work required.	Low
437 TPO No T8	Oak (Quercus spp.)	Average 30cm	17	Mature	Good	2	40+	low	3x codominant stemmed tree, good overall form and vitality. No issues identified.	No work required.	Low
437a (Tree with the sign for the larches) No TPO Number	Ash (Fraxinus excelsior)	40cm	11	Mature	Reasonable	3	<10	Low	Single stem tree with crown spread at 2.5 metres. Ivy prevents full detailed survey. Some evidence of ash dieback.	High prune over the public footpath. Work to be carried out within 1 month.	High
438 TPO No T9	Ash (Fraxinus excelsior)	50cm	16	Mature	Poor	3/4	<5	Med	Single stem tree reasonable form poor vitality and in decline due to ash dieback. Crown thinning and crown dieback evident. Medium diameter deadwood over footpath.	Fell to ground level or monolith at 5 metres. Remove within 3 months	High
439 TPO No T10	Ash (Fraxinus excelsior)	70cm	16	Mature	Poor	3/4	<5	Med	Single stem tree reasonable form poor vitality and in decline	Fell to ground level or monolith	High

									due to ash dieback. Crown thinning and crown dieback evident.	at 5 metres. Remove within 3 months.	
441 TPO No T11	Ash (Fraxinus excelsior)	70cm	16	Mature	Poor	3/4	<5	Med	Single stem tree reasonable form poor vitality and in decline due to ash dieback. Crown thinning and crown dieback evident. Large diameter dead branch over footpath.	Fell to ground level or monolith at 5 metres. Remove within 3 months. Remove dead branch as soon as possible.	Urgent
442 TPO No T12	Ash (Fraxinus excelsior)	50cm	17	Mature	Poor	3/4	<5	Med	Single stem tree then multi stem at 2 metres. Significant ivy growth prevents full inspection. Moderate vitality.	Currently no work required. Reinspect within 12 months. Monitor for signs of worsening health or ash die back.	Medium
443 TPO No T13	Ash (Fraxinus excelsior)	25cm	17	Mature	Poor	3/4	<5	Med	Originally 2x codominant stems, southern stem failed several years ago	Fell to ground level.	High

									resulting in significant decay in stem union with remaining stem. Poor vitality with significant signs of advanced ash dieback.	Remove within 3 months	
443 TPO No T14	Ash (Fraxinus excelsior)	74cm	20	Mature	Reasonable but in decline.	3/4	<10	Med	Large mature tree growing over the southern boundary. Large asymmetrical crown with significant lateral growth to the south over the neighbouring property and public footpath. Loss of large limb on northern side at 3 metres, good response to the injury. Scaffold limb unions optimised although some evidence of reaction wood production. Signs of ash dieback present with some reduction in vitality, crown thinning and small/medium diameter deadwood over footpath.	Crown lift and crown reshape over the public foot path to reduce lateral growth. 30% overall crown reduction. Work to be carried out within 3 months.	High

**Appendix 2
Tree Location
plan**



TPO No	Tree Tag No	Species
T1	430	Oak
T2	Tree dead and on the ground.	
T3	431	Sycamore
T4	432	Ash
T5	433	Ash
T6	434	Sycamore
Group A	435	Scots Pine
T7	436	Oak
T8	437	Oak
T9	438	Ash
T10	439	Ash
T11	441	Ash
T12	442	Ash
T13	443	Ash
T14	444	Ash

Appendix 3

Glossary of tree work and arboricultural terminology

Abscission

The shedding of a leaf or other short-lived part of a woody plant, involving the formation of a corky layer across its base; in some tree species twigs can be shed in this way.

Abiotic

Pertaining to non-living agents, e.g. environmental factors.

Absorptive roots

Non-woody, short-lived roots, generally having a diameter of less than one millimetre, the primary function of which is uptake of water and nutrients.

Adaptive growth

In tree biomechanics, the process whereby the rate of wood formation in the cambial zone, as well as wood quality, responds to gravity and other forces acting on the cambium. This helps to maintain a uniform distribution of mechanical stress.

Adaptive roots

The adaptive growth of existing roots; or the production of new roots in response to damage, decay or altered mechanical loading.

Adventitious shoots

Shoots that develop other than from apical, axillary or dormant buds; see also 'epicormic'.

Anchorage

The system whereby a tree is fixed within the soil, involving cohesion between roots and soil and the development of a branched system of roots which withstands wind and gravitational forces transmitted from the aerial parts of the tree.

Arboricultural Impact Assessment (AIA)

AIA is a recommendation of British Standard 5837: 2012 (BS5837:2012) *Trees in relation to design, demolition & construction – Recommendations, that an Arboricultural Impact Assessment is produced in order to inform the development process.*

The AIA will help to shape development plans you may have, it is needed for local planning applications where existing trees maybe on or near the site. This applies to both domestic extensions and developments of new homes or buildings.

An AIA will identify and evaluate the development impacted trees, and if necessary, recommend solutions (Rootbridge, Cellweb, etc.) to minimise the impact on the trees or suggest the removal or replacement of trees.

Arboricultural Method Statement (AMS)

AMS is usually supplied at the same time as the AIA (see above), because once planning is granted, a condition is usually to have an AMS or Arboricultural Method

Statement in place. The AMS will dictate the progress of the development in relation to the trees covered in the AIA. This could include the use of protection by fencing or use of special digging techniques or tools or other measures. These are often also covered in the **Tree Protection Plan (TPP)** one condition may also be continuous or regular **Site Supervision**.

Architecture

In a tree, a term describing the pattern of branching of the crown or root system.

Axil

The place where a bud is borne between a leaf and its parent shoot.

Bacteria

Microscopic single-celled organisms, many species of which break down dead organic matter, and some of which cause diseases in other organisms.

Bark

A term usually applied to all the tissues of a woody plant lying outside the vascular cambium, thus including the phloem, cortex and periderm; occasionally applied only to the periderm or the phellem .

Basidiomycotina (Basidiomycetes)

One of the major taxonomic groups of fungi; their spores are borne on microscopic peg-like structures (basidia), which in many types are in turn borne on or within conspicuous fruit bodies, such as brackets or toadstools. Most of the principal decay fungi in standing trees are basidiomycetes.

Bifurcation

A term referring to a tree fork in the trunk giving rise to two roughly equal diameter branches. These forks are a common feature of tree crowns.

Bolling

A term sometimes used to describe pollard heads.

Bottle-butt

A broadening of the stem base and buttresses of a tree, in excess of normal and sometimes denoting a growth response to weakening in that region, especially due to decay involving selective delignification.

Bracing

The use of rods or cables to restrain the movement between parts of a tree

Branch:

- Primary. A first order branch arising from a stem.
- Lateral. A second order branch, subordinate to a primary branch or stem and bearing sub-lateral branches.
- Sub-lateral. A third order branch, subordinate to a lateral or primary branch, or stem and usually bearing only twigs.

Branch bark ridge

The raised arc of bark tissues that forms within the acute angle between a branch and its parent stem.

Branch collar

A visible swelling formed at the base of a branch whose diameter growth has been disproportionately slow compared to that of the parent stem; a term sometimes applied also to the pattern of growth of the cells of the parent stem around the branch base.

Brown-rot

A type of wood decay in which cellulose is degraded, while lignin is only modified.

BS5837:2012

A British Standard Institute (BSI) publication, *BS 5837 (2012) – Trees in Relation to Design, Demolition and Construction*

A 40 odd page document which gives advice on how to assess and monitor *Trees in Relation to Design, Demolition and Construction*. This is the expected standard for any tree report submitted to the planning authorities.

Buckling

An irreversible deformation of a structure subjected to a bending load Buttress zone. The region at the base of a tree where the major lateral roots join the stem, with buttress-like formations on the upper side of the junctions.

Cambium

Layer of dividing cells producing xylem (woody) tissue internally and phloem (bark) tissue externally.

Canker

A persistent lesion formed by the death of bark and cambium due to colonisation by fungi or bacteria.

Canopy species

Tree species that mature to form closed woodland canopy.

Cleaning out

The removal of dead, crossing, weak, and damaged branches, where this will not damage or spoil the overall appearance of the tree.

Compartmentalisation

The confinement of disease, decay or other dysfunction within an anatomically discrete region of plant tissue, due to passive and/or active defences operating at the boundaries of the affected region.

Compression strength

The ability of a material or structure to resist failure when subjected to compressive loading, measurable in trees with special drilling devices.

Compressive loading

Mechanical loading which exerts a positive pressure, the opposite to tensile loading.

Condition

An indication of the physiological vitality of the tree. Where the term 'condition' is used in a report, it should not be taken as an indication of the stability of the tree.

Construction exclusion zone

Area based on the Root Protection Area (in square metres) to be protected during development, by the use of barriers and/or ground protection.

Crown/Canopy

The main foliage bearing section of the tree, these terms are interchangeable.

Crown lifting

The removal of limbs and small branches to a specified height above ground level.

Crown thinning

The removal of a proportion of secondary branch growth throughout the crown to produce an even density of foliage around a well-balanced branch structure.

Crown reduction/shaping

A specified reduction in crown size whilst preserving, as far as possible, the natural tree shape.

Crown reduction/thinning

Reduction of the canopy volume by thinning to remove dominant branches whilst preserving, as far as possible the natural tree shape.

Deadwood

Branch or stem wood bearing no live tissues. Retention of deadwood provides valuable habitat for a wide range of species and seldom represents a threat to the health of the tree. Removal of deadwood can result in the ingress of decay to otherwise sound tissues and climbing operations to access deadwood can cause significant damage to a tree. Removal of deadwood is generally recommended only where it represents an unacceptable level of hazard.

Decurrent

In trees, a system of branching in which the crown is borne on a number of major widely spreading limbs of similar size (cf. excurrent).

In fungi with toadstools as fruit bodies, the description of gills which run some distance down the stem, rather than terminating abruptly.

Defect

In relation to tree hazards, any feature of a tree which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.

Delamination

The separation of wood layers along their length, visible as longitudinal splitting.

Dieback

The death of parts of a woody plant, starting at shoot-tips or root-tips.

Disease

A malfunction in or destruction of tissues within a living organism, usually excluding mechanical damage; in trees, usually caused by pathogenic micro-organisms.

Distal

In the direction away from the main body of a tree or subject organism (cf. proximal).

Dominance

In trees, the tendency for a leading shoot to grow faster or more vigorously than the lateral shoots; also the tendency of a tree to maintain a taller crown than its neighbours.

Dormant bud

An axial bud which does not develop into a shoot until after the formation of two or more annual wood increments; many such buds persist through the life of a tree and develop only if stimulated to do so.

Dysfunction

In woody tissues, the loss of physiological function, especially water conduction, in sapwood.

DBH (Diameter at Breast Height)

Stem diameter measured at a height of 1.5 metres (UK) or the nearest measurable point. Where measurement at a height of 1.5 metres is not possible, another height may be specified.

Endophytes

Micro-organisms which live inside plant tissues without causing overt disease, but in some cases capable of causing disease if the tissues become physiologically stressed, for example by lack of moisture.

Epicormic shoot

A shoot having developed from a dormant or adventitious bud and not having developed from a first-year shoot.

Excrecence

Any abnormal outgrowth on the surface of tree or other organism.

Excurrent

In trees, a system of branching in which there is a well-defined central main stem, bearing branches which are limited in their length, diameter and secondary branching (cf. decurrent).

Felling licence

In the UK, a permit to fell trees in excess of a stipulated number of stems or volume of timber.

Flush-cut

A pruning cut which removes part of the branch bark ridge and or branch-collar.

Girdling root

A root which circles and constricts the stem or roots possibly causing death of phloem and/or cambial tissue.

Guying

A form of artificial support with cables for trees with a temporarily inadequate anchorage.

Habit

The overall growth characteristics, shape of the tree and branch structure.

Hazard beam

An upwardly curved part of a tree in which strong internal stresses may occur without being reduced by adaptive growth, prone to longitudinal splitting.

Heartwood/false heartwood/ripewood

Sapwood that has become dysfunctional as part of the natural aging processes.

Heave

A term mainly applicable to a shrinkable clay soil which expands due to re-wetting after the felling of a tree which was previously extracting moisture from the deeper layers; also the lifting of pavements and other structures by root diameter expansion; also the lifting of one side of a wind-rocked root-plate.

High canopy tree species

Tree species having potential to contribute to the closed canopy of a mature woodland or forest.

Incipient failure

In wood tissues, a mechanical failure which results only in deformation or cracking, and not in the fall or detachment of the affected part.

Included bark (ingrown bark)

Bark of adjacent parts of a tree (usually forks, acutely joined branches or basal flutes) which is in face-to-face contact.

Increment borer

A hollow auger, which can be used for the extraction of wood cores for counting or measuring wood increments or for inspecting the condition of the wood.

Infection

The establishment of a parasitic micro-organism in the tissues of a tree or other organism.

Internode

The part of a stem between two nodes; not to be confused with a length of stem which bear nodes but no branches.

Lever arm

A mechanical term denoting the length of the lever represented by a structure that is free to move at one end, such as a tree or an individual branch.

Lignin

The hard, cement-like constituent of wood cells; deposition of lignin within the matrix of cellulose microfibrils in the cell wall is termed Lignification.

Lions tailing

A term applied to a branch of a tree that has few if any side-branches except at its end and is thus liable to snap due to end loading.

Loading

A mechanical term describing the force acting on a structure from a particular source, e.g. the weight of the structure itself or wind pressure.

Longitudinal

Along the length (of a stem, root or branch).

Lopping

A term often used to describe the removal of large branches from a tree, but also used to describe other forms of cutting.

Mature Heights (approximate):

- Low maturing – less than 8 metres high
- Moderately high maturing – 8 – 12 metres high
- High maturing – greater than 12 metres high

Microdrill

An electronic rotating steel probe, which when inserted into woody tissue provides a measure of tissue density.

Minor deadwood

of a diameter less than 25mm and or unlikely to cause significant harm or damage upon impact with a target beneath the tree.

Mulch

Material laid down over the rooting area of a tree or other plant to help conserve moisture; a mulch may consist of organic matter or a sheet of plastic or other artificial material.

Mycelium

The body of a fungus, consisting of branched filaments (hyphae).

National Planning Policy Framework (NPPF)

Exactly as it states, this is the National Planning Policy Framework, a huge document which covers many aspects of development, a portion of which includes trees. The July 2021 amendment encourages all developers to plant more trees, parks and community orchards and ALL new streets must be lined with trees. But it is so important to get the right trees,

Non-Optimised Union

Non *optimised branch union*, often associated with included bark, which is considered a structural defect.

Occluding tissues

A general term for the roll of wood, cambium and bark that forms around a wound on a woody plant (cf. woundwood).

Occlusion

The process whereby a wound is progressively closed by the formation of new wood and bark around it.

Pathogen

A micro-organism which causes disease in another organism.

Photosynthesis

The process whereby plants use light energy to split hydrogen from water molecules and combine it with carbon dioxide to form the molecular building blocks for synthesizing carbohydrates and other biochemical products.

Phytotoxic

Toxic to plants.

Pollarding

The removal of the tree canopy, back to the stem or primary branches. Pollarding may involve the removal of the entire canopy in one operation or may be phased over several years. The period of safe retention of trees having been pollarded varies with species and individuals. It is usually necessary to repollard on a regular basis, annually in the case of some species.

Primary branch

A major branch, generally having a basal diameter greater than 0.25 x stem diameter.

Primary root zone

The soil volume most likely to contain roots that are critical to the health and stability of the tree and normally defined by reference to BS5837 (2005) Trees in Relation to Construction Recommendations.

Priority

Works may be prioritised, 1. = high, 5. = low.

Probability

A statistical measure of the likelihood that a particular event might occur.

Proximal

In the direction towards from the main body of a tree or other living organism (cf. distal).

Pruning

The removal or cutting back of twigs or branches, sometimes applied to twigs or small branches only, but often used to describe most activities involving the cutting of trees or shrubs.

Radial

In the plane or direction of the radius of a circular object such as a tree stem.

Rams-horn

In connection with wounds on trees, a roll of occluding tissues which has a spiral structure as seen in cross-section.

Rays

Strips of radially elongated parenchyma cells within wood and bark. The functions of rays include food storage, radial translocation and contributing to the strength of wood.

Reactive Growth/Reaction Wood

Production of woody tissue in response to altered mechanical loading; often in response to internal defect or decay and associated strength loss (cf. adaptive growth).

Removal of dead wood

Unless otherwise specified, this refers to the removal of all accessible dead, dying and diseased branch wood and broken snags.

Removal of major dead wood

The removal of, dead, dying and diseased branch wood above a specified size

Respacing

Selective removal of trees from a group or woodland to provide space and resources for the development of retained trees.

Residual wall

The wall of non-decayed wood remaining following decay of internal stem, branch or root tissues.

Root-collar

The transitional area between the stem/s and roots.

Root-collar examination

Excavation of surfacing and soils around the root-collar to assess the structural integrity of roots and/or stem.

Root protection area (RPA)

An area of ground surrounding a tree that contains sufficient rooting volume to ensure the tree's survival. Calculated with reference to BS5837 (2012).

Root zone

Area of soils containing absorptive roots of the tree/s described. The Primary root zone is that which we consider of primary importance to the physiological well-being of the tree.

Sapwood

Living xylem tissues.

Secondary branch

A branch, generally having a basal diameter of less than 0.25 x stem diameter.

Selective delignification

A kind of wood decay (white rot) in which lignin is degraded faster than cellulose.

Shedding

In woody plants, the normal abscission, rotting off or sloughing of leaves, floral parts, twigs, fine roots and bark scales.

Silvicultural thinning

Removal of selected trees to favour the development of retained specimens to achieve a management objective.

Simultaneous white rot

A kind of wood decay in which lignin and cellulose are degraded at about the same rate.

Snag

In woody plants, a portion of a cut or broken stem, branch or root which extends beyond any growing-point or dormant bud; a snag usually tends to die back to the nearest growing point.

Soft rot

A kind of wood decay in which a fungus degrades cellulose within the cell walls, without any general degradation of the wall as a whole.

Spores

Propagules of fungi and many other life-forms; most spores are microscopic and dispersed in air or water.

Shrub species

Woody perennial species forming the lowest level of woody plants in a woodland and not normally considered to be trees.

Sporophore

The spore bearing structure of fungi.

Sprouts

Adventitious shoot growth erupting from beneath the bark.

Stem/s

The main supporting structure/s, from ground level up to the first major division into branches.

Stress

In plant physiology, a condition under which one or more physiological functions are not operating within their optimum range, for example due to lack of water, inadequate nutrition or extremes of temperature.

Stress

In mechanics, the application of a force to an object.

Stringy white rot

The kind of wood decay produced by selective delignification.

Storm

A layer of tissue which supports the fruit bodies of some types of fungi, mainly ascomycetes.

Structural roots

Roots, generally having a diameter greater than ten millimetres, and contributing significantly to the structural support and stability of the tree.

Subsidence

In relation to soil or structures resting in or on soil, a sinking due to shrinkage when certain types of clay soil dry out, sometimes due to extraction of moisture by tree roots.

Subsidence

In relation to branches of trees, a term that can be used to describe a progressive downward bending due to increasing weight.

Taper

In stems and branches, the degree of change in girth along a given length.

Target canker

A kind of perennial canker, containing concentric rings of dead occluding tissues.

Targets

In tree risk assessment (with slight misuse of normal meaning) persons or property or other things of value which might be harmed by mechanical failure of the tree or by objects falling from it.

Topographic Survey (TOPO)

A topographic survey is simply the recording of coordinates and height data for a particular survey area. These are often required for planning and in advance of the AIA report being commissioned.

Topping

In arboriculture, the removal of the crown of a tree, or of a major proportion of it.

Torsional stress

Mechanical stress applied by a twisting force.

Translocation

In plant physiology, the movement of water and dissolved materials through the body of the plant.

Transpiration

The evaporation of moisture from the surface of a plant, especially via the stomata of leaves; it exerts a suction which draws water up from the roots and through the intervening xylem cells.

Tree Constraints Plan (TCP)

A Tree Constraints Plan will show the both the above and below ground spread of your trees. This will help inform the location of your proposals within the site.

Tree Hazard and Risk Assessment (TRA)

Sometimes referred to as a tree management survey or a tree maintenance survey. Trees situated close to buildings or on publicly accessible land present potential risk to both personal and public safety.

Landowners are responsible for damage or injury caused by trees on their land and have a duty of care to prevent foreseeable harm occurring to people from any hazardous trees situated on their property. Trees need to be assessed regularly and managed to reduce the risks of harm or injury.

Tree Protection Plan (TPP)

A TPP shows the measures required to ensure the long-term viability and safety of the specified tree(s).

Tree Survey

During a tree survey, any trees on or affected by your site will be assessed. A thorough tree survey will categorise trees or groups of trees for their quality, life expectancy and value within the local landscape.

Understorey

A layer of vegetation beneath the main canopy of woodland or forest or plants forming this.

Understorey tree species

Tree species not having potential to attain a size at which they can contribute to the closed high canopy of a woodland.

Vascular wilt

A type of plant disease in which water-conducting cells become dysfunctional.

Vessels

Water-conducting cells in plants, usually wide and long for hydraulic efficiency; generally not present in coniferous trees.

Veteran tree

A loosely defined term for an old specimen that is of interest biologically, culturally or aesthetically because of its age, size or condition and which has usually lived longer than the typical upper age range for the species concerned.

Vitality

The degree of physiological and biochemical processes (life functions) within an individual, group or population of trees.

White rot

A range of kinds of wood decay in which lignin, usually together with cellulose and other wood constituents, is degraded.

Wind exposure

The degree to which a tree or other object is exposed to wind, both in terms of duration and velocity.

Wind pressure

The force exerted by a wind on a particular object.

Windthrow

The blowing over of a tree at its roots.

Wound dressing

A general term for sealants and other materials used to cover wounds in the hope of protecting them against desiccation and infection, only of proven value against fresh wound parasites.

Woundwood

Wood with atypical anatomical features, formed in the vicinity of a wound.