

Aerial Tree Inspection

Technical Note

Land at Wrexham Road

Rhostyllen

Report Ref: 238/R/101

October 2022

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1. INTRODUCTION

1.1 Scope of survey

MDLandscape have been instructed by SG Estates Ltd to review the condition of an ash tree on land at Wrexham Road, Rhostyllen, following a Tree Verification Survey in September 2022.

This Technical Note should be read in conjunction with the Tree Constraints Verification Report 238/R/100_P01 and the Arboricultural Implication Study undertaken by ACS Ltd ref 1358/DR.06 in April 2013. Refer to documents: 1358/DR.06 Arboricultural Implication Study; 1358_AL_01-SK_01 Arboricultural Layout Plan sheet one of two; 1358_AL_01-SK_02 Arboricultural Layout Plan sheet two of two; 1358_TP_01-SK_01 Tree protection plan 1; and 1358_TP_01-SK_02 Tree protection plan 2.

The verification report by MDLandscape details the existing tree and hedgerow population and notes changes to site vegetation since reported in 2013, including comments on current tree health and condition and any further recommendations pertinent to the development.

During the survey in September, it was noted that an ash tree, T1, required further inspection due to the presence of fungal fruiting bodies, *Inonotus hispidus*, in the crown, dead and decaying wood and broken and fallen branches. The location of the tree is at OS grid reference SJ31646 48700 to the north edge of a field 5.5m from the hedgerow boundary with Wrexham Road, as shown in Figure 1.0.

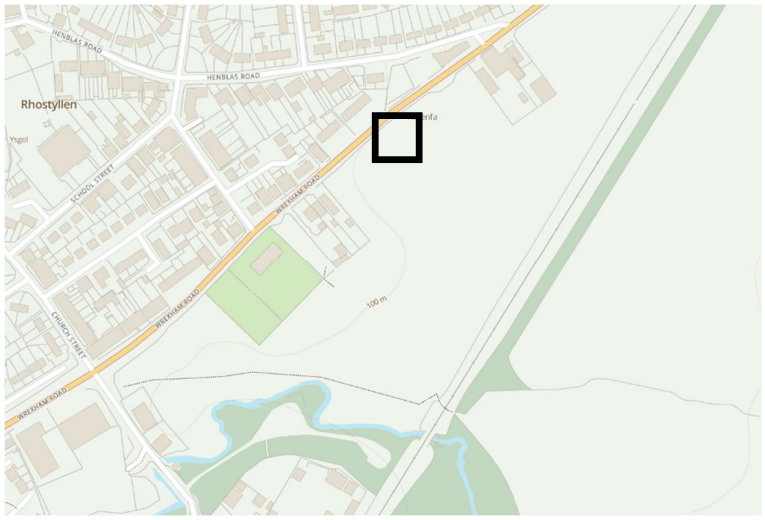


Figure 1.0 Contains Ordnance Survey data; source OpenStreetMap

1.2 The site

The ash tree is located in a field used for grazing with hedgerows and trees to the site boundary. The north extent of the crown overhangs Wrexham Road and roadside footpath.

The topography of the site is flat to gently sloping with localised changes in level to the south west towards Glanyrafon Brook.

1.3 Protection status

The ash is protected by a Tree Preservation Order (TPO), reference 2834 in the ACS Ltd survey and noted in the order as TPO 1998, number 23 as T1 Ash (E:331646, N:348702).

1.4 Survey findings

The verification survey was carried out on 12th September 2022 and undertaken in mild weather. Inspection was carried out from ground level by M Dobson FdScArb, MArborA and trees were assessed in accordance with *BS5837:2012 Trees in relation to design, demolition and construction – Recommendations*. Investigation to identify extent of cavities or decay detection was not undertaken, however further investigation was recommended due to the tree condition.

Photographs of the tree were taken and are illustrated in plates below.

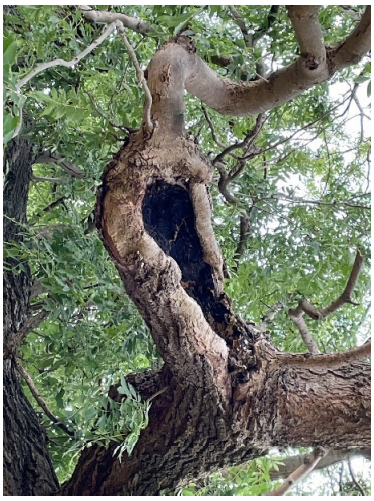


Ash 2834 (T1) from the south west



Ash 2834 (T1) from the north east.

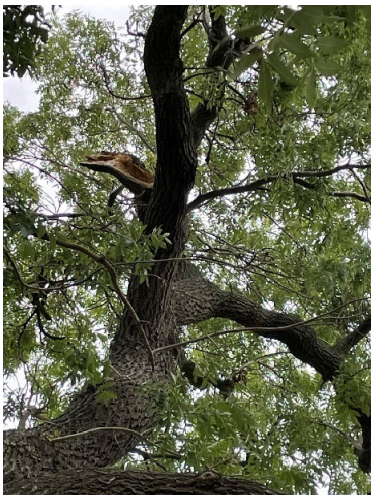
Plates showing decay and fungal fruiting bodies

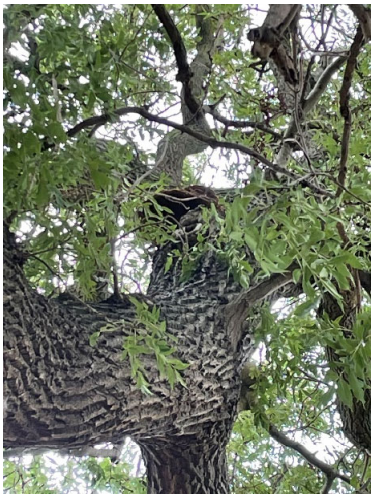






Recent decayed branch breakage





Inonotus hispidus to scaffold branch

2 TREE QUALITY CATEGORISATION

Under BS 5837:2012 trees and groups are objectively assigned a quality category designed to quantify their value. Table 1 presents a summary of the categories presented in the British Standard. The full table has been reproduced.

Table 1 **Cascade chart for tree quality assessment**

Category and definition	Criteria (including subcategories where appropriate)			Identification on plan
Trees unsuitable for retention (see Note)				
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 dedine • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see 4.5.7.*			See Table 2
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**	
Trees to be considered for retention				
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)	See Table 2
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	See Table 2
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	See Table 2

Table 1: Summary of *BS 5837:2012* tree quality categorisation criteria

3 TREE POPULATION AND CONDITION

3.1 Categorisation and value

The ash tree was surveyed in accordance with BS5837:2012 and findings recorded as shown in Table 2.

ACS Ltd tree ref number	Species	Height m	Stem dia. mm	Crown spread m				Height of crown clearance m	Age class	Physiological condition	Structural condition	Estimated remaining contribution in years	Category Rating
				N	S	E	W						
2834 TPO ref T1	Ash	20	1500	9	11	9.5	7.5	2	Over mature / early veteran	Poor	Poor	Under 10 Potentially 10-20 years after intervention and with appropriate ongoing tree management and annual inspections	U Potentially B3 after intervention and with appropriate ongoing tree management and annual inspections
Preliminary management recommendations and comments on condition													
Fungal fruiting bodies present on major scaffold branches; recent branch failures of 100mm dia.; adaptive (new) growth to stem, tree is compensating for loss of branches in crown but is in slow decline; healthy crown with no sign of ash dieback; potential to develop into early veteran; if retained as part of new development a review of the potential target area and targets is required; crown reduction required to allow safe retention in an area of potential public access; consider fencing around the crown spread of the tree; crown clearance lower than previous survey													

Table 2 Tree constraints assessment

4 DEVELOPMENT ASPECTS AND RECOMMENDATIONS

4.1.1 Ash tree 2834

The ash tree 2834 appears to be of reasonable vigour with full crown and healthy leaf growth and limited signs of dieback, however recent branch failures were noted and fungal fruiting bodies to scaffold branches as noted in 2013 still flourish. The tree has put on adaptive growth and the stem diameter has increased from 1370mm dbh to 1500mm dbh over the last ten years, however the extent of decay could not be determined during the September survey and decay detection was not undertaken at the time of the assessment. It could therefore not be discounted that decay to the stem has continued and become more extensive and that the adaptive growth to the stem has occurred as a response to decay. There is raised ground to the base of the north side of the tree and included bark to the root flare. It is considered that the ash is in a state of decline. At present, failure of parts of the tree or failure of the tree as a whole presents a moderate hazard within the field environment with a moderate risk of damage or injury.

As part of the recommendations of the September 2022 assessment, MDLandscape also noted that changes to the environment around the tree as a result of development and introduction of public access, could increase the potential risk to high and therefore present an unacceptable level of risk. As recommended in the ACS Ltd report, extensive crown reduction would be required to bring the tree within an acceptable level of safety if it were to be retained. Furthermore, it is recommended that permanent access within the crown spread of the tree as a minimum, is excluded if the tree is retained within an area of new development.

4.1.2 Further investigations

A survey using decay detection equipment was considered to obtain a better indication of the extent of decay within the tree stem and allow an informed decision to be made about the viable long-term retention of the ash.

An opinion was sought from JCA Ltd, Arboricultural Consultants specialising in decay detection using ArboSonic Decay Detection equipment. Through discussions it was agreed that a climbed inspection and visual assessment would provide a better indication of condition. The decay detection would focus on the main stem and the results may conclude that the stem is healthy and structurally sound, whilst not addressing the likelihood of failing branches. JCA Ltd further commented that should the tree be retained, it will need to be crown cleaned (and possibly crown reduced also) and it would also be prudent to consider fencing it off, so the public have no access beneath it. Regular surveys, at least annually, were also advised. Planting a specimen tree was also recommended to take the place of the ash when it does die or decline to such an extent that it has to be removed.

An Arboricultural Association Approved Contractor, Treehogs Ltd, was appointed to undertake a climbed inspection of the tree on 18th October 2022 and to report on their observations which were as follows:

1. Only one fruiting body present at time of inspection, on the largest limb facing south.
2. The tree is showing early signs of ash die back.
3. Large cavity at approximately 5m from historic pruning or branch loss. Lots of decayed timber inside. Once kicked away this uncovered a hollowing in the main branch union of the tree. Probe inserted approximately 1m . Difficult to assess the extent of the internal cavity without a resistograph or PICUS investigation.

The recommendations of Treehogs Ltd were as follows:

1. Reduce large south facing limb by approximately 5m to vertical growth point. This would be to reduce end loading and reduce the probability of limb failure.
2. Reduce/thin the remainder of the crown by approximately 30% to maintain shape and relieve stress/ weight from the main structure.

These recommendations align with those made by MDLandscape, ACS Ltd and JCA Ltd.

4.1.3 Recommendations

A short and long term management strategy for the ash tree is recommended if it is to be retained both in its current field environment and in the future, in a publicly accessible amenity environment. This should be discussed and agreed with the landowner and Wrexham CBC Tree Officer. Confirmation should also be sought from the Tree Officer and Planning Officer of Wrexham CBC, that the existing planning permission reference P /2012 /0337 and therefore approval and acceptance of ACS Ltd Arboricultural Implication Study, provides consent for the following works:

In the short term, within the next four months to end of February 2023, it is recommended that:

- Dead branches overhanging Wrexham Road and roadside footpath be removed to reduce risk of damage or injury from falling branches onto vehicle and pedestrian routes with the crown spread of the tree;
- At the same time, additional crown cleaning should be undertaken to remove dead branches to the north east and south west adjacent to the field boundary and to ensure the tree retains a balanced crown; and
- An inspection carried out by an arboricultural consultant in June 2023 and again in September/October 2023, to review tree condition, including health and extent of foliage cover, signs of advancing ash die back and further development of fungal fruiting bodies and decay. Inspections are also recommended after periods of extreme weather such as strong winds and drought.

In the medium term, it is recommended that:

- Two inspections per year be carried out by an arboricultural consultant in May/June and September/October to assess and record tree condition and again prior to any development on site. The inspections should include a photographic survey and any recommendations for ongoing management of the tree to ensure its safe retention in its current environment.

Prior to development it is recommended that:

- A Visual Tree Risk Assessment is undertaken by an arboricultural consultant and if necessary a climbed inspection, to assess and record current tree condition;
- If the tree is still of a stable and safe condition to retain, undertake crown cleaning and if necessary crown reduction in accordance with the ACS Ltd recommendations;
- If the tree has declined since the previous inspection date,
- Install permanent tree protection fencing to prevent access within the crown spread of the tree;
- Install tree protection fencing and ground protection in accordance with the ACS Ltd recommendations prior to commencement of construction works;
- Continue to inspect the tree throughout the construction period and undertake any tree management works recommended by the arboricultural consultant; and
- Plant a specimen tree as part of the landscape proposals for the development of appropriate size to replace the ash tree in the long term.

Post development it is recommended that:

- Two inspections per year be carried out by an arboricultural consultant in May/June and September/October to assess tree condition. The inspections should include a photographic survey and any recommendations for ongoing management of the tree to ensure its safe retention in its current environment; and
- Any future landscape, arboricultural and ecological management plan for the site, includes these recommendations.

APPENDIX 1 - GLOSSARY OF TERMS

Maturity
Newly planted - Not fully established and capable of being transplanted or easily replaced
Young - Establishing, usually with good vigour, still capable of being transplanted or replaced
Early mature - Established, usually vigorous and increasing in height
Semi-mature – Established with an overall height in excess of 4 metres and or a stem girth measurement (circumference) of 20 centimetres or larger;
Middle Age - Trees in the established growth stage of their life with the potential to continue increasing in size;
Mature - Trees that have reached their ultimate size, given their location and surroundings;
Over-mature - Fully mature, in last quarter of life expectancy, vigour decreasing

Condition
Good, Fair, Poor. An overall assessment of a tree's physiological and structural state.

Veteran
Trees that have biological, cultural or aesthetic value due to age and / or condition. Typically trees that may be living beyond their expected age range for their species.

BS 5837 Tree Quality Assessment
The tree quality assessment is based on four categories (A, B, C and U) are used to denote tree quality (A= High, B = Moderate, C = Low, U= Unsuitable for retention).
Subcategories (1-3) denote the specific function value of the trees and the reasoning behind the allocation of a specific category.

Root Protection Area (RPA)
The theoretical rooting area of a tree as defined in *BS5837: 2012* . RPA is allocated to ensure that a sufficient area is left undisturbed during development. It is provided as an area (m^2) and as the radius of a circle (m) typically plotted from the centre of the stem.

Estimated Remaining Contribution
The approximate life expectancy as healthy functioning tree and relates to species and the condition of the tree at the time of survey.
Long > 40 years; Medium 20 – 40 years; Short – Medium 10- 20 years; Short - Imminent removal <10years

Adventitious or Epicormic shoots
Small branches that grow in clusters around the stem or base of a tree in an uncharacteristic fashion for a normally healthy tree, usually at the site of pruning wounds or as an indicator of stress.

Bifurcate
Divided into two branches or forks.

Buckling
Deformation of a structure subjected to a bending load Buttress zone, irreversible.

Chalara – Ash dieback
Chalara dieback of ash, also known as Chalara or ash dieback, is a disease of ash trees caused by a fungus called *Hymenoscyphus fraxineus*

Decurrent
The tree crown is borne on several major wide spreading limbs of similar size

Defect
A feature which detracts from the uniform distribution of mechanical stress, or which makes the tree mechanically unsuited to its environment.

Dieback
A condition in which a tree or shrub begins to die from the tip of its leaves or roots backwards, owing to disease or an unfavourable environment

Disease
A malfunction or destruction of tissues usually caused by pathogens.

Dominance
The tendency for a leading shoot to grow faster than the lateral shoots; also a tree that maintains a taller crown than its neighbours.

Excurrent
A well-defined central main stem to the crown, bearing branches which are limited in their length, diameter and secondary branching.
Flush-cut
A pruning cut which removes part of the branch bark ridge and or branch-collar.
Fungal fruiting body
Plant diseases may be non-infectious or infectious. The infectious diseases are those caused by a pathogen, also known as a disease-causing agent. The major pathogen groups that cause plant disease include fungi, bacteria, viruses, phytoplasmas, and nematodes. Of these pathogens, only fungi form fruiting bodies and spores that are used in diagnosis of plant disease. Fruiting bodies are fungal structures that contain spores.
Girdling root
A root which circles and constricts the stem.
Hazard beam
An upward curving part of a tree in which strong internal stresses may occur without being reduced by adaptive growth; prone to longitudinal splitting or may form a banana shaped crack.
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.
Infection
The establishment of a parasitic micro-organism in the tissues of a tree or other organism.
Lopping
Removal of large branches from a tree that does not follow natural target pruning practices
Natural target pruning
The siting of pruning cuts at the branch bark ridge with a cut of minimal surface area to allow quicker healing of the wound
Occlusion
The process of continual radial growth and healing of a wound which is progressively closed by the formation of new wood and bark around it.
Plant pathogen
Infectious organism that causes a disease on a plant. Although relatives of some plant pathogens are human or animal pathogens, most plant pathogens only harm plants. Plants are rarely cured of disease once infected.
Pollarding
The removal of the tree canopy, back to the stem or primary branches. The management regime is usually repeated as part of a regular management programme.
Primary branch
A major branch, of greater order than secondary branches.
Pruning
The removal or cutting back of lesser branches or twigs
Reactive Growth/Reaction Wood
Production of woody tissue in response to mechanical stresses
Root-collar
The transitional area between the stem/s and roots prior to development of a root flare or buttress.
Secondary branch
A branch, of lower order than primary branch.
Veteran tree
An aged old specimen that has features which increase its value as habitat for wildlife (dead wood, cavities, fungal fruiting body etc.) irrespective of its chronological age and that is of interest biologically, culturally or aesthetically because of its age, size or condition, is usually of advanced age
Windthrow
The fall of a tree in high wind, blowing over of a tree at its roots.
Wound wood
Wood developing in response to a wound which gradually heals and occludes the wound.