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TREE HAZARD RISK ASSESSMENT

PLANNING DEPARTMENT

15 DEC 2020

RECEIVED

CLIENT	Brett Hughes BSc (Hons), C.Build E MCABE
SITE INSPECTED	Woodland to rear of Woodland Drive Aberfan Merthyr Tydfil S Wales
INSPECTED BY	G.M. Ayres BSc (Hons) Dip Biol M Arbor A ND arb T.A. Seymour BA (Hons) M. Arbor A. Dip Geog ND arb
DATE OF INSPECTION	23 rd November 2020 Valid for 12 months

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1. INTRODUCTION

1.1 ASSIGNMENT

We have been instructed by Mr. Brett Hughes to carry out a Tree Hazard Risk Assessment on 4 trees bordering residential properties and gardens from the woodland area to the rear of woodland Drive Aberfan.

1.2 DOCUMENTS AND INFORMATION PROVIDED

We were provided with a map showing trees to be assessed marked in green as well as written instruction via e mail by Mr. Brett Hughes

1.3 LIMITATIONS AND USE OF COPYRIGHT

All rights in this report are reserved. No part of it may be reproduced or transmitted, in any form or by any means without our written permission. Its contents and format are for the exclusive use of Mr. Brett Hughes and associates. It may not be sold, lent out or divulged to any third party not directly involved in this situation without the written consent of Cardiff Treescapes.

Trees are living organisms whose health and condition can change rapidly. The conclusions and recommendations in this report are only valid for **one** year unless otherwise stated. Any changes to the site, e.g. building of extensions, excavation works, importing of soils, extreme weather events etc will invalidate this report.

Visual tree assessment has been undertaken from ground level utilising aids such as binoculars, sounding hammer and probes where necessary. If a more detailed investigation was carried out or required in the future this will be highlighted in the text. A more detailed investigation may take the form of a climbing inspection, decay assessment or root collar investigation.

1.4 DISCLAIMER

We have no connection with any of the parties involved in this situation that could influence the opinions expressed in this report.

1.5 QUALIFICATIONS AND EXPERIENCE

We have based this report on our site observations and investigations, and we have come to conclusions in the light of our academic and experiential knowledge. We have qualifications and extensive practical experience in arboriculture and list the details in Appendix 2.

2. THE SITE

2.1 SITE VISIT

We carried out site visits on 20th and the 23rd July 2020. All our observations were from ground level without detailed investigations and we estimated all dimensions unless otherwise indicated. The weather at the time of inspection was overcast with occasional light rain and sunny spells.

2.2 SITE DESCRIPTION

2.2.1 Target areas and access

The area of woodland is on a hillside to the rear of residential properties with gardens and out-buildings being mainly in the target area. The woodland is predominantly Oak with mature trees forming a mainly complete canopy cover. There is a poor representation of other age classes within the woods with little natural regeneration evident.

The woodland comprises of native species, is subject to protection under a tree preservation order and forms a very important amenity and resource for wildlife flora and fauna in this area.

2.2.2 Composition of woodland

The woodland itself has many trees that have fallen or have significant failed limbs and dead branches with little in the way of understorey. As well as Oak there are Ash, and Alder. Many of the trees are of early mature age class and have probably reached a mature height. No active management of the woods appears to have been undertaken in recent years.

2.2.3 Health of trees

Many of the early mature Ash trees are showing early signs of Ash Die Back in the upper crowns. Ash dieback is a serious disease of ash trees caused by the fungus *Hymenoscyphus fraxineus* (It used to be called *Chalara fraxinea*). The disease causes leaf loss and crown dieback in affected trees and can lead to the death of the tree.

2.3 IDENTIFICATION AND LOCATION OF THE TREES

The locations of the trees surveyed have been indicated on the site plan below. All the relevant information on the tree is contained within this report and the provided documents.

2.4 LEGAL CONSTRAINTS

If the trees are protected by a Tree Preservation Order or fall within a conservation area then any works will require the written consent of the Local Authority.

Conservation Area

In Conservation Areas, trees of a diameter greater than 75mm, measured at 1.5m from ground level are automatically protected (except in certain circumstances) under the Town and Country Planning Act 1990. Notice of intent is required to be given to the Local Planning Authority (LPA) before work is carried out. An application form can be downloaded from the LPA website. The LPA has six weeks to decide whether the tree should be made subject to a Tree Preservation Order. If the LPA do not respond within the six week period, then the tree work that has been applied for may proceed.

If an application for work is refused and a Tree Preservation Order is designated to the trees, the applicant has a right of appeal to the Secretary of State under the provisions of section 78 of the Town and Country Planning Act 1990 (as amended).

Tree Preservation Order (TPO)

A Tree Preservation Order is made by the Local Planning Authority which in general makes it an offence under the Town & Country Planning Act 1990, to cut down, top, lop, uproot, willfully damage or willfully destroy a tree without the planning authority's permission.

It will be necessary to apply to the Local Planning Authority (LPA) for permission to carry out any work on these trees. The LPA has eight weeks to respond to the application to either refuse or permit the work applied for. The LPA can also make alternative work recommendations.

If an application for work is refused, or allowed subject to conditions, or if the council fails to decide the application within 8 weeks, the applicant has a right of appeal to the Secretary of State under the provisions of section 78 of the Town and Country Planning Act 1990 (as amended)

Carrying out work on protected trees without permission from the LPA can result in fines of up to £20,000 per tree, if convicted in a magistrate's court and you have destroyed the tree or up to £2,500 for other offences.

There may also be controlling covenants on the woodlands which will determine the quantity of trees permitted to be removed during a given period. There are also controls over the amount of timber permitted to be extracted from a woodland during a 3 month period above which a felling licence is required. It should be noted however that the works advised in this report are to ensure the safe upkeep of trees and to minimise risks to the public and property.

2.5 TREework AND ECOLOGY

Bats, nesting birds and some mammals are protected under the Conservation of Habitats and Species Regulations 2010, Wildlife and Countryside Act 1981 and (as amended) Wildlife and Countryside Act 2000. A risk assessment will be required prior to commencement of any tree work or felling to assess the likelihood of disturbing or endangering any protected wildlife or habitat. If any protected species are present in any of the trees, or if the tree has a known bird or bat roost, then consultation with the Statutory Nature Conservation Organisation (SNCO) must be undertaken prior to commencement of work.

3. EXPLANATION OF THE HAZARD RISK ASSESSMENT

3.1 INTRODUCTION

Trees are important part of our urban landscape and are often taken for granted. They are important for visual amenity as their aesthetic beauty breaks up and softens the surrounding built environment. They signal the change of seasons, by producing flowers, fruit and autumn colour. They produce large quantities of oxygen, filter pollution and shelter us from wind and sun light. Within schools' trees are part of a natural resource for educating children about the importance of our natural environment.

Trees are living organisms and on occasions can be prone to failure of parts of their structure or on rare occasion's total failure.

In recent years there has been an average of around six tree related deaths annually, which is a chance of 1 fatality per 10 million of the population. Compared with other daily risks such as industrial or traffic accidents, this figure is broadly acceptable and tolerable. These risks will increase slightly in highly populated urban areas with a high concentration of people close to trees. Nonetheless, tree related accidents can occur and are very traumatic for those involved. Fortunately, these tragic incidences are rare but do tend to get high profile coverage in the media. This can lead to a disproportionate apprehension of trees and can result in unnecessary tree removal and overzealous tree pruning.

Example of tree failure



3.2 LEGAL FRAMEWORK

There is an obligation of reasonable safety owed by a site's owner, or manager to both visitors and to those adjacent to the site under the Occupier's Liability Act 1957 and as revised in 1984. The owner/manager of the land may be held liable for any physical harm to person or property arising from an accident that was both reasonably foreseeable and reasonably preventable in that situation.

In order for an owner/manager to foresee and prevent harm arising from tree failure, it is necessary to subject the trees to 'regular inspection' by someone competent to identify defects and interpret the significance to public safety. This should take the form of a formal 'Tree Hazard Risk Assessment'.

3.3 DUTY OF CARE

- The law assumes that the owner/manager of a tree is the owner/manager of the land surrounding the base of its trunk
- The person responsible for any tree has a duty, known in law as the **duty of care**, to take reasonable care to avoid acts or omissions which they could foresee would be likely to cause harm.
- In practice it is never possible to completely eliminate all danger. The law therefore simply requires that the owner /manager takes reasonable care to identify possible sources of foreseeable danger and when hazards have been identified they should remove them as far as possible.
- **Negligence** is a breach of legal duty resulting in damage. For example, when a tree owner/manager fails to take necessary action, resulting in harm to people, animals or property.

- The law does not require or expect the impossible. The duty on owners/manager is not to take every possible step to achieve perfect safety, as this would mean almost every tree being felled to remove all risk. The duty of the owner is rather to take all reasonable care to ensure that people are safe. What is "reasonable" must ultimately be a matter of judgment for the tree owner/manager and their professional advisers (tree consultants).
- In order to provide an adequate duty of care, a tree risk assessment is necessary, in which two separate factors of **Hazard** and **Risk** are addressed.

3.4 HAZARD AND RISK

- **Hazard** is the potential for a tree to mechanically fail or impact on something and cause physical harm. (See the following tree hazards below)
- **Risk** is the probability or likelihood that harm will occur during a stated period of time and the consequences of the impact.

3.5 TREE RISK

Tree Risk Assessment is comprised of three separate factors which are considered independently.

- a) **Risk** which is the estimated chance or likelihood of a previously identified tree hazard failing in the next coming year. For example, a large seasoned piece of deadwood in a tree is less likely to fail than a split and hanging branch which is moving in the wind. Risks range from extremely likely to remote.
- b) **The size of the identified hazard part** of the tree is also very relevant. A small piece of dead wood may have the same risk of falling as a whole tree with basal decay, but the consequences of that failure are very different; ranging from slight injury or damage to possible fatalities or major structural damage.
- c) **Target** rating relates to the location of the tree and the occupancy and intensity of use of the land surrounding it. Any person, animal or property that is in range of a potential tree hazard is known as a target. For example, a mature tree with a large split limb in remote woodland would be considered a high hazard but a low risk. The same tree on a busy urban street would be considered a high hazard and a high risk. Target ratings range from low, moderate to high.

Example of high hazard high risk (public recreation area)



Example of high hazard medium risk



Example of high hazard low risk (remote woodland)



3.6 TREE HAZARDS

A tree's shape and form are governed by the laws of mechanics, the same as any structure, but trees are also dynamic and lay down tension and compression wood to compensate for weight and wind loading and produce reaction wood in response to decay or structural weaknesses. In fact, trees have evolved to have excessive mechanical safety factors in order to cope with extreme weather conditions.

Trees are also naturally shedding organisms and regularly drop twigs, branches and occasionally limbs as part of the natural growing process. A tree's structural integrity can also be compromised by natural faults and biological factors such as fungi, bacteria and viruses which influence wood strength at a cellular level. They can also be impacted by environmental influences such as wind, flooding, pollution, compaction, physical impact etc.

The signs of possible structural weakness are usually evident from external inspection by a trained and experienced person who can evaluate the potential hazard risk and prescribe remedial action.

Example of failure due to fungal decay



Example of failure due to mechanical fault and fungal decay



3.7 SERVICES

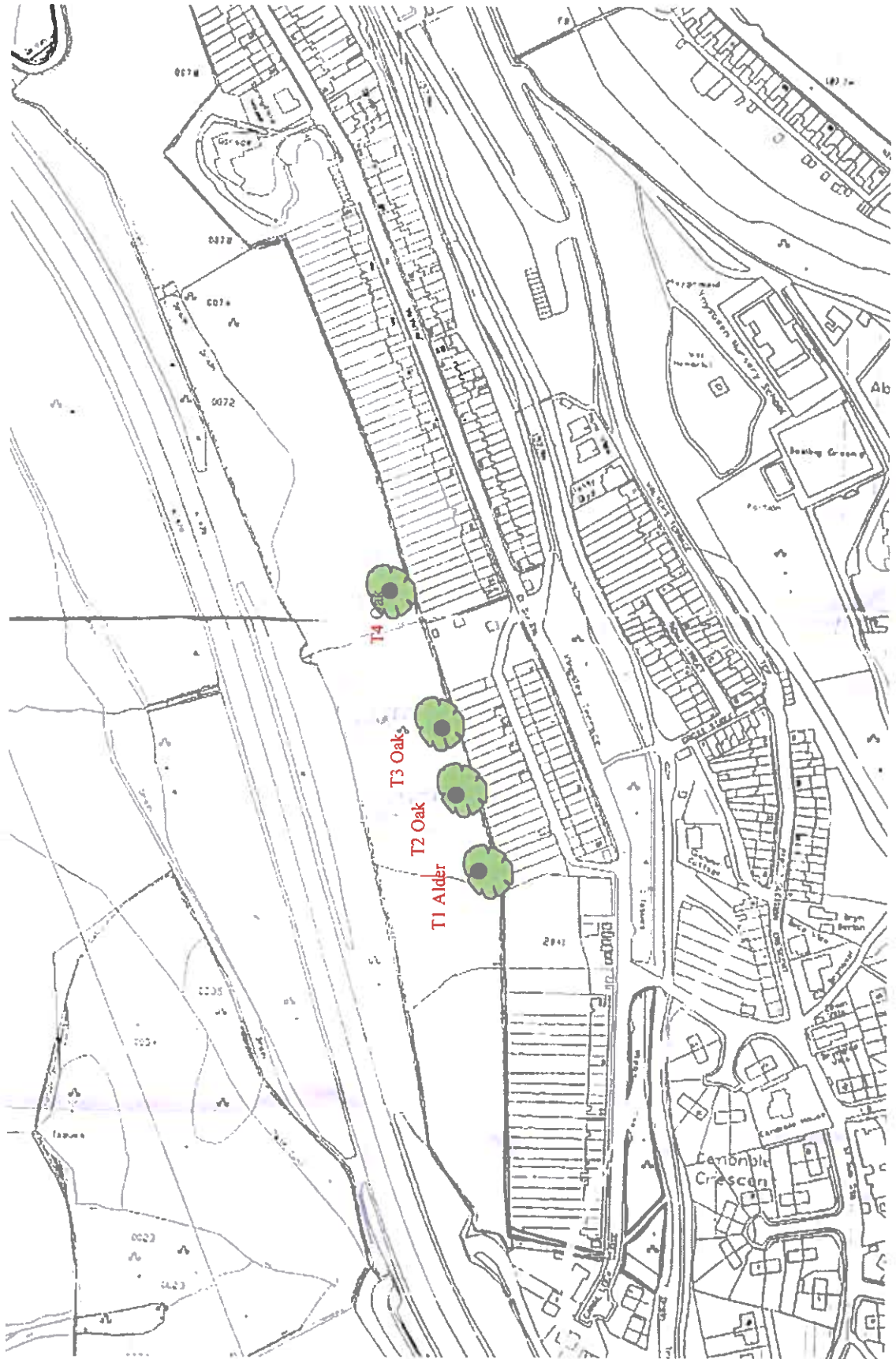
Cardiff Treescapes provide the full range of up to date, tree hazard risk assessment services. Practitioners are trained to both basic and professional levels . We can undertake initial site assessment, provide a site-specific hazard risk system and policy statement. Where necessary we can undertake climbing inspections advanced decay detection and root collar investigations. We are also committed to continual professional development.

Advanced decay detection with the Picus Sonic Tomograph



4. TREE SCHEDULE

Tree No	Type	Tag No	Species	Botanical	Condition			Identified Hazard			Risk	Size of hazard	Target	Priority	Action
					Age	Height	Crown	Whole tree	Possible	Large	Moderate				
01	T	Alder		<i>Alnus glutinosa</i>	EM	9	Woodland edge tree with slight lean away from into private garden. Basal decay and open cavity with decayed stem base.	Whole tree	Possible	Large	Moderate	2	Reduce tree to height of 6m		
02	T	Oak		<i>Quercus robur</i>	EM	17	Woodland edge tree with single stem that has been ring barked in the past 20-25 years. Approximately 75% of bark was removed resulting in exposure of heartwood present at the time which has now been subject to decay. Crown holds several heavily end loaded limbs that extend over private garden with large dead branches and die back in branch tips.	Branches	Probable	Large	Moderate	2	Fell		
03	T	Oak		<i>Quercus robur</i>	EM	15	Woodland edge tree with single stem that has been ring barked in the past 20-25 years. Approximately 75% of bark was removed resulting in exposure of heartwood present at the time with evidence of Honey fungus colonisation and severe stem decay. Significant large diameter dead limbs in crown that would affect adjacent garden and outbuilding	Branches	Probable	Large	Moderate	2	Fell		
04	T	Oak		<i>Quercus robur</i>	EM	14	Growing on boundary of wood and cleared area this tree has been ring barked in the past and has severe decay of exposed heartwood present at time of wounding on the upwards slope side of the tree. Large diameter deadwood in crown and previously failed limbs that affect adjacent garden and out building.	Branches	Possible	Small	Low	2	Fell		D3N5EA1 05





Tree 1 Alder Growing close to boundary with garden and with decay at base of stem reduce to 6m as indicated by red line



Tree 2 oak with historic stem damage/ring barking with lean and heavily weighted crown with dead branches over neighbouring property to pollard or fell



Tree 3 Oak with decayed stem and evidence of Honey fungus Tree 4 Oak with bark damage/ring barked and severe decay of stem

5.COMMENTS

5.1 IMPLEMENTATION OF WORKS

We advise that any recommended work be carried out by Qualified Arboricultural Contractors. The contractor should carry out all tree works to BS 3998 *Recommendations for Tree Work* and as modified by research that is more recent.

5.2 TREES SUBJECT TO STATUTORY CONTROLS

It may be necessary to consult with the local planning authority before any pruning works can be carried out (other than certain exemptions). The works specified above are necessary for reasonable management and should be acceptable to the local authority. However, tree owners should appreciate that they may take an alternative point of view and have the option to refuse consent.

5.3 FUTURE CONSIDERATIONS

The trees should be inspected every 12 months by a qualified arboricultural consultant and the documentation updated accordingly.

APPENDIX I

QUALIFICATIONS AND PROFESSIONAL DEVELOPMENT

Mr. G.M. Ayres BSc (Hons) M. Arbor A. NDArb

1. QUALIFICATIONS

- BSc (Hons) Biological Sciences & Environmental studies
- Diploma in Biological Sciences
- Surrey County Diploma in Arboriculture 1981 – Merrist Wood College
- Ordinary National Diploma in Arboriculture – 1981 Merrist Wood College, Surrey
- M.Arbor A Professional membership of The Arboricultural Association

Mr. T.A.SEYMOUR BA.(Hons) M.Arbor A.

1. QUALIFICATIONS

- BA (Hons) Human geography & Environmental studies
- Diploma in Environment and Geography
- Surrey County Diploma in Arboriculture 1981 – Merrist Wood College
- Ordinary National Diploma in Arboriculture – 1981 Merrist Wood College, Surrey
- M.Arbor A Professional membership of The Arboricultural Association

2. AREAS OF EXPERTISE

- Tree hazard risk assessments for tree owners
- Mortgage and Insurance reports to assess the influence of trees on buildings
- Pre-development site surveys and arboricultural implication studies
- Tree management reports to prioritise maintenance programs
- Tree related insurance claims
- Diagnosis of tree disorders
- General arboricultural advice

3. CONTINUAL PROFESSIONAL DEVELOPMENT

- **Some recent courses attended:**
- Picus (Sonic tomography) Master class - Kew Gardens 2016
- Tree science day Cardiff University 2016 Prof. Lynne Boddy of Cardiff University, supported by PhD Students Emma Gilmartin and Sarah Johnston, the roles of fungi in death and decay of trees and also their crucial roles in feeding and protecting trees from pathogens

- Transformational nature (Kew Gardens) – secrets of natural form, plant intelligence and the ageing process. Covering tree architecture Sensory information and communication. Adaptation, life change and process. Francis Halle, Stefan Mancuso, Howard Thomas, Monica Gagliano, Neville Fay
- AA Western Branch seminar at Ashton Court led by Prof. Lynne Boddy of Cardiff University, supported by PhD students Emma Gilmartin and Sarah Johnston, illustrating roles of fungi in death and decay of trees, and also their crucial roles in feeding and protecting trees from pathogens.
- Seminar Prof. Dr Claus Mattheck VTA update.
- A new branch attachment model starting from Alex Shigo's model
- A new unpredictable lateral grain failure mode of branches which look absolutely safe
- Possible symptoms for the new failure mode and related risks of misinterpretation
- Relationship between topping, root decay and branch failure due to lateral grain
- Slenderness failures of lion-tail branches versus failures due to vigour and compactness – the unbelievable comes true!
- The life-long fight between branch and trunk
- Conclusions for decay propagation from trunk to branch and vice versa
- Truth and lies in the body language of the 'Chinese moustache' (branch bark ridge) – common errors May 2014
- Seminar Prof. Dr Claus Mattheck VTA update, Shear square method, tensile triangles & force cones. Sac fungi. Age determination of perennial fungal fruiting bodies. How broadleaf trees fight spiral cracks & the biomechanical similarities between the hazard beam crack and spiral crack. May 2010.
- Management of veteran trees in historic gardens (N.Fay & T. Green) Nov 2008
- Seminar XII TEP Trees, Roots, Fungi, Soil Nov. 2008
- Picus masterclass July 2008
- Mattheck VTA update May 2008
- Seminar IX TEP Fungal Decay Process & Applied Engineering Nov. 2007
- Seminar V11 TEP Tree Morphology 2 June 2007
- Seminar VI TEP The future of Tree risk management September 2006
- Seminar V TEP Tree morphology March 2006
- Decay Detection Master class (Picus Sonic Tomograph) May 2005
- Principles of Tree Risk Assessment & Management Silwood Park 2002
- Principles of Tree Risk Assessment – July 2002
- Tree Mechanics with Dr Claus Mattheck – 2002
- Biology of Decay in Trees – Hatfield Forest – November 2001
- Trees and the Law Leicester Racecourse 2001
- Modern Arboriculture – a system approach to practical tree care – Dr Alex Shigo – 1992

5. **PROFESSIONAL AFFILIATIONS**

- Arboricultural Association

APPENDIX 2

TREE SCHEDULE KEY

Inspection Frequency	Considering the trees' condition and location, this is the recommended maximum period of time for the next visual assessment and updating of the records.
Work Schedule	This is the maximum period of time that the recommended action is carried out.
Tree identification	Tree number for on site identification
Tree age	Relates to where the tree is at present within its potential life cycle which can influence its potential hazard risk. Young – juvenile tree with dominant leading shoot growth and short side branches. Vigorous growth and often of conical form. Semi-mature – young adult tree, leading shoot growth may not always be dominant but side branches are usually ascending. Vigorous growth, flower and seed production. Minimal deadwood. Early maturity – adult tree with the main framework of the crown formed. Not yet at full dimensions. Vigorous growth and some shedding of inner branches and deadwood. Horizontal side branches. Mature – adult tree at full crown volume and dimensions. Maximum flower and seed production. Dead wood likely within the crown and reiteration growth in the lower canopy. Over mature – loss of overall vigor and reduction of full dimensions due to limb loss and branch tip die back. Major dead wood within the crown and possible hollowing and cavities. Retrenchment of the crown through increased reiteration growth on the lower branches.
Height	Tree height has been calculated by means of a clinometer and recorded in metres, unless otherwise stated.
Hazard condition	Following a systematic visual tree assessment any mechanical faults, fungal decay or disorders are identified
Part most likely to fail	Is the part of the tree identified in the hazard condition as being the most likely to fail
Risk	Is defined as the likelihood of an identified hazard to cause damage or injury. This risk has been categorised into five levels of probability:- Extremely likely – when there is a likelihood of failure of an estimated 1:10 chance in a one-year period. This is an unacceptable risk and requires immediate action. Probable - when there is a likelihood of failure of an estimated 1:100 chance in a one-year period. This is a high risk and requires prioritised attention in the work schedule. Possible – when there is a likelihood of failure of an estimated 1:1000 chances in a one-year period. This is a moderate risk in the short term and requires planned priority in the work schedule. Unlikely – when there is a likelihood of failure of an estimated 1:10,000 chance in a one-year period. This is a tolerable risk and requires low priority in the work schedule. Remote – when there is a probability of failure of an estimated 1:100,000 chance in a one-year period. This is a broadly acceptable risk and requires no specific allocation of resources for health and safety reasons at the present time.
Size of Hazard	Is the size of the part identified as most likely to fail, which has been categorised into four size ranges. The larger the diameter of the part likely to fail the greater its potential to have extreme consequences. The four sizes are:- Small – below 2.5cm in diameter, small light weight branches or deadwood whose impact is only likely to cause slight injury, or inexpensive damage Medium – between 2.5cm and 10cm diameter of moderate weight likely to be a secondary branch from a main limb or small sized tree. Impact has a potential to cause serious injury, possibly disablement or hospitalisation but unlikely to be fatal. Minor damage can be caused to property. Large – between 10cm and 45cm diameter and of considerable weight, likely to be a primary limb or medium size tree. Impact has a potential to cause fatal or disabling injuries, severe vehicle damage and moderate structural damage. Very large – larger than 45cm diameter and of significant weight. This is likely to be failure of a mature tree's main stem, large limb or the entire tree. Impact is likely to cause fatalities or disablement, vehicles crushed and severe structural damage.
Target	The target is any object or area that may be impacted by a falling tree hazard. The target rating reflects the intensity of use of the immediate area around the tree and relates to the value of the property that may be damaged and the likelihood of human injury. There are three categories of target and they reflect on the intensity of the occupation and value of any targets. Examples of target types are listed below but they will always be site specific and vary accordingly. High • Principle highways such as motorways, A roads or major junctions with constant vehicle use. • Public footpath with periods of concentrated pedestrian use. • High valued occupied buildings. • Main pedestrian assembly points. Moderate • Public highways with intermittent to frequent vehicle use, B roads.

	- Public footpath with intermittent to frequent pedestrian use. - Domestic dwellings and buildings of periodic occupation. - Public open spaces with regular use. - Patios, garages and outbuildings. - Woodland edges near occupied land. iii. Low - Slow roads with low volumes of traffic, tracks and bridleways. - Pathways with rare or low rates of pedestrian traffic. - Open recreational green space or domestic gardens of rare occupancy. - Low value structures, fences, inexpensive walls and garden features. - Woodland interiors.
Action	Prescribes recommendations to minimise the risk of failure for general tree management purposes.
Priority code	Categorises the urgency that the recommended work should be carried out. The priority codes have been calculated using the systemic ready reckoner below. Recommended work has been categorised into four priorities: Priority 1 Urgent work requiring immediate action as soon as practically possible. Priority 2 Priority work within the work schedule that requires prompt attention and allocation of resources. Priority 3 Planned work to manage future hazard risk and improve tree condition. Priority 4 Non-safety work to improve tree condition, dependent on available resources or no foreseeable maintenance required.

PRIORITY CODE RECKONER															
<i>Size of Hazard</i>	Extremely Likely			RISK Probable			Possible			Unlikely			Remote		
Large															
Medium															
Small															
Target Area	Hi	Mod	Low	Hi	Mod	Low	Hi	Mod	Low	Hi	Mod	Low	Hi	Mod	Low

	Priority	Action
	1	Unacceptable risk – immediate response
	2	High risk – prioritised schedule
	3	Moderate risk – planned action
	4	Unlikely – low priority