
Arborhelp

2026 Tree hazard inspection for Savernake Hospital

QTRA2026-GFM-SH-report

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Registered User

Tree Risk Assessment – Methodology & underlying principles

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1. Scope of survey and assessment

Arborhelp was instructed to undertake a tree survey and risk assessment of trees encountered at the client site.

The scope of the survey was to:

- Undertake a positive, ground-based visual assessment of the structural integrity of the encountered trees belonging to the client
- Risk assess any structural defects encountered on those trees, against the identified site targets.
- The survey & risk assessment were to be recorded and conveyed to the client in the form of a tree location plan and a risk assessment schedule.
- Control measures to reduce any unacceptable risk were also to be provided, within the risk assessment schedule with a system of priority applied.
- Additional work recommendations were also requested, that assisted in responsible management of the site, although not arising from any assessment of risk.
- Plot, identify and undertake basic risk assessment of trees located on private land.

The subject trees were tagged, their locations plotted on a GIS platform & then assessed visually from the ground for structural defects. The assessment was carried out on a clear day in July 2026.

The assessment of risk of significant harm/damage was undertaken using the QTRA methodology (*see section 2 of this report for information on QTRA as a risk assessment tool*). The QTRA risk assessment tool encompasses the principles within HSE SIM 01/2007/05 and the National Tree Safety Group advice in FCMS024.

1.2 Limitations

- i. I cannot make any assessment on the existence and/or condition of any underground services.
- ii. I cannot make any comment on the existing dynamics of the local soil hydrology.
- iii. I cannot make any assessment of the local water table.
- iv. Any inspection of trees on or surrounding the site, have been assessed solely on the VTA method. Detailed inspections on the condition of any of the trees, is considered beyond the scope of this report. I have not carried out any further inspections, unless otherwise stated and accompanied with the resulting evidence.
- v. Unless otherwise stated, any assessment and recommendations can be held good for one year from the date of inspection, except where review periods indicate two years.
- vi. The review periods are a recommended period and are subject to dynamic events, like storms. Where a force 8 (Beaufort), or greater wind event has occurred, the review periods will become invalid and a walkover review of the site trees should be undertaken within 48 hours of the wind event.
- vii. The assessment and report do not constitute any kind of subsidence risk assessment.
- viii. The potential for the subject trees to cause indirect damage to adjacent structures has not been considered and is outside the scope of the assessment.
- ix. The data contained within this document and the accompanying documents, has been provided in a non-modifiable form. Any third party modification of its data may render this document unfit for purpose and any third party responsible for such modifications, will be held solely liable for any implications this may cause.
- x. This document and its accompanying documents have been prepared by me in my professional capacity as an arboricultural consultant. The contents of these documents do not, in any way, purport to include any manner of legal advice or opinion.
- xi. Trees are living organisms and their physiological health and structural condition can change, sometimes rapidly. The risk assessments have been based on anomalies visually present at the time of inspection only.

1.3 The sites

General Character

The site is a hospital site under frequent to high use in most external areas and under almost constant occupancy in most buildings. Fifty trees and two tree groups were included within the survey & risk assessment, most of which appeared to be located on land belonging to and under use by the client.

Statutory Controls

Trees that are subject to a Preservation Order must have consent from the local authority to lawfully have work undertaken on them. There are a few exceptions, such as works to dangerous, diseased or dead trees, but these also require 5 day notification to be given, prior to undertaking work. The application usually takes around eight weeks for the local authority to determine.

Local authorities also require notification for intended works to trees in conservation areas. Local authorities cannot refuse the intended works, but instead have to make a Tree Preservation Order and then refuse consent. The notification period takes six weeks from acknowledgement. The same exceptions exist for emergency works to trees in conservation areas as for TPO trees, as does the 5 day notification period.

- An online search of Wiltshire County Council's planning map service could not confirm that the site falls inside or outside any Conservation Area.
- An online search of Wiltshire County Council's website has determined that most site trees are protected by a Tree Preservation order (TPO ref: E/403). The TPO schedule is not available online.

Site use & preconditions to risk assessment

The site was found to be under moderate to high use externally by pedestrians, except for parking areas. The parking areas were under high to constant use, as were the site buildings.

Invasive plants

Not applicable.

Invasive pests

None observed.

Ivy/obstructing vegetation and Trees

Ivy does not harm trees but can conceal potential structural issues. Ivy also provides nesting sites and foraging materials/food for various mammals and so is considered a resource in some localities.

Where trees are covered in ivy, the structural integrity cannot be determined. However, in the absence of any physiological symptoms often associated with structural integrity issues, a subject ivy-clad tree can be disregarded as it is generally considered a grossly disproportionate sacrifice of financial resources to clear trees of ivy without any symptoms or indications justifying such an expense. Ivy removal can result in an offence if nesting or roosting sites are disturbed at certain times of the year, so only in extreme circumstances is ivy ever recommended for complete removal. More appropriately, where significant targets or high usage exist around a subject tree, ivy severance near the tree base can be undertaken, with a subsequent inspection in the following year, once the ivy has died and fallen away to expose the tree structure.

The same principle can be applied to vegetation or basal growth from the subject tree, that conceals parts of its structure.

It is strongly recommended that ivy be severed where advised, so that an adequate assessment of the structural integrity of each subject tree can eventually be made as a baseline. Ivy can be allowed to regrow on some of these trees in future years.

Additional Reporting

Most of the site trees presented with no significant defects & have been recorded as such (NSDO). Those that presented with significant defects were risk assessed. Most of the recommended works from the 2022 and 2024 surveys have been undertaken.

Some minor works have been recommended without any risk assessment having been undertaken. This will normally apply to trees where work is required to comply with statutory obligations (such as maintaining clear access to the public footpath). Where tree work has been recommended without a risk assessment defending the recommendation, it will be noted as works to benefit the management of the site. This type of work is not necessary to mitigate any risk, but may result in increased long term management costs to site infrastructure if not undertaken.

Risk profile from site trees

50 individual trees were inspected and assessed for structural anomalies. 2 tree groups consisting of an additional 13 trees were recorded.

The risk categories broke down as:

Risk category	No. of trees within category
1/30K	7
1/50K	1
1/300K	5
1/500K	1
<1/1m (1/5m)	4
<1/1m (1/40m)	1
<1/1m (1/50m)	1
N/A	30
Grand Total	50

QUANTIFIED TREE RISK ASSESSMENT - RISK DECISION INFORMING FRAMEWORK		
Risk Thresholds	Description	Action
1/1 000	Unacceptable Risks will not ordinarily be tolerated	- Control the risk - Periodically review the risk
	Unacceptable (where imposed on others) Risks will not ordinarily be tolerated	- Control the risk - Periodically review the risk
1/10 000	Tolerable (by agreement) Risks may be tolerated if - those exposed to the risk accept it, or - the tree has exceptional value	- Control the risk unless there is broad stakeholder agreement to tolerate it, or the tree has exceptional value - Periodically review the risk
	Tolerable (where imposed on others) Risks are generally tolerable	- Assess costs and benefits of risk control - Control the risk only where a significant benefit might be achieved at a reasonable cost - Periodically review the risk
1/1 000 000	Broadly Acceptable	- No action currently required - Periodically review the risk

14 trees presented with risks that fell into the ALARP category; 36 trees did not present with any risks or risk assessed were tolerable (work has been identified to some of these trees to comply with statutory duties and general maintenance).

Risk controls

Regarding risk controls, where risks fall within intolerable categories (1/1 to 1/10K), these works should be undertaken regardless of cost. However, for ALARP risks, the statutes where the 'duty of care' principle is laid out (Occupiers Liability Act, Health and Safety at Work Act), stipulates that an occupier or landowner should only go to *reasonable* measures to protect others from risks of harm or damage. This principle of reasonableness allows tree owners to balance tree risks against the cost of the works, the loss of amenity and the risk imposed on tree work operatives. The HSE have gone some way to defining what level of risk could be subject to these balancing calculations (ALARP group – see matrix above – also see section 2.5 of this report for understanding whether a risk can already be considered to be As Low As Reasonably Practicable - ALARP). Generally, it is recommended to undertake work to risks presented from 1/30K to 1/50K where budgets allow, as these risks are quite close to the intolerable levels of risk. Risks lower than this (1/100K to 1/1m) are normally considered already as low as reasonably practicable.

Tree Work Recommendations

Work recommendations have been provided to mitigate some risks identified, with additional works as nuisance abatement works / general maintenance works and others to comply with statutory duties. The accompanying risk assessment schedule contains the work recommendations in order of priority and provides a recommended timeframe by which these should be undertaken.

The recommended works should be undertaken by suitably competent arboricultural contractors who have evidenced up to date public liability insurance (£2m minimum) and employers liability insurance (£10m minimum). All recommended works should be undertaken in accordance with BS3998:2010 and the current industry code of practice for Arboriculture.

1.4 Tree survey/assessment regime

Tree assessment regime

The review period for subsequent tree assessments would be determined by the values of potentially affected targets and the significance of any previously identified structural or physiological anomalies.

For the client site, there are some moderate to high value/use targets (parked cars, communal gardens, footpaths, dwellings and adjacent lands) that stand potentially to be affected by any significant defects or anomalies found in the trees. Owing to these factors, it would be reasonable to undertake repeat assessments every 12-24 months, *unless otherwise stated in the risk assessment schedules for specific trees*. The repeat assessment should be undertaken in a subsequent season to the assessment previously undertaken, so that the subject trees can be viewed at different stages in the year. This optimises the chances for discovery of some potential wood decay fungi species that are otherwise very difficult to discover and allows for the complete annual physiological cycle of the subject trees to be observed over time.

1.5 Accompanying information

Accompanying this report are:

1. A tree location plan. This plan is sometimes broken down into 50m x 50m grids, as one grid per page to assist tree location. The trees are referred to by their fixed tags unless they have none.
2. A tree risk assessment schedule. This is provided as a PDF version of a spreadsheet form displaying the tree survey data. It is ordered by risk priority.
3. A tree risk assessment report – tree per page. This is a PDF document from the export of the tree survey data and normally contains some more information on the subject trees surveyed. The additional information is not essential, but is information recorded and has been made available.

If the raw tree survey information (gpkg, csv, xlsx) is required, please contact the author of the report who will provide it.

ON QTRA

2.1 Overview.

Tree safety management is a matter of limiting the risk of significant harm from tree failure whilst maintaining the benefits conferred by trees. Although it may seem counter intuitive, the condition of trees should not be the first consideration. Instead, tree managers should consider first the usage of the land on which the trees stand, which in turn will inform the process of assessing the trees.

The Quantified Tree Risk Assessment (QTRA) system applies established and accepted risk management principles to tree safety management. Firstly, the targets (people and property) upon which trees could fail are assessed and quantified, thus enabling tree managers to determine whether or not and to what degree of rigour a survey or inspection of the trees is required. Where necessary, the tree or branch is then considered in terms of both impact potential (size) and probability of failure. Values derived from the assessment of these three components (target, impact potential and probability of failure) are combined to calculate the probability of significant harm occurring.

The system moves the management of tree safety away from labelling trees as either 'safe' or 'unsafe', thereby requiring definitive statements of tree safety from either tree surveyors or tree managers. Instead, QTRA quantifies the risk of significant harm from tree failure in a way that enables tree managers to balance safety with tree value and operate to a predetermined limit of reasonable or acceptable risk (in this case, predetermined by the HSE).

2.2 Target values for the site.

The target values have been produced on the survey schedules using the below table:

QTRA Target ranges (Zones)

Target Range	Property (repair or replacement cost)	Human (not in vehicles)	Vehicle Traffic (number per day)	Ranges of Value (probability of occupation or fraction of £2 000 000)
1	£2 000 000 – >£200 000	Occupation: Constant – 2.5 hours/day Pedestrians & cyclists: 720/hour – 73/hour	26 000 – 2 700 @ 68mph 32 000 – 3 300 @ 50mph 47 000 – 4 800 @ 32mph	1/1 – >1/10
2	£200 000 – >£20 000	Occupation: 2.4 hours/day – 15 min/day Pedestrians & cyclists: 72/hour – 8/hour	2 600 – 270 @ 68mph 3 200 – 330 @ 50mph 4 700 – 480 @ 32mph	1/10 – >1/100
3	£20 000 – >£2 000	Occupation: 14 min/day – 2 min/day Pedestrians & cyclists: 7/hour – 2/hour	260 – 27 @ 68mph 320 – 33 @ 50mph 470 – 48 @ 32mph	1/100 – >1/1 000
4	£2 000 – >£200	Occupation: 1 min/day – 2 min/week Pedestrians & cyclists: 1/hour – 3/day	26 – 4 @ 68mph 32 – 4 @ 50mph 47 – 6 @ 32mph	1/1 000 – >1/10 000
5	£200 – >£20	Occupation: 1 min/week – 1 min/month Pedestrians & cyclists: 2/day – 2/week	3 – 1 @ 68mph 3 – 1 @ 50mph 5 – 1 @ 32mph	1/10 000 – >1/100 000
6	£20 – £2	Occupation: <1 min/month – 0.5 min/year Pedestrians & cyclists: 1/week – 6/year	None	1/100 000 – 1/1 000 000

Vehicle, pedestrian and property Targets are categorised by their frequency of use or their monetary value. The probability of a vehicle or pedestrian occupying a Target area in Target Range 4 is between the upper and lower limits of 1/1 000 and >1/10 000 (column 5). Using the VOSL £2 000 000, the property repair or replacement value for Target Range 4 is £2 000- >£200.

Based in these target values, I assessed the risk the trees presented to their targets by their defects.

2.3 Tolerance of risk.

The HSE & BMA both recommend the upper limit of tolerance of risk of significant harm imposed on the broader public to be no more than 1 in 10,000. From this level of risk down to a risk of 1 in 1 million, is the tolerable region, but one where any elevated risk should be reduced to one that is as low as is *reasonably* practicable (ALARP). A risk higher than the upper general limit of tolerability (1 in 10,000) would be intolerable & risk reduction measures would be required to bring the risk down to one that is acceptable.

A risk of significant harm below 1 in 1,000,000 is considered to be broadly acceptable & no risk reduction measures would need to be considered.

Risk of harm for tree workers in this case has a higher upper limit (1 in 1,000), but beyond this, the risk is too great to be tolerable & risk reduction measures would be required to bring the risk down to one that is acceptable.

QUANTIFIED TREE RISK ASSESSMENT - RISK DECISION INFORMING FRAMEWORK

Risk Thresholds	Description	Action
1/1 000	Unacceptable Risks will not ordinarily be tolerated	- Control the risk - Periodically review the risk
	Unacceptable (where imposed on others) Risks will not ordinarily be tolerated	- Control the risk - Periodically review the risk
1/10 000	Tolerable (by agreement) Risks may be tolerated if - those exposed to the risk accept it, or - the tree has exceptional value	- Control the risk unless there is broad stakeholder agreement to tolerate it, or the tree has exceptional value - Periodically review the risk
	Tolerable (where imposed on others) Risks are generally tolerable	- Assess costs and benefits of risk control - Control the risk only where a significant benefit might be achieved at a reasonable cost - Periodically review the risk
1/1 000 000	Broadly Acceptable	- No action currently required - Periodically review the risk

Costs and Benefits of Risk Control.

Risk control measures bring benefits in terms of reducing or eliminating a risk, but those benefits come at a cost that should, in broad terms, be balanced against the benefits of risk control.

Based on the tree owner/manager accepting the principles set out in the Quantified Tree Risk Assessment Practice Note and or any other specific instructions, the risk assessor will take account of the cost/benefit balance when providing management recommendations.

The risk of *significant* harm is the focus of the assessment, as that is what is considered reasonable & is also a requirement under the relevant statutes & regulations.

Calculation of the risk of significant harm

Three main factors are essential in calculating the risk of significant harm from a falling tree/tree part. The first is the target value, which in most cases is the total time the target is occupied (pedestrian & vehicle).

The second value is the size of the part presenting the risk. Four main size categories are used:

1. >450mm

2. 250-450mm
3. 100-250mm
4. 25-100mm

The third part is the probability of failure of that defective part, within the coming year. Seven main categories are used here:

1. 1/1 - 1/10
2. 1/10 - 1/100
3. 1/100 - 1/1000
4. 1/1,000 - 1/10 000
5. 1/10,000 – 1/100 000
6. 1/100,000 – 1/1m
7. 1/1m – 1/10m

All three factors are multiplied together & the product (the risk of significant harm) is expressed as a fraction (i.e. 1/10,000 or 1 in 10,000). So in the accompanying schedules, a column entitled risk of harm (RoH), provides the total risk of significant harm, calculated as a fraction.

The expression is an assessment of the risk of significant harm posed by the assessed defect over the *coming twelve months only*. It must be clarified that a risk assessment (including a tree risk assessment), is an attempt to quantify the unquantifiable & the greater the timescale included in the assessment, the greater the potential inaccuracy produced. At some point the level of uncertainty is so great that the assessment is meaningless, so the risk assessment is based on what foreseeability there is for the coming twelve months.

2.4 Risk from surveyed trees.

Where a risk of harm was assessed as falling within those values consistent with levels of risk, an assessment of the cost of risk reduction can be made for the recommended work, to demonstrate that the risk reduction work recommended is proportionate to the risk posed.

In calculating this the value of statistical life can be used in combination with the risk of significant harm already calculated, to determine what cost would be considered proportionate.

2.5 Value Of Statistical Life.

The Value of Statistical Life (VOSL) is a sum that is used by UK Government departments, the NHS & the insurance industry to place a financial value on one human life, in order to assess whether expenditure on risk reduction/control/treatment etc is proportionate.

The current VOSL is recommended at £2,000,000

Using this value it is possible to calculate whether the cost of reducing the risk posed by a defective tree is justified. To do this, the VOSL is multiplied by the fraction of the risk of significant harm:

Example:

A tree with a large branch that has a compromised branch attachment overhangs a busy road. The total risk of harm has already been calculated at 1 in 20,000 – the calculation:

$$£2,000,000 \times 1/20,000 = £100$$

So in the above example, the cost that would be roughly proportionate to reduce the risk presented by the defect would be £100. If it were to cost more than £100 to reduce the risk, an argument *could* be made that this would be a disproportionate response to the risk presented. The above calculation is intended as an approximate guide only.

VOSL = £2m = 1/1.

The above does not apply to a risk equal or greater than a 1 in 10,000 as this is the accepted upper limit of tolerability. Where this occurs, the risk needs to be reduced regardless of cost. The closer the risk approaches to this limit, the less defensible it is to not spend money mitigating the risk.

By using the above QTRA method in assessing tree risk, a repeatable, transparent & defensible system can be used to justify tree management recommendations & its associated cost.

3. The tree location plans

- 3.1 The tree location plans indicate the assigned tree number (either an imaginary number or a number relating to a tag placed somewhere on the tree stem) & *approximate* location of the trees surveyed. Where groups of trees have been surveyed, these have also been shown; a label indicates their reference number on the survey schedule.
- 3.2 Where statutory controls are known to exist on the subject trees (Tree Preservation orders, Conservation Areas), these controlled trees will have the corresponding information shown adjacent them.
- 3.3 The tree location plans have location grids overlaid them, to assist location of surveyed trees. Each grid has a unique number that is referenced against each tree record in the tree schedules. Rapid location of a subject tree can be accomplished by referring to the map set, then the grid number and finally the tree number.
- 3.4 The tree location plan has been provided as PDF files, ideally to be printed at A1 & A3 size. The source data exists in GIS file format. If this source data is of interest, emailing me (markclews@arborhelp.co.uk), with the request will get the data released to you.

4. Risk assessment details

RISK ASSESSMENT DETAILS	ARBORICULTURIST
SURVEY UNDERTAKEN BY:	Mark Clews
RISK ASSESSMENT UNDERTAKEN BY:	Mark Clews
PRODUCTION OF RISK ASSESSMENT INFORMATION:	Mark Clews
SOURCE DATA ADMINISTRATOR:	Mark Clews
GIS ADMINISTRATOR:	Mark Clews

4.1 Digital records

All records of trees assessed are retained by the source data & GIS administrator named above. These records are kept securely, in a variety of digital formats, managed by the data administrator. The data is never intentionally destroyed, unless specifically instructed to do so. The data is retained to aid ongoing tree management. No personally identifiable or commercially sensitive information is kept within this data.

Survey information Contact:

Mark Clews
markclews@arborhelp.co.uk
07950481175 / 02085409966

Appendix A - The Tree Risk Assessment Schedule

The schedule includes 26 columns of potential data for each tree assessed. They follow as:

Column 1 (leftmost side of page);

Site – For clients with multiple sites being surveyed, this column will include the site the subject tree is located on.

Column 2;

Grid No – larger sites have their site areas broken down into 50m x 50m grids for ease of tree location. Each grid has its own unique number. This column will include the grid number, the subject tree is located in.

Column 3;

Tree Ref – normally refers to the tag number fixed to the tree & is also used on the tree location plan. The number is sometimes preceded with letters, particularly where a tree does not have a tag, these letters being:

G – Indicates a tree group

JV – Indicates a juvenile tree

N – Indicates a tree not numbered

PR – Indicates a privately owned non-numbered tree

dd – Indicates a dead tree

Column 4;

Species – Identifies the botanical name for the subject tree

Column 5;

Common Name – identifies the common name for the subject tree

Column 6;

Age Range – indicates the approximate age range of the subject tree from a series of age categories, these being:

JV – juvenile

Y – Young

EM – Early Mature

M – Mature

PM – Post Mature

S – Senescent

VT – Veteran

DD – Dead

Column 7;

Height – measured in metres

Column 8;

Stem dia class – records the stem diameter

Column 9;

Crown spread - measured in metres

Column 10;

Vigour – identifies the general physiological health of the tree

Column 11;

No Significant Defects Observed – Simple YES/NO for any defects requiring further scrutiny

Column 12;

Structural condition – details any structural defects observed on the tree

Column 13;

Trip Haz – Is a column to indicate whether the trees growth has caused an immediately obvious trip hazard through significant disturbance of the surrounding hard surface.

Column 14;

Obs Street Light – Is a column to indicate whether the canopy of the subject tree has developed to block light from a street lamp

Column 15;

Obs Bldg – Is a column to indicate whether the subject tree canopy is touching or rubbing against a nearby structure

Column 16;

Low Canopy – Is a column to indicate whether the subject trees canopy is sufficiently high enough to allow free movement under it. Along a public highway, tree canopies should provide 5.5m clearance beneath them & over public footpaths, a 3m clearance beneath them. For private footpaths, there is no minimum clearance requirement.

Column 17;

Deadwood – Is a column to detail whether deadwood exists on the subject tree & what size diameter if existing.

Column 18;

Ivy Obstructed View – Is a column to record when a tree cannot be assessed due to the structure being concealed by Ivy.

Column 19;

Primary target – identifies the main target area where possible, in the event of the identified structural risk failing

Column 20;

Table 2. Targets				
Target Range	Property (repair or replacement cost)	Human (not in vehicles)	Vehicle Traffic (number per day)	Ranges of Value (probability of occupation or fraction of £1 500 000)
1	£1 500 000 – >£150 000	Occupation: Constant – 2.5 hours/day Pedestrians & cyclists: 720/hour – 73/hour	26 000 – 2 700 @ 110kph (68mph) 32 000 – 3 300 @ 80kph (50mph) 47 000 – 4 800 @ 50kph (32mph)	1/1 – >1/10
2	£150 000 – >£15 000	Occupation: 2.4 hours/day – 15 min/day Pedestrians & cyclists: 72/hour – 8/hour	2 600 – 270 @ 110kph (68mph) 3 200 – 330 @ 80kph (50mph) 4 700 – 480 @ 50kph (32mph)	1/10 – >1/100
3	£15 000 – >£1 500	Occupation: 14 min/day – 2 min/day Pedestrians & cyclists: 7/hour – 2/hour	260 – 27 @ 110kph (68mph) 320 – 33 @ 80kph (50mph) 470 – 48 @ 50kph (32mph)	1/100 – >1/1 000
4	£1 500 – >£150	Occupation: 1 min/day – 2 min/week Pedestrians & cyclists: 1/hour – 3/day	26 – 4 @ 110kph (68mph) 32 – 4 @ 80kph (50mph) 47 – 6 @ 50kph (32mph)	1/1 000 – >1/10 000
5	£150 – >£15	Occupation: 1 min/week – 1 min/month Pedestrians & cyclists: 2/day – 2/week	3 – 1 @ 110kph (68mph) 3 – 1 @ 80kph (50mph) 5 – 1 @ 50kph (32mph)	1/10 000 – >1/100 000
6	£15 – £1	Occupation: <1 min/month – 0.5 min/year Pedestrians & cyclists: 1/week – 6/year	None	1/100 000 – 1/1 000 000

Vehicle, pedestrian and property Targets are categorised by their frequency of use or their monetary value. The probability of a vehicle or pedestrian occupying a target area is categorised by the upper and lower limits of 1/1 000 and >1/10 000 (column 5). Using the VOSL £1 500 000, the property repair or replacement cost is £1 500 – £150.

Target range – applies a target range number according to the use/value/occupancy of the target area.

Column 21;

Size Range – applies a numerical value to the size part (in wood diameter), identified at risk of failure

Column 22;

Probability of Failure (PoF) – applies a numerical value to the probability of the identified part failing

Column 23:

Risk of Harm – is the product of the previous three columns & is expressed as a 'one in x likelihood', to one significant figure. This output can be compared to the Tolerability of Risk matrix used by the HSE to broadly determine when a risk is unacceptable, tolerable or broadly acceptable. Work can then be prioritized according to these outputs.

Column 24;

Controls – Provides risk reduction recommendations that will reduce the risk to one that is acceptable at the least. Will also include specific management recommendations that have been requested by the client, regardless of risk of failure.

Column 25;

Priority – Provides a numerical value to aid prioritisation of any recommended work. Exists as many clients make specific management requests which aren't related to risks around tree failure. These follow as:

- 1 – within 24 hours
- 2 – within 1-3 months
- 3 – within 1 year
- 4 – Statutory obligation
- 5 – Wider estate Management
- 6 – within 2 years

7 – within 3 years

8 – not required to reduce risk

9 – N/A

This column is provided as a guide only. It also provides some context for trees where a risk assessment hasn't produced a work recommendation, such as clearing away from a building, but would be recommended as sensible management of the tree/estate.

Column 26;

Review Period – provides a timeframe where it would be considered reasonable to review/reinspect the subject trees

Column 27;

Additional Comments – provides a field for any additional notes.

Appendix A - GLOSSARY OF ARBORICULTURAL TERMS

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

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

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

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 a 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

Compartmentalization. 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

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

Excrescence. 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. 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)

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 re-pollard 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 branchwood and broken snags

Removal of major dead wood. The removal of, dead, dying and diseased branchwood 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. 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

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

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

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

End Of Report