Tree Risk Management Appraisal

of Trees within the Identified Boundaries at

Clitheroe Castle Grounds, Castle Hill, Clitheroe, Lancashire, BB7 1BA

Prepared by:

Bowland Tree Consultancy Ltd

August 2025

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TREE RISK MANAGEMENT APPRAISAL
CLITHEROE CASTLE GROUNDS, CLITHEROE

Project Details

Project No.: BTC3205

Site: Clitheroe Castle Grounds, Castle Hill, Clitheroe, BB7 1BA

Survey Type: Individual Tree Survey

Tree(s) Considered: Those within site boundaries as identified by client

Report Time Frame: 12 months from date of issue

Next Inspection Date: ≈18 months from date of issue

Client: Ribble Valley Borough Council

Survey Dates: 03 June & 16 July 2025

Surveyor: Joseph Lambert BSc(Hons) FdSc MArborA

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Date of Issue: 08 August 2025

Version No: 1

1. CIVIL LAW REGARDING TREE OWNERSHIP AND DUTY OF CARE

1.1 Under civil law the owner of the land on which a tree stands, together with any party who has control over the tree's management, has a duty of care to take reasonable steps to prevent or minimise the risk of personal injury and/or damage to property from any tree located within the curtilage of the land in question.

1.2 In turn, it is accepted that these steps should normally include commissioning a qualified and experienced arboriculturist to survey the tree in order to identify and appraise any risk of harm to persons or damage to property that it may present and, where unacceptable risks are identified, taking suitable remedial action to negate or reduce those risks accordingly.

2. QTRA METHODOLOGY OVERVIEW AND APPLICATION IN MANAGEMENT DECISIONS

2.1 A survey was carried out in order to consider the general structural stability of the trees at the site and the associated risk of harm that they pose to persons and/or damage that they pose to property and, from this information, to make management recommendations to reduce any risks identified to be unacceptable to a level that is considered to be either tolerable or broadly acceptable (see Table 1, below).

2.2 The Quantified Tree Risk Assessment (QTRA) methodology utilised for the tree survey (see appended QTRA Practice Note for more details) quantifies the three components of tree failure risk, which are:

i. *Target* (something with potential to be harmed and/or damaged by the mechanical failure of tree parts);
ii. *Impact Potential*; and
iii. *Probability of Failure* (within the coming year).

2.3 The product of the three component values is the annualised 'Risk of Harm', which is a combined measure of the likelihood and the consequence of tree failure considered in terms of the loss within the coming year, and is expressed as a probability. In applying the 'Tolerability of Risk Framework' (ToR) the QTRA methodology divides the 'Risk of Harm' into three threshold values, being;

1. *Unacceptable* (i.e. >1/1,000), which is unacceptable and will not ordinarily be tolerated;
2. *Tolerable* (i.e. between 1/1,000,000 and 1/1,000, where the Risk of Harm will be tolerable if it is As Low As Reasonably Practicable (ALARP); but a Risk of Harm 1/10,000 or greater will not ordinarily be Tolerable where it is imposed on others, such as the public. In the Tolerable range management decisions are informed by consideration of the benefits and costs of risk control, including benefits provided by trees that would be lost to risk control measures; and
3. *Broadly Acceptable* (<1/1,000,000), which is already ALARP.

2.4 The QTRA advisory thresholds, (see Table 1, below) are proposed as a reasonable approach to balancing safety from falling trees with the costs of risk reduction. This approach takes account of the principles of ALARP and ToR, but does not dictate how these principles should be applied. While the thresholds can be the foundation of a robust policy for tree risk management, tree managers should make decisions based on their own situation, values and resources.

Table 1: QTRA Advisory Risk Thresholds:

Threshold	Description	Action
Risk of harm of 1/1,000 or greater	**Unacceptable** - Risks will not ordinarily be tolerated	▪ Control the risk
Risk of harm between 1/1,000 and 1/10,000	**Unacceptable** (where imposed on others) - Risks will not ordinarily be tolerated	▪ Control the risk ▪ Review the risk
	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 ▪ Review the risk
Risk of harm between 1/10,000 and 1/1,000,000	**Tolerable** (where imposed on others) - Risks are tolerable if ALARP	▪ Assess costs and benefits of risk control ▪ Control the risk only where a significant benefit might be achieved at reasonable cost ▪ Review the risk
Risk of harm less than 1/1,000,000	**Broadly Acceptable** - Risk is already ALARP	▪ No action currently required ▪ Review the risk

2.5 As detailed in Table 1, a Risk of Harm less than 1/1,000,000 is Broadly Acceptable and already ALARP (i.e. 'as low as reasonably practicable'). A Risk of Harm 1/1,000 or greater is unacceptable and will not ordinarily be tolerated. Between these two thresholds, the Risk of Harm is in the Tolerable region of the ToR Framework and will be tolerable if it is ALARP, but a Risk of Harm 1/10,000 or greater will not ordinarily be Tolerable where it is imposed on others, such as the public. Here, management decisions are informed by consideration of the benefits and costs of risk control, including benefits provided by trees that would be lost to risk control measures.

2.6 In respect of the above the assessor (i.e. Bowland Tree Consultancy Ltd) may consider the costs of risk control when providing options for management if specifically asked to do so, but the tree owner/manager, who owns the risk and therefore exercises control over the costs, must consider the balance and make the final management decision(s).

3. PROTECTED SPECIES AND STATUTORY RESTRICTIONS

Tree Preservation Orders and Conservation Area Designations

3.1 The Town & Country Planning Act (1990) (the Act) and associated Regulations empower Local Planning Authorities (LPAs) to protect trees in the interests of amenity by making Tree Preservation Orders (TPOs). The Act also affords protection for trees of over 75mm diameter that stand within the curtilage of a Conservation Area (CA). Subject to certain exemptions, an application must be made to the LPA in question to carry out works upon or to remove trees that are subject to a TPO, whilst six weeks' notice of intention must be given to carry out works upon or to remove trees within a CA that are not protected by a TPO.

3.2 In this regard it is noted that TPO and CA protection at the site has not been checked as, in this instance, the client is also the LPA, and is subsequently deemed to have sufficient knowledge to make appropriate arrangements in respect of the necessary checks and, in turn, obtain appropriate permissions in regard to any identified statutory tree protection.

Protected Species

3.3 Nesting birds are afforded statutory protection under the Wildlife & Countryside Act (1981) (as amended) and their potential presence should therefore be considered when clipping hedges, removing climbing plants and pruning and removing trees. The breeding period for woodlands runs from March to August inclusive. Hedges provide valuable nesting sites for many birds and clipping should therefore be avoided during March to July. Trees, hedges and ivy should be inspected for nests prior to pruning or removal and any work likely to destroy or disturb active nests should be avoided until the young have fledged.

3.4 All bat species and their roosts are protected under Schedule 5 of the Wildlife & Countryside Act (1981) (as amended) and under Schedule 2 of the Conservation of Habitats and Species Regulations 2017 (as amended). In this respect, it should be noted that it is possible that unidentified bat habitat features may be located high in tree crowns and all personnel carrying out tree works at the site should therefore be vigilant and mindful of the possibility that roosting bats may be present in trees with such features. If any bat roosts are identified, then it is essential that works are halted immediately and that a suitably qualified and experienced ecologist investigates and advises on appropriate actions prior to works continuing.

3.5 In turn, any subsequent works carried out in relation to any protected species must be carried out under guidance from a suitably qualified and experienced ecologist and in strict accordance with applicable industry guidance (i.e. BS8596:2015 - Surveying for Bats in Trees and Woodlands).

Felling Licences

3.6 Subject to certain exemptions the Forestry Act (1967) requires that a 'Felling Licence' be obtained to remove growing trees amounting to more than five cubic metres of timber in a calendar quarter, providing no more than two cubic metres are sold. Felling Licences are administered by the Forestry Commission and contravention of the associated controls can incur substantial penalties. A felling licence is, however, not required for trees standing within the curtilage of a private residential garden, orchard, churchyard or in public open spaces such as land registered under the Commons Act 1899, village greens, public parks and public gardens.

4. SUMMARY OF SURVEY FINDINGS AND RECOMMENDATIONS

3.1 An 'Individual Tree Survey' (see 'Schedule of Operations' appended to agreed project quote) was undertaken on 03 June and 16 July 2025 at the site under consideration. The extents of the land considered as part of the survey were identified on a plan supplied by the instructing client's representative, David Hewitt of Ribble Valley Borough Council, by email.

3.2 The survey identified 29 individual trees and 26 groups of trees. The surveyed trees are in the young to post-mature age range with heights of up to 28.5 metres, stem diameters of up to approximately 1700 millimetres, and maximum diametral crown spreads of up to approximately 22 metres.

3.3 The site under consideration consists of a formal public park and recreation ground with associated footpaths and landscaped areas throughout, along with various purpose built outdoor amenity areas such as a playground, skate park and bowls green with benches and various trees and shrubs standing as groups and individuals, and open access throughout the park. The castle itself stands on a raised hill to the north-east of the wider park with a vehicular access and parking area from Parson Lane to the north-east and parking area to the north of the castle itself (see TSP).

3.4 The site is bordered to the north-west through to the south by a mixture of various roads and associated footpaths and neighbouring residential and commercial properties both backing onto the park itself and immediately opposite the adjoining roads and footpaths. The site is bordered to its south-west by a small light commercial premises and two storey brick building and along the western boundary by a railway line.

3.5 As a component of this appraisal various targets were identified to be within falling distances of the surveyed trees, including, but not restricted to, pedestrians and vehicles and their occupants using various adjoin and neighbouring roads and footpaths, persons using the various pathways, outdoor amenity facilities and greenspace areas within the park itself, persons using areas of neighbouring land, and various items of property including buildings on site, neighbouring buildings, parked vehicles and park and street furniture.

3.6 In turn, as highlighted with the colour orange in the appended Tree Survey Schedule and in Table 2 (overleaf), the risk assessment established that several trees and groups have calculated QTRA risk indices that fall within the unacceptable risk threshold range of 1/10,000 or over (please refer to Table 1, on the previous page, with regard to advisory tree risk thresholds). Consequently, as also detailed in Table Two, management recommendations have been made in order to negate the risk that these trees present, with both the trees and groups being highlighted with the colour orange in Table 2, in the TSS, and on the TSP.

3.7 However, as also detailed in Table 2, various works have been recommended to several of the surveyed trees with calculated QTRA risk indices that fall within the tolerable and broadly acceptable risk threshold ranges (as highlighted with the colours yellow and green, respectively), either for general non-risk management related reasons (as denoted with the suffix (M)) or, where relevant, to enable applicable trees to be inspected in further detail for risk assessment purposes (as denoted with the suffix (I)).

Table 2: Tree Work Recommendations:

No.	Species	Management Works Recommended*	Responsible Professional	Work Priority
T1	Lime	1. Prune tree to remove deadwood >50mm diameter directly over and adjacent to footpath and access to changing facility due to identified increased risk of failure and subsequent unacceptable risk of harm to persons.	1. Tree contractor	1. High
T2	Sycamore	1. Instruct detailed invasive inspection of buttress area to establish extents of decay and enable subsequent management recommendations to be made.	1. Client	1. High
T3	Cherry	1. Remove tree due to identified increased risk of failure and subsequent increased risk of harm to persons.	1. Tree contractor	1. High

Table continued overleaf

Table 2: Tree Work Recommendations (cont.):

No.	Species	Management Works Recommended*	Responsible Professional	Work Priority
T8	Common Beech	1. Prune tree to remove two identified dead branches (see comments) due to identified increased risk of failure. NB: Works recommended to be undertaken with other adjacent tree works to reduce overall cost of works.	1. Tree contractor	1. Moderate
T9	Sycamore	1. Remove tree due to identified increases risk of failure and subsequent unacceptable risk of damage to property.	1. Tree contractor	1. High
T13	Red Horse Chestnut	1. Prune tree to reduce north west side of canopy by up to approximately 2m to reduce static and dynamic loading on weakened stem base, pruning surrounding canopy to match, due to identified increased risk of failure and subsequent risk of harm to persons.	1. Tree contractor	1. High
T17	Common Beech	1. Prune tree to remove deadwood >50mm diameter due to identified increased risk of failure and subsequent unacceptable risk of harm to persons. 2. Consider mulching tree's root-zone to help alleviate compaction and cover exposed buttress roots.	1. Tree contractor 2. Client	1. High 2. Moderate
T23	Sycamore	1. Sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	1. Grounds maintenance staff	1. Low
T24	Ash 'Raywood'	1. Sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	1. Grounds maintenance staff	1. Low
T25	Beech	1. Arrange mulching of compacted areas of soil in tree's root-zone to improve soil aeration, alleviate compaction and promote good physiological health.	1. Client	1. Low
T27	Tree of Heaven	1. Remove tree due to identified increased risk of failure and subsequent unacceptable risk of harm to persons.	1. Tree contractor	1. High
T28	Common Holly	1. Remove tree due to identified increased risk of failure and subsequent increased risk of harm to persons.	1. Tree contractor	1. High
T29	Common Oak	1. Prune tree to remove lowest branch to west (see TSS comments) due to identified increased risk of failure and subsequent unacceptable risk of harm to persons.	1. Tree contractor	1. High
G1	8no. Common Lime, 1no. Fastigiate Oak	1. Prune applicable trees to remove deadwood >50mm diameter directly over footpaths and to attain a 0.5m clearance to overhead telephone lines and building roof.	1. Tree contractor	1. Moderate
G2	1no. Cotoneaster, 1no. Common Hawthorn. 1no. Hazel	1. Prune applicable trees to attain 0.5m clearance to building to south. 2. Sever Ivy in Hawthorn to prevent dominance within canopy (M).	1. Tree contractor 2. Grounds maintenance staff	1. Moderate 2. Moderate
G3	Common Lime	1. Prune applicable trees to attain approximately 2m clearance over roof of toilet block (M).	1. Tree contractor	1. Moderate

Table continued overleaf

Table 2: Tree Work Recommendations (cont.):

No.	Species	Management Works Recommended*	Responsible Professional	Work Priority
G6	2no. Sycamore	1. Sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	1. Grounds maintenance staff	1. Low
G7	3no. Sargent Cherry	1. Plant and establish new trees adjacent to group in anticipation of loss due to age and condition.	1. Client	1. Low
G9	Cherry	1. Remove redundant stakes and ties from applicable trees to prevent future damage (M).	1. Grounds maintenance staff	1. Moderate
G 10	16no. Common Lime, 1no. Cherry, 1no. Weeping Birch	1. Clear ivy and basal growth immediately prior to next inspection cyclical inspection.	1. Grounds maintenance staff	1. Low
G 11	approx. 7no. Sycamore, 3no. Ash, 1no. Common Lime	1. Remove early-mature Ash (marked G11a) to north-east due to conflict with adjacent building. 2. Sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	1. Tree contractor 2. Grounds maintenance staff	1. Moderate 2. Low
G 13	Ash, Holly, Lawsons Cypress Maple, Rowan, Sycamore	1. Prune Norway Maple to attain 0.5m clearance to adjacent fence (M).	1. Tree contractor	1. Moderate
G 14	Cherry Plum, Holly, Lilac, Cherry, Ginkgo, Lawson Cypress, Yew	1. Prune four Cherry Plum by up to approximately 1.5m to reduce static loading on basal unions, and sever Ivy at base, due to identified increased risk of failure and subsequent increased risk of harm to persons. 2. Prune Sargent Cherry marked G14a to reduce overhangs over adjacent footpath due to identified increased risk of failure.	1. Tree contractor 2. Tree contractor	1. Moderate 2. Moderate
G 16	approx. 9no. Sycamore, 3no. Holly, 2no. Beech, 2no. Lime, 1no. Red Maple, 1no. Cockspur Thorn, Dogwood	1. Prune Sycamore tree marked G16a to remove identified deadwood (see comments) over footpath and bench due to identified increased risk of failure and subsequent unacceptable risk of harm to persons. 2. Prune Sycamore and Dogwood to north to attain a 1m clearance to adjacent street light and 2m clearance to adjacent building (M). 3. Sever Ivy on applicable stems at ground level and 2m height and remove section in between in order to facilitate future inspections (I).	1. Tree contractor 2. Tree contractor 3. Grounds maintenance staff	1. High 2. High 3. Low
G 17	2no. Common Lime, 1no. Silver Maple	1. Remove basal growth from Limes immediately prior to next inspection (I).	1. Grounds maintenance staff	1. Low

Table continued overleaf

Table 2: Tree Work Recommendations (cont.):

No.	Species	Management Works Recommended*	Responsible Professional	Work Priority
G 18	5no. Oak, 4no. Sycamore, 5no. Beech, 4no. Holly, 1no. Ash, 2no. Horse Chestnut, 1no. Sugar Maple	1. Prune Copper Beech tree marked G18a to remove identified deadwood (see comments) over footpath and bench due to identified increased risk of failure and subsequent unacceptable risk of harm to persons. 2. Sever Ivy around entire circumference of applicable stems at ground level and at 2m height, and remove section between in order to facilitate future inspections (I).	1. Tree contractor 2. Grounds maintenance staff	1. High 2. Moderate
G 19	Ash, Beech, Sycmore, Hawthorn	1. Prune applicable semi mature trees to attain 1.5m clearance to adjacent buildings (M). 2. Remove dead Hawthorn and dying Elm and Ash due to projected continued decline and subsequent increased risk of failure. 3. Sever and remove Ivy from mature tree stems where applicable to prevent establishment. 4. Arrange and confirm regular inspection intervals of installed flexible brace in Beech with applicable tree contractor.	1. Tree contractor 2. Tree contractor 3. Grounds maintenance staff 4. Client	1. Moderate 2. Moderate 3. Moderate 4. Moderate
G 20	Birch, Robinia	1. Remove ivy from Robinia stem prior to next cyclical inspection.	1. Grounds maintenance staff	1. Low
G 21	6no. Beech, 5no. Sycamore, 1no. Lime, 1no. Ash, Elm	1. Prune semi-mature trees to north to attain approximately 1.5m clearance to adjacent residential buildings (M). 2. Sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	1. Tree contractor 2. Grounds maintenance staff	1. Moderate 2. Low
G 23	4no. Kanzan Cherry, 2no. Tibetan Cherry	1. Prune applicable trees in group to attain approximately 3m clearance to building (M). 2. to sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	1. Tree contractor 2. Grounds maintenance staff	1. Moderate 2. Low
G 24	9no. Sycamore, 4no. Common Beech, 4no. Lime, 2no. Oak, 2no. Maple, Various Young Trees	1. Prune applicable trees to remove basal growth and Ivy from ground level to approximately 2m height in order to facilitate detailed inspection of two mature Limes to north adjacent to high usage road, and future inspections (I). 2. Prune trees G24a and G24b to remove broken branches (see comments) due to identified increased risk of failure.	1. Tree contractor/ grounds maintenance staff 2. Tree contractor	1. High 2. High
G 25	4no. Sycamore	1. Sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	1. Grounds maintenance staff	1. Low
G 26	Lawson Cypress, Holly, Yew, Birch, Monkey Puzzle, Cherry	1. Remove two central Lawson Cypress trees due to evident poor physiological condition and projected continued decline.	1. Tree contractor	1. Low

*Note: it shall be the client's responsibility to arrange contact with the applicable council to check for the presence of any statutory tree protection measures, such as the site's location within a Conservation Area and/or the presence of any Tree Preservation Orders, prior to scheduling or carrying out any tree works

3.8 In turn, Table 3, below, lists the trees and groups that are recommended for more detailed inspections for risk management related reasons following any works recommended in Table 2, along with their accompanying re-inspection schedule(s).

Table 3: Tree Re-Inspection Recommendations:

No.	Species	Re-Inspection Recommendations*	When?
T8	Common Beech	▪ Review tree's structural and physiological condition in 12 months to review any advancement of basal dysfunction and/or emergence of fungal fruiting bodies.	Within 12 months from report date
T10	Horse Chestnut	▪ Monitor tree's structural and physiological condition annually in light of colonisation by Horse Chestnut Bleeding Canker.	Annually
T25	Common Beech	▪ Re-inspect tree to review basal area and tree for apparition of fungal fruiting bodies, and to monitor overall vitality.	Autumn 2025
T26	Sycamore	▪ Re-inspect tree to review basal area and tree for apparition of fungal fruiting bodies, and to monitor overall vitality.	Autumn 2025
G 24	Common Lime	▪ Re-inspect group upon removal of basal growth and dieback of Ivy. NB QTRA Risk index to be re-evaluated if necessary following re-inspection.	Within 3 months of report date

*Note: Unless otherwise specified, all inspections detailed in Table 3 are to be carried out by the client, or the tree consultant upon direct additional instruction by the client

3.9 Where trees are recommended for removal, whether for risk management purposes or for other arboricultural management reasons, then it is strongly recommended that replacement trees of suitable sizes and species be planted in appropriate locations throughout the site, both in order to mitigate for the loss of the multiple benefits they provide to the environment, and to help ensure continuity of canopy cover in the local area. Accordingly, new tree planting advice should be sought from an arboricultural consultant.

3.10 Subsequently, any new tree planting should be carried out in strict accordance with BS8545:2014 (Trees: From Nursery to Independence in the Landscape – Recommendations), in order to ensure that they are of a suitable quality for usage, and that they are provided with adequate care and maintenance following planting for them to successfully establish and, over the long term, grow to maturity.

5. GENERAL TREE MANAGEMENT COMMENTS

4.1 During the course of the survey, it was noted that the canopies of a number of the trees border Manchester Road and the associated footway. In this respect it is generally accepted that the minimum clearances should be approximately 2.5 metres over a footpath and 5.05 metres over a road carriageway which, in turn, should give sufficient clearance for a person with a raised umbrella to walk unimpeded along a footpath and for a double-decker bus to travel along a road without striking any overhanging branches. Furthermore, adequate clearance should be maintained to visibility splays from junctions and accesses and also to road signs and street lights.

4.2 Additionally, it was noted that the canopies of various trees overhang access driveways. As such, it is recommended that general periodic maintenance pruning should be undertaken as and when necessary to ensure adequate canopy clearances are maintained to roads, footways and internal accesses and any overhead utilities such as overhead telephone lines.

6. TREE RISK MANAGEMENT STRATEGY RECOMMENDATIONS

5.1 In consideration of the high usage of the adjacent Manchester Road, and the proximity of the trees to various items of property, and the associated identified targets such as parked and moving vehicles and pedestrians and residential properties and parked cars, it is subsequently recommended that all of the trees be re-inspected on a cyclical programme of roughly every 18 months, so that they can be alternately viewed whilst both in and out of leaf in order to monitor both their structural and physiological condition and, consequently, for the site occupiers to meet their duty of care. In this respect it is therefore recommended that the trees be re-inspected during winter 2025/26.

5.2 Additionally, it is strongly recommended that the client undertakes a walkover check of trees around the site following any inclement weather events, and observes the trees during their day to day activities and routines. This is recommended to identify any obvious risk features, such as broken, split or hanging branches, root-plate heave, the apparition of fungal fruiting bodies etc. that could have occurred following

inclement weather, and, if subsequently identified as necessary, to then seek appropriate advice from a tree contractor or tree consultant.

Site:	Clitheroe Castle Grounds, Castle Hill, Clitheroe, Lancashire, BB7 1BA
Client:	Ribble Valley Borough Council
Brief:	Carry out an individual tree survey within area specified by client, report on projected risk posed to persons and property, and make management recommendations where appropriate

Surveyor:	Joseph Lambert Chartered Arboriculturist
Survey Dates:	03 June and 16 July 2025
Viewing Conditions:	Bright conditions with light breeze
Job Reference:	BTC3205

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vital-ity	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
T1	Common Lime	M	21	500	9	G	▪ One piece of deadwood to approximately 120mm diameter on east side at approximately 11m height and 5m long over footpath and access to changing facility.	▪ Tree contractor to prune tree to remove deadwood >50mm diameter directly over and adjacent to footpath and access to changing facility due to identified increased risk of failure and subsequent unacceptable risk of harm to persons.	P = Deadwood to 120mm diameter. T = Persons using paths below.	2	3	2	N/A	5K	H
T2	Sycamore	M	21	1160	16	G	▪ Previously recorded within group G5 in 2023 tree survey. ▪ Area of dysfunctional wood with decay and hollowing when sounded with nylon mallet and probed with screwdriver of approximately 1.5m circumference to approximately 1.1m height. ▪ One adaptive growth strip on top through centre. ▪ Small immature fruiting bodies in dysfunctional area, which have evidently died before maturing. ▪ Area of decay may have progressed slightly since 2023 survey. ▪ Canopy displaying good vitality.	▪ Client to instruct detailed invasive inspection of buttress area to establish extents of decay and enable subsequent management recommendations to be made.	P = Stem at ground level. T = Persons using path. NB: Tree within falling distance of amphitheatre area too.	2	1	4	N/A	40K	H
T3	Wild Cherry	SM	4.5	130	4	D	▪ Dead tree.	▪ Tree contractor to remove tree due to identified increased risk of failure and subsequent increased risk of harm to persons.	P = Tree at ground level. T = Persons using footpath.	2	3	3	N/A	50K	H
T4	Cherry	-	-	-	-	-	▪ Removed to 1.5m high standing stem following 2023 survey.	▪ None.	-	-	-	-	-	-	-

HEADINGS & ABBREVIATIONS

NO. TREE/GROUP REFERENCE NUMBER. REFER TO PLAN OR NUMBERED TAGS WHERE APPLICABLE
SPECIES: COMMON NAME
AGE: Y = YOUNG, SM = SEMI MATURE, EM = EARLY MATURE, M = MATURE, PM = POST MATURE
HEIGHT: APPROXIMATELY 80% OF TREES ARE MEASURED USING AN ELECTRONIC CLINOMETER AND THE REMAINDER ESTIMATED AGAINST THE MEASURED TREES
DIAMETER: STEM DIAMETER MEASURED OR ESTIMATED AT A HEIGHT OF APPROXIMATELY 1.3 METRES
CROWN SPREAD: MEASURED OR ESTIMATED DIAMETER OF CROWN(S) AT THE WIDEST POINT
VITALITY: A MEASURE OF PHYSIOLOGICAL CONDITION WHEREBY D = DEAD, MD = MORIBUND, P = POOR, M = MODERATE, G = GOOD
MANAGEMENT: SUFFIXES: (M) = FOR GENERAL ARBORICULTURAL OR SILVICULTURAL MANAGEMENT; (S) = TO REMOVE OR REDUCE THE RISK OF DIRECT DAMAGE TO A FIXED STRUCTURE BY MEANS OF CIRCUMFERENTIAL ROOT, STEM OR BRANCH GROWTH; (I) = TO ENABLE THE TREE(S) TO BE INSPECTED FURTHER FOR RISK ASSESSMENT PURPOSES
TARGET RANGE: HIGHEST VALUE TARGET THAT THE MOST SIGNIFICANT PART LIKELY TO FAIL COULD STRIKE. RANGES 1-6. 1 = HIGH, 6 = LOW VALUE/OCCUPANCY
RISK ASSESSMENT DESCRIPTION: DESCRIPTION OF PART IDENTIFIED AS MOST LIKELY TO FAIL AND ASSOCIATED TARGET, ASSESSED IN ACCORDANCE WITH QTRA SYSTEM
SIZE RANGE: SIZE CATEGORY OF MOST SIGNIFICANT PART CONSIDERED LIKELY TO FAIL. - RANGES 1-4 WHEREBY 1 = LARGE, 4 = SMALL, P = PROPERTY
P.O.F: PROBABILITY OF FAILURE WITHIN 12 MONTHS. RANGES 1-7. 1 = HIGH, 7 = LOW
REDUCED MASS %: WHERE THE MASS OF A TREE OR BRANCH IS REDUCED BY DEGRADATION THE RISK INDEX IS MULTIPLIED TO REFLECT THE PERCENTAGE OF MASS REDUCTION
RISK INDEX: E.G. RISK INDEX 20 = RISK OF SIGNIFICANT HARM 1 IN 20,000. AN ADDITIONAL FIGURE, IN BRACKETS, MAY BE SUFFIXED 'T' REPRESENTING THE RATE OF MULTIPLE OCCUPATION OVER THE YEAR, E.G. 10(10T) REPRESENTS A RISK OF HARM 1/10,000 TO 10 OCCUPANTS OR AN EQUIVALENT MONETARY VALUE. SEE QTRA PRACTICE NOTE FOR MORE INFORMATION REGARDING COLOURS USED TO SIGNIFY RISK INDEX
WORK PRIORITY: H (HIGH) = TREE WORKS TO BE GIVEN IMMEDIATE CONSIDERATION. M (MODERATE) = TREE WORKS TO BE CARRIED OUT WITHIN 12 MONTHS OF SURVEY (TIMING MAY BE SPECIFIED IN MANAGEMENT RECOMMENDATIONS). L (LOW) = TREE WORKS THAT ARE NOT CONSIDERED ESSENTIAL FOR RISK MANAGEMENT PURPOSES, BUT ARE RECOMMENDED IN ACCORDANCE WITH PRUDENT ARBORICULTURAL MANAGEMENT (TO BE REVIEWED IN 12 MONTHS, OR SPECIFIED TIME, IF APPLICABLE). N/A = NOT APPLICABLE

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vitality	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
T5	Sycamore	M	6	1000	2	M	▪ Pruned to standing stem following 2023 survey.	▪ None.	P = Stem at ground level. T = Persons using footpath to north-west.	3	1	7	N/A	<1M	N/A
T6	Lawson Cypress	M	17	2x650 (ts)	8	G	▪ Twin stemmed from ground level with tight included bark union. ▪ Large partially occluded wound to 280mm width on north-west of stems from ground level up to 2m height, with evidently non-progressive decay within, as well as signs of effects of pin hole borer. ▪ Sounding with nylon mallet indicated no progressive decay to remaining buttresses. ▪ No signs of rapid adaptive growth or canopy gaps indicating stem subsidence.	▪ Tree consultant to monitor progression of stem decay as component of future cyclical inspections.	P = Stems at ground level. T = Persons using grassed areas.	3	1	5	N/A	<1M	L
T7	Cherry	-	-	-	-	-	▪ Removed following 2023 survey.	▪ N/A	-	-	-	-	-	-	-
T8	Common Beech	M	21	850	16	G	▪ Second tree in from southern end of wider group. ▪ Areas of depressed bark with necrotic area to north of stem from ground level up to 600mm height and 400mm width at base, tapering to close at top. ▪ No fungal fruiting bodies evident and no hollowing when sounded with nylon mallet, some staining in area but no signs of rapid progression. ▪ Good vitality. ▪ One piece of deadwood arises west towards path of approximately 150mm diameter and one piece of 100mm diameter at approximately 11m and 10m height respectively. ▪ Both pieces of deadwood stop at path edge and are considered likely to impact evidently lower use grass bank upon failure. ▪ Multiple severe upper branch curvatures.	▪ Tree contractor to prune tree to remove two identified dead branches (see comments) due to identified increased risk of failure. NB: Works recommended to be undertaken with other adjacent tree works to reduce overall cost of works. ▪ Client to review tree's structural and physiological condition in 12 months to review any advancement of basal dysfunction and/or emergence of fungal fruiting bodies.	P = Deadwood up to 150mm diameter. T = Person using grassed area below.	4	3	2	N/A	500 K	M

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vital-ity	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
T9	Sycamore	M	18	2x550 (ts)	10	M/P	▪ Located adjacent to moderate to high use road and parked cars, with high canopy bias east over road towards adjacent residential and commercial properties. ▪ Ivy previously severed but re-established up south-east stem, which partially impeded inspection. ▪ Twin stemmed from 1.2m, with moderately tight cupped union. ▪ Areas of necrotic bark previously observed have evidently progressed since previous 2023 survey, with various areas now showing bark loss and necrosis from ground level to approximately 4m height, with little sign of occlusion to any points. ▪ No active decay or softening of wood observed in dysfunctional areas, but some stem bleeds above union to north-east, indicative of physiological stress. ▪ Canopy moderately sparse and impinging on street light to south-east. ▪ Evidently in a mid stage of progressive terminal decline.	▪ Tree contractor to remove tree due to identified increases risk of failure and subsequent unacceptable risk of damage to property.	P = Stems >450mm diameter at 1.2m height. T = Parked vehicles and residential properties and occupants to east.	2	P	3	N/A	3K	H
T10	Horse Chestnut	M	22	1600	20	G	▪ Growing immediately adjacent to low stone wall, which has sustained minor displacement. ▪ Multiple branches from 2m height. ▪ Multiple partially occluded necrotic bark strips from ground level up to 4-5m height. ▪ Number of dried and stained bleeding lesions on east side from ground level up to 4m height. ▪ Multiple strips and bleeding lesions, associated with colonisation by Horse Chestnut Bleeding Canker. ▪ Several partially occluded pruning wounds to lower primary branches, with decay pockets up to 200mm diameter. ▪ No significant notable decay within strips and tree displaying good canopy vitality.	▪ Client to monitor tree's structural and physiological condition annually in light of colonisation by Horse Chestnut Bleeding Canker.	P = Branches up to 250mm diameter. T = Persons using footpath.	2	3	5	N/A	<1M	M
T11	Sycamore	-	≈ 5	750	-	-	▪ Pruned to approximately 5m high standing stem following 2023 survey.	▪ None.	-	-	-	-	-	-	-
T12	Horse Chestnut	-	-	-	-	-	▪ Removed following 2023 survey.	▪ None	-	-	-	-	-	-	-

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T13	Red Horse Chestnut	M	13.5	620	16	G	▪ Multiple partially occluded dysfunctional strips throughout stem, some with aerial rooting. ▪ Primary branch of 450mm diameter arising to south-west at 2m has dysfunctional strip 100mm wide up entire length, but unable to probe to any significant depth. ▪ Canopy edges overhang footpath and metal pergola to north. ▪ Branch arising to north-west over pergola and footpath edge has partially occluded longitudinal split to centre and moderate attenuation over footpath. ▪ Occluded on west side, and partially occluded with staining on east. ▪ Failure would likely occur to pergola and footpath north-west.	▪ Tree contractor to prune tree to reduce north west side of canopy by up to approximately 2m to reduce static and dynamic loading on weakened stem base, pruning surrounding canopy to match, due to identified increased risk of failure and subsequent risk of harm to persons.	P = Branch of 310mm diameter. T = Persons using footpath	2	2	4	N/A	100 K	H
T14	Sycamore	-	-	750	-	-	▪ Ivy covered stem with regrowth, removed following 2023 survey recommendations.	▪ -	-	-	-	-	-	-	-
T15	Horse Chestnut	M	22	950	15	G	▪ Located on steep bank adjacent to 4m high retaining wall, which partially restricted access for inspection. ▪ Multiple increment strips throughout stem, evidently occluded Horse Chestnut Bleeding Canker wounds. ▪ Branch of 380mm diameter with multiple dysfunctional bark strips arises east at approximately 4.5m height, and has evidently been pruned to reduce end weight. ▪ Branch of 320mm diameter above at approximately 6.5m has moderately sharp curvature at 5m distance from stem. ▪ Significant historical decay cavity of approximately 400mm height, 300mm width and 280mm depth on west side of stem at 6.5m height, evidently resultant of previous branch tear out, with likely associated decay pocket above and below. ▪ Tree canopy evidently reduced in height and spread on recommendation of 2023 survey to good arboricultural standard, reducing static and dynamic loading on identified defective parts.	▪ Tree consultant to monitor tree's structural and physiological condition through subsequent cyclical inspections.	P = Branches to approximately 75mm diameter. T = Persons using footpath.	2	4	6	N/A	<1M	L

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vitality	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
T16	Common Beech	M	22	950	15	G	▪ Located on steep bank adjacent to 4m high retaining wall, which partially restricted access for inspection. ▪ Large 150mm wide and 1m long historical cavity to north-west at approximately 8m height, with evident decay within but large pronounced occluding ribs. ▪ Canopy displaying good vitality. ▪ Branch of approximately 400mm diameter arises to south-east at 7m with moderately tight union, with south-east side partially obscured by Ivy, although union showing no signs of incipient failure at time of survey.	▪ Tree consultant to monitor tree's structural and physiological condition through subsequent cyclical inspections.	P = Branch of approximately 400mm at 7m height. T = Persons using footpath below.	2	2	6	N/A	<1M	L
T17	Common Beech	M	17	1x 1000 1x780 (ts)	22	G	▪ Evident ground compaction and erosion in root-zone, with exposed buttresses and secondary roots, indicating relatively high foot fall of persons. ▪ Stem bifurcates at 1m height with tight cupped water filled union, which was showing no signs of incipient failure at time of survey. ▪ Lower spreading branching habit, and part of canopy has 'cut leaf' form. ▪ Approximately 150mm diameter branch stub to south east from pruning, approximately 1.5m long. ▪ One dead branch in north east side of canopy at approximately 10m height over parking area and main castle access. ▪ Further deadwood in inner lower canopy throughout to 100mm diameter including one 90mm diameter hanging branch in centre of canopy.	▪ Tree contractor to prune tree to remove deadwood >50mm diameter due to identified increased risk of failure and subsequent unacceptable risk of harm to persons. ▪ Client to consider mulching tree's root-zone to help alleviate compaction and cover exposed buttress roots.	P = Branches up to 75mm diameter. T = Persons using grounds.	2	3	2	N/A	10K	H
T18	Copper Beech	M	19	700	16	G	▪ Moderate stem lean south-west towards car-park. ▪ Stem bifurcates at 3m height with wide union with two branches of approximately 450-500mm diameter arising with moderate curvatures. ▪ Macadam laid up to roots approximately 300mm distance from stem with associated minor historical mechanical damage evident.	▪ None.	P = Branches up to 50mm diameter. T = Persons using access.	2	4	7	N/A	<1M	N/A
T19	Austrian Pine	M	18	680	14	G	▪ Two tight unions on south-east side at 2.5m and 5m, with two branches of approximately 280mm diameter subsequently in contact at 7m height.	▪ Tree consultant to monitor condition of tree's main branch unions as component of future cyclical inspections.	P = Branches up to 75mm diameter. T = Persons using access road.	2	4	6	N/A	<1M	L

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vital-ity	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
T20	Dawn Redwood	EM	20	770	10	G	▪ No significant visible defects noted at time of survey.	▪ None.	P = Branches up to 50mm diameter. T = Persons using grounds.	3	4	7	N/A	<1M	N/A
T21	Horse Chestnut	-	-	-	-	-	▪ Removed following 2023 survey.	▪ N/A	-	-	-	-	-	-	-
T22	Horse Chestnut	-	-	-	-	-	▪ Removed following 2023 survey.	▪ N/A	-	-	-	-	-	-	-
T23	Sycamore	M	19	760	14	G	▪ Ivy severed and dead cladding stem, but stems largely visible through. ▪ Light Ivy starting to establish again at stem base. ▪ Multiple previous branch removals to approximately 120mm diameter with associated localised decay pockets from 1.5m.	▪ Grounds maintenance staff to sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	P = Deadwood up to 50mm diameter. T = Persons using footpath below.	2	4	3	25%	<1M	L
T24	Ash 'Raywood'	EM	18.5	580	14	G	▪ No signs of colonisation by Ash Dieback Disease (ADD). ▪ Some branch stubs to 90mm diameter from previous evident branch failures, typical of species. ▪ Established Ivy previously severed but now recladding stem to approximately 2.5m height, which impeded inspection.	▪ Grounds maintenance staff to sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	P = Branches up to 50mm diameter. T = Persons using footpath below.	2	4	6	N/A	<1M	L

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vital-ity	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
T25	Common Beech	M	28.5	1400	24	G	▪ Located north of access road. ▪ Extensive ground compaction to root-zone. ▪ Area of historical wounding and decay to south of stem at 3.5m height, below 460mm diameter branch arising to south-east over access road, which has evidently previously been pruned to lessen loading. ▪ Old unidentified fruiting bodies in wound, but position and form indicate decay is likely saprophytic and confined to dysfunctional wood. ▪ Multiple stress indicative stem bleeds to east from 2-4m east, possibly caused by ground compaction and associated root impacts, woodchip mulch evidently applied since 2023, but areas worn away. ▪ Multiple partially occluded historic pruning wounds to approximately 300mm diameter throughout stem and lower primary branches. ▪ Branch to south-east removed, with subsequent approximately 500mm long branch stubs. ▪ Eastern side of canopy has evidently been pruned to reduce height and spread and whole canopy reduced to balance to high arboricultural standard.	▪ Client to re-inspect tree during autumn 2025 to review basal area and tree for apparition of fungal fruiting bodies, and to monitor overall vitality. ▪ Client to arrange additional mulching of compacted areas of soil in tree's root-zone to improve soil aeration, alleviate compaction and promote good physiological health.	P = Branch >450mm diameter. T = Persons using access road.	2	1	5	N/A	400 K	M
T26	Sycamore	M	22	920	17	G	▪ Tree previously standing within group G24, with metal tag no. S022. ▪ Area of necrotic bark on buttress root on north east side from ground level to approximately 0.5m height and of approximately 600mm circumference. ▪ Good overall vitality, with some deadwood up to 100mm diameter to south over evidently lower use grass area. ▪ Some light Ivy starting to establish at base. ▪ Two large fruiting bodies of white rot decay causing *Cerioporus squamosus* in hedge north east of tree on ground, but unclear of origin tree.	▪ Client to re-inspect tree during autumn 2025 to review basal area and tree for apparition of fungal fruiting bodies, and to monitor overall vitality.	P = Deadwood up to 100mm diameter. T = Persons using grass area.	3	4	2	50%	1M	M

Site:	Clitheroe Castle Grounds, Castle Hill, Clitheroe, Lancashire, BB7 1BA
Client:	Ribble Valley Borough Council
Brief:	Carry out an individual tree survey within area specified by client, report on projected risk posed to persons and property, and make management recommendations where appropriate

Surveyor:	Joseph Lambert Chartered Arboriculturist
Survey Dates:	03 June and 16 July 2025
Viewing Conditions:	Bright conditions with light breeze
Job Reference:	BTC3205

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vitality	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
T27	Tree of Heaven	EM	16	550	12	M-P	▪ Basal wound with missing bark on south west side of approximately 300mm diameter and 500mm height, with little occlusion and evidently progressive. ▪ Canopy sparse and showing significant reduction in vitality. ▪ Non durable timber characteristics means desiccated and dysfunctional wood likely to be colonised rapidly by decay fungi.	▪ Tree contractor to remove tree due to identified increased risk of failure and subsequent unacceptable risk of harm to persons.	P = Stem at ground level. T = Person using castle grounds.	2	1	3	N/A	4K	H
T28	Common Holly	SM	9	1x280 1x240 (ts)	7	D	▪ Dead tree within shrubs, but theoretically within falling distance of adjacent footpath to west.	▪ Tree contractor to remove tree due to identified increased risk of failure and subsequent increased risk of harm to persons.	P = Stems at ground level. T = Persons using castle grounds.	3	2	3	N/A	100 K	H
T29	Common Oak	EM	20	600	15	G	▪ Lowest branch arising to west of approximately 150mm diameter at 2.5m height has longitudinal split 2m distance from stem. ▪ Branch is attenuated with end overhanging footpath.	▪ Tree contractor to prune tree to remove lowest branch to west (see comments) due to identified increased risk of failure and subsequent unacceptable risk of harm to persons.	P = Branch to approximately 150mm diameter. T = Persons using castle grounds.	2	3	2	N/A	5K	H
G1	8no. Common Lime, 1no. Fastigiate Oak	SM-M	21	710	14	G	▪ Linear group of three mature trees along south and two along west, and three semi-mature trees to east. ▪ Significant damage from grass cutting machinery to young and semi mature tree root tops. ▪ Canopy of smaller tree to north immediately adjacent to two-storey brick building with lower edge contacting corner, and is showing a moderate reduction in vitality. ▪ Small to moderate amount of deadwood to approximately 60mm diameter to south over footway. ▪ Lower canopies in contact with overhead telephone lines.	▪ Tree contractor to prune applicable trees to remove deadwood >50mm diameter directly over footpaths and to attain a 0.5m clearance to overhead telephone lines and building roof (M).	P = Deadwood up to 60mm diameter. T = Persons using footpaths.	2	4	2	25%	200 K	M
G2	1no. Cotoneaster, 1no. Common Hawthorn. 1no. Hazel	SM-M	≤ 9	≤ 100	≤ 8	G	▪ Hawthorn has dense Ivy to stems, which restricted visibility and becoming dominant in canopy. ▪ Hazel and Cotoneaster to south of group contacting building to south.	▪ Tree contractor to prune applicable trees to attain 0.5m clearance to building to south. ▪ Grounds maintenance staff to sever Ivy in Hawthorn to prevent dominance within canopy (M).	P = Stems of Hawthorn to approximately 200mm diameter. T = Persons using footpath.	2	3	6	N/A	<1M	M

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vital-ity	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
G3	Common Lime	M	≤ 24	≤ 750	≤ 16	G	▪ Linear group around recreation ground edge. ▪ Moderate historical damage to root tops from grass cutting machinery to many trees. ▪ Several have historical pruning wounds which are partially occluded with evident localised decay pockets. ▪ Moderate deadwood to 60mm diameter, largely over grassed areas. ▪ Three trees to north west corner have canopies contacting toilet block roof.	▪ Tree contractor to prune applicable trees to attain approximately 2m clearance over roof of toilet block (M).	P = Deadwood up to 60mm diameter. T= Persons using footpath.	2	4	2	25%	200 K	M
G4	2no. Common Lime, 1no. Sycamore	M	≤ 18.5	≤ 510	≤ 9	M-G	▪ Located adjacent to retaining wall to road/rail bridge.	▪ None.	P = Deadwood up to 75mm diameter. T = Persons using grass area below.	3	4	2	25%	<1M	N/A
G5	2no. Copper Beech, 1no. Yew	M	21	780	16	G	▪ Exposed buttress roots tops and secondary roots along path edge from erosion and compaction of soil.	▪ None	P = Deadwood up to 50mm diameter. T = Persons using park.	2	4	3	25%	<1M	N/A
G6	2no. Sycamore	M	≤ 20.5	≤ 1200	≤ 20	G	▪ Loosely spaced pair on grass banking. ▪ Tree to north has evidently long established multiple target cankers throughout stem. ▪ Buttress to south west of southern tree now exposed. ▪ Large partially dysfunctional burr, with partially occluded dysfunctional area immediately adjacent at approximately 0.3m height. ▪ No hollowing when sounded with nylon mallet. ▪ Dead Ivy persisting from 1.5m and some live Ivy clumps to east, which partially obscured base.	▪ Grounds maintenance staff to sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	P = Deadwood up to 75mm diameter. T = Persons using grassed area.	3	4	2	25%	<1M	L

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vitality	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
G7	3no. Sargent Cherry	PM	≤ 4.5	≤ 590	≤ 10	M	▪ All tree in group approaching post-maturity, with multiple areas of evident long standing brown rot decay and moderately severe reductions in canopy vitality. ▪ Unidentified old fungal fruiting body in base of tree to south-east. ▪ Projected safe useful life expectancy of less than 10 years. ▪ Deadwood evidently removed from tree canopies.	▪ Client to plant and establish new trees adjacent to group in anticipation of loss due to age and condition.	P = Branches up to 260mm diameter at 2m height. T = Persons using grassed area of park below.	3	2	3	N/A	100 K	L
G8	Paper Birch etc.	SM	≤ 8	≤ 190	≤ 4	G	▪ Multiple new young trees and semi-mature tree plantings of various species in areas between children's' play area to west and mature tree groups to east.	▪ None.	N/A	-	-	-	-	<1M	N/A
G9	Cherry	M	≤ 12.5	≤ 620	≤ 11	M	▪ Mixed double avenue of Cherry including Kanzan, Tibetan and Wild. ▪ One dead Ivy covered stem to north of group. ▪ Larger Wild Cherry to north showing moderately severe reduction in vitality. ▪ Dense Ivy to large Kanzan north of bench. ▪ Kanzan opposite bench to west has moderate stem lean to north-east. ▪ Number of new plantings within group with some stakes and ties damaging new trees. ▪ Older trees approaching post-maturity.	▪ Ground maintenance staff to remove redundant stakes and ties from applicable trees to prevent future damage (M). ▪ Tree consultant to monitor remaining group's structural and physiological condition through continued inspections.	P = Deadwood up to approximately 50mm diameter. T = Persons using footpath.	2	4	3	50%	1M	L
G10	16no. Common Lime, 1no. Cherry, 1no. Weeping Birch	M	≤ 17	≤ 650	≤ 12	G	▪ Includes nine mature Lime along southern boundary behind residential gardens and seven semi-mature Lime along footpath. ▪ Mature Limes located within shrubs and several with dense Ivy and moderately dense basal growth, which restricted inspection. ▪ All previously pruned at approximately 11m height, with 6m long resultant regrowth.	▪ Tree contractor/grounds maintenance staff to clear Ivy and basal growth immediately prior to next inspection cyclical inspection (I).	P = Stems up to 120mm diameter from pruning points. T = Persons using neighbouring gardens.	2	3	6	NA	<1M	L

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vital-ity	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
G11	approx. 7no. Sycamore, 3no. Ash, 1no. Common Lime	M	≤ 21	≤ 750	≤ 14	M-G	▪ Lime located to south-west has dense basal growth which restricted inspection. ▪ Two Sycamore to north have very dense Ivy throughout, which prevented inspection. ▪ Early-mature Ash located in north-east corner (marked G11a) conflicting with neighbouring wooden outbuilding. ▪ Semi-mature Ash and Sycamore stems along stone wall to south have potential to cause structural displacement. ▪ Mature Ash and Sycamore to east topped at approximately 9m with 2m long regrowth. ▪ Mature topped Ash has two small fruiting bodies of white rot decay causing *Ganoderma* sp. brackets on north side at ground level and slight hollowing when sounded with nylon mallet. Tree has slight lean north over evidently low use yard area and significantly reduced sail area. ▪ Sycamore to north west has partially severed Ivy but live section obscuring stem base. Area adjacent evidently used for antisocial behaviour with some vandalism on tree stem. ▪ Sycamores to north have canopy bias south over evidently lower use yard area. ▪ Himalayan Balsam in area of group.	▪ Tree contractor to remove early-mature Ash (marked G11a) to north-east due to conflict with adjacent building (M). ▪ Grounds maintenance staff to sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	P = Deadwood up to 100mm diameter. T = Persons accessing neighbouring garages to south.	3	4	2	25%	<1M	M
G12	Cherry, Norway Maple, Lawsons Cypress, Rowan	SM	≤ 8	≤ 240	≤ 10	G	▪ Shrub border with young to semi-mature trees. ▪ Not inspected in detail.	▪ None.	P = Branches up to 25mm diameter. T = Person using footpath.	2	4	7	N/A	<1M	N/A
G13	Ash, Holly, Lawsons Cypress Maple, Rowan, Sycamore	EM	≤ 11	≤ 300	≤ 8	M-G	▪ Loosely spaced group of young to early-mature trees. ▪ Sycamore to centre has dense Ivy to stem, which restricted inspection and dense Ivy on ground around group and basal areas of all trees. ▪ Ash to centre showing no signs of colonisation by ADD. ▪ Norway Maple to north-west has branches in contact with weld mesh fence to tennis courts to west.	▪ Tree contractor to prune Norway Maple to attain 0.5m clearance to adjacent fence (M).	P = Deadwood up to 50mm diameter. T = Persons using footpath.	2	4	3	25%	<1M	M

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G14	Cherry Plum, Holly, Lilac, Cherry, Ginkgo, Lawson Cypress, Yew	M	8	2x300 1x250 (ms)	12	G	▪ Groups and individuals in shrub borders and formal garden areas. ▪ Four Cherry plums along south border between grass green area and bank sloping to south have multiple white rot decay causing *Ganoderma* sp. fruiting bodies and have multiple past pruning and tear out wounds to approximately 200mm diameter, one with dense Ivy. ▪ Sargent Cherry (G14a) with 340mm stem diameter and 12m spread has white rot decay causing Ganoderma sp. fruiting body at base on west side, with hollowed and decayed buttress root to south west and moderate Ivy cover. ▪ Some bark necrosis on north side. ▪ Canopy spreads laterally over footpath edge. ▪ Crab apple to centre has sustained 60mm branch failure into evidently low use shrubs.	▪ Tree contractor to prune four Cherry Plum by up to approximately 1.5m to reduce static loading on basal unions, and sever Ivy at base, due to identified increased risk of failure and subsequent increased risk of harm to persons. ▪ Tree contractor to prune Sargent Cherry marked G14a to reduce overhangs over adjacent footpath due to identified increased risk of failure.	P = Stems of Cherry Plum to 300mm diameter. T = Persons using castle grounds.	2	2	4	N/A	100 K	M
G15	3no. Beech, 1no. Sycamore, 1no. Horse Chestnut, 1no. Lime,	M	≤ 21	≤ 1150	≤ 20	G	▪ Multiple tight included bark unions throughout Beech, which is typical of species, but all showing no signs of incipient failure at time of survey. ▪ Beech to south has a relatively poor stem taper below main union. ▪ Beech to north has multiple occluded pruning wounds from 2m to 3m height and multiple small bleeding stains on west side of stem at 1.5-3m height.	▪ Tree consultant to monitor structural and physiological condition of trees and conditions of unions as component of cyclical inspections.	P = Primary branches 500mm diameter at 2m height. T = Persons using footpath.	2	1	5	N/A	400 K	L

Site:	Clitheroe Castle Grounds, Castle Hill, Clitheroe, Lancashire, BB7 1BA
Client:	Ribble Valley Borough Council
Brief:	Carry out an individual tree survey within area specified by client, report on projected risk posed to persons and property, and make management recommendations where appropriate

Surveyor:	Joseph Lambert Chartered Arboriculturist
Survey Dates:	03 June and 16 July 2025
Viewing Conditions:	Bright conditions with light breeze
Job Reference:	BTC3205

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vitality	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
G16	approx. 9no. Sycamore, 3no. Holly, 2no. Beech, 2no. Lime, 1no. Red Maple, 1no. Cockspur Thorn, Dogwood	M	≤ 21	≤ 860	≤ 16	M-G	▪ Group between footpath and road frontage. ▪ Dense Ivy to several stems towards north of group, previously severed, but beginning to re-establish around stem bases, which partially impeded inspection. ▪ Sycamore to north-west has bacterial canker at 1.5m height on east of stem. ▪ Sycamore to north is impinging on street light to east and adjacent building. ▪ Dogwood to north east highly attenuated over path and road and impinging on street light with Sycamore. ▪ Sycamore to west marked G16a has one piece of 100mm deadwood in canopy at approximately 7m height over footpath and bench. ▪ Sycamore to south west corner has one piece of deadwood up to approximately 120mm diameter at approximately 12m height on south side over grass banking evidently under power use than adjacent path.	▪ Tree contractor to prune Sycamore tree marked G16a to remove identified deadwood (see comments) over footpath and bench due to identified increased risk of failure and subsequent unacceptable risk of harm to persons. ▪ Tree contractor to prune Sycamore and Dogwood to north to attain a 1m clearance to adjacent street light and 2m clearance to adjacent building (M). ▪ Grounds maintenance staff to sever Ivy on applicable stems at ground level and 2m height and remove section in between in order to facilitate future inspections (I).	P = Deadwood up to 75mm diameter. T = Persons using footpaths.	2	3	2	N/A	5K	H
G17	2no. Common Lime, 1no. Silver Maple	M	≤ 21	≤ 810	≤ 12	G	▪ Moderate basal growth and light Ivy, which partially restricted visibility around stem bases. ▪ Multiple areas of bud proliferation around base of tree to north-east. ▪ Tree to south-west has moderate inner canopy growth, which is typical of species.	▪ Tree contractor/grounds maintenance staff to remove basal growth from Limes immediately prior to next inspection (I).	P = Deadwood up to 90mm. T = Persons using grassed area.	3	4	2	25%	<1M	L

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vitality	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
G18	5no. Oak, 4no. Sycamore, 5no. Beech, 4no. Holly, 1no. Ash, 2no. Horse Chestnut, 1no. Sugar Maple	M	≤ 24.5	≤ 1200	≤ 20	G	▪ Moderately closely spaced group along moderately steep banking sloping south, which partially restricted access. ▪ Several stems have dense Ivy throughout, which restricted inspection, Ivy pulled back and parted where possible around stem bases. ▪ One dead Ivy covered mature 7m high Ash stem, partially sounded with nylon mallet and bark still present, indicating stability. ▪ Deadwood within canopies to approximately 75mm diameter and some 120mm diameter pieces over evidently low use shrub areas ▪ Copper Beech marked G18a has one piece of deadwood to 120mm diameter and 8m long over path to north in lower canopy.	▪ Tree contractor to prune Copper Beech tree marked G18a to remove identified deadwood (see comments) over footpath and bench due to identified increased risk of failure and subsequent unacceptable risk of harm to persons. ▪ Tree contractor/grounds maintenance staff to sever Ivy around entire circumference of applicable stems at ground level and at 2m height, and remove section between in order to facilitate future inspections (I).	P = Deadwood up to 120mm diameter. T = Persons using footpath.	2	3	2	N/A	5K	H

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vital-ity	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
G19	Ash, Beech, Sycmore, Hawthorn	M	25	760	18	M-G	▪ Closely spaced wooded group to north-eastern edge of park on steep banking with shrubbed understorey. ▪ Ivy establishing to several lower stems. ▪ Undergrowth and topography impeded inspection in parts and views into upper canopies. ▪ Three mature Sycamore, three mature Beech and one mature Ash, with remainder being young-semi-mature. ▪ Beech to centre-south is twin stemmed from approximately 2m height, with a tight included bark union, and a flexible brace installed between stems. ▪ Beech to centre-north has 450mm diameter partially hollowed pruning wound to stem at 2.5m height to east, with localised decay pocket evident when sounded with nylon mallet. ▪ Closely spaced semi-mature Ash to north-east have moderate symptoms of colonisation by ADD. ▪ Sycamore and Hawthorn impinging on neighbouring building to east. ▪ Dead Hawthorn previously identified in 2023 survey has now collapsed to east over raised boundary wall and is overhanging garden area. ▪ Dead and dying Ash and Elm to north east corner within falling distance of adjacent boundary.	▪ Tree contractor to prune applicable semi mature trees to attain 1.5m clearance to adjacent buildings (M). ▪ Tree contractor to remove dead Hawthorn and dying Elm and Ash due to projected continued decline and subsequent increased risk of failure. ▪ Tree contractor/grounds maintenance staff to sever and remove Ivy from mature tree stems where applicable to prevent establishment. ▪ Client to arrange and confirm regular inspection intervals of installed flexible brace in Beech with applicable tree contractor.	P = Branches up to 120mm diameter. T = Buildings and occupants to east.	4	P	3	N/A	300 K	M
G20	Birch, Robinia	Y-SM	≤ 12	≤ 290	≤ 8	G	▪ Moderate Ivy to Robinia stem.	▪ Grounds maintenance staff to remove Ivy from Robinia stem prior to next cyclical inspection.	P = Deadwood up to 50mm diameter. T = Persons using footpaths.	2	4	3	25%	<1M	L

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vitality	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
G21	6no. Beech, 5no. Sycamore, 1no. Lime, 1no. Ash, , 1no. Oak, 1no. Birch, Elm	SM-M	≤ 20	≤ 1100	≤ 14	G	▪ Group between footpath and grass bank to east of castle and extending north-east down to road and rear of neighbouring properties. ▪ Steep slope and undergrowth to north impeded access for inspection. ▪ Group becoming densely shrubbed in understorey to north, and closely spaced semi-mature Elm to north. ▪ Ivy to majority of stems, mostly severed but beginning to re-establish to bases, which partially impeded inspection. ▪ Moderate basal growth to several Sycamore and Lime stems. ▪ Elm and semi-mature vegetation growth to north, close to and contacting neighbouring buildings to north-east.	▪ Tree contractor to prune semi-mature trees to north to attain approximately 1.5m clearance to adjacent residential buildings (M). ▪ Grounds maintenance staff to sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	P = Deadwood up to 75mm diameter. T = Persons using footpath.	2	4	2	25%	200 K	M
G22	approx. 8no. Common Yew	M	13	1x260 1x180 (ts)	12	G	▪ Located along access road to castle and around driveway access. ▪ Minor encroachment of lower canopies on access road.	▪ None.	P = Branches up to 25mm diameter. T = Persons using access road.	2	4	7	N/A	<1M	N/A
G23	4no. Kanzan Cherry, 2no. Tibetan Cherry	M	≤ 9	≤ 480	≤ 13	G	▪ Linear group. ▪ Exposed surface roots with mechanical damage from grass cutting machinery, typical of species. ▪ Ivy severed on two trees, but now re-establishing on north tree. ▪ Canopies contacting building to east.	▪ Tree contractor to prune applicable trees in group to attain approximately 3m clearance to building (M). ▪ Grounds maintenance staff to sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	P = Branches up to 150mm diameter at 2m height. T = Cars parked on neighbouring drive.	3	P	6	N/A	<1M	M

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vitality	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
G24	9no. Sycamore, 4no. Common Beech, 4no. Lime, 2no. Oak, 2no. Maple, Various Young Trees	M	≤ 28.5	≤ 1700	≤ 22	G	▪ Two Limes to north overhang moderately high use road, and have Ivy beginning to re-establish in tree to west, and moderately dense basal growth which impeded inspection. ▪ Other trees several have moderately dense Ivy, which impeded inspection. ▪ Lime to west (G24a) has one broken hanging branch on south side to approximately 90mm diameter over grass area south. ▪ Oak to south-east (G24b) corner has broken branch of approximately 90mm diameter at approximately 6m height in south side of canopy over grassed area.	▪ Tree contractor to prune applicable trees to remove basal growth and Ivy from ground level to approximately 2m height in order to facilitate detailed inspection of two mature Limes to north adjacent to high usage road, and future inspections (I). ▪ Tree contractor to prune trees G24a and G24b to remove broken branches (see comments) due to identified increased risk of failure. ▪ Client to re-inspect group upon removal of basal growth and dieback of Ivy. NB QTRA Risk index to be re-evaluated if necessary following re-inspection.	P = Broken branches to approximately 90mm diameter. T = Person using park grounds.	2	4	2	N/A	50K	H
G25	4no. Sycamore	M	≤ 19	≤ 690	≤ 15	G	▪ Moderately closely spaced group. ▪ Tree to north has severed dead Ivy throughout, which partially impeded inspection. ▪ Tree to east has approximately 1m long and 100mm wide historical wound on south-east of stem at 4m height, with large occluding tissues and evident central decay cavity. ▪ Tree to south has historical wound on east side from ground level up to 400mm height with evidently non-progressive decay below very tight included bark union from 300mm height up to 1.5m height. ▪ Stem largely vertical with little lateral leverage to east. ▪ Decay strips extend along several branches of tree east up to 200mm diameter. ▪ Tree to north has canopy contacting adjacent amphitheatre roof to east.	▪ Grounds maintenance staff to sever and remove Ivy to prevent re-establishment, to facilitate future detailed inspections (I).	P = Stem of tree to south of 420mm diameter. T = Amphitheatre.	3	P	4	N/A	300 K	L

No.	Species	Age	Height (m)	Stem Diam. (mm)	Crown Spread (m)	Vital-ity	Comments	Management Recommendations	Risk Assessment Description (Part/Target)	Target	Size	P.O.F	Reduced Mass %	Risk Index	Work Priority
G26	Lawson Cypress, Holly, Yew, Birch, Monkey Puzzle, Cherry	M	≤ 16	≤ 1x580 1x390 (ts)	≤ 9	G-P	▪ Closely spaced group of Lawson Cypress, Holly and Yew, turning into loosely spaced group of other species. ▪ Canopy of Lawson Cypress immediately behind bandstand is showing a moderately severe reduction in vitality, likely due to soil compaction/erosion. ▪ Central Lawson Cypress tree (Tag 033 and orienteering tag on stem) has moderate lean south east into Holly, but no signs of recent ground movement, and displaying very poor vitality. ▪ Several areas of missing bark on Lawson, Cypress stems, evidently due to vandalism.	▪ Tree contractor to remove two central Lawson Cypress trees due to evident poor physiological condition and projected continued decline.	P = Stems of Lawson cypress up to 350mm diameter at ground level. T = Persons using footpath.	2	2	5	N/A	1M	L

T = Individual Tree, G = Group of Trees

- **(Red) = Tree/Group with Risk of Harm of 1/1,000 or greater**
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- **(Green) = Tree/Group with Risk of Harm less than 1/1,000,000**

*** See QTRA Methodology Overview and Application in Management Decisions Section of Report for details regarding Risk of Harm**

Site: Clitheroe Castle Grounds, Castle Hill, Clitheroe, BB7 1BA

Job No. BTC3205

Scale: Not to Scale

Paper Size (for printing): A4

Date: August 2025

TREE SURVEY PLAN

(Overview)

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TREE SURVEY PLAN

(Plan 1 of 4)

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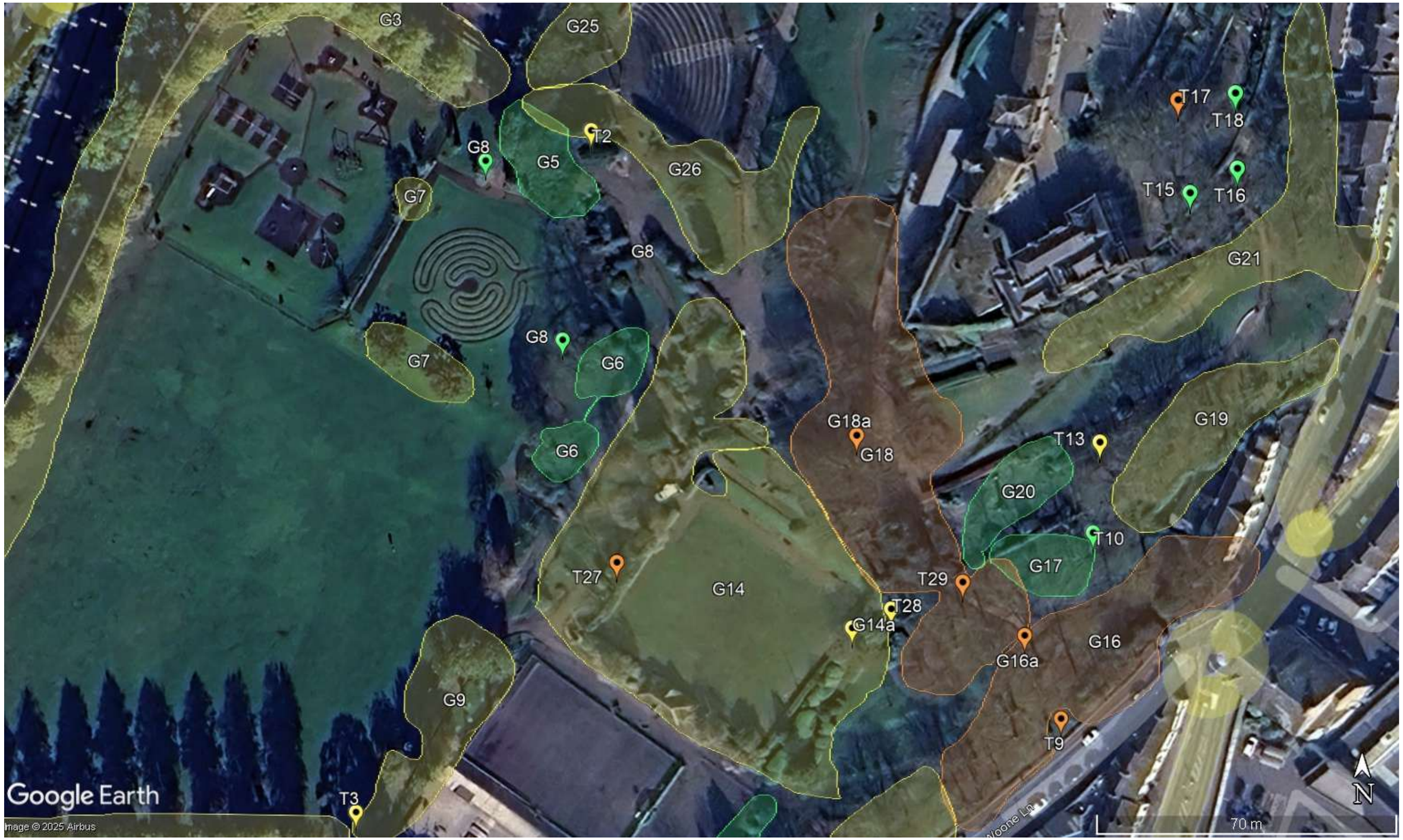

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TREE SURVEY PLAN

(Plan 2 of 4)

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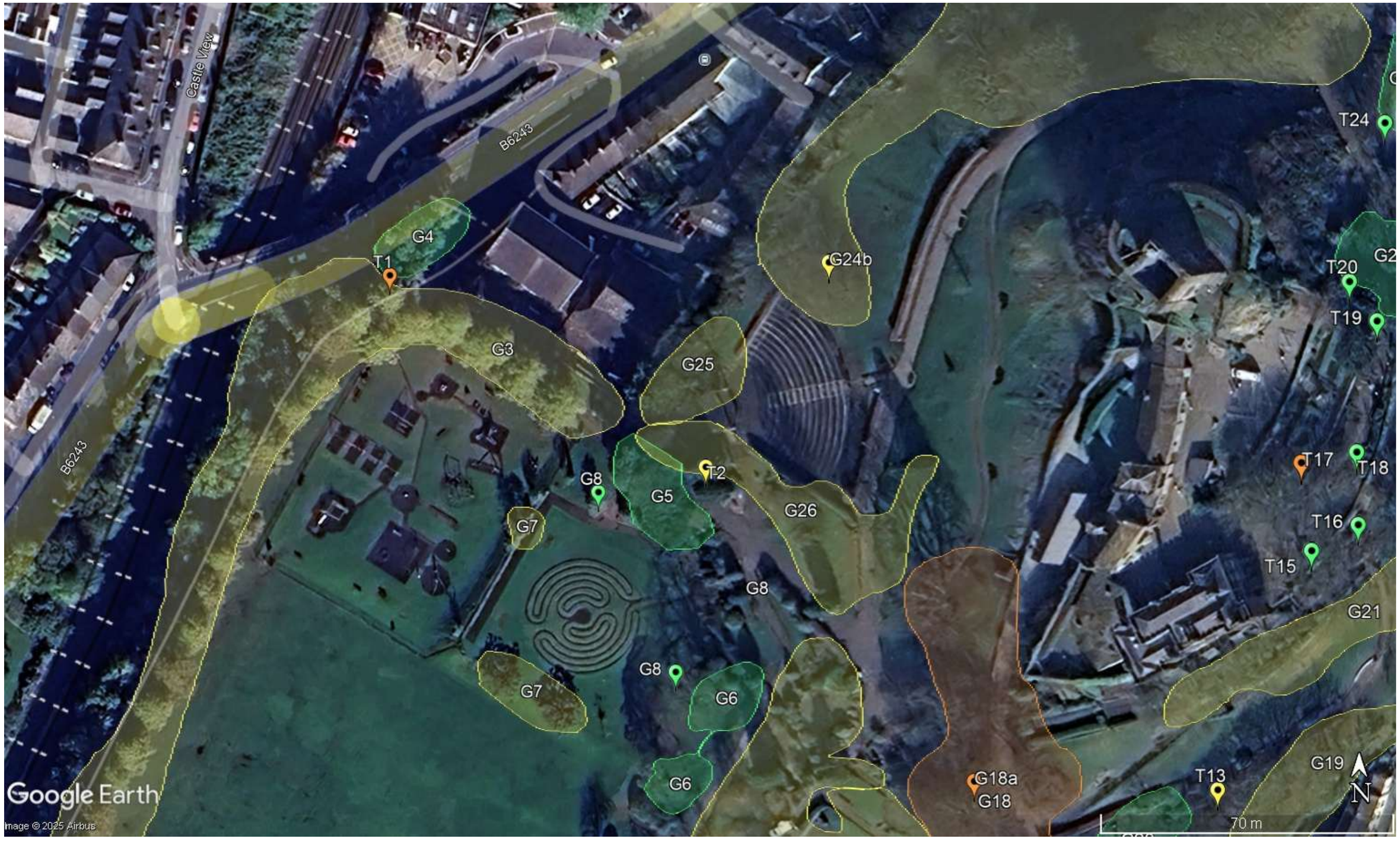

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Site: Clitheroe Castle Grounds, Castle Hill, Clitheroe, BB7 1BA

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TREE SURVEY PLAN

(Plan 3 of 4)

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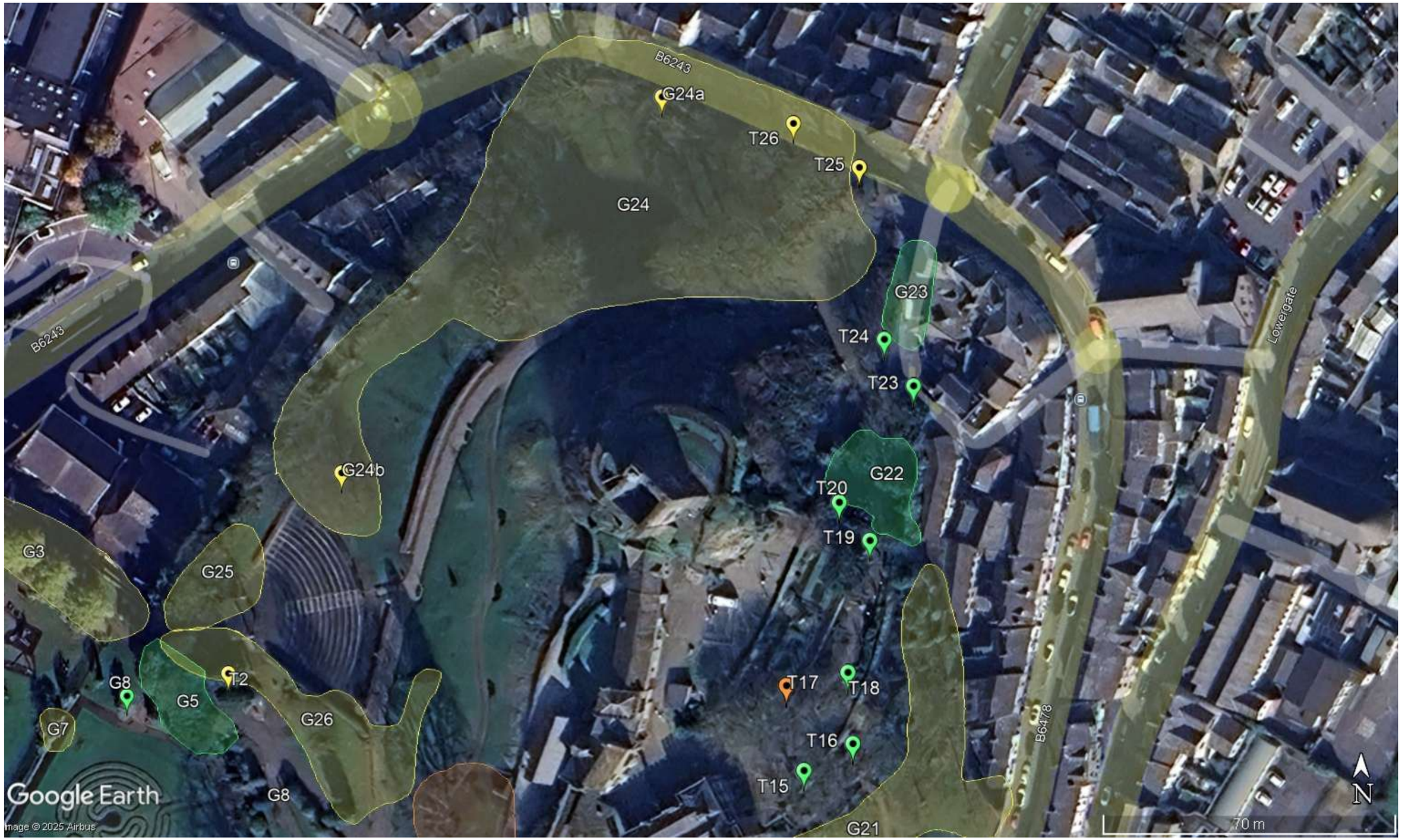

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TREE SURVEY PLAN

(Plan 4 of 4)

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DISCLAIMER

Survey Limitations: Unless otherwise stated all trees are viewed from ground level using non-invasive techniques. The disclosure of hidden crown and stem defects, in particular where they may be above a reachable height or where trees are ivy clad or in areas of ground vegetation, cannot therefore be expected. All obvious defects, however, are reported. Where the QTRA Risk Index is calculated as Tolerable or Broadly Acceptable, but the tree(s) have not been adequately inspected (e.g. due to the presence of ivy and/or ground vegetation which impeded the inspection), then it is essential to follow the recommendations made in the Management Recommendations column and to have the applicable tree(s) re-inspected as recommended.

Detailed tree safety appraisals are only carried out under specific written instructions. Comments upon evident tree safety relate to the condition of said tree at the time of the survey only. The level of detail of the survey is as per the brief detailed on the Tree Survey Schedule and as per the specifics set out in the associated fee estimate for the project.

Unless otherwise stated all trees should be re-inspected annually in order to appraise their on-going mechanical integrity and physiological condition. It should, however, be recognised that tree condition is subject to change, for example due to the effects of disease, decay, high winds, development works, etc. Changes in land use or site conditions (e.g. development that increases access frequency) and the occurrence of severe weather incidents are also significant considerations with regards tree structural integrity and trees should therefore be re-assessed in the context of such changes and/or incidents and inspected at intervals relative to identified and varying site conditions and associated risks.

Where trees are located wholly or partially on neighbouring private third-party land then said land is not accessed and our inspection is therefore restricted to what can reasonably be seen from within the site. Any subsequent comments and judgments made in respect of such trees are based on these restrictions and are our preliminary opinion only. Recommendations for works to neighbouring third-party trees are only made where a potentially unacceptable risk to persons and/or property has been identified during our survey. Where significant structural defects of third-party trees are identified and associated management works are considered essential to negate any risk of harm and/or damage then we will first attempt to inform the site occupier of the issues and, if not possible, then inform the relevant Council. Where a more detailed assessment is considered necessary then appropriate recommendations are set out in the Tree Survey Schedule.

The potential influence of trees upon existing or proposed buildings or other structures, resulting from the effects of their roots abstracting water from shrinkable load-bearing soils, is not considered herein.

Third Parties: Any disclosure of this document to a third party is subject to this disclaimer. The report was prepared by Bowland Tree Consultancy Ltd at the instruction of and for use by our client, as named. This report does not in any way constitute advice to any third party who is able to access it by any means. Bowland Tree Consultancy Ltd excludes to the fullest extent lawfully permitted all liability whatsoever for any loss or damage arising from reliance on the contents of this report.

Statutory Tree Protection: It is the client's responsibility to check for the presence of any statutory tree protection measures, such as the site's location within a Conservation Area and/or the presence of any Tree Preservation Orders, directly with the applicable Council's planning department prior to scheduling or carrying out any tree works. In turn, it is also the client's responsibility to check for the need for a felling licence with the Forestry Commission prior to scheduling or carrying out any tree works. Bowland Tree Consultancy Ltd cannot be held responsible for any decisions made by the client to prune or remove trees where any such statutory protection exists.

Liability: This report was prepared for the sole use of 'The Client' and, where applicable, the client's 'Agent', in accordance with the agreement under which the services were instructed. No warranty, express or implied, is made as to the advice in this report or any other service provided by Bowland Tree Consultancy Ltd. This report may not be relied upon by any other party except the client or any third party for whom the report is intended without the prior written permission of Bowland Tree Consultancy Ltd. The content of this report is, at least in part, based upon information provided by secondary data sources and on the assumption that all relevant information has been provided by those parties from whom it has been requested. Information obtained from any third party has not been independently verified by Bowland Tree Consultancy Ltd, unless otherwise stated in the report.

Validity: The findings and recommendations contained within this report are, providing its recommendations are observed and the site conditions are retained as per the date(s) of the survey, valid for a period of twelve months from the last survey date. This period of validity may be reduced should there be any changes in factors affecting both the surrounding environment and/or built structures in relative proximity to the trees. The condition of trees should be re-appraised directly, through a site survey, following major weather events such as storms, changes undertaken to the site's conditions, inclusive of demolition and/or ground works, or the removal of existing site vegetation, including trees.

Quantified Tree Risk Assessment

Simply Balancing Risks With Benefits

Quantified Tree Risk Assessment

PRACTICE NOTE

VERSION 5

Quantified Tree Risk Assessment Practice Note

"***When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind"***

William Thomson, Lord Kelvin, Popular Lectures and Addresses [1891-1894]

1. INTRODUCTION

Every day we encounter risks in all of our activities, and the way we manage those risks is to make choices. We weigh up the costs and benefits of the risk to determine whether it is acceptable, unacceptable, or tolerable. For example, if you want to travel by car you must accept that even with all the extensive risk control measures, such as seat-belts, speed limits, airbags, and crash barriers, there is still a significant risk of death. This is an everyday risk that is taken for granted and tolerated by millions of people in return for the benefits of convenient travel. Managing trees should take a similarly balanced approach.

A risk from falling trees exists only if there is both potential for tree failure and potential for harm to result. The job of the risk assessor is to consider the likelihood and consequences of tree failure. The outcome of this assessment can then inform consideration of the risk by the tree manager, who may also be the owner.

Using a comprehensive range of values[1], Quantified Tree Risk Assessment (QTRA) enables the tree assessor to identify and analyse the risk from tree failure in three key stages. 1) to consider land-use in terms of vulnerability to impact and likelihood of occupation, 2) to consider the consequences of an impact, taking account of the size of the tree or branch concerned, and 3) to estimate the probability that the tree or branch will fail onto the land-use in question. Estimating the values of these components, the assessor can use the QTRA manual calculator or software application to calculate an annual Risk of Harm from a particular tree. To inform management decisions, the risks from different hazards can then be both ranked and compared, and considered against broadly acceptable and tolerable levels of risk.

A Proportionate Approach to Risks from Trees

The risks from falling trees are usually very low and high risks will usually be encountered only in areas with either high levels of human occupation or with valuable property. Where levels of human occupation and value of property are sufficiently low, the assessment of trees for structural weakness will not usually be necessary. Even when land-use indicates that the assessment of trees is appropriate, it is seldom proportionate to assess and evaluate the risk for each individual tree in a population. Often, all that is required is a brief consideration of the trees to identify gross signs of structural weakness or declining health. Doing all that is reasonably practicable does not mean that all trees have to be individually examined on a regular basis (HSE 2013).

The QTRA method enables a range of approaches from the broad assessment of large collections of trees to, where necessary, the detailed assessment of an individual tree.

Risk of Harm

The QTRA output is termed the Risk of Harm and is a combined measure of the likelihood and consequences of tree failure, considered against the baseline of a lost human life within the coming year.

ALARP (As Low As Reasonably Practicable)

Determining that risks have been reduced to As Low As Reasonably Practicable (HSE 2001) involves an evaluation of both the risk and the sacrifice or cost involved in reducing that risk. If it can be demonstrated that there is gross disproportion between them, the risk being insignificant in relation to the sacrifice or cost, then to reduce the risk further is not 'reasonably practicable'.

Costs and Benefits of Risk Control

Trees confer many benefits to people and the wider environment. When managing any risk, it is essential to maintain a balance between the costs and benefits of risk reduction, which should be considered in the determination of ALARP. It is not only the financial cost of controlling the risk that should be considered, but also the loss of tree-related benefits, and the risk to workers and the public from the risk control measure itself.

When considering risks from falling trees, the cost of risk control will usually be too high when it is clearly 'disproportionate' to the reduction in risk. In the

[1] See Tables 1, 2 & 3.

context of QTRA, the issue of 'gross disproportion'[2], where decisions are heavily biased in favour of safety, is only likely to be considered where there are risks of 1/10 000 or greater.

Acceptable and Tolerable Risks

The Tolerability of Risk framework (ToR) (HSE 2001) is a widely accepted approach to reaching decisions on whether risks are broadly acceptable, unacceptable, or tolerable. Graphically represented in Figure 1, ToR can be summarised as having a Broadly Acceptable Region where the upper limit is an annual risk of death 1/1 000 000, an Unacceptable Region for which the lower limit is 1/1 000, and between these a Tolerable Region within which the tolerability of a risk will be dependent upon the costs and benefits of risk reduction. In the Tolerable Region, we must ask whether the benefits of risk control are sufficient to justify their cost.

In respect of trees, some risks cross the Broadly Acceptable 1/1 000 000 boundary, but remain tolerable. This is because any further reduction would involve a disproportionate cost in terms of the lost environmental, visual, and other benefits, in addition to the financial cost of controlling the risk.

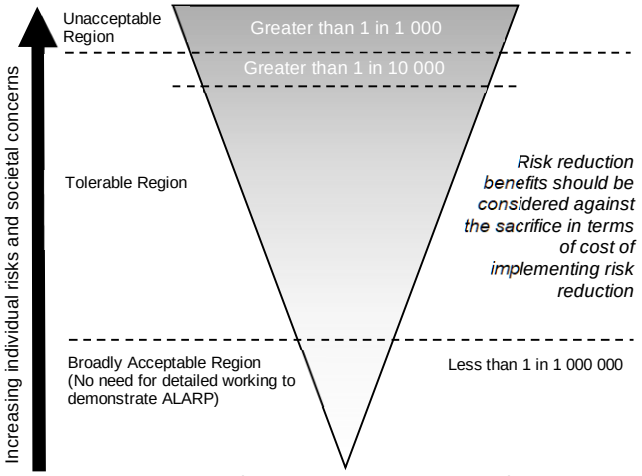

Figure 1. Adapted from the Tolerability of Risk framework (HSE 2001).

Value of Statistical Life

The Value of Statistical Life (VOSL), is a widely applied risk management device, which uses the value of a hypothetical life to guide the proportionate allocation of resources to risk reduction. In the UK, this value is currently in the region of £2 000 000, and this is the value adopted in the QTRA method.

In QTRA, placing a statistical value on a human life has two particular uses. Firstly, QTRA uses VOSL to enable damage to property to be compared with the loss of life, allowing the comparison of risks to people and property. Secondly, the proportionate allocation of financial resources to risk reduction can be informed by VOSL. "***A value of statistical life of £1 000 000 is just another way of saying that a reduction in risk of death of 1/100 000 per year has a value of £10 per year***" (HSE 1996).

Internationally, there is variation in VOSL, but to provide consistency in QTRA outputs, it is suggested that VOSL of £2 000 000 should be applied internationally. This is ultimately a decision for the tree manager.

2. OWNERSHIP OF RISK

Where many people are exposed to a risk, it is shared between them. Where only one person is exposed, that individual is the recipient of all of the risk and if they have control over it, they are also the owner of the risk. An individual may choose to accept or reject any particular risk to themselves, when that risk is under their control. When risks that are imposed upon others become elevated, societal concern will usually require risk controls, which ultimately are imposed by the courts or government regulators.

Although QTRA outputs might occasionally relate to an individual recipient, this is seldom the case. More often, calculation of the Risk of Harm is based on a cumulative occupation – i.e. the number of people per hour or vehicles per day, without attempting to identify the individuals who share the risk.

Where the risk of harm relates to a specific individual or a known group of people, the risk manager might consider the views of those who are exposed to the risk when making management decisions. Where a risk is imposed on the wider community, the principles set out in the ToR framework can be used as a reasonable approach to determine whether the risk is ALARP.

3. THE QTRA METHOD - VERSION 5

The input values for the three components of the QTRA calculation are set out in broad ranges[3] of Target, Size, and Probability of Failure. The assessor estimates values for these three components and inputs them on either the manual calculator or software application to calculate the Risk of Harm.

[2] Discussed further on page 5.

[3] See Tables 1, 2 & 3.

Assessing Land-use (Targets)

The nature of the land-use beneath or adjacent to a tree will usually inform the level and extent of risk assessment to be carried out. In the assessment of Targets, six ranges of value are available. Table 2 sets out these ranges for vehicular frequency, human occupation and the monetary value of damage to property.

Human Occupation

The probability of pedestrian occupation at a particular location is calculated on the basis that an average pedestrian will spend five seconds walking beneath an average tree. For example, an average occupation of ten pedestrians per day, each occupying the Target for five seconds is a daily occupation of fifty seconds, giving a likelihood of occupation 1 / 1,728. Where a longer occupation is likely, as with a habitable building, outdoor café, or park bench, the period of occupation can be measured, or estimated as a proportion of a given unit of time, e.g. six hours per day (1 / 4). The Target is recorded as a range (Table 2).

Weather Affected Targets

Often the nature of a structural weakness in a tree is such that the probability of failure is greatest during windy weather, while the probability of the site being occupied by people during such weather is often low. This applies particularly to outdoor recreational areas. When estimating human Targets, the risk assessor must answer the question 'in the weather conditions that I expect the likelihood of failure of the tree to be initiated, what is my estimate of human occupation?' Taking this approach, rather than using the average occupation, ensures that the assessor considers the relationship between weather, people, and trees, along with the nature of the average person with their ability to recognise and avoid unnecessary risks.

Vehicles on the Highway

In the case of vehicles, likelihood of occupation may relate to either the falling tree or branch striking the vehicle or the vehicle striking the fallen tree. Both types of impact are influenced by vehicle speed; the faster the vehicle travels the less likely it is to be struck by the falling tree, but the more likely it is to strike a fallen tree. The probability of a vehicle occupying any particular point in the road is the ratio of the time it is occupied - including a safe stopping distance - to the total time. The average vehicle on a UK road is occupied by 1.6 people (DfT 2010). To account for the substantial protection that the average vehicle provides against most tree impacts and in particular, frontal collisions, QTRA values the substantially protected 1.6 occupants in addition to the value of the vehicle as equivalent to one exposed human life.

Property

Table 1. Size

Size Range	Size of tree or branch	Range of Probability
1	> 450mm (>18") dia.	1/1 - >1/2
2	260mm (10½") dia. - 450mm (18") dia.	1/2 - >1/8.6
3	110mm (4½") dia. - 250mm (10") dia.	1/8.6 - >1/82
4	25mm (1") dia. - 100mm (4") dia.	1/82 - 1/2 500

* Range 1 is based on a diameter of 600mm.

Property can be anything that could be damaged by a falling tree, from a dwelling, to livestock, parked car, or fence. When evaluating the exposure of property to tree failure, the QTRA assessment considers the cost of repair or replacement that might result from failure of the tree. Ranges of value are presented in Table 2 and the assessor's estimate need only be sufficient to determine which of the six ranges the cost to select.

In Table 2, the ranges of property value are based on a VOSL of £2 000 000, e.g. where a building with a replacement cost of £20 000 would be valued at 0.01 (1 / 100) of a life (Target Range 2).

When assessing risks in relation to buildings, the Target to be considered might be the building, the occupants, or both. Occupants of a building could be protected from harm by the structure or substantially exposed to the impact from a falling tree if the structure is not sufficiently robust, and this will determine how the assessor categorises the Target.

Multiple Targets

A Target might be constantly occupied by more than one person and QTRA can account for this. For example, if it is projected that the average occupation will be constant by 10 people, the Risk of Harm is calculated in relation to one person constantly occupying the Target before going on to identify that the average occupation is 10 people. This is expressed as Target 1(10T) / 1, where 10T represents the Multiple Targets. In respect of property, a Risk of Harm 1(10T) / 1 would be equivalent to a risk of losing £20 000 000 as opposed to £2 000 000.

Tree or Branch Size

A small dead branch of less than 25mm diameter is not likely to cause significant harm even in the case of direct contact with a Target, while a falling branch with a diameter greater than 450mm is likely to cause some harm in the event of contact with all but the most robust Target. The QTRA method categorises

Size by the diameter of tree stems and branches (measured beyond any basal taper). An equation derived from weight measurements of trees of different stem diameters is used to produce a data set of comparative weights of trees and branches ranging from 25mm to 600mm diameter, from which Table 1 is compiled. The size of dead branches might be discounted where they have undergone a significant reduction in weight because of degradation and shedding of subordinate branches. This discounting, referred to as 'Reduced Mass', reflects an estimated reduction in the mass of a dead branch.

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 £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 @ 110kph (68mph) 32 000 – 3 300 @ 80kph (50mph) 47 000 – 4 800 @ 50kph (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 @ 110kph (68mph) 3 200 – 330 @ 80kph (50mph) 4 700 – 480 @ 50kph (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 @ 110kph (68mph) 320 – 33 @ 80kph (50mph) 470 – 48 @ 50kph (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 @ 110kph (68mph) 32 – 4 @ 80kph (50mph) 47 – 6 @ 50kph (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 @ 110kph (68mph) 3 – 1 @ 80kph (50mph) 5 – 1 @ 50kph (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.

Probability of Failure

In the QTRA assessment, the probability of tree or branch failure within the coming year is estimated and recorded as a range of value (Ranges 1 – 7, Table 3).

Selecting a Probability of Failure (PoF) Range requires the assessor to compare their assessment of the tree or branch against a benchmark of either a non-compromised tree at Probability of Failure Range 7, or a tree or branch that we expect to fail within the year, which can be described as having a 1/1 probability of failure.

During QTRA training, Registered Users go through a number of field exercises in order to calibrate their estimates of Probability of Failure.

Table 3. Probability of Failure

Probability of Failure Range	Probability
1	1/1 - >1/10
2	1/10 - >1/100
3	1/100 - >1/1 000
4	1/1 000 - >1/10 000
5	1/10 000 – >1/100 000
6	1/100 000 – >1/1 000 000
7	1/1 000 000 – 1/10 000 000

The probability that the tree or branch will fail within the coming year.

The QTRA Calculation

The assessor selects a Range of values for each of the three input components of Target, Size and Probability of Failure. The Ranges are entered on either the manual calculator or software application to calculate a Risk of Harm.

The Risk of Harm is expressed as a probability and is rounded, to one significant figure. Any Risk of Harm

that is lower than 1/1 000 000 is represented as <1/1 000 000. As a visual aid, the Risk of Harm is colour coded using the traffic light system illustrated in Table 4 (page 7).

> Risk of Harm - Monte Carlo Simulations
>
> The Risk of Harm for all combinations of Target, Size and Probability of Failure Ranges has been calculated using Monte Carlo simulations[4]. The QTRA Risk of Harm is the mean value from each set of Monte Carlo results.
>
> In QTRA Version 5, the Risk of Harm should not be calculated without the manual calculator or software application.

Assessing Groups and Populations of Trees

When assessing populations or groups of trees, the highest risk in the group is quantified and if that risk is tolerable, it follows that risks from the remaining trees will also be tolerable, and further calculations are unnecessary. Where the risk is intolerable, the next highest risk will be quantified, and so on until a tolerable risk is established. This process requires prior knowledge of the tree manager's risk tolerance.

Accuracy of Outputs

The purpose of QTRA is not necessarily to provide high degrees of accuracy, but to provide for the quantification of risks from falling trees in a way that risks are categorised within broad ranges (Table 4).

4. INFORMING MANAGEMENT DECISIONS

Balancing Costs and Benefits of Risk Control

When controlling risks from falling trees, the benefit of reduced risk is obvious, but the costs of risk control are all too often neglected. For every risk reduced there will be costs, and the most obvious of these is the financial cost of implementing the control measure. Frequently overlooked is the transfer of risks to workers and the public who might be directly affected by the removal or pruning of trees. Perhaps more importantly, most trees confer benefits, the loss of which should be considered as a cost when balancing the costs and benefits of risk control.

When balancing risk management decisions using QTRA, consideration of the benefits from trees will usually be of a very general nature and not require detailed consideration. The tree manager can consider, in simple terms, whether the overall cost of risk control is a proportionate one. Where risks are approaching 1/10 000, this may be a straightforward balancing of cost and benefits. Where risks are 1/10 000 or greater, it will usually be appropriate to implement risk controls unless the costs are grossly disproportionate to the benefits rather than simply disproportionate. In other words, the balance being weighted more on the side of risk control with higher associated costs.

Considering the Value of Trees

It is necessary to consider the benefits provided by trees, but they cannot easily be monetised and it is often difficult to place a value on those attributes such as habitat, shading and visual amenity that might be lost to risk control.

A simple approach to considering the value of a tree asset is suggested here, using the concept of 'average benefits'. When considered against other similar trees, a tree providing 'average benefits' will usually present a range of benefits that are typical for the species, age and situation. Viewed in this way, a tree providing 'average benefits' might appear to be low when compared with particularly important trees – such as in Figure 2, but should nonetheless be sufficient to offset a Risk of Harm of less than 1/10 000. Without having to consider the benefits of risk controls, we might reasonably assume that below 1/10 000, the risk from a tree that provides 'average benefits' is ALARP.

In contrast, if it can be said that the tree provides lower than average benefits because, for example, it is declining and in poor physiological condition, it may be necessary to consider two further elements. Firstly, is the Risk of Harm in the upper part of the Tolerable Region, and secondly, is the Risk of Harm likely to increase before the next review because of an increased Probability of Failure. If both these conditions apply then it might be appropriate to consider the balance of costs and benefits of risk reduction in order to determine whether the risk is ALARP. This balance requires the tree manager to take a view of both the reduction in risk and the costs of that reduction.

[4] For further information on the Monte Carlo simulation method, refer to http://en.wikipedia.org/wiki/Monte_Carlo_method


Fig. 2

Lower Than Average Benefits from Trees

Usually, the benefits provided by a tree will only be significantly reduced below the 'average benefits' that are typical for the species, age and situation, if the life of the benefits is likely to be shortened, perhaps because the tree is declining or dead. That is not to say that a disbenefit, such as undesirable shading, lifting of a footpath, or restricting the growth of other trees, should not also be considered in the balance of costs and benefits.

The horse chestnut tree in Figure 3 has recently died, and over the next few years, may provide valuable habitats. However, for this tree species and the relatively fast rate at which its wood decays, the lifetime of these benefits is likely to be limited to only a few years. This tree has an already reduced value that will continue to reduce rapidly over the coming five to ten years at the same time as the Risk of Harm is expected to increase. There will be changes in the benefits provided by the tree as it degrades. Visual qualities are likely to reduce while the decaying wood provides habitats for a range of species, for a short while at least. There are no hard and fast measures of these benefits and it is for the tree manager to decide what is locally important and how it might be balanced with the risks.

Where a risk is within the Tolerable Region and the tree confers lower than average benefits, it might be appropriate to consider implementing risk control while taking account of the financial cost. Here, VOSL can be used to inform a decision on whether the cost of risk control is proportionate. Example 3 below puts this evaluation into a tree management context.

There will be occasions when a tree is of such minimal value and the monetary cost of risk reduction so low that it might be reasonable to further reduce an already relatively low risk. Conversely, a tree might be of such considerable value that an annual risk of death greater than 1 / 10 000 would be deemed tolerable.

Occasionally, decisions will be made to retain elevated risks because the benefits from the tree are particularly high or important to stakeholders, and in these situations, it might be appropriate to assess and document the benefits in some detail. If detailed assessment of benefits is required, there are several methodologies and sources of information (Forest Research 2010).

Delegating Risk Management Decisions


Fig. 3

Understanding of the costs with which risk reduction is balanced can be informed by the risk assessor's knowledge, experience and on-site observations, but the risk management decisions should be made by the tree manager. That is not to say that the tree manager should review and agree every risk control measure, but when delegating decisions to surveyors and other staff or advisors, tree managers should set out in a policy, statement or contract, the principles and perhaps thresholds to which trees and their associated risks will ordinarily be managed.

Based on the tree manager accepting the principles set out in the QTRA Practice Note and or any other specific instructions, the risk assessor can take account of the cost / benefit balance and for most situations will

be able to determine whether the risk is ALARP when providing management recommendations.

Table 4. QTRA Advisory Risk Thresholds

Thresholds	Description	Action
	Unacceptable Risks will not ordinarily be tolerated	• Control the risk
1/1,000		
	Unacceptable (where imposed on others) Risks will not ordinarily be tolerated	• Control the risk • Review the risk
	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 • Review the risk
1/10 000		
	Tolerable (where imposed on others) Risks are tolerable if ALARP	• Assess costs and benefits of risk control • Control the risk only where a significant benefit might be achieved at reasonable cost • Review the risk
1/1 000 000		
	Broadly Acceptable Risk is already ALARP	• No action currently required • Review the risk

QTRA Informative Risk Thresholds

The QTRA advisory thresholds in Table 4 are proposed as a reasonable approach to balancing safety from falling trees with the costs of risk reduction. This approach takes account of the widely applied principles of ALARP and ToR, but does not dictate how these principles should be applied. While the thresholds can be the foundation of a robust policy for tree risk management, tree managers should make decisions based on their own situation, values and resources. Importantly, to enable tree assessors to provide appropriate management guidance, it is helpful for them to have some understanding of the tree owner's management preferences prior to assessing the trees.

A Risk of Harm that is less than 1/1 000 000 is Broadly Acceptable and is already ALARP. A Risk of Harm 1/1 000 or greater is unacceptable and will not ordinarily be tolerated. Between these two values, the Risk of Harm is in the Tolerable Region of ToR and will be tolerable if it is ALARP. In the Tolerable Region, management decisions are informed by consideration of the costs and benefits of risk control, including the nature and extent of those benefits provided by trees, which would be lost to risk control measures.

For the purpose of managing risks from falling trees, the Tolerable Region can be further broken down into two sections. From 1/1 000 000 to less than 1/10 000, the Risk of Harm will usually be tolerable providing that the tree confers 'average benefits' as discussed above. As the Risk of Harm approaches 1/10 000 it will be necessary for the tree manager to consider in more detail the benefits provided by the tree and the overall cost of mitigating the risk.

A Risk of Harm in the Tolerable Region but 1/10 000 or greater will not usually be tolerable where it is imposed on others, such as the public, and if retained, will require a more detailed consideration of ALARP. In exceptional circumstances a tree owner might choose to retain a Risk of Harm that is 1/10 000 or greater. Such a decision might be based on the agreement of those who are exposed to the risk, or perhaps that the tree is of great importance. In these circumstances, the prudent tree manager will consult with the appropriate stakeholders whenever possible.

5. EXAMPLE QTRA CALCULATIONS AND RISK MANAGEMENT DECISIONS

Below are three examples of QTRA calculations and application of the QTRA Advisory Thresholds.

Example 1.

	Target		Size		Probability of Failure		Risk of Harm
Range	6	x	1	x	3	=	<1/1 000 000

Example 1 is the assessment of a large (Size 1), unstable tree with a probability of failure of between 1/100 and >1/1 000 (PoF 3). The Target is a footpath with less than one pedestrian passing the tree each week (Target 6). The Risk of Harm is calculated as less than 1/1 000 000 (green). This is an example of where the Target is so low consideration of the structural condition of even a large tree would not usually be necessary.

Example 2.

	Target		Size		Probability of Failure		Risk of Harm
Range	1	x	4	x	3	=	1(2T)/50 000

In Example 2, a recently dead branch (Size 4) overhangs a busy urban high street that is on average occupied constantly by two people, and here Multiple Target occupation is considered.

Having an average occupancy of two people, the Risk of Harm 1(2T)/50 000 (yellow) represents a twofold increase in the magnitude of the consequence and is therefore equivalent to a Risk of Harm 1/20 000 (yellow). This risk does not exceed 1/10 000, but being a dead branch at the upper end of the Tolerable Region it is appropriate to consider the balance of costs and benefits of risk control. Dead branches can be expected to degrade over time with the probability of failure increasing as a result. Because it is dead, some of the usual benefits from the branch have been lost and it will be appropriate to consider whether the financial cost of risk control would be proportionate.

Example 3.

	Target		Size		Probability of Failure		Risk of Harm
Range	3	x	3	x	3	=	1/500 000

In Example 3, a 200mm diameter defective branch overhangs a country road along which travel between 470 and 48 vehicles each day at an average speed of 50kph (32mph) (Target Range 3). The branch is split and is assessed as having a probability of failure for the coming year of between 1/100 and 1/1 000 (PoF Range 3). The Risk of Harm is calculated as 1/500 000 (yellow) and it needs to be considered whether the risk is ALARP. The cost of removing the branch and reducing the risk to Broadly Acceptable (1/1 000 000) is estimated at £350. To establish whether this is a proportionate cost of risk control, the following equation is applied. £2 000 000 (VOSL) x 1/500 000 = £4 indicating that the projected cost of £350 would be disproportionate to the benefit. Taking account of the financial cost, risk transfer to arborists and passers-by, the cost could be described as being grossly disproportionate, even if accrued benefits over say ten years were taken into account.

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