Basic Tree Survey Report

SITE:

The Bell Public House – JD Weatherspoon
13-15 Salisbury Street
Amesbury
Salisbury
Wiltshire
SP4 7AW

PREPARED FOR:

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PREPARED BY:

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BARTLETT PROJECT REFERENCE:

JPL/230229/R

SITE VISIT DATE:

Wednesday 3rd May 2023

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Submitted on 5th May 2023

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1.0 SCOPE OF REPORT

1.1 Assignment

Bartlett Consulting were instructed by Clarissa Connor, Advanced Customer Consultant, Ambius on 27th March 2023 to:

1. Perform a Level 2 Basic Survey of the six trees located within the grounds of The Bell Public House – JD Weatherspoon, 13-15 Salisbury Street, Amesbury, Salisbury, Wiltshire, SP4 7AW, following the visual tree assessment (VTA) techniques developed by Mattheck & Breloer (1994).

2. Undertake a qualified tree risk assessment in accordance with the International Society of Arboriculture's (ISA's) Best Management Practices (BMP) *Tree Risk Assessment* and *Tree Risk Assessment Manual* of the trees detailed in Assignment Item 1 above.

   After review and discussion with the client, the tree risk assessment will be conducted for the following *targets*: *Persons* (patrons, visitors, staff, general public), *Property* (The Bell Public House) and *Parked Vehicles* (third party car parking areas).

3. Provide a written report summarising the tree stock subject to the survey; providing a schedule of trees and the level of associated tree risk based on the likelihood of failure and impact to the identified targets detailed above; and including fully informed management recommendations in accordance with current Arboricultural practice and tree health care techniques so that the tree owner (risk manager) can determine their tolerability of risk and take reasonable and proportionate action.

1.2 Background

The mangers of The Bell Public House – JD Weatherspoon, Ambius Ltd wish to identify which trees are classified as hazardous and what measures can be taken to reduce the current level of risk they pose to persons and property.

1.3 Report References

Specific tree survey references applied by Bartlett Consulting for this project include:

- Dunstar, J.A, Smiley. T, Matheny. N, Lilly. S. (2017) *Tree Risk Assessment Manual, Second Edition*. International Society of Arboriculture. Champaign, IL.
- Fay, N. Dowson, D. Helliwell, R (2016) *Tree Surveys: A Guide to Good Practice* Arboricultural Association, The Malthouse, Gloucestershire
- Health & Safety Executive (2001) *Reducing Risk, Protecting People: HSE's Decision-Making Process*
- Lonsdale, D. (1999) *The Principles of Tree Hazard Assessment & Management* Department of the Environment. London.
- Mattheck, C., et. al. (2015) *The Body Language of Trees – Encyclopaedia of Visual Tree Assessment* Karlsruhe Institute of Technology Campus North.
- Slater, Dr D (2016) *Assessment of Tree Forks – Assessment of Junctions for Risk Management* Arboricultural Association, The Malthouse, Gloucestershire.

1.0 SCOPE OF REPORT (Continued…)

1.4 Report Limitations & Methodologies

This report is restricted to the six trees detailed in the Assignment above.

Our Level 2 survey and qualified risk assessment of trees surveyed at The Bell Public House – JD Weatherspoon, 13-15 Salisbury Street, Amesbury, Salisbury, Wiltshire, SP4 7AW, is based on a single site visit on 3rd May 2023. All photographs, samples, and readings, if applicable, were taken at the time the assessment was performed.

This assessment was limited by the following factor(s): timber boundary fence panels and common Ivy.

Targets and *Occupancy Rates* considered in the tree risk assessment were determined based on a conversation and agreement with The Bell Public House staff member. Targets considered in this tree risk assessment are: *Persons* (patrons, visitors, staff, general public), *Property* (The Bell Public House) and *Parked Vehicles* (third party car parking areas). The *time frame* for the risk assessment is three years.

This information is solely for the use of the tree owner and manager to assist in the decision-making process regarding the management of their tree or trees. Tree risk assessments are simply tools which should be used in conjunction with the owner or tree manager's knowledge, other information and observations related to the specific tree or trees discussed, and sound decision making.

The statements, findings and recommendations made within the report do not take into account any effects of extreme climate and weather incidences, vandalism, changes in the natural and/or built environment around the trees after the date of this report, nor any damage whether physical, chemical or otherwise.

Tree risk ratings are derived from a combination of three factors: the likelihood of failure, the likelihood of the failed tree part impacting a target, and the consequences of the target being struck. These factors are then used to categorize tree risk as extreme, high, moderate or low. The factors used to define your risk rating are identified in this report.

Tools used in the assessment included: a nylon hammer to 'sound' the tree and tree parts; a probe to measure the depth of cavities and open wounds, as well as explore soil conditions; and binoculars to observe upper portions of the tree. Tree dimensions were recorded using hand tools such as a laser range finder; diameter tape and measuring tape.

All tree information and data were captured using Pear Technology tree management software; the trees were plotted by GPS on an Ordnance Survey base map, using a Trimble TDC600 hand-held unit. This combination of technology has resulted in the production of the Tree Location Plan found at the end of this report.

The tree dimensions are accurate as captured on the day. The surveyed trees were individually tagged with tags numbered T393 – T398.

1.5 Assessment of Ecological Status of Tree & Potential Constraints

Following the site visit and tree survey and assessment, we believe that there is a low potential for wildlife and ecological associations with the tree subject to this report. Ecological associations are limited to nesting birds within the crowns of trees.

The Wildlife and Countryside Act 1981, as amended by the Countryside and Rights of Way Act 2000, provides statutory protection to birds, bats, insects and other species that inhabit trees, hedgerows, or other associated vegetation. It is the recommendation of Bartlett Consulting that professional, detailed, advice from an ecologist is sought (if not done-so already) to confirm the consideration of Bartlett Consulting and to check if any such constraints apply to this site and its development proposals.

All trees must be thoroughly assessed for nesting birds prior to any recommended tree works.

2.0 TREE PROTECTION STATUS

The Town & Country Planning Act (Tree Preservation) (England) Regulations 2012 and the Town & Country Planning Act 1990 (as amended) provides legislative protection for trees within England.

An online enquiry was conducted by Bartlett Consulting on 4th May 2023 via accessing the Wiltshire Borough Council interactive '*Planning Explorer'* website:

https://wiltscouncil.maps.arcgis.com/apps/webappviewer/index.html?id=74a353612a934bd48fee1f2bc564cdd8.

2.1 Tree Preservation Order (TPO) Status

None

2.2 Conservation Area (CA) Status

Amesbury Conservation Area

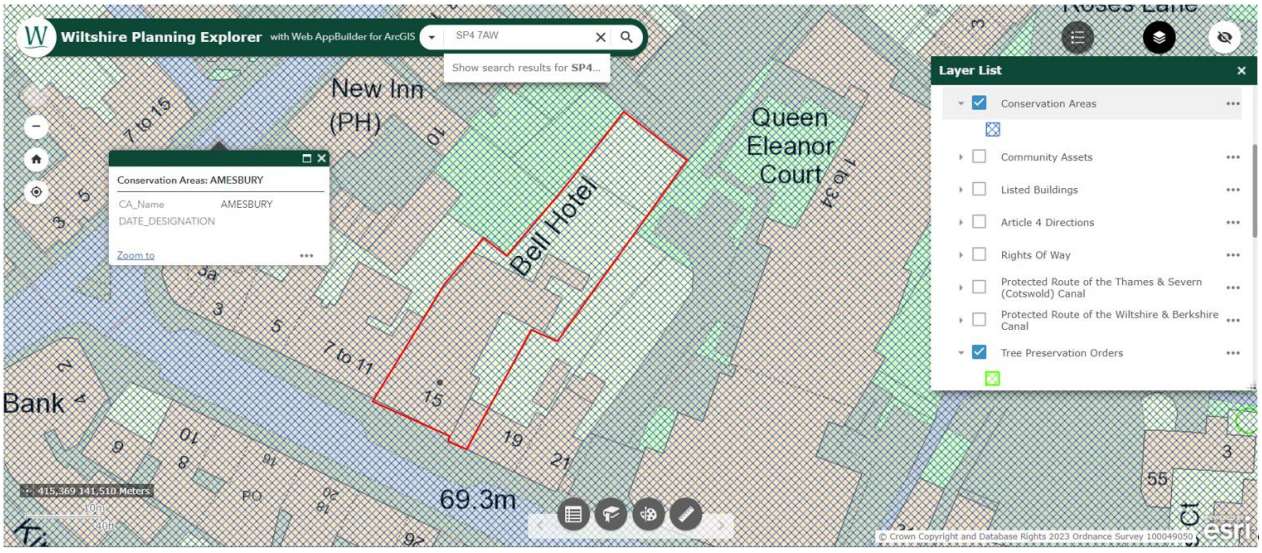


Figure 1: Annotated screenshot obtained from Wiltshire Borough Council, highlighting the curtilage of The Bell Public House – JD Weatherspoon with a red polygon.

2.3 Tree Management Implications

None of the trees on this site are currently subject to a Tree Preservation Order (TPO). However, it has been established via accessing the Local Planning Authority (LPA) website that the site does stand within a designated Conservation Area (CA), administered by the LPA; Wiltshire Borough Council. The CA is named: Amesbury.

This status affects all trees of a stem diameter greater than 75mm, when measured at 1.5m above ground level. Therefore, trees will be protected by virtue of their location in the designated CA.

Under the Town and Country Planning Act 1990 (as amended), a Section 211 Notice must be served upon the LPA, providing them with 6 weeks' notice of any intention to implement works to protected trees.

The purpose of this notice is to provide the LPA an opportunity to consider whether a TPO should be made in respect of the trees.

Please note that I haven't established whether any of the trees are subject to planning conditions.

Please note that the removal of dead trees and the pruning of dead wood from living trees are permitted and "excepted" works under the 2012 Regulation listed above.

3.0 TREE POPULATION OVERVIEW

A total of six individual trees were surveyed and inventoried within the boundaries of The Bell Public House – JD Weatherspoon, 13-15 Salisbury Street, Amesbury, Salisbury, Wiltshire, SP4 7AW. The age range of the tree population is composed of:

2x early mature
3x semi-mature
1x young trees

A diverse variation in age and species within a tree stock is important for the continued ecological, environmental, and amenity benefits that trees provide now and into the future. It can also help develop resilience to outbreaks of pests and diseases, or aid regeneration after storm losses.

It is our recommendation that any additional trees that are lost or removed should continue to be replaced, and that every given opportunity to increase the tree stock is to be encouraged, in order that the amenity the site provides to users of the school site and the wider community is not merely maintained but is actively improved where reasonable.

3.1 Detailed Tree Assessments

As part of the basic visual assessment (Level 2) from ground level, we can determine whether some aspect of the tree structure or health indicates that a more comprehensive evaluation (Level 3 Detailed Assessment) is required to thoroughly evaluate tree condition and risk of failure. This is achieved through sounding of each tree stem using a nylon hammer, to listen for variations in resonance. Where there is wood degradation and cavities, the sound will resonate with a deeper tone than when the wood is solid. Areas of dead bark will return a loud and sharp 'crack'. We also explore the buttresses and main stem for the presence of cavities and voids, measuring horizontal and/or vertical depth of these features with a metal probe.

A detailed (Level 3) advanced assessment of the roots, stem, or crown may be recommended. These assessments may include climbing inspections, examination of the root system using a compressed-air tool (that avoids damage to roots and underground utilities) or one or more of the following: Resistance Micro-drilling (a precision drilling instrument that provides graphical output) or PiCUS Sonic Tomography that produces a visual representation of how sound moves through the tree to determine its internal conditions.

The goal is to use the appropriate method to evaluate impact of wood decay in stems and buttress roots that show potential for failure and to determine the presence and condition of the root system. Once such advanced assessments are completed, appropriate measures can be recommended, such as remediation, maintenance or removal.

The inventoried trees listed in the table below met the conditions for a Level 3 assessment:

3.2 Table 1: Advanced Assessments

Tree ID	Common Name	Priority	Advanced Assessment	Defect(s) or Observation(s)
T397	Sycamore	High 6 months	PiCUS Sonic Tomography & IML PD400 RESI	Large cavity at 0.5 m, attributed to the removal of co-dominant stem. Probed vertically to a depth beyond 450 mm.

3.0 TREE POPULATION OVERVIEW (Continued…)

3.3 Prescribed Tree Works

For your convenience, the following work schedule has been brought forward from the recommendations given in Section 7.0, providing all recommended tree works and plant health care programs representing the extreme, high, moderate and low priority works with the timescales being: as soon as practically possible, within 1 year.

Section 7.0 contains additional information about the trees and should be read in conjunction with these extracted schedules of work.

All works are to be carried out in full compliance with BS 3998:2010 Tree Works - Recommendations (Section 7.0) and as modified by more recent research.

3.4 Table 3: Tree works to be carried out within 1 year.

Tree ID	Common Name	Tree Works
T393	Sycamore	• Sever ivy & reinspect. • Crown reduction, height & spread by 2.0-3.0 m. • Remove deadwood. • Treatment for aphid control.
T394	Sycamore	• Formative prune. • Treatment for aphid control.
T395	Sycamore	• Sever ivy & reinspect. • Crown reduction, height & spread by 2.0-3.0 m. • Remove deadwood. • Treatment for aphid control.
T396	Sycamore	• Crown reduction, height & spread by 2.0-3.0 m, back to suitable secondary growth points. • Remove deadwood. • Treatment for aphid control.
T398	Sycamore	• Sever ivy & reinspect. • Crown reduction by 4.0-5.0 m. • Remove deadwood. • Treatment for aphid control.

4.0 FUNGAL, DISEASE OR INSECT PATHOGEN

4.1 Sycamore Aphid Name (*Drepanosiphum platanoidis*)

The presence of Sycamore Aphids (*Drepanosiphum platanoidis*) has been found attached to the leaves and buds of all six trees on site.

Type: Small sap feeding insects, generally 1-5 mm long with soft bodies. More than 500 species occur in Britain and northern Europe.

Appearance: Aphid body colour varies between species i.e., Sycamore Aphis are pale green and have red eyes.

Area affected: Primarily leaves, but also new shoots and buds. A full mature tree can support up t0 2.5 million Aphids.

Season & Persistence: As summer temperatures increase young aphids mature in about one week allowing for a rapid rise in the population when conditions are favourable. Their reproductive potential is so great that it has been calculated a single aphid could give rise to about ten million tons of aphids after 10 days of summer breeding.

Principle Species: More than 500 species of aphids occur in Britain Some aphids feed on more than one plant i.e., Apple grass aphid feeds on young new leaves and blossom of apples until summer before migrating to oats, grasses and reeds for the rest of the summer. Lime leaf aphids on the other hand are restricted to limes.

Consequence: Primary damage to trees results from the effects of feeding upon young tissue, which weakens and distorts new growth. Secondary effects result from fouling of the leaves and stems with honeydew which encourages the growth of a fungus known as sooty mold. Transmission of viruses carried from diseased to healthy plants on the aphid stylet and in the saliva is also a problem.



Figure 2: Photograph of Sycamore Aphid's present on the emergent buds of T396 – Sycamore.

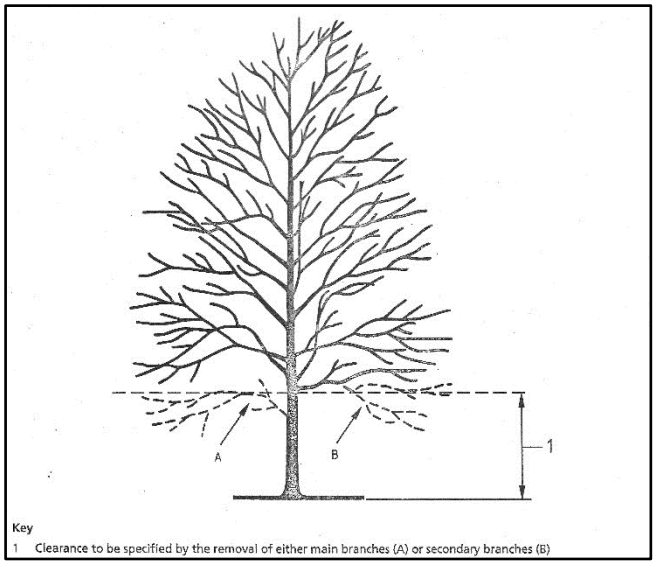
Watson. G. (2013)
Tree Pests and Diseases - An Arborists Field Guide.
Arboricultural Association, Stonehouse

5.0 RECOMMENDATIONS

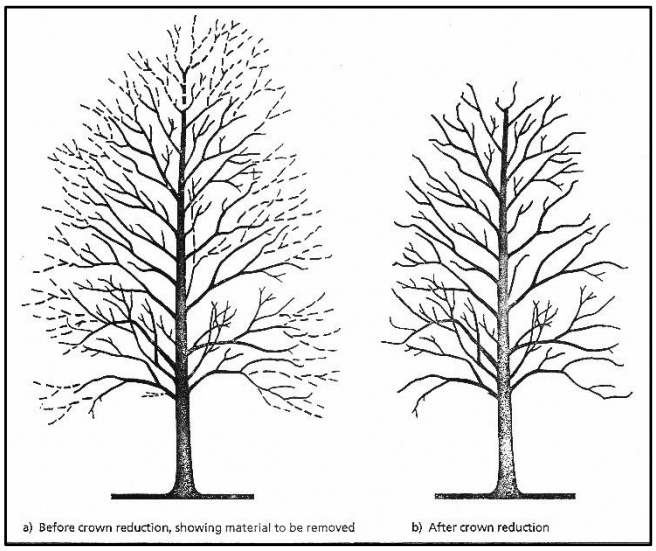
For reference and the benefit of the client, we have provided below detailed specifications and definitions of the various recommended tree work operations as well as tree health care practices.

5.1 Pruning Specifications

Crown Raising: Will be carried out in accordance with Section 7.6 of British Standard 3998:2010 so to achieve a final clearance in height above ground level, as detailed in the tables below. Branch removal will be in accordance with Figure 3 of the British Standard and carried out by removing primary branches in the first instance and the secondary branches second instance, unless otherwise specified.



Crown Reduction: Will be carried out in accordance with Section 7.7 of BS3998:2010 by reducing the height and/or lateral branch spread, as detailed in the tables below. Pruning cuts will be made by using the selective pruning and 'drop-crotch' methodologies, as described in Section 7.7 and 7.8 of the British Standard and as per Figure 4 of the Standard.

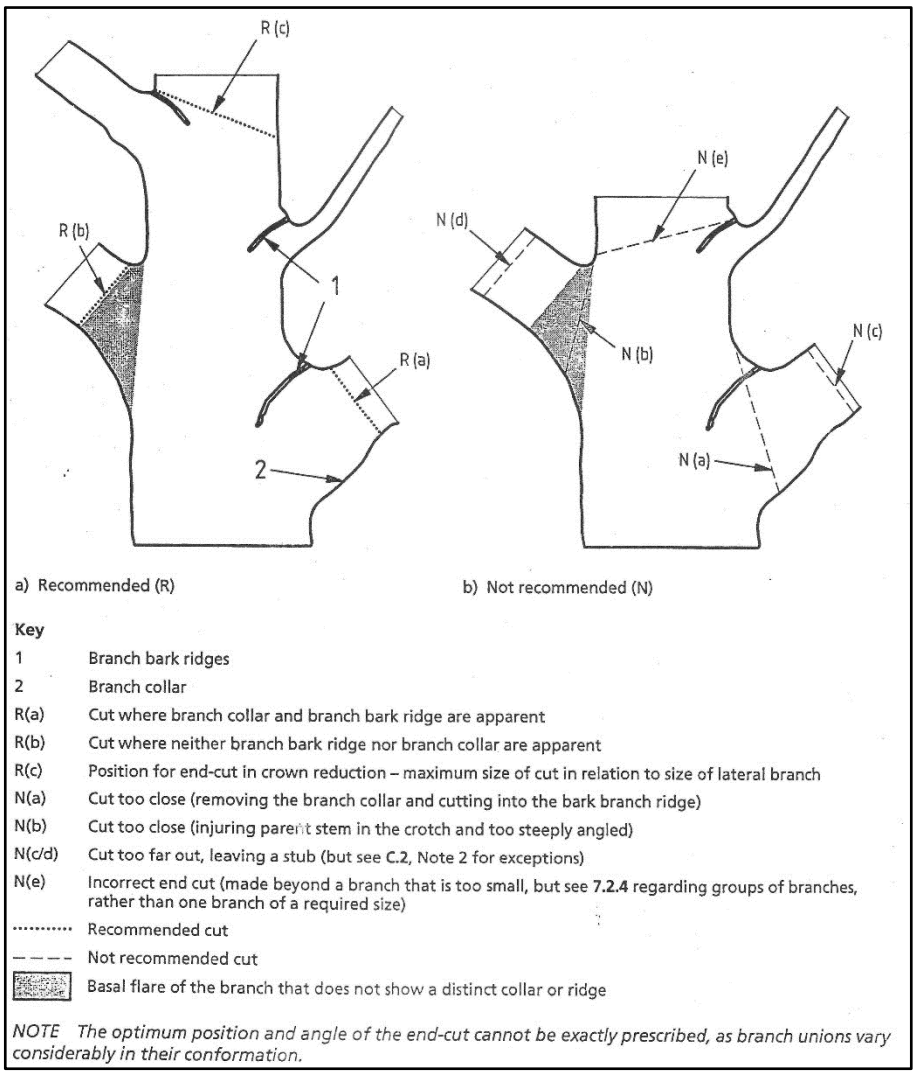


Formative or Structural Pruning: The removal of crossing and rubbing branches to prevent further damage; the removal of secondary branches with vertical growth; the removal of branches growing internally; a reduction in length of branches with included branch unions; a reduction back to lateral growth of branches competing for apical dominance; the removal of selective branches to improve and increase branch spacing. This does not include major crown reduction and reshaping works.

5.0 RECOMMENDATIONS (Continued…)

5.1 Pruning Specifications (Continued…)

Pruning Cuts: All cuts will be made to significant lateral growth, and not back to a bud so that only a stubbed branch end remains – in accordance with Figure 02 of British Standard 3998:2010.



a) Recommended (R) b) Not recommended (N)

Key

1	Branch bark ridges
2	Branch collar
R(a)	Cut where branch collar and branch bark ridge are apparent
R(b)	Cut where neither branch bark ridge nor branch collar are apparent
R(c)	Position for end-cut in crown reduction – maximum size of cut in relation to size of lateral branch
N(a)	Cut too close (removing the branch collar and cutting into the bark branch ridge)
N(b)	Cut too close (injuring parent stem in the crotch and too steeply angled)
N(c/d)	Cut too far out, leaving a stub (but see C.2, Note 2 for exceptions)
N(e)	Incorrect end cut (made beyond a branch that is too small, but see 7.2.4 regarding groups of branches, rather than one branch of a required size)
·····	Recommended cut
– – – –	Not recommended cut
	Basal flare of the branch that does not show a distinct collar or ridge

NOTE The optimum position and angle of the end-cut cannot be exactly prescribed, as branch unions vary considerably in their conformation.

Pruning Cuts: All cuts will be made to significant lateral growth, and not back to a bud so that only a stubbed branch end remains, in accordance with Figure 02 of British Standard 3998:2010.

6.0 RISK ASSESSMENT & DUTY OF CARE

6.1 Limitations of Tree Risk Assessments

It is important for the tree owner or tree manager to know, and understand, that all trees pose some degree of risk from failure or other conditions, and as trees are living and dynamic organisms, it is not possible to maintain them free of risk. Some level of risk must be accepted to experience the full range of benefits that trees provide. As such, we reference the National Tree Safety Group (NTSG) publication *Common Sense Risk Management of Trees* (Forestry Commission 2011). This document provides guidance on trees and public safety in the UK for owners', managers, and advisors.

The information and recommendations within this report have been derived from the level of tree risk assessment identified in this report, using the information and practices outlined in the *International Society of Arboriculture's Best Management Practices for Tree Risk Assessment*, as well as the information available at the time of the inspection.

However, the *overall tree risk rating*, the mitigation recommendations, or any other conclusions do not preclude the possibility of failure from undetected conditions, weather events, or other acts and/or influences of humans or nature on the tree(s). Trees can unpredictably fail even if no defects or other conditions are present. Tree failure can cause adjacent trees to fail resulting in a "domino effect" that impacts *targets* outside the foreseeable *target zone* of this tree. It is the responsibility of the tree owner or manager to schedule repeat or advanced assessments, determine actions, and implement follow up recommendations, monitoring and/or mitigation.

Bartlett Consulting and Bartlett Tree Experts can make no warranty or guarantee whatsoever regarding the safety of any tree, trees, or parts of trees, regardless of the level of tree risk assessment provided, the risk rating, or the residual risk rating after mitigation. Bartlett Consulting and Bartlett Tree Experts cannot accept any liability in connection with these factors, nor where recommended tree management is not carried out in accordance with modern tree health care techniques, within the timelines proposed and specification provided.

The information in this report should not be considered as making safety; legal; architectural; engineering; landscape architectural; nor land surveying advice, nor any other professional advice.

This information is solely for the use of the tree owner or tree manager to assist in the decision-making process regarding their duty of care, tolerability of risk, and management of their tree or trees. Tree risk assessments are simply tools which should be used in conjunction with the owner or tree manager's knowledge, other information and observations related to the specific tree or trees discussed, and sound decision making.

All recommendations made by Bartlett Tree Experts will be based on the defects that are present and detectable at the time of the inspection or assessment, and the commonly accepted industry practices for reducing or minimising the risks associated with the trees and are meant to assist the owner/client with the decision-making process regarding the trees. Tree conditions, though, can change, and some features/hazards may not be present or detectable through the inspection process. As such, Bartlett Tree Experts can make no guarantees or warranties of any kind that all features/hazards will be detected; nor can Bartlett Tree Experts accept any liability in any manner whatsoever for any damage caused by any tree on this property, whether the tree was assessed or not, or whether any recommendations to mitigate risk were followed or not.

Therefore, to the fullest extent permitted by law, the owner/client agrees to indemnify and hold harmless Bartlett Tree Experts from any third party law suits or claims based on the past, present, or future conditions of the owner/client's trees, or decisions made by the owner/client regarding the trees, or injuries or damages caused by any future tree or tree part failures, which are under the ownership and control of the owner/client, that Bartlett Tree Experts may suffer as the result of any negligent action, inaction, or decisions made by the owner/client regarding the trees. Such obligations shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this paragraph.

6.0 RISK ASSESSMENT & DUTY OF CARE (Continued…)

6.2 Tree Owner's Duty of Care

A tree owner has a duty of care to ensure that all visitors, guests, employees, etc. to their land shall be safe from harm, and that there is no exposure to risks to that visitor's health and safety. This duty of care means that reasonable care must be taken to avoid acts or omissions that could be reasonably foreseen, leading to harm.

This duty must also be reasonable, proportionate, and reasonably practicable when managing tree risk. Therefore, the tree owner can take a balanced approach to manage the risk, retain the many benefits trees provide, and not waste resources on unnecessary tree management.

6.3 Tolerability of Risk

Some level of risk must be accepted to experience the full range of benefits that trees provide, and an evaluation of what is reasonable to balance the benefit of trees and the risk they pose should be undertaken by the tree owner.

Risks which are considered tolerable are risks which the tree owner, visitors, guests, employees, and the wider public are prepared to accept to secure the associated tree benefits. However, tolerable risks come with expectations, such as the trees being accurately assessed; control measures being in place; residual risk as low as reasonably practical; and the risk rating is periodically reviewed.

7.0 TREE SURVEY & CONDITION AND MANAGEMENT SCHEDULE

Client:	Ambius Unit 9, Eldon Way, Whitby Road, Brislington, Bristol, Somerset, BS4 3QQ	***Report No:***	JPL/230229/R
Site:	The Bell Public House – JD Weatherspoon, 13-15 Salisbury Street, Amesbury, Salisbury, Wiltshire, SP4 7AW	***Weather:***	Clear & dry
Trees Tagged:	Yes (T393 – T398)		
Completed by:	Mr James Percy-Lancaster, Senior Arboricultural Consultant	***Date of Survey:***	3rd Mary 2023

Timescale for Works

ASAP	6 Months	1 Year	2 Years	3 Years

Tree No.	Species	Height Class	Stem Diameter Class	Age	Physiological Condition	Structural Condition			Observations	Works Required	Time Scale	Risk Factor
						Basal	Stem	Crown				
T393	Sycamore	Medium	Medium	Semi Mature	Good	Moderate	Good	Moderate	• Boundary fence inhibiting inspection of buttresses & lower main stem. • Single stemmed specimen with crown break forming at 3.0 m. • Ivy & timber fence prohibited access to base & main stem. • Suppressed crown, expressing bias towards west, attributed to competition with neighbouring trees. • Minor deadwood throughout crown, approx. 5%. • Crown previously lifted, adequate regrowth measuring approx. 1.5 m. • Crown infested with aphids.	• Sever ivy & reinspect. • Crown reduction, height & spread by 2.0-3.0 m. • Remove deadwood. • Treatment for aphid control.	1 Year	Low
T394	Sycamore	Small	Small	Young	Moderate	Moderate	Good	Moderate	• AstroTurf inhibiting inspection of buttresses. • Single stemmed specimen with crown break forming at 3.0 m. • Heavily suppressed by neighbouring trees. • Previously unsympathetically crown lifted, adequate regrowth measuring approx. 1.0 m.	• Formative prune. • Treatment for aphid control.	1 Year	Low

Tree No.	Species	Height Class	Stem Diameter Class	Age	Physiological Condition	Structural Condition			Observations	Works Required	Time Scale	Risk Factor
						Basal	Stem	Crown				
T395	Sycamore	Medium	Medium	Semi Mature	Good	Moderate	Moderate	Moderate	• AstroTurf inhibiting inspection of buttresses. • Multi-stemmed specimen with trifurcation forming at 0.5 m, weak included bark unions. • Ivy inhibiting inspection of upper mains stems. • Companion tree with T396. • Asymmetrical crown expressing bias towards south-west. • Major deadwood throughout crown, approx. <5%. • Previously crown lifted & reduced to northern laterals.	• Sever ivy & reinspect. • Crown reduction, height & spread by 2.0-3.0 m. • Remove deadwood. • Treatment for aphid control.	1 Year	Low
T396	Sycamore	Medium	Medium	Semi Mature	Good	Moderate	Good	Good	• Single stemmed specimen with crown break forming at 3.0 m. • Companion tree with T395. • Asymmetrical crown expressing bias towards south. • Previously, unsympathetically crown lifted to north, adequate regrowth measuring approx. 1.0 m. • Infestation of aphids. • Minor deadwood throughout crown, approx. <5%.	• Crown reduction, height & spread by 2.0-3.0 m, back to suitable secondary growth points. • Remove deadwood. • Treatment for aphid control.	1 Year	Low
T397	Sycamore	Large	Large	Early Mature	Good	Moderate	Moderate	Moderate	• AstroTurf inhibiting inspection of buttresses, suspected to be partially buried. • Large cavity at 0.5 m, attributed to the removal of co-dominant stem. • Large water pocket, filled with shingle. • Probed vertically to a depth beyond 450 mm. • Single stemmed specimen with multiple co-dominant leaders forming at 2.0 m, suspected weak included bark unions. • Ivy inhibiting inspection of upper main stem & co-dominant leaders. • Active birds' nest at 3.0 m. • Large open grown habit. • Minor deadwood throughout crown, approx. 5%. Infestation of aphids.	• Level 3 advanced assessment of lower main stem: PiCUS sonic tomography & RESI power drill.	6 Months	Moderate

Tree No.	Species	Height Class	Stem Diameter Class	Age	Physiological Condition	Structural Condition			Observations	Works Required	Time Scale	Risk Factor
						Basal	Stem	Crown				
T398	Sycamore	Large	Large	Early Mature	Good	Moderate	Moderate	Moderate	• Multi-stemmed specimen with three co-dominant stems forming at 0.5 m, suspected weak included bark unions. • Ivy & boundary fence inhibiting inspection of main stems, unions & primary scaffolds. • Large asymmetrical habit expressing bias towards the south. • Previously crown lifted & reduced on eastern flank. • Major deadwood throughout crown, approx. 5%. Infestation of aphids.	• Sever ivy & reinspect. • Crown reduction by 4.0-5.0 m. • Remove deadwood. • Treatment for aphid control.	1 Year	Low

Tree Survey Schedule Key:

Tree No – tree reference on Tree Location Plan and/or tree tags where used. **Species** – tree species giving English common name. **Height Class –** Small: 0m – 5m, Medium: 5m – 15m, Large: 15m and greater. **Stem Diameter Class -** the individual stem diameters when typically measured at 1.5m above ground level unless otherwise stated, Small: 150mm – 300mm, Medium: 305 – 500mm, Large: 505mm and greater. **Age Class –** recorded as **NP** (newly planted); **Y** (Y) up-to 1/5 of trees life-cycle; **SM** (semi-mature) up-to 2/5 of trees life-cycle; **EM** (early-mature) up-to 3/5 of trees life-cycle; **M** (mature) up-to 4/5 of trees life-cycle; **OM** (over-mature) up-to 5/5 of trees life-cycle; **Vet** (veteran) exceptional age for species with features such as cracks, cavities and decay which enhance biological associations and value of tree with senescence/retrenchment. **Physiological Condition** – an assessment of the vitality of the tree expressed as **High** (vigorous) prolific growth **Good** (normal) no dieback no decline or **Low** (low) exhibiting signs of dieback and reduced growth/vitality. **Structural Condition –** is reference to physical and structural observations of the individual parts **Poor** structurally defective, **Moderate** minor defects observed, **Good** no observable defects. **Observations** free text of observed tree features. **Works Required** tree works prescribed to mitigate risk. **Time Scale –** recommended priority and timeframe in which recommended actions should be completed, including **N/A** (not applicable as no priority). **Risk Factor** – as per Section 6.0 of report.
Note on Time Scale: Where a program of coppicing has been recommended, the time scale is the recommended time in which the program should commence.

We trust that the contents and recommendations contained within this report were informative, easy to understand and helpful to you, with regards to managing your tree(s).

Should you have any further questions or concerns, please do not hesitate to contact us again.

REPORT CLASSIFICATION: Basic Tree Survey Report

REPORT STATUS: Final

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DATE: 4th May 2023

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DATE: 4th May 2023

APPENDIX 1 – Tree Risk Assessment Glossary

Bartlett Consulting uses the International Society of Arboriculture's (ISA) Tree Risk Assessment methodology, referred to as TRAQ (Tree Risk Assessment Qualified). This is a 'qualitative' system which uses a matrix-based combination of ratings, to reach a conclusion of associated risk. The standard Bartlett Consulting timeline within the TRAQ system is three (03) years, unless otherwise stated within the report.

Risk is the combination of the 'likelihood' of an event: in this case the failure of a tree or part of a tree, and the severity of the potential consequences. A hazard is the likely source of harm. The two tables below define both the likelihood and risk levels as per the TRAQ system.

Tree risk assessment has a unique set of terms with specific meanings. Definitions of all specific terms may be found in the International Society of Arboriculture's *Best Management Practice for Tree Risk Assessment*. Definitions of some of these terms used in this report are as follows:

Classification	**Description of Likelihood of Failure** (As per Dunster, Smiley, Matheny, Lilly 2017)
Improbable	The tree or tree part is not likely to fail during normal weather conditions, and may not failure in extreme weather conditions, within the specified time frame.
Possible	Failure may be expected in extreme weather conditions, but it is unlikely during normal weather conditions, within the specified time frame.
Probable	Failure may be expected under normal weather conditions, within the specified time frame.
Imminent	Failure has started or is most likely to occur in the near future, even if there is no significant wind, weather, or increased load.

Targets are people, property, or activities that could be injured, damaged or disrupted by a tree failure.

Likelihood of Impact may be categorized as high meaning that a failed tree or tree part will most likely impact a target; medium meaning the failed tree or tree part is as likely to impact the target as not; low meaning that the failed tree or tree part is not likely to impact a target; and very low meaning that the likelihood of a failed tree or tree part impacting the specified target is remote.

Consequences of a known target being struck may be categorized as severe meaning that impact could involve serious personal injury or death, damage to high-value property, or disruption to important activities; significant meaning that the impact may involve property damage of moderate to high value, considerable disruption, or personal injury; minor meaning that impact could cause low to moderate property damage, small disruptions to traffic or a communication utility, or very minor injury; and negligible meaning that impact may involve low-value property damage or disruption that can be replaced or repaired, and do not involve personal injury.

Risk Level	**Description of Risk** (As per Dunster, Smiley, Matheny, Lilly 2017)
Extreme Risk	Failure is *imminent*, impact & failure is *very likely*, and the consequences of the failure are *severe*. Mitigation will be a high priority or targets must be temporarily controlled.
High Risk	Impact & Failure is *likely* to *very likely* with *significant* consequences; or consequences are *severe,* and the Impact & Failure is *likely*. Mitigation measures should be taken.
Moderate Risk	Impact & Failure is *likely* to *very likely* with *minor* consequences; or consequences are *significant* to *severe* with a *somewhat likely* Impact & Failure. Mitigation will be determined by tolerance of risk.
Low Risk	Consequences are either negligible or minor, with corresponding Impact & Failure ratings of either unlikely or somewhat likely respectively. Mitigation may be desirable but not strictly necessary.

Overall Tree Risk is the highest individual risk identified for the tree.

Residual Risk is the level of risk the tree should pose after the recommended mitigation

APPENDIX 2 – Tree Survey & Assessment Glossary

The scientific study of tree hazard evaluation and assessment is not an exact science, and there is still much to learn with constantly developing technology, research and calculations. Most limitations of tree hazard evaluation arise from uncertainties with trees and the loads the trees are subjected to.

The three levels of tree evaluation and assessment employed by Bartlett Consulting are those defined in the International Society of Arboriculture's (ISA) *Best Management Practices for Tree Risk Assessment* and *ANSI (American National Standards Institute) A300 Tree Risk Assessment Standard*. All three levels are described below, along with the basic limitations of each.

I. Level 1 Limited Visual Assessment

A *Level 1 Limited Visual Assessment* (also referred to as a Hazard Survey or Negative Tree Survey) is a visual assessment from a specific perspective of an individual tree or a population of trees near specified targets. These assessments are conducted to identify obvious defects or specified tree conditions (such as dead trees) as agreed with the client and tree owner / manager.

A *Level 1 Limited Visual Assessment* is typically performed from a pre-defined and specified perspective (i.e., from the pavement, street, car parking area(s), woodland edge, etc.), and typically of one side of the tree from that specified perspective. The specified tree or trees are visually assessed to identify tree features, defects, or specific conditions constituting a hazard which result in a likelihood of failure of probable or imminent and would impact the specified target(s).

Level 1 Limited Visual Assessments are typically performed to quickly assess large populations of trees to identify trees with the highest likelihood of failure ratings in the population, or trees that are recommended for higher level of assessment.

A *Level 1 Limited Visual Assessment* typically includes:

1. Identifying the location and/or selection criteria of trees to be assessed.
2. Determining and documenting the most efficient route to be taken.
3. Determining and documenting the method of visual assessment (e.g., walk-by, drive-by).
4. Recording the location of, and assessing the condition of, tree(s) of concern from the defined perspective meeting the predefined criteria (e.g., dead trees, broken branches).
5. Evaluating the risk (a risk rating is optional).
6. Identifying trees needing a higher level of assessment (*Level 2 Basic or Level 3 Advanced*) and/or priority corrective action.
7. Submitting risk mitigation recommendations and/or report.

Limitations of *Level 1 Limited Visual Assessments*

As the least thorough means of assessment, tree features and/or conditions may not be visible as the inspection is from a particular viewpoint; not all tree features and observations may be visible or apparent at different times of the year; climbers, undergrowth, basal growth, etc. will not be removed inhibiting the inspection; and the inspection may not be adequate enough to make a risk mitigation recommendation. Residual risk designations for trees are not included.

APPENDIX 2 – Tree Survey & Assessment Glossary (Continued…)

II. Level 2 Basic Visual Assessment

A *Level 2 Basic Visual Assessment* is a more detailed visual inspection of a tree and its surrounding site, and a synthesis of the information collected. It requires complete inspection around a tree including the site and ground conditions / growing environment; visible buttress roots; main stem(s); and branches (as defined in the International Society of Arboriculture's (ISA) *Best Management Practices for Tree Risk Assessment* and *ANSI A300 Tree Risk Assessment Standard*).

A *Level 2 Basic Visual Assessment* allows for all aspects of the tree(s) to be surveyed and removal of climbers, undergrowth and basal growth. The crown, branches, stem(s), and buttress roots of the specified tree(s) are all assessed to look for notable features including any defect, decay, dysfunction or other structural weakness, as well as assessing the overall health and vitality of the tree(s). A *Level 2 Basic Visual Assessment* will include the use of hand-tools such as a sounding hammer; depth probe; binoculars; and measuring tapes / laser range finders to record tree dimensions; and possibly a trowel to uncover buttresses. Recommendations for trees that need a higher level of assessment are typically included.

A *Level 2 Basic Visual Assessment* typically includes:

1. Locating and identifying the tree or trees to be assessed.
2. Determining the *targets* and *target zone* for the tree or branches of concern.
3. Reviewing the site history and conditions, and species failure profile.
4. Assessing the potential load on the tree and its parts.
5. Visually assessing general tree health based on observable features at the time.
6. Completing the tree inspection and assessment using tools listed above.
7. Recording all details and observations.
8. Analysing all captured field data to determine the *likelihood of failure* and *consequences of failure* in order to complete a tree risk assessment.
9. Developing mitigation options, recommending a further Level 3 Advanced Assessment, if deemed necessary, and estimating *residual risk* for each mitigation option.
10. Producing and submitting the report, including when appropriate, advice on re-inspection intervals.

Limitations of Level 2 Basic Visual Assessments

This visual assessment will only include details and information on tree features and conditions that can be detected from a ground-based inspection on the day of the assessment, using the tools listed in the introduction above. The extent of some internal decay, as well as the type of wood decay, and below ground or high canopy features or conditions may be difficult to observe, determine or assess.

APPENDIX 2 – Tree Survey & Assessment Glossary (Continued…)

III. Level 3 Advanced Assessment

A *Level 3 Advanced Assessment* is performed to provide detailed information about specific tree parts, conditions or features, targets, or site conditions. A *Level 3 Advanced Assessment* typically incorporates all aspects of a *Level 2 Basic Visual Assessment* and is usually conducted after a *Level 2 Basic Visual Assessment* with client approval.

Specialized equipment, data collection and analysis, and/or expertise are typically required for these advanced assessments to provide detailed and in-depth information about a specific tree parts, conditions or features, and the likelihood of failure, previously identified in a *Level 2 Basic Visual Assessment*.

A *Level 3 Advanced Assessment* typically includes:

1. Locating and identifying the tree or trees to be assessed.
2. Determining the *targets* and *target zone* for the tree part of concern.
3. Reviewing and updating the *Level 2 Basic Visual Assessment* data as necessary.
4. Completing the advanced assessment using methods and/or techniques as determined necessary and appropriate by the Arborist, and as defined in the Scope of Work.
5. Interpreting and analysing the advanced assessment data and information to update and revise the *likelihood of failure* and *consequences of failure* in order to complete a tree risk assessment.
6. Developing mitigation options and estimating *residual risk* for each mitigation option.
7. Producing and submitting the report, including when appropriate, advice on re-inspection intervals.

Limitations of Level 3 Advanced Assessments

Using technology, methodologies and equipment listed below always involves a degree of uncertainty as well as limitations in use. Furthermore, most data is not an accurate measure, but a qualified or quantified estimation.

Arborists employing advanced assessment equipment and technology must have an advanced knowledge of the application and use of the various equipment (e.g., when and where it is appropriate for use and which method); in-depth knowledge of decay fungi and host tree species relationships; training and experience in interpreting data; and likelihood of failure assessment.

APPENDIX 2 – Tree Survey & Assessment Glossary (Continued…)

III. Level 3 Advanced Assessment (continued…)

Methods of Advanced Assessment

Procedure	Methodology
Aerial Tree Inspection (Evaluation of tree structure within crown)	• visual inspection from within the tree crown or from a lift • unmanned aerial vehicle (UAV) photographic inspection • decay testing of branches
Detailed Target Analysis	• property value • use and occupancy statistics • potential disruption of activities
Detailed Site Evaluation	• history evaluation • soil profile inspection to determine root depth • soil mineral and structural testing
Decay Testing	• increment boring • drilling with small-diameter bit • resistance-recording drilling • single path sonic (stress) wave • sonic / impulse tomography • electrical impedance tomography • radiation (radar, X-ray) • advanced analysis for pathogen identification
Tree Health Evaluation	• tree ring analysis (in temperate zone trees) • shoot length measurement • detailed health/vigour analysis • starch assessment
Root Inspection and Evaluation	• root and root collar excavation • root decay evaluation • ground-penetrating radar • sonic / impulse tomography
Storm / Wind Load Analysis	• detailed assessment of tree exposure and protection • computer-based estimations according to engineering models • wind reaction monitoring over a defined interval
Measuring & Assessing the Change in Tree Lean	• visual documentation • plumb line • digital spirit level
Load Testing	• hand pull • measured static pull • measured tree dynamics

Note: All levels of tree inspection, evaluation and assessment consider visible, and detectable, tree observation, conditions and features in proximity to the known and/or assigned targets of the tree or trees being assessed. Regardless of the level selected, any tree risk assessment will be limited to the tree or trees selected, and the detectable conditions at the time of the defined and assigned assessment. The client should also recognize that not all defects will be detectable, and not all failures can be predictable

APPENDIX 3 – Tree Location Plan

