KEY TREE SOLUTIONS

ARBORICULTURAL CONSULTANTS

Arboricultural Hazard Assessment

Site Address:	10 Elm Field Drive Brandesburton YO25 8RR	Client:	Stuart Draper
Report Ref:	EFDB01-24	Report Date:	11th March 2024
Author:	Laurence Smith BSc (Hons) Arb, M Arbor A	Signed:	Laurence Smith

1. Introduction

1.1 About the Author

Arboricultural Consultant, Mr Laurence Smith BSc (Hons), M Arbor A, carried out this tree survey and report. Laurence has a degree in Arboriculture and a BTEC National Diploma in Forestry and Arboriculture. He is a professional member of the arboricultural association and a registered user of QTRA (Quantified Tree Risk Assessment) with over a decade of experience within the arboricultural industry, initially as an arborist and for the last eight years as a consultant.

1.2 Intention of the Report

Stuart Draper name requested that Key Tree Solutions conduct an independent arboricultural survey of the two significant trees located within the property to assess the risk of harm from observable defects. The survey site has been shown on the site plan in Appendix D.

The report will provide information regarding any observed potential issues and provide a Risk of Harm (RoH) threshold rating. This is calculated considering the size of the part most likely to fail, the target value and the Probability of Failure (PoF) within the next 12 months. Where appropriate, recommendations for tree works will be given to manage risk to a tolerable or broadly acceptable level, with a prioritisation towards tree retention. This system is to assist risk-based decision-making to take a proportionate approach to tree management. Further information on the QTRA methodology is given in Appendix F.

The collected survey data and any management recommendations can be viewed within the Arboricultural Schedule of Works given in Appendix B; this can be referenced with the site plan in Appendix D and any applicable images in Appendix C. Where further elaboration is considered necessary, these are discussed in Section 5.

1.3 Scope of the Report

This report is based on a walkover survey conducted from ground level. All relevant trees have been surveyed as part of this report. However, risk assessments have only been carried out on arboricultural elements if they are considered noteworthy specimens within the site or have some form of significant defect observed. Trees within the site boundary but not included in the schedule of works are *generally* considered to be in good health with a broadly acceptable RoH threshold.

While the survey primarily focuses on trees within the site boundary, it may also include general observations of trees located outside the boundary that may have the potential to impact the site should a failure occur. Where such observations occur it is the client's responsibility to relay any information to the third party so that they may seek their own advice. Key Tree Solutions does not take any responsibility for the management or assessment of third-party trees.

In larger collections, trees are *typically* been grouped by target range. If any tree(s) within the group pose a potential hazard, a risk assessment is carried out working from the most problematic to the least. When the RoH from an individual passes below the tolerable threshold, the residual risk from the rest of the group is considered broadly acceptable and no further individual risk assessments are carried out.

To assess the PoF of any aspect of the tree, Visual Tree Assessment (VTA) methodology devised by Mattheck (1991) is utilised. VTA is a ground-level visual assessment of a tree, carried out to identify obvious mechanical defects, signs of ill health, potential mechanical failure and the suitability of a tree to a site to make an informed judgment of the potential for failure.

In some instances, further investigation may be necessary to gather more data such as after the removal of Ivy or to assess cavities not visible from the ground via ladders or rope and harness.

1.4 Limitations to the survey

Seasonal changes impact what can and can't be observed within reasonable tolerances. For example: during leaf-on conditions, observations can be made regarding canopy and crown health; however, high volumes of leaf material may prevent clear views of branch and stem architecture. Alternatively, fruiting fungi may only be visible at limited times of the year and absent at others.

Arboricultural assessment is conducted at ground level and within the predetermined boundary only. In some instances, viewing all aspects around the tree may not be possible, given a lack of access.

Trees are living organisms which constantly adapt to their surroundings and are often subject to changes outside human control including harsh or unexpected weather conditions or heavy storms. Changes to groundwater or damage to underground structures may also impact tree health and safety. As such trees should be periodically re-assessed. The period between assessments is typically every one to three years depending on the target value. Findings within this report can only be validated for 12 months.

While this report aims to highlight any potential issues it cannot reasonably guarantee the safety of all trees, especially concerning future pest and disease attacks or weather-related failures such as extreme wind events, snow loading, flooding etc.

1.5 Survey Details

The arboricultural survey (Appendix B) was undertaken on the 23rd of February 2024, which collected information on the existing tree stock.

The survey occurred during the early spring season before bud break. Weather conditions on the day were clear with low wind.

Tree data was collected using an electronic distometer and specialist measuring tape in all practical situations. In some circumstances, such as where there was a lack of access, measurements have been estimated and indicated with an asterisk (*).

2. Site Description

The site is a domestic dwelling which backs onto a golf course. Trees to the rear of the garden and those beyond within the golf course are typically mature native and naturalised specimens. These trees form a cohesive shelter belt that benefits from companion shelter. Static targets within the fall zone of the trees within the garden include the property and neighbouring property and garden. While it is accepted that both gardens are also used for recreation the actual occupancy period is relatively low.

3. Statutory Protection

Local Planning Authorities (LPAs) have the power to preserve selected trees and woodlands by making Tree Preservation Orders (TPOs). Similarly, special provision is provided to trees located within a Conservation Area (CA) which are not the subject of a TPO. The LPA's powers to do this are provided by the following Act of Parliament and its associated regulations:

- Town and Country Planning Act 1990
- Town and Country Planning (Determination of Appeals by Appointed Persons) (Prescribed Classes) (Amendment) (England) Regulations 2008
- Town and Country Planning (Trees) (Amendment) (England) Regulations 2012

The principal effect of a TPO is to prohibit the cutting down, uprooting, topping, lopping, wilful damage or wilful destruction of trees without first obtaining the consent of the relevant local authority. Where works to trees within a CA are proposed, the relevant LPA must first give six weeks' notification. Unauthorised works on trees protected by a TPO or those within a CA could result in an unlimited fine.

Information from the East Riding of Yorkshire Council's website visited on the 11th of March 2024 shows that the trees within the garden and neighbouring shelter bet are included within an area TPO designation. As such no tree work should be conducted without first gaining written permission from the local authority.

Trees should be checked for protected species before work is undertaken. While it is outside of the scope of this tree survey to comment on the actual or likely presence of protected animal species, it is against the law to disturb bats or their roosts under the Conservation of Habitat and Species Regulations (2010). Likewise, nesting birds (typically between March and the end of July) are protected by the Wildlife and Countryside Act (1981) (as amended) and Badgers by the Protection of Badgers Act (1992). If protected species are discovered, works should cease immediately, and Natural England should be contacted for advice.

Alongside these animal protections, landscape features may also be protected under the following acts and regulations.

- The Hedgerow Regulations 1997
- Countryside and Rights of Way Act 2000
- Natural Environment and Rural Communities Act 2006 & Environment (Wales) Act 2016

4. Tree Descriptions and Recommendations

If appropriate, risk-assessed trees have been tagged onsite with an ID number. This number has been suffixed within the report with a letter that describes what the tag represents. ie (T)ree, (G)roup, (W)oodland or (H)edge. In some instances, the element may not be tagged due to a lack of access, the size of a stem or ease of identification. For non-tagged trees ID numbers have been generated from 1 upwards within the schedule of works.

For each risk-assessed element, data along with a narrative comment and any relevant management recommendations have been given within the Arboricultural Schedule of Works found in Appendix B. This can be cross-referenced with any images (Appendix C) where applicable, and the site plans found in Appendix D.

An explanation for the arboricultural survey, including any shorthand or acronyms, can be found in Appendix A.

5. Conclusion

There are two significant trees within the Garden, a Lime and an Oak. The Lime tree presented no visible significant risks and as such no risk assessment was carried out.

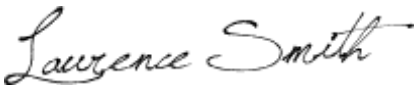
The Oak tree (T1), however, displayed the fruiting body of *Ganoderma australe* between buttressing on the western aspect of the tree stem (Figure 1). This Fungi is considered both parasitic and saprobic given its ability to attack both living and dead cells. In addition, it can breach reaction zones resulting in the breakdown of lignin within the cells known as white rot. Significant colonisations can result in failure via wind throw or stem collapse.

Although no further fruiting brackets were observed, on two further aspects of the tree, north (Figure 2) and eastern (Figure 3) the wood between buttresses was found to be soft with cambial dieback in the region. The southern aspect also displayed some darkening of the bark, however, it was not reasonable to conclude that this was a result of internal decay (Figure 4).

Given the lack of significant observable pruning wounds or open cavitation close to the stem base, it is reasonable to conclude that this decay has extended down the stem from a now occluded wound at a higher height. This would also suggest that all three regions of cambial dieback and soft timber are internally linked. This would constitute a considerable loss of internal structure. Should this tree fail at close to ground level it would likely impact the neighbouring property given the canopy bias in that direction (Figure 5).

This rationale guided the probability of failure within the next 12 months to a value of 3. Assuming that the potential damages of the tree failure onto the neighbouring property would be equal to or over £20,000 the risk of harm is calculated to 1/3K which is considered unacceptable as it is imposed on a 3rd party. As such a recommendation has been made to remove the tree.

Signed:



Laurence Smith BSc (Hons) Arboriculture, M Arbor A

6. Caveats and Limitations

6.1
Climate conditions, including storms, drought and temperature-related factors, can cause damage and failure in apparently healthy trees. The client should consider that all trees potentially pose a hazard with the justification for action based on the risk level and target's value. While every effort has been made to detect any significant defects in inspected trees, it is impossible to guarantee a tree's safety.

6.2
Comments on tree conditions and their associated risk relate to the date and time the survey was undertaken. Tree health and structure are subject to development due to the tree's biological nature or other mechanical or physical changes nearby. As such, trees should be inspected at intervals relative to identified site risks and following relevant HSE and Central Government guidance, typically between 1 and 3 years.

6.3
No reports regarding underground utilities or past construction works have been made available to the author. The client should note that such documentation may affect the recommendations of this report.

6.4
As an arboricultural report, the author is not qualified to comment on damage to buildings or underground utilities that may or may not have been caused by roots. Any observations made regarding the condition of such structures are from a layperson's view.

6.5
All tree work should be undertaken following the appropriate Duty of Care and carried out according to the standards set out in the British standards document *BS 3998:2010 Tree work - recommendations*. For example, a contractor should include site-specific risk assessments and due diligence inspections for the presence of protected species, including all nesting birds and bats.

Appendix A: Survey Reference Information

A1. Survey Key

Column Heading	Description
ID	Each tree/group has been given a unique number prefixed with a letter to represent the element type. (T) Tree, (G) Group, (H) Hedge, (W) Woodland.
Age Class	The tree is described as Young, Semi-Mature, Early-Mature, Mature, Over-Mature, Veteran or Dead.
Species	The English common name has been used along with the botanical name in brackets and italics.
Height (m)	An indication of the tree's height measured in metres.
Crown Spread	The distance the canopy extends in each of the four cardinal directions from the main stem.
Diameter (mm)	The diameter of the trees stem when measured at 1.5 metres from ground level.
Vitality	A quick reference guide to the trees overall health and condition. Given as: Normal, Reduced, Poor, Moribund, Dead.
General Observations	Narrative comments which may include observations on the general condition including defects and overall appearance.
Risk Assessment of	The part of the tree most likely to fail after visual analysis.
Target Range	Set target ranges within QTRA for targets including vehicular, pedestrian and property. Target rage is a number allocation between 1-6 with 1 representing the highest target rating.
Size Range	The size of the part with potential for failure. Size rage is a number allocation between 1-4 with 1 representing the largest size.
PoF	The Probability of Failure (PoF) of the risk assessed part. PoF rage is a number allocation between 1-7 with 1 representing the highest risk.
Reduced Mass	Where deadwood is assessed, there is the potential for a reduction in mass due to the drying of the wood. This is accounted for within the assessment. Where applicable, reduced mass is given is 25%, 50% and 100%.
Risk of Harm	QTRA calculated Risk of Harm (RoH) using the inputs generated by the surveyor. These are given as a fraction between 1 in 4 (1/4) and greater that 1 in 1 million (<1/1m). For risk thresholds see A2 below.
Management Recommendations	Any works recommended in order to minimise risk, improve form or maintain a high value.
Estimated Remaining contribution	An estimation of how long the feature will contribute to its surroundings. This is recorded in bands of either <10 years, 10> years, 20> years and 40> years.
Fig ref.	A reference number for any applicable images located in Appendix C.

A2. Risk Decision Informing Framework

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

Appendix B: Arboricultural Schedule of Works

ID	Age Class	Species	Height (m)	Crown Spread	Diameter (mm)	Vitality	General Observations	Risk Assessment of	Target Range	Size Range	PoF	Reduce Mass to	Risk of Harm	Management Recommendations	Estimated Remaining Contribution	Figure ref.
T1	Mature	Oak (*Quercus robur*)	22.5	8.5, 12, 6, 5	910	Normal	Fruiting fungal body believed to be *Ganoderma australe* observed between buttresses on the western aspect. Fungi is parasitic and saprobic and has the ability to breach reaction zones. The fungi is attributed to white rot and a loss of structural strength. Although fruiting bodies are only observed on the western aspect, cambial death and softening of wood was also observed between buttressing on the northern and eastern aspect. The southern aspect also displays some darkening of the bark though this is not conclusively due to decay. Assumed decay is linking up with the three dead regions suggesting a significant loss of structural strength. Stem failure at the base would impact into the neighbouring property.	Stem failure	2		3	100%	1/3K	Fell	<10	Fig. 1, 2, 3, 4 & 5

Appendix C: Images

Figure 1. Fruiting fungal body of *Ganoderma australe*.

Figure 2. Cambial dieback and softening of bark and timber on the northern aspect.

Figure 3. Cambial dieback and softening of bark and timber on the eastern aspect.

Figure 4. Darkening of the bark between buttressing.

Figure 5. T1 highlighted by the red arrow displaying an asymmetrical canopy biased towards the neighbouring property.

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Arboricultural Hazard Assessment site plan to be viewed in color alongside report reference no. EFDB01-24

Icon	Description	Action
	Unacceptable Risks will not ordinarily be tolerated	1. Control the risk 2. Periodically review the risk
	Unacceptable (where imposed on others) Risks will not ordinarily be tolerated	1. Control the risk 2. Periodically review the risk
	Tolerable (by agreement) Risks may be tolerated if those exposed to the risk accept it, or the tree has exceptional value	1. Control the risk unless there is broad stakeholder agreement to tolerate it, or the tree has exceptional value 2. Periodically review the risk
	Tolerable (where imposed on others) Risks are generally tolerable	1. Assess costs and benefits of risk control 2. Control the risk only where a significant benefit might be achieved at a reasonable cost 3. Periodically review the risk
	Broadly Acceptable	1. No action currently required 2. Periodically review the risk
	Approximate site boundary	
	Local Tree Preservation Order	

Site Location
10 Elm Field Drive
Brandesburton
YO25 8RR

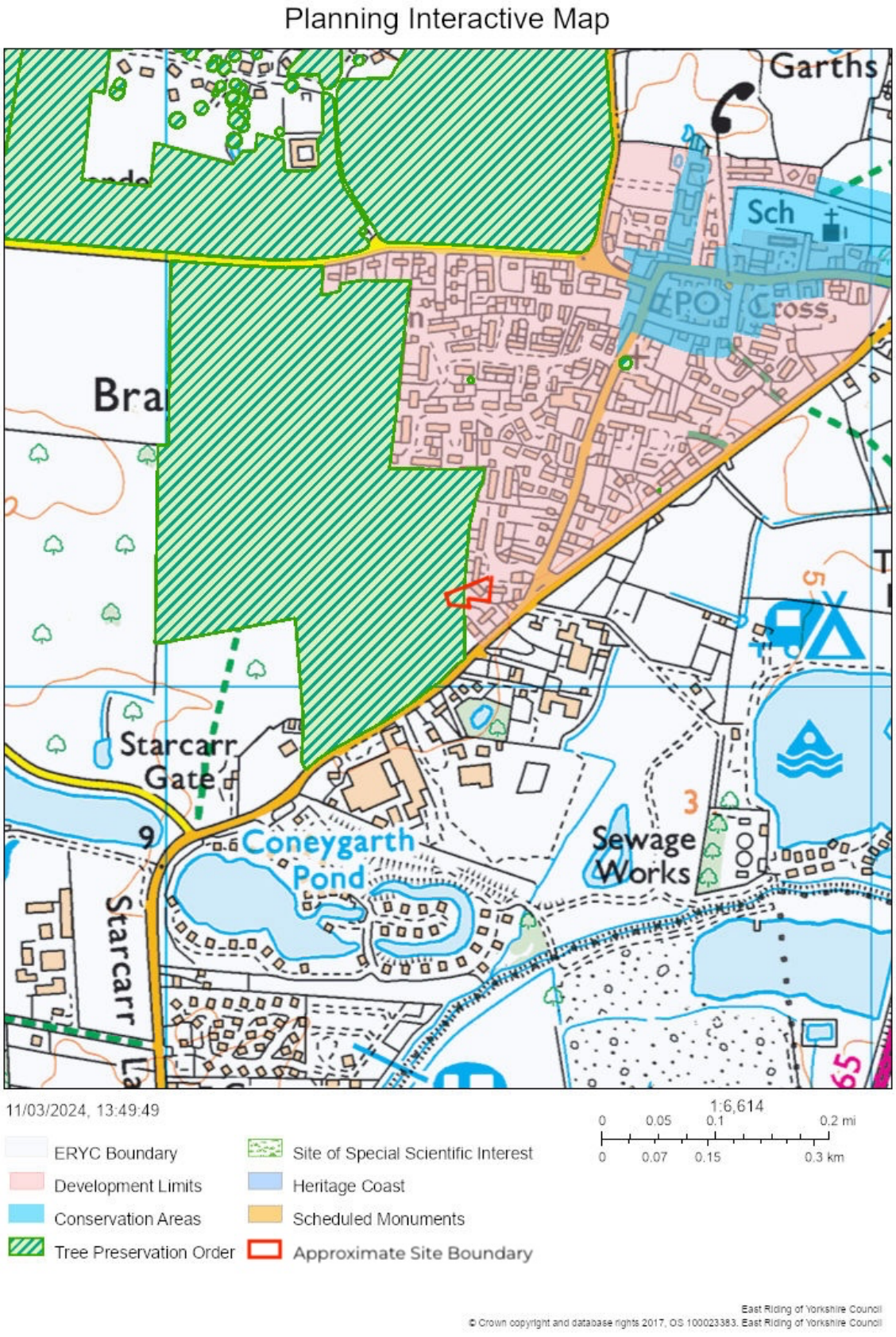
Key Tree Solutions
Rolys Cottage,
YO61 2QY
Tel. 07716 638 613
www.KeyTreeSolutions.co.uk

Job
Arboricultural Hazard Assessment

Title
Appendix D:
Arboricultural Locations Plan

Drawn by	Date	Scale @ A3	Drg. no.
L Smith	**Mar 2024**	**1:500**	**1/1**

Appendix E: Statutory Protection



Appendix F: What is Quantified Tree Risk Assessment?

Tree safety management is a matter of balancing the Risk of Harm from falling trees with the benefits from trees. Although it may seem counterintuitive, the condition of trees should not be the first consideration. Instead, tree managers should first consider the usage of the land on which the trees stand, which in turn will inform the process of assessing the trees.

Quantified Tree Risk Assessment (QTRA) applies established and accepted risk management principles to tree safety management following ISO 31000:2009, Risk Management – Principles and guidelines, which are published by national standards agencies. By quantifying the Risk of Harm as a probability, QTRA enables the tree manager to manage the risk from tree failure to widely accepted risk thresholds.

Using the QTRA approach, the land use (people and property) upon which trees could fail is assessed and quantified first. This enables tree managers to determine whether or not and to what degree of rigour a survey or inspection of the trees is required. Where necessary, the tree or branch is then considered in terms of both size (potential impact) and probability of failure. Values derived from the assessment of these three components are combined to calculate the risk of harm as a probability, which can then be compared to advisory levels of risk acceptability.

The method moves the management of tree safety away from labelling trees as either ‘safe’ or ‘unsafe’, thereby requiring definitive statements of tree safety from either tree surveyors or tree managers. Instead, QTRA quantifies the risk of significant harm from tree failure in a way that enables tree managers to balance safety with tree value and operate to predetermined risk thresholds.

By taking a QTRA approach to tree risk, tree managers commonly find they spend fewer resources on assessing and managing tree risk, whilst maximising the benefits their tree populations provide. Furthermore, in the event of a 'tolerable' or 'acceptable' tree risk being realised, they are in a robust position to demonstrate that they have acted reasonably and proportionately.