Arboricultural Safety Assessment

WC-391.1b

19, Hightown View, Liversedge WF15 8BY

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QTRA Quantified Tree Risk Assessment

Report type:	Arboricultural Safety Assessment
Report reference:	WC-391.1
Revision:	b
Client:	Thomas Chamberlain
Site address	19, Hightown View, Liversedge WF15 8BY
OS Grid reference:	SE 18484 24435
Report prepared by:	Jack Delaney MICFor MArborA
Date:	29th April 2025

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Contents

1. Introduction

1.1. Scope of Report

1.1.1. Woodsage Consulting Ltd have been instructed by Thomas Chamberlain to carry out an Arboricultural Safety Assessment upon one tree which is located within the rear garden of 19, Hightown View, Liversedge WF15 8BY.

1.1.2. The purpose of this report will be to evaluate the structural and physiological condition of the tree in question, in order to determine the likelihood of failure and associated risk potential.

1.1.3. In relation to the surrounding area, site features and usage, this report will also seek to provide informed management recommendations, with regards to the wellbeing and longevity of the tree in question, alongside the future safety of people and/or property which may come within its vicinity.

1.2. Site Details

1.2.1. The tree in question - hereafter referred to as 'T001' - is centred on OS Grid Reference SE 18484 24435, and is located within the rear garden of 19, Hightown View. The location of T001 is shown in ***Fig 1.1***, below.

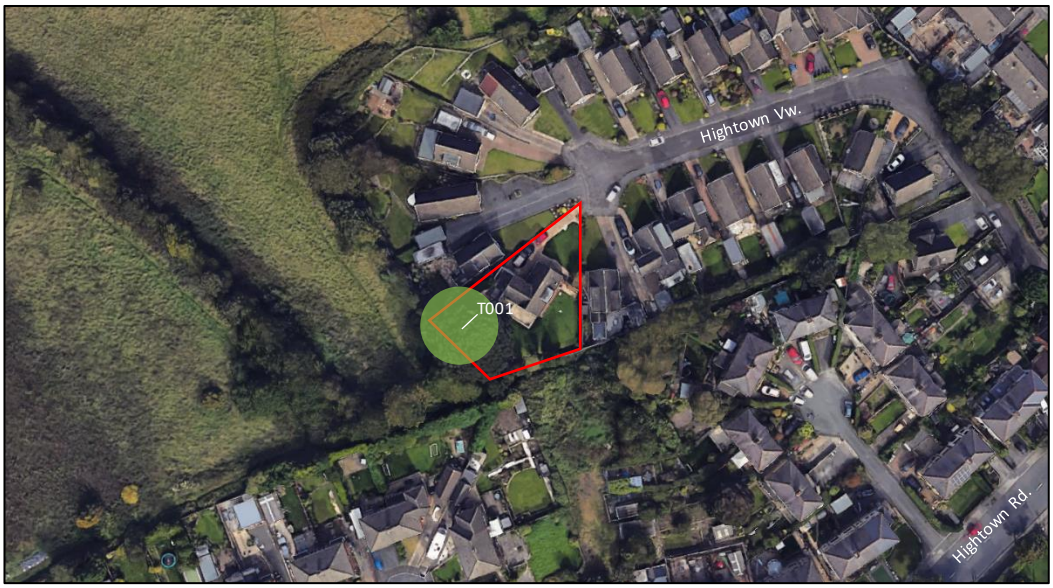

Figure 1.1: *Aerial imagery showing the approximate boundaries of 19, Hightown View, outlined in red, and the location of T001*[1].

1.3. Site Elevation and Topography

1.3.1. The tree lies at an approximate altitude of 148 m above sea-level.

1.3.2. The surrounding topography falls away from the west to the east.

[1] Google Earth Pro (2025). *Google Earth* [online]. Available at: > www.google.co.uk/earth < [accessed 8th April 2025].

1.4. Desk Based Study

1.4.1. According to information available on the website of Kirklees Council[2], T001 is subject to an individual tree preservation order (TPO Ref: 29/80/t2).

1.4.2. Cranfield University[3] states that the soil type in the surrounding area consist of *Soilscape 17*: these are acidic, loamy and clayey soils, that are slowly permeable and seasonally wet. No further detailed soil analysis was carried out as part of the survey.

1.5. Planning History

1.5.1. An application (Reference No: 2021/92079) was submitted by the client to remove T001 on the 14th of May 2021. This application was subsequently refused by Kirklees Council, though consent was given for the following:

One Sycamore, if required, Crown lift removing small diameter branches only (less than 10 cm) to give 5 metres ground clearance. Clean out crown removing any dead, dangerous, hazardous or split branches and stubs; while maintaining the tree's structural integrity and natural form.

1.5.2. Although the client briefly enquired with an arboricultural contractor to carry out the consented works - these were never completed - as the lowest branches on T001 already displayed close to the allotted 5 m clearance.

[2] Kirklees Council (2025). *Interactive TPO/Conservation Area Map* [online]. Available at: > www.kirklees.gov.uk < [accessed 8th April 2025].

[3] Cranfield University (2025). *Soilscapes* [online]. Available at: > www.landis.org.uk/soilscapes < [accessed 8th April 2025].

2. Methods

2.1. Survey Details

2.1.1. The survey was carried out on Friday the 28th of March 2025.

2.1.2. The weather conditions at the time of the survey were fine and dry; the visibility of the trees was not impeded.

2.2. Survey Personnel

2.2.1. The survey was carried out by Jack Delaney. Jack is a Chartered Arboriculturalist (Member of the Institute of Chartered Foresters) and has worked in the arboricultural sector for over 15 years. Jack holds an FdSc in Arboriculture with distinction, and is a Professional Member of the Arboricultural Association. Jack is also a LANTRA qualified Professional Tree Inspector, and is a trained and registered user of Quantified Tree Risk Assessment (QTRA).

2.3. Tree Inspection Methods

2.3.1. T001 was inspected from ground level using the Visual Tree Assessment (VTA) methodology[4], and included a detailed inspection of the structural and physiological condition of the tree.

2.3.2. Where necessary, T001 was assessed with the aid of a metal probe, for inspection of stem cavities and areas of decay, and a nylon sounding mallet, for the purpose of detecting changes in resonance in stem wood (which may indicate dysfunction, and that further investigation is required).

2.3.3. The dimensions of T001 were determined as follows:

- Height was measured to the nearest 0.5 m, from the base of the main stem to the top of the crown, using an electric clinometer
- The mean crown radius was calculated to the nearest 0.5 m, from readings taken at each cardinal point, using a laser distometer
- The diameter at breast height (DBH) was measured to the nearest centimetre at 1.5 m above ground level, using a diameter tape measurer

2.4. Tree Risk Assessment

2.4.1. Tree hazard potential was calculated using the Quantified Tree Risk Assessment (QTRA) methodology[5]. QTRA quantifies the risk of significant harm from tree failure in a way that enables tree owners to balance safety with tree values and operate to predetermined limits of tolerable or acceptable risk.

2.4.2. The QTRA method provides a framework for the assessment of the three primary components of tree-failure, those being, target, size, and probability of failure (PoF).

2.4.3. Ranges of value for target, size, and PoF are entered into a QTRA calculator which generates a traffic light colour-coded risk of harm (RoH), and indicates the level of remedial action required:

- Trees with a broadly acceptable RoH pose a level of risk which is as low as is reasonably practicable (ALARP), and no further action is usually required

[4] Mattheck, C., Breloer, H. (1994). *The Body Language of Trees, a Handbook for Failure Analysis*. London: Her Majesty's Stationary.
[5] QTRA (2020). *Quantified Tree Risk Assessment: User Manual* (Version 5). Macclesfield: QTRA.

- Trees with a tolerable RoH may require further action, depending on who is at risk, and whether the RoH is ALARP
- Trees with an unacceptable RoH require the risk to be controlled, usually through remedial works to the tree

2.4.4. Using these criteria, a tree survey schedule was drawn up.

3. Results and Assessment

3.1. Survey Constraints

3.1.1. The survey was constrained by the season in which it took place; for example, certain pathogens and defects, in particular the fruiting bodies of decay fungi, are only visible at specific times of year.

3.2. Target Zones

3.2.1. In the event of failure, T001 has the potential to impact the following targets:

- The dwelling of 19, Hightown View, and other adjacent residential dwellings, which in the event of tree failure may sustain in the region of £200 – £200,000 in damage. These classify as QTRA **Target Zone 2**, **3**, **4**, or **5**, depending upon the size of the tree part being assessed.
- The garden of 19, Hightown View, and other adjacent residential gardens, where the average occupancy beneath T001 is in the region of 2 – 14 minutes per day, which classifies as QTRA **Target Zone 3**.

3.2.2. For a more detailed explanation of target zones, refer to the QTRA User Manual (2020).

3.3. Tree Features and Other Observations

3.3.1. T001 is a mature sycamore *Acer pseudoplatanus,* which bifurcates between 1 m and 3 m into multiple co-dominant stems. The angles of these branch unions are all greater than 25°, which suggests that they do not contain included bark.

3.3.2. Deadwood which is less than 100 mm in diameter was identified throughout the crown of T001, which is considered typical of the species type at full maturity.

3.4. Survey Results and Assessment

3.4.1. Taking account of the target zones, size of the tree or tree part, and the probability of failure:

- the RoH presented by T001 - in terms of the deadwood within the crown - was determined to be less than 1/1,000,000; and,
- the RoH presented by T001 - in terms of the potential for catastrophic failure of the main stem or root plate - was determined to be less than 1/1,000,000.

3.4.2. A RoH of less than 1/1,000,000 is in most circumstances deemed to be broadly acceptable.

4. Conclusion and Recommendations

4.1. Tree Works

4.1.1. Since the RoH posed by T001 has been deemed to be broadly acceptable, no further work to the tree is recommended for risk mitigation.

4.2. Long-term Management

4.2.1. Due to the size of T001 and its proximity to the property, the client has sought advice from Woodsage Consulting Ltd to prescribe pruning works which will reduce the severity of seasonal nuisances that are currently experienced, such as shading, leaf/fruit fall, honeydew etc.

4.2.2. The 5 m crown lift and crown clean which was previously granted by Kirklees Council under Application Number: 2021/92079 is still considered unworthwhile, as the lowest branches are already close to this height. Alternatively, it is proposed that a 3 m crown reduction is carried out.

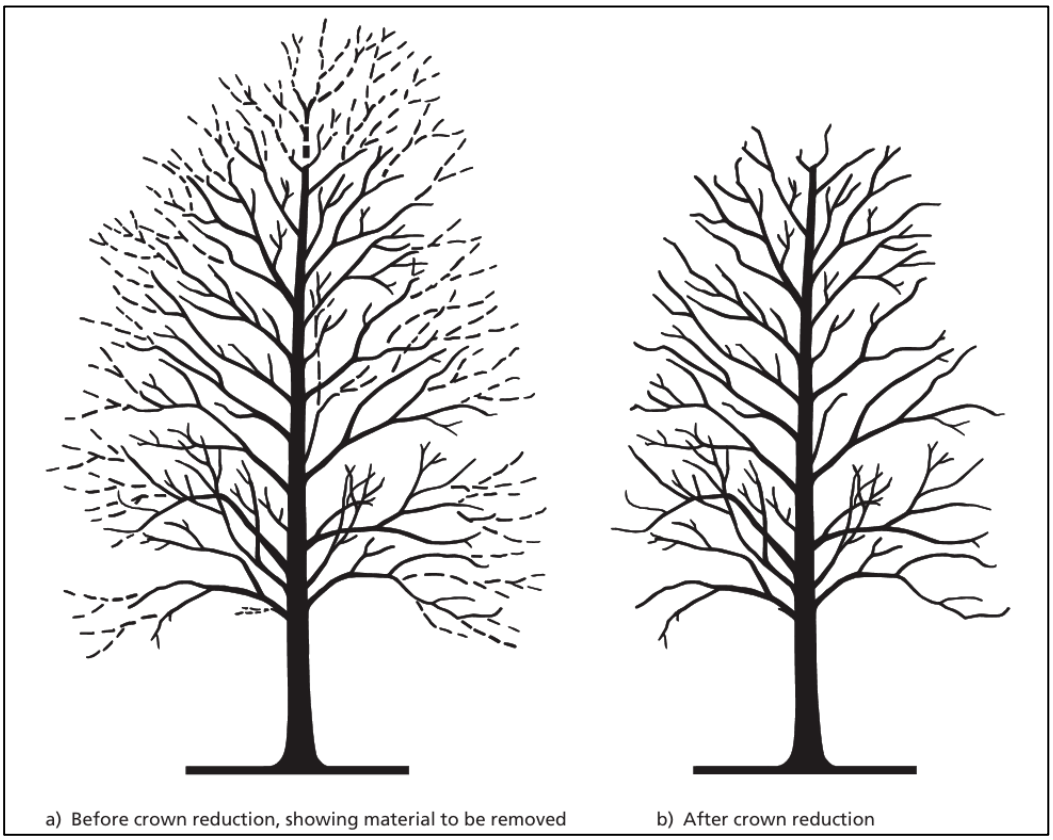

Figure 4.1: *Diagrammatic illustration of a tree before and after crown reduction, with the peripheral branches shortened or removed in a uniform and systematic manner, whilst preserving as natural a shape as possible*[6]*.*

4.2.3. A crown reduction can help to allow the long-term retention of large trees like T001, that are located in confined spaces. Unlike topping, a crown reduction will retain the main framework of the crown, and with this, a high proportion of the foliage-bearing structure.

[6] British Standards (2010). *BS 3998: 2010 - Tree Work: Recommendations*. London: British Standards Institute

4.2.4. The crown of T001 should be reduced in proportion to its existing shape, so as to avoid altering the balance of the tree as a whole. The pruning cuts should not exceed 100 mm.

4.2.5. Due to its potentially negative effects, the crown reduction of T001 should not be carried out in addition to other pruning operations (e.g. thinning), which would add to the amount of wounding and leaf loss.

4.3. Additional Information

4.3.1. Under the Occupiers Liability Act (1957 and 1984), landowners have a duty of care to ensure reasonable steps are taken to prevent or minimise the risk of personal injury or damage to property, arising from the presence of trees on a site.

4.3.2. In order to maintain a duty of care, it is essential that trees are inspected regularly, and also following any event which may have incurred sudden change, for example, a storm.

4.3.3. The observations made within this document are valid only during typical weather conditions. The majority of failures are associated to structural defects, and/or declining physiological conditions, often in combination with unusual or extreme weather conditions. Every effort has been made to identify defects on the tree, and the risks these pose; however, even healthy trees or parts of healthy trees, which are absent of defects, may fail at any time, and therefore the consequences of such phenomena are unforeseeable.

4.3.4. Providing the recommendations within this document are completed, and update inspections are carried out within the proposed time frame, there will be very little residual risk to people and/or property of a foreseeable nature.

4.3.5. All visual observations and recommendations relate to the condition of the tree and the surroundings at the time of the survey. As such, any subsequent changes to landform in the proximity of the tree could invalidate the advice given.

4.3.6. The results of this survey are considered valid for a period of 24 months; it is therefore recommended that an update assessment is carried out before May 2027.

Appendices

Appendix 1: Images of Trees

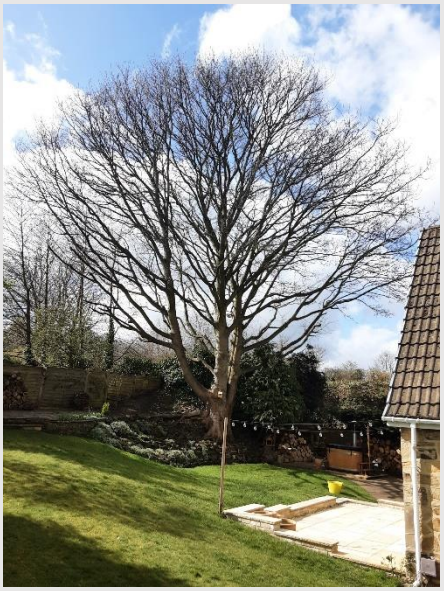

Plate 1: *T001 (viewed from the south)*

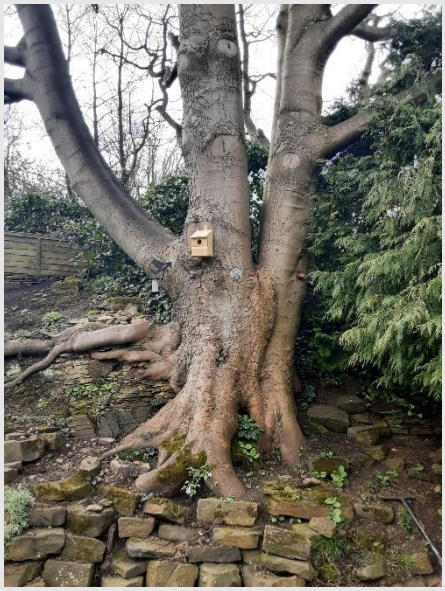

Plate 2: *Base and lower main stem of T001 (viewed from the east)*

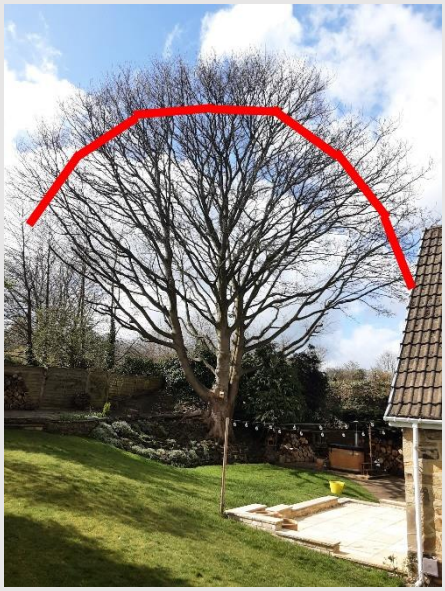

Plate 3: *Approximate extent of proposed 3 m reduction*

Appendix 2: Tree Survey Schedule

Table Key			
Tree/Group Ref:	Tree reference number	**Species:**	Common (and *binomial name*)
Height (H):	Measured to nearest metre	**DBH:**	Diameter at breast height (1.5 m), measured to nearest centimetre
Crown Spread (CS):	Average radius of crown, measured to nearest metre	**Target Type:**	**V** = Vehicle on Highway; **H** = Human; **P** = Property
Mass:	The percentage mass of a tree or branch can alter according to its physiological condition, and has been estimated accordingly	**SULE:**	Safe useful estimated life expectancy of tree, in years
		Vitality (V):	A measure of the physiological condition of tree. **G** = Good; **F** = Fair; **P** = Poor; **D** = Dead
Age	**Young (Y):** Young sapling/newly planted tree **Semi-mature (SM):** Trees in within first third of SULE for species type **Early-mature (EM):** Trees in second third of SULE for species type **Mature (M):** Trees in final third of SULE for species type		**Over-mature (OM):** Trees that have exceeded their natural life span **Veteran (V):** Trees of any age which display veteran characteristics **Ancient (A):** Trees which are remarkably old for the species type

Priority Categories	
N/A: Tree risk of harm (RoH) is broadly acceptable or as low as reasonably practicable (ALARP), and therefore no further works are prescribed **Urgent:** Emergency situations where there is likelihood of imminent failure; works to be completed soon as reasonably practicable	**High:** Dangerous trees that require planning and/or consultation; works to be completed within 4 weeks of inspection **Moderate:** Trees noted as hazardous; works to be completed within 20 weeks of inspection **Low:** Tree RoH is broadly acceptable or ALARP; works to be completed for long-term management purposes and at the discretion of the landowner

Quantified Tree Risk Assessment Calculations			
Target Zone	**(H = Human; V = Vehicle; P = Property)**	**Size**	**Probability of Failure (PoF)**
Target 2:	• Potential to cause £20,000 – £200,000 in damage to property	**Size 1:** > 450 mm DBH **Size 2:** 450-260 mm DBH **Size 3:** 250-110 mm DBH **Size 4:** 100-25 mm DBH **Size P:** Used to calculate damage to property	**1:** 1/1 - > 1/10 **2:** 1/10 - > 1/100 **3:** 1/100 - > 1/1K **4:** 1/1K - > 1/10K **5:** 1/10K- > 1/100K **6:** 1/100K – 1/1M **7:** < 1/1M
Target 3:	• Average estimated occupancy of 2 – 14 mins p/day • Average estimated traffic of 2 – 7 pedestrians p/hr • Potential to cause £2,000 – £20,000 in damage to property		
Target 4:	• Potential to cause £200 – £2,000 in damage to property		
Target 5:	• Potential to cause £20 – £200 in damage to property		

Risk of Harm (RoH)	RoH as Fraction	Action
Broadly Acceptable (BA):	< 1/1M	No further remedial action is required
Tolerable (T):	1/10K – 1/1M	Remedial action may be required
Tolerable (when not imposed upon others) (T):	1/1K – 1/10K	Remedial action would usually be required
Unacceptable (U):	> 1/1K (or 1/K - 1/10K when imposed on others)	Urgent remedial action is required

Tree Ref:	Species	A	SULE	H	CS	DBH	V	Comments	Area of Tree Risk Assessed	Target Description	QTRA Factors					Management	Priority Category
											Target Type /Zone	Size	Mass	PoF	RoH		
T001	Sycamore *(Acer pseudoplatanus)*	M	40-80	21	9	116	F	Bifurcates between 1 m and 3 m into multiple co-dominant stems; unions appear structurally optimised. Minor deadwood < 100 mm in diameter scattered throughout the crown. Multiple pruning wounds on main stem and first order branches, sustained from historic crown lifting and thinning works, with adventitious shoots apparent.	Deadwood	Residential gardens	H3	4	25%	3	< 1/1M (BA)	Reduce crown by approx. 3 m	Low
									Main stem/root plate failure	Residential dwellings	P2	1	100 %	7	< 1/1M (BA)		