

ARBORICULTURAL ASSESSMENT OF 39 KINGSWAY, CHANDLER'S FORD, EAST- LEIGH, SO53 1EL

Carried out by Matthew Rowden for Victor Laurence,
Homeowner

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ROWDEN TREESCAPES

CONTENTS

1. TITLE PAGE
2. CONTENTS
3. INSTRUCTION
4. LIMITATIONS
5. SITE DETAILS
6. LEGAL RESTRICTIONS
7. PROPOSALS
8. DRAWINGS AND DOCUMENTS
9. SUMMARY
10. FINDINGS
11. CONCLUSION
12. RECOMMENDATIONS
13. REFERENCES
14. APPENDICES 1 (TREE SURVEY SCHEDULE), 2 (TREE LOCATION PLAN)

3. INSTRUCTION

This report is to survey the trees on the site for the potential to cause damage and/or harm for insurance and liability. I refer to the current guidance set out within NTSG Common sense risk management of trees 2011 to enable the duty holder to have discharged their duty of care.

The risks that I have assessed are: Likelihood of damage to property (indirect or contact), tree failure through structures, and personal harm or injury. I have been instructed by Victor Laurence, homeowner and applicant.

4. LIMITATIONS

This survey is valid for 3 - 5 years (adhering to the guidance set out in NTSG 2011). I must be kept in direct supervision of the site at all times in regards to all arboricultural matters in order for the findings in this report to remain valid.

The site was inspected using the VTA method as outlined in Mattheck and Breloer 1994. No detailed decay detection has been carried out.

No soil analysis has been carried out: assumptions have been made based on data from the BGS, and the species that grow in that area. Trees have been grouped where the recommendation is the same, or where there is very little to differentiate between them: those trees that present a foreseeable threat have been surveyed individually and mapped.

5. SITE DETAILS

The site comprises the rear garden of 39 Kingsway, Chandler's Ford, Eastleigh, with Tree 1 (*Quercus robur*) situated immediately adjacent to the boundary with Merton Junior School playing fields. The tree is a mature specimen approximately 26m in height, with a stem diameter of approximately 1,300mm and an asymmetric crown extending approximately 7m north, 14m east, 12m south and 11m west. The

principal target area is therefore not confined to the subject property, but extends into the adjoining school playing fields, where the combination of the tree's height and crown spread creates a foreseeable potential for persons to be present within its failure zone. The location drawing demonstrates the relationship between the tree and the adjoining land, with a substantial proportion of its crown extending towards the school grounds. The consequence of complete or major structural failure could therefore be significant; however, consequence must be distinguished from likelihood. At the time of inspection the tree displayed good canopy vitality, good branch architecture, no observable defects within the principal stem and extensive adaptive buttressing. Accordingly, notwithstanding the presence of basal *Ganoderma resinaceum*, there is presently insufficient evidence to classify failure as probable or imminent, and the overall likelihood of harm is considered low, subject to implementation of the remedial management and periodic inspection prescribed within this report.

6. LEGAL RESTRICTIONS

The tree is covered by a TPO, ref: 290-E.

7. PROPOSALS

This report aims to establish a long term management strategy for the trees on the site, and to ensure that they are maintained to keep any risk posed to level that is as low as reasonably practicable. It will also instil a cyclical inspection schedule to ensure that the duty holders are fulfilling their duties and responsibilities under the Occupier's ability acts 1957 and 1984.

8. DRAWINGS AND DOCUMENTS

The client has not provided any drawings or documents for the assessment. I have obtained a plan from the Ordnance Survey and have annotated the trees on the map.

9. SUMMARY

Tree 1 is a large, mature *Quercus robur* which remains physiologically and structurally functional, displaying good canopy vitality, good branch architecture and no significant observable structural defects within the principal stem. Fruiting bodies identified as *Ganoderma resinaceum* are present at approximately 0.5m on the eastern aspect of the stem, with anecdotal evidence of *Ganoderma australe* having previously occurred at ground level on the northern aspect. Whilst *G. resinaceum* is capable of producing significant white rot within the butt and root system of oak, its presence should not in isolation be regarded as evidence of imminent structural failure. On *Quercus*, decay is commonly concentrated within the butt and roots and may ultimately result in extensive central dysfunction and hollowing whilst a functional peripheral shell and adaptive growth are maintained. The conspicuous buttressing present around this tree provides evidence of an ongoing mechanically adaptive response to altered loading.

The appropriate management response is therefore considered to be retention rather than removal. Given the school playing fields within the potential failure zone, a precautionary reduction in wind loading is nevertheless justified. Reduction should principally address height rather than indiscriminately removing lateral crown spread, because reducing the vertical lever arm and upper crown sail area disproportionately reduces bending moment at the basal region where fungal colonisation is evident. A reduction in height of approximately 4–5m, retaining as much lateral crown spread and photosynthetic capacity as reasonably practicable, is considered proportionate. The work is classified as low priority and should be undertaken within five years, followed by triennial arboricultural inspections.

10. FINDINGS (PLEASE SEE APPENDIX 1 FOR SPECIFIC DETAILS)

Tree condition. Tree 1 is approximately 26m high with a 1,300mm stem diameter and has an estimated remaining contribution exceeding 40 years. The crown remains vigorous, branch architecture is good and no significant defect was identified within the principal stem. The presence of a decay fungus must therefore be considered alongside the tree's observable biological and mechanical response rather than treated as an automatic indication for removal.

Fungal colonisation. Multiple *Ganoderma resinaceum* sporophores occur at approximately 0.5m on the eastern aspect of the stem. *G. resinaceum* is a white-rot fungus capable of degradation of the structural components of woody tissue. Research into *Ganoderma* demonstrates its capacity for delignification of oak, whilst literature specifically concerning *G. resinaceum* indicates that on *Quercus* the resulting decay is characteristically concentrated within the butt and root system.

Decay strategy and prognosis. *G. resinaceum* is capable of breaching reaction zones and progressively colonising functional woody tissue; consequently, continued colonisation can reasonably be anticipated. The long-term prognosis is therefore development of increasingly extensive central decay and potentially a substantially hollow lower stem rather than recovery of the colonised woody volume. Importantly, however, published observations indicate that decay associated with *G. resinaceum* can be less extensive than that produced by some other *Ganoderma* species. The eventual formation of a hollow stem is therefore not synonymous with mechanical failure provided that sufficient peripheral load-bearing tissue and adaptive growth are maintained.

Adaptive growth. Extensive buttress development is evident around the lower stem and was recorded during the survey as positive mechanosensory/adaptive growth associated with fungal colonisation. This is mechanically significant because the tree is not a static structure: incremental wood deposition can redistribute material in response to altered stresses. Consequently, the extent of an internal decay column cannot legitimately be equated directly with an identical percentage reduction in whole-tree load-bearing capacity. Rinn specifically cautions against making that assumption when assessing decayed mature trees.

Strength-loss criterion. In the absence of destructive investigation or quantified tomography/resistance data, the actual percentage strength loss at the basal stem cannot presently be established. For the purposes of deriving a conservative pruning intervention, however, a hypothetical **33% strength loss** has been adopted. The Bartlett formula developed by Smiley and Fraedrich expresses estimated strength loss as:

$$\text{Strength loss (\%)} = [d^3 + R(D^3 - d^3)] / D^3 \times 100$$

where D represents stem diameter, d represents the diameter of the decay/hollow and R represents the ratio of cavity opening to stem circumference. The historical Bartlett criterion regarded approximately 33% calculated strength loss as an action threshold, reduced to 20% where additional defects or severe stresses were present. This 33% figure is used here deliberately as a conservative hypothetical design criterion and does not constitute a finding that 33% strength loss has actually occurred within Tree 1.

Limitations of the 33% criterion. The Bartlett threshold should not be interpreted as a binary point at which a tree changes from safe to unsafe. Comparative research has demonstrated limitations in formula-based prediction of actual failure, while Rinn similarly observes that the dimensions of an internal decay column cannot simply be translated into an equivalent loss of load-carrying capacity. The criterion is therefore most appropriately used here to establish a deliberately cautious loading scenario against which proportionate crown management can be calculated.

Required reduction in loading. Rinn (2014) demonstrates that reduction in tree height produces a disproportionately greater reduction in wind-induced bending moment. His examples indicate that approximately 10% height reduction can reduce wind load by approximately 20%, whilst approximately

20% height reduction may reduce basal bending moment by approximately 50%. He consequently proposes a factor of approximately two as a useful rule of thumb, whilst emphasising that the relationship varies with crown geometry and is not strictly linear.

Application to Tree 1. Adopting the deliberately conservative hypothetical strength loss of 33%, an approximately equivalent reduction in imposed wind loading would require, using Rinn's approximate factor of two:

Required height reduction $\approx 33\% \div 2 = 16.5\%$

Applied to the measured tree height:

$26\text{m} \times 0.165 = 4.29\text{m}$

A reduction of approximately **4–5m**, producing a retained height of approximately **21–22m**, therefore provides a rational and conservative management specification. At 4m the height reduction is approximately 15.4%; at 5m it is approximately 19.2%, placing the proposed intervention within the range in which Rinn's published examples indicate a substantial reduction in basal bending moment.

Pruning strategy. The objective is specifically to reduce bending moment at the basal stem/root crown rather than simply reduce crown volume. Rinn's work indicates that relatively modest height reductions can generate substantial reductions in wind loading and that excessive pruning unnecessarily removes photosynthetic capacity. The proposed works should therefore concentrate on removing approximately 4–5m from the upper crown while **retaining as much lateral spread as practicable**, subject to forming an arboriculturally coherent crown and suitable pruning points.

Risk and target occupancy. The principal factor elevating the significance of the fungal colonisation is the adjoining Merton Junior School playing fields, specifically identified within the survey as the target area. The potential consequence of failure is therefore appreciable, but the present probability of failure remains moderated by good vitality, satisfactory branch architecture, absence of observable principal-stem defects and pronounced adaptive buttressing. The proposed reduction consequently represents proportionate risk mitigation rather than treatment of an imminently hazardous tree.

11.CONCLUSION:

Tree 1 remains a viable mature oak of considerable arboricultural value and, notwithstanding colonisation by *Ganoderma resinaceum*, there is presently no reasonable arboricultural justification for its removal. The fungus can progressively produce substantial white rot within the butt and root system and the longer-term development of a hollow lower stem should be anticipated; however, hollowing does not itself demonstrate mechanical instability. The tree retains good vitality and branch architecture, has no significant observable defect within its principal stem and displays extensive adaptive buttressing around the colonised region.

The adjoining Merton Junior School playing fields constitute a significant target and justify proactive management. Applying a deliberately conservative hypothetical strength loss of 33%, corresponding with the historical Bartlett action criterion, and Rinn's approximate relationship whereby percentage height reduction can produce approximately twice the proportional reduction in wind loading, indicates a theoretical height reduction of approximately 16.5%, or 4.29m from the existing 26m height. A specified reduction of 4–5m in overall height, retaining as much existing lateral crown spread as reasonably practicable, is therefore considered sufficient and proportionate to materially reduce the wind-induced bending moment acting through the lower stem and likely region of structural weakness.

Following implementation of those works, the foreseeable risk associated with Tree 1 can reasonably be reduced as low as reasonably practicable (ALARP) whilst retaining the substantial environmental and amenity benefits of the mature tree. The works are classified as low priority and shall be completed within five years of the date of inspection. Thereafter, the tree should be subject to formal arboricultural re-inspection at intervals not exceeding three years, with additional inspection following any signi-

ficant change in condition, major storm event or observable alteration in the extent or distribution of fungal fruiting bodies.

12. RECOMMENDATIONS

- i. Reduce in height by 4-5m, retaining as much canopy spread as feasibly possible.
- ii. Formal re-inspection date for August 2029. Informal observations may be made by visiting arboricultural contractors, or stakeholders of the site. Triennial inspections to follow thereafter.



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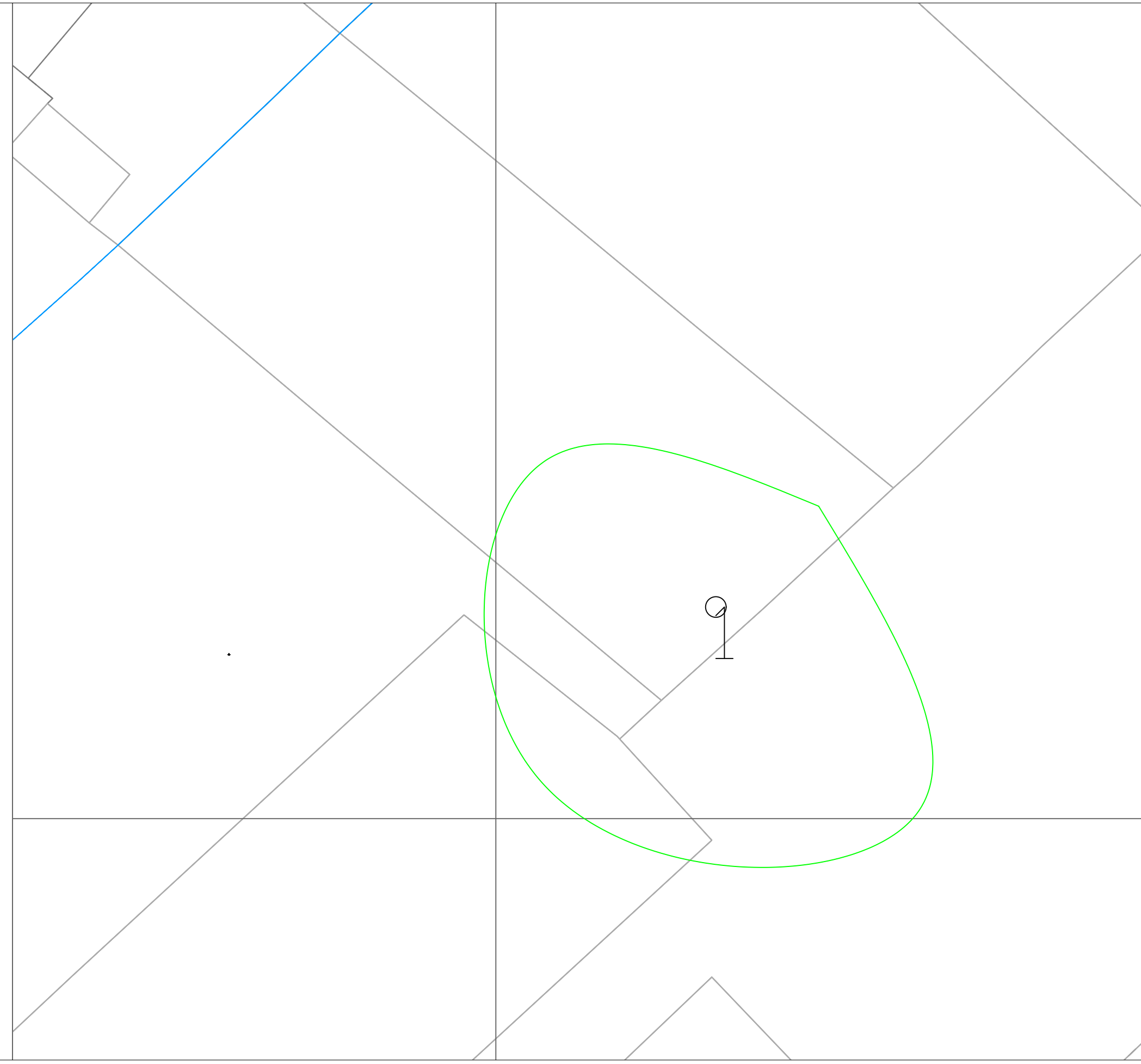
13. REFERENCES

1. Adaskaveg, J.E., Gilbertson, R.L. & Blanchette, R.A. (1990). 'Comparative studies of delignification caused by Ganoderma species', *Applied and Environmental Microbiology*, 56(6), pp. 1932–1943.
2. Kane, B., Ryan, D. & Bloniarz, D.V. (2001). 'Comparing formulae that assess strength loss due to decay in trees', *Journal of Arboriculture*, 27(2), pp. 78–87.
3. Rinn, F. (2014). 'How much crown pruning is needed for a specific wind-load reduction?', *Western Arborist*, Spring 2014, pp. 10–12.
4. Smiley, E.T. & Fraedrich, B.R. (1992). 'Determining strength loss from decay', *Journal of Arboriculture*, 18(4), pp. 201–204.

TREE NO. ON PLAN	SPECIES	HT (M)	CROWN SPREAD (M) N E S W	STEM DIA. @1.5M (MM)	LIFE STAGE	ESTIMATED REMAINING CONTRIBUTION IN YEARS	GENERAL OBSERVATIONS PHYSIOLOGICAL CONDITION - P STRUCTURAL CONDITION - S	PRELIMINARY MANAGEMENT RECOMMENDATIONS	PRIORITY
1	<i>Quercus robur</i>	26	7 14 12 11	1300	M	>40	P- Fair S- Fair <i>Ganoderma resinaceum</i> brackets on E aspect stem at 0.5m, 300mm x 200mm, 250mm x 150mm, and anecdotal evidence of <i>Ganoderma australe</i> on N aspect stem at ground level (not visible at time of inspection). Extensive buttressing showing positive mechanasensis in response to fungi. Concentration of brackets in lee of prevailing wind pushes recommendation towards reduction. No defects main stem. Branch structure = good. Canopy vitality = good. Target area = Merton junior school playing fields.	Reduce in height by 4-5m.	Low

SURVEY SCHEDULE KEY

1. Tree ID: Refers to numbers as shown in the tree location plan.
2. Species: scientific name
3. Height (measured in meters)
4. Crown spread (measured in meters at the points of North, South, East and West). Where “#” is used as a suffix, the measurements are approximate.
5. Stem diameter measured at 1.5m height in mm.
6. Life stage: Young (Y) (small trees at a very early stage of their growth), young mature (YM)(larger trees at an early life stage with the potential to still grow considerably larger), Mature (MA)(trees which have reached their maximum size and are self sustaining at the point), Over mature (OM)(trees that are beginning to decline and starting to die back from the tips), Veteran (V)(trees that are rapidly in decline and steadily losing canopy spread), Dead (D)
7. Estimated remaining contribution in years: Until such a time as any residual amenity is lost.
8. General observations - a visual assessment of the physiological and structural condition of the tree, classed as :Poor, fair, good, dead, decline. Physiologically refers to the vitality and vigour of the tree; Structural refers to the presence of physical defects within the tree's structural makeup. For example, a multi stemmed tree from a lapsed pollard with multiple defects in those unions, but with good vitality and good leaf cover would be classed as physiologically good, but structurally poor.
9. Preliminary management recommendations - recommendations to maintain the tree as part of the proposals, or assessing whether its retention is viable, whether it be the suggestion of aerial inspections, remedial pruning, or detailed decay inspections.
10. Likelihood of causing damage/ harm: None, low, moderate, high and critical. These mean that respectively, the recommendations are to be actioned with no time scale and within 5 years (green canopy spread), 1 year (blue canopy spread), 6 months (red canopy spread). Trees to be felled with have the canopy spread denoted in a red dotted line.



General Notes

Key

Low risk trees

Moderate risk trees

High risk trees

No.	Revision/Issue	Date

Firm Name and Address

ROWDEN

TREESCAPES

Project Name and Address

39 Kingsway,
Chandler's Ford,
CASTLEIGH, SD53
1EL

Project

RTC/AL/29TREC/VTA/V1

Date

14/08/2025

Scale

1:200 @ A3

Sheet

Appendix B
Tree
Location
Plan