



Gale Tree Consultancy

Tree Condition Report

Plaistow Recreation Ground

May 2022

Ref: TCR/297/22

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Summary

- A veteran tree located on the edge of a recreation ground that also overhangs a country lane
- The age of the tree places it within an age group where it will begin to retrench its crown which will result in some decline being recorded
- Two species of decay fungus were noted around the base of the stem and after a detailed decay evaluation, no significant decay was observed
- During the aerial assessment, a number of stem sections were recorded with features that could result in their failure; however, at the time of the assessment, no further action has been recommended
- The delay between the two assessments was done so an appraisal of the tree's physiological condition could be made whilst in leaf

1.0 Introduction

1.1 Client and Address

- Catherine Nutting, Clerk to Plaistow & Ifold Parish Council, The Winterton Hall, Loxwood Road, PLAISTOW, RH14 0PX

1.2 Site Address if Different from the Above

- Plaistow Recreation Ground

1.3 Date of Inspection

- 14th January and 10th May 2022

1.4 Name of Inspector

- Andrew Gale *Dip Arb L6 (ABC) M.Arbor.A*

1.5 Our Reference

- TCR/297/22

1.6 Instructions Received

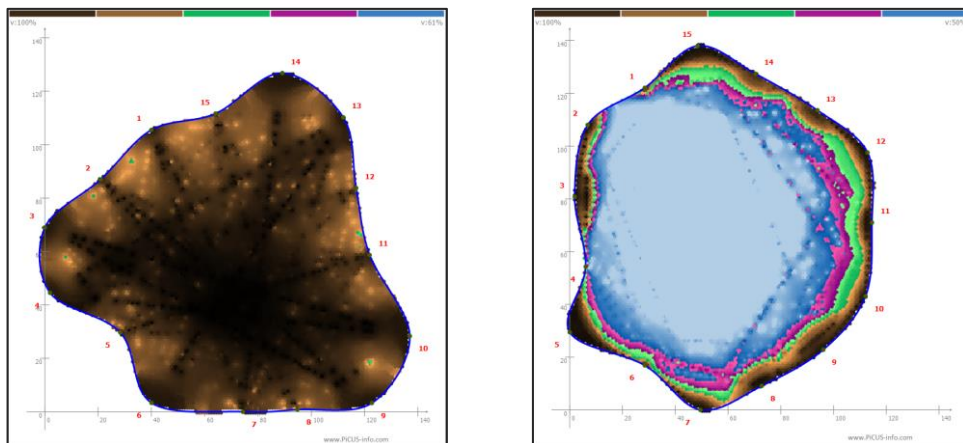
- I have been instructed by the Clerk to Plaistow & Ifold Parish Council to undertake a ground level decay evaluation and an aerial assessment of a tree growing within the grounds of Plaistow Recreation Ground
- I am to provide my findings in the form of a report detailing any remedial work that may be necessary

2.0 Scope of the Report

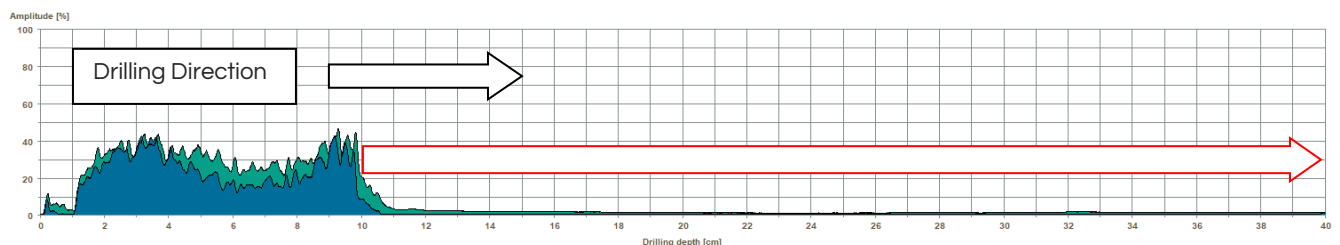
- This tree condition report relates to the ground level assessment and aerial inspection of the tree, it does not consider any below ground issues unless stated otherwise
- The report addresses issues apparent on the tree at the time of the inspection, therefore the likelihood of failure is considered for twelve months and three years from the reports date based on the information gained on the day of the report and on the assumption that any recommended work has been undertaken in the time frame specified
- The site has not been checked for any statutory constraints
- The trees were not assessed for wildlife which would include birds or bats

3.0 Method of Inspection

- A plastic headed mallet was used to sound the stem as an initial indication of the presence of decay
- A thin steel rod was used, where necessary, to assess the depth of any decay in cavities and concavities between buttress roots
- Sonic tomography uses the relative velocity of sound waves induced across the stem to produce a colour shift image where dark browns represent wood with higher velocities and as such sound wood
- Lower sound speeds caused by decay or hollowing are represented by lighter colours with blue/white indicating significant decay/hollowing
- On the examples below, the tomogram on the left indicates a sound tree and the tomogram on the right, a trees with significant decay or hollowing:



- To further assess areas of a concern, an IML Resi PD400 microdrill, which measures the resistance of a very fine drill bit to a depth of 400mm, was used for further confirmation. Significant drops in drilling resistance are indicative of decay or hollowing
- On the example below, extensive decay is indicated from a depth of 10cm through to the end of the assessment



- (Please note, historically Resi drill traces have read from right-to-left due to the configuration of the original machine. However, by using the software available, I have flipped the drill traces to read left-to-right, the more conventional way to read a graph)

4.0 Results of Inspection

4.1 Tree Species and Dimensions

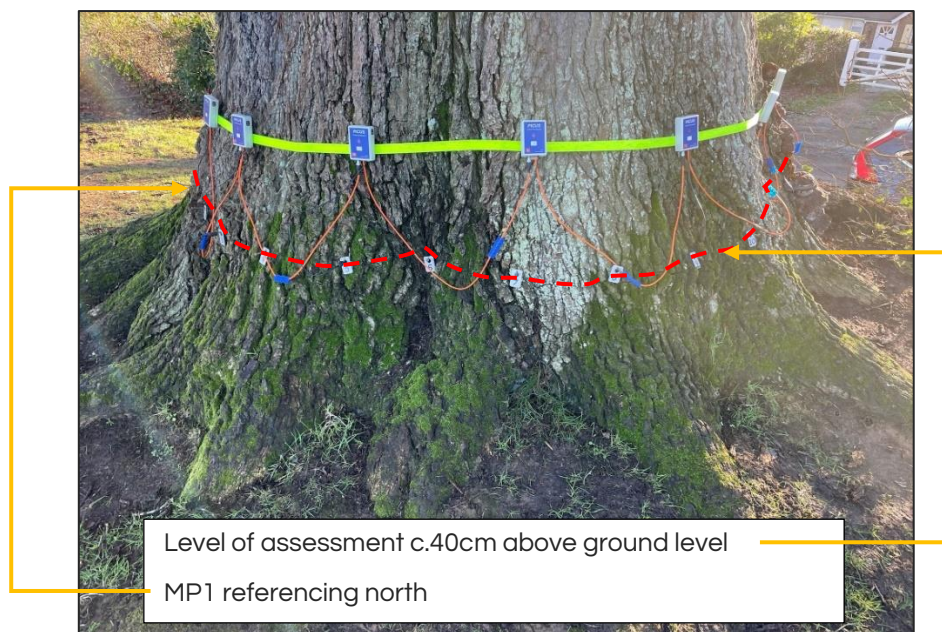
No.	Species	Scientific Name	Height (m)	Crown Spread (m)				Age	Phys. Condition
				N	E	S	W		
T530	Sessile oak	<i>Quercus petraea</i>	20	17	14.5	18	12	V	GOOD

4.2 General Description

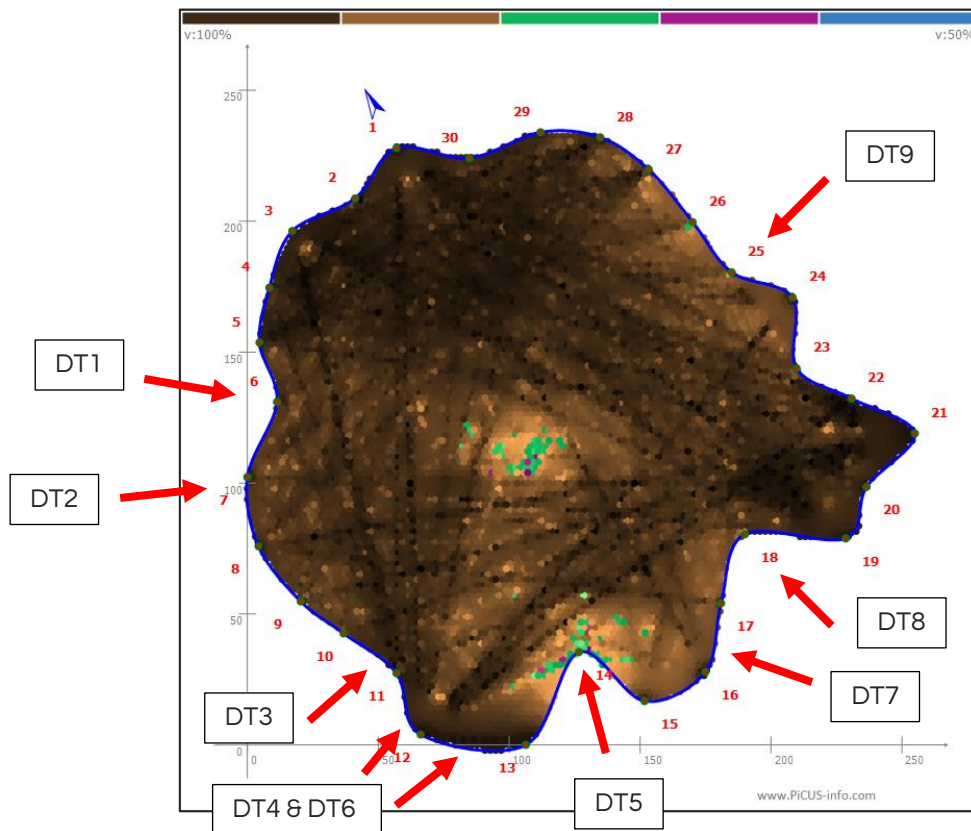
- The tree is located on the southern edge of the recreation ground atop a ridge/bank where the ground drops away to the adjacent lane; the height difference between the two is c.1.5m
- Located between the deeply fluted buttress roots, fungal fruiting bodies of the decay fungus *Pseudoinonotus dryadeus* and *Gymnopus fusipes* were noted
- The south and east crown spread overhangs the entire width of the lane whilst the northern crown spread heads towards Plaistow Playground
- Numerous tear out wounds were noted within the upper canopy. Two stubs from the failure of secondary stem sections were also noted in the low crown
- A low fence has been erected to the west of the tree to limit footfall and compaction beneath the crown of the tree; however, it does not encompass the westerly facing branch structure which overhangs it

4.3 Ground Level Detailed Decay assessment

- To confirm the extent of any decay, the Picus 2 sonic tomography unit was used 40 cm above ground level (south side of the stem) with 30 measuring points (MP). MP 1 was placed at north for reference purposes – please see below:

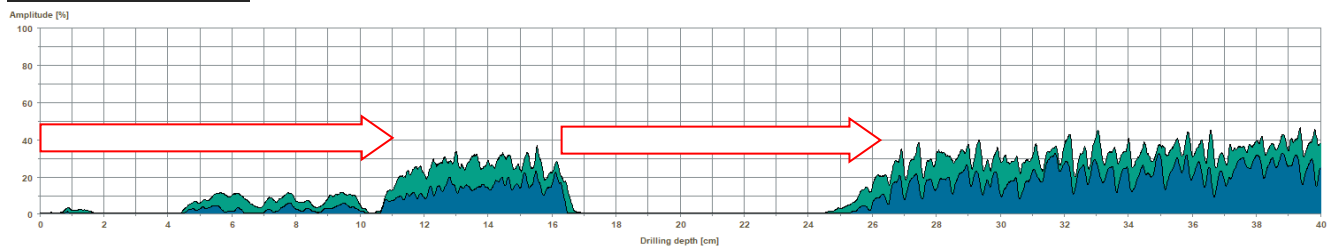


- The tomogram below indicates an area of high sonic velocity across the level of assessment as indicated by the brown colour – see below:



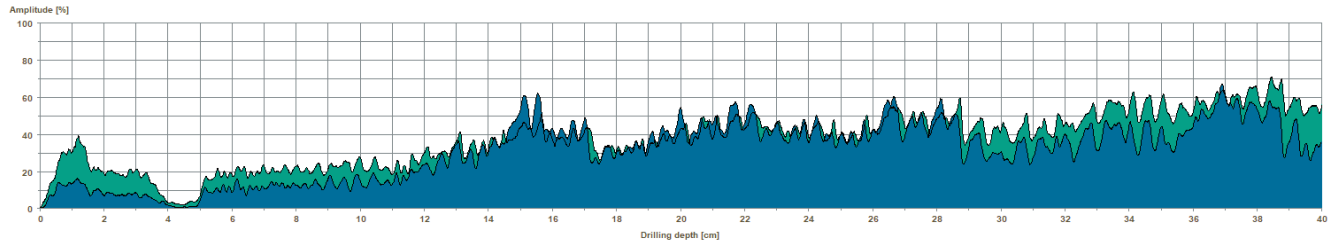
- To confirm the tomogram, the Resi PD400 was used in nine locations at the level of assessment – please see the drill traces below:

Drill Trace 1 – MP6



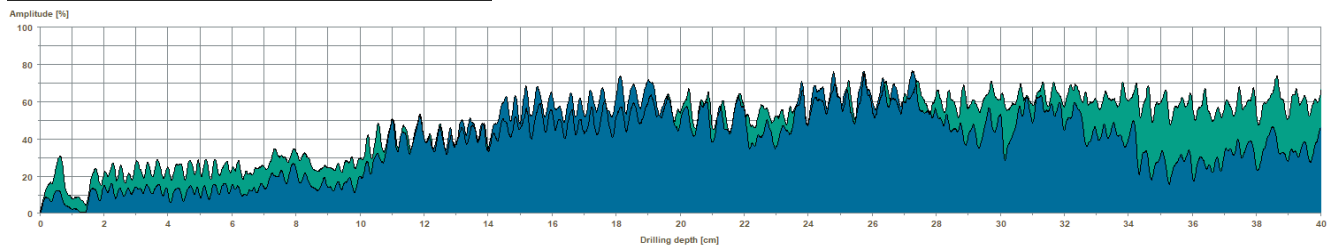
- The drill trace indicates two areas of low drilling resistance along the assessment length
- The first to a depth of c.10.5cm and the second between c.16.5cm and c.26cm; the remaining drill trace indicates sound wood is present

Drill Trace 2 – MP7



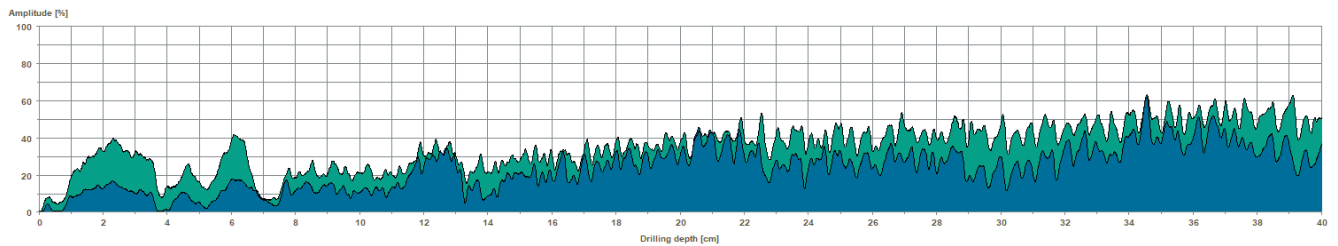
- The drill trace indicates sound wood along the length of the assessment

Drill Trace 3 – between MP10 – MP11



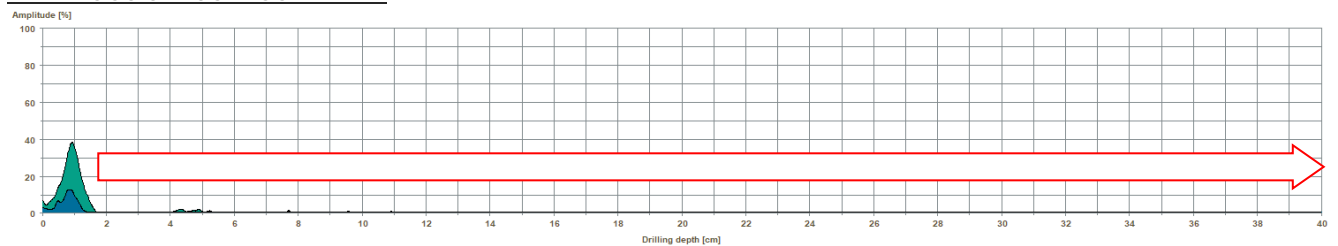
- The drill trace indicates sound wood along the length of the assessment

Drill Trace 4 – MP12



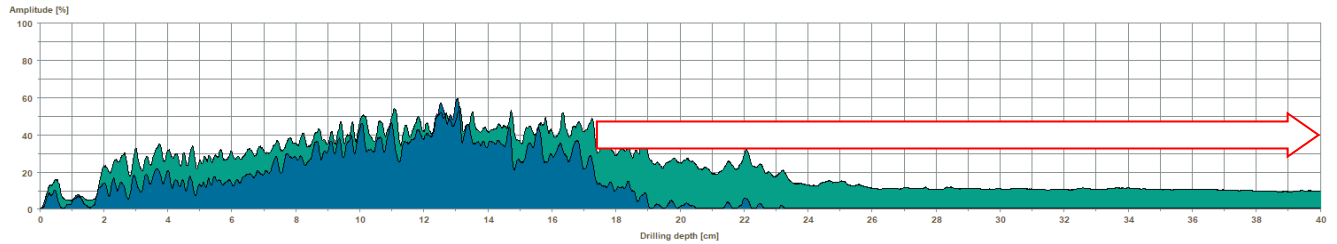
- The drill trace indicates sound wood along the length of the assessment

Drill Trace 5 – between MP14



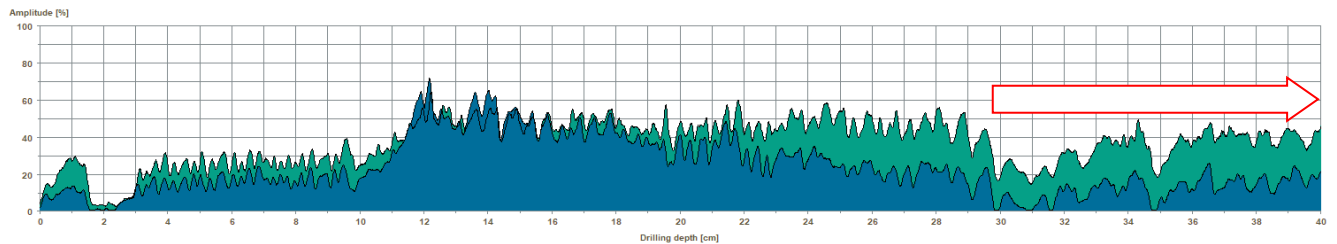
- The drill trace indicates extensive decay/hollowing

Drill Trace 6 – MP12-13



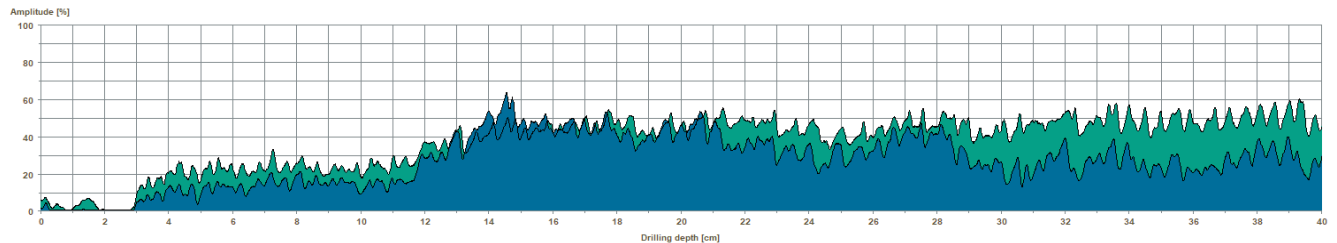
- The drill trace indicates an area of extensive decay forming from c.17.5cm through to the end of the assessment

Drill Trace 7 – between MP16 – MP17



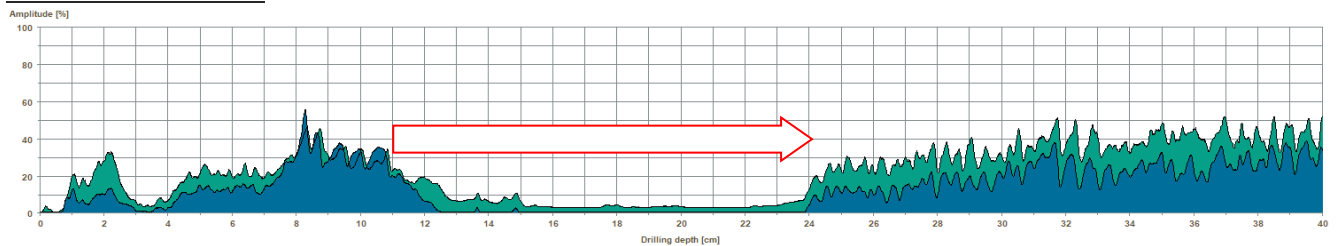
- The drill trace indicates sound wood is present to a depth of c.30cm
- From c.30cm to the end of the assessment, the resistance becomes more variable in nature suggesting an area of dysfunction has been reached

Drill Trace 8 – MP18



- The drill trace indicates sound wood along the length of the assessment

Drill Trace 9 – MP25



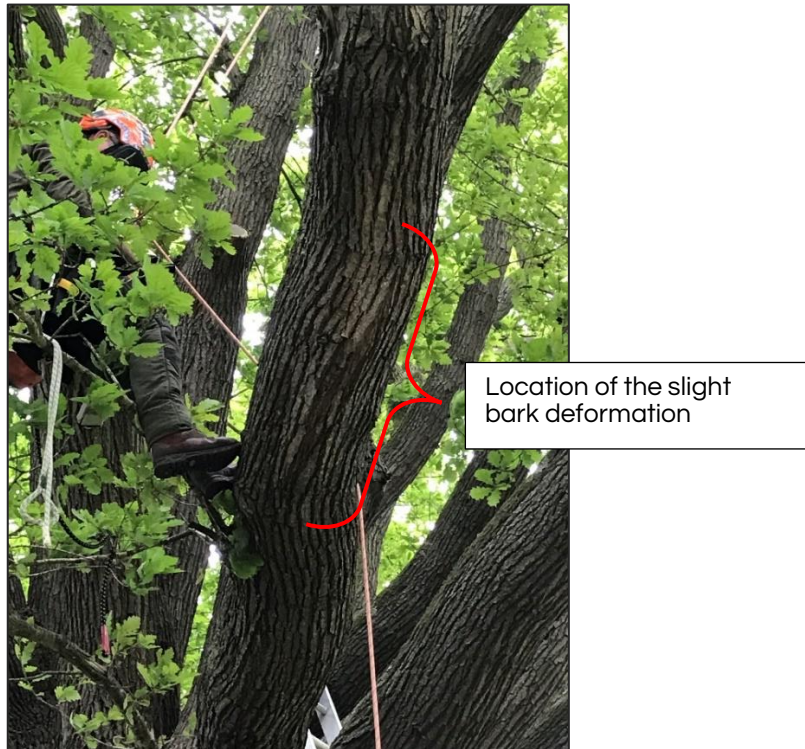
- The drill trace indicates an area of incipient decay/decay forming from c.11cm through to c.24cm
- From c.24cm, the drill trace suggests sound wood is present

4.4 Aerial Assessment of Principal Branching Structure

- The tree was accessed using modern arboricultural climbing equipment

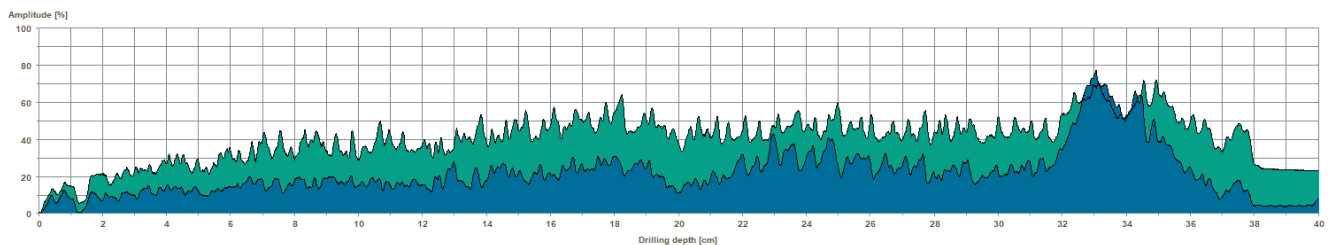
1 – Secondary Stem Section at c.4.7m heading east

- On its underside, the stem section has a slight deformation in the bark contour suggesting a possible crack may have occurred and subsequently occluded



- The stem diameter measured c.41cm however the cross section is more oblong with the longer distance being along its vertical axis
- The Resi PD400 was used at a 24° angle on the upper side of the stem section – please see the drill trace below

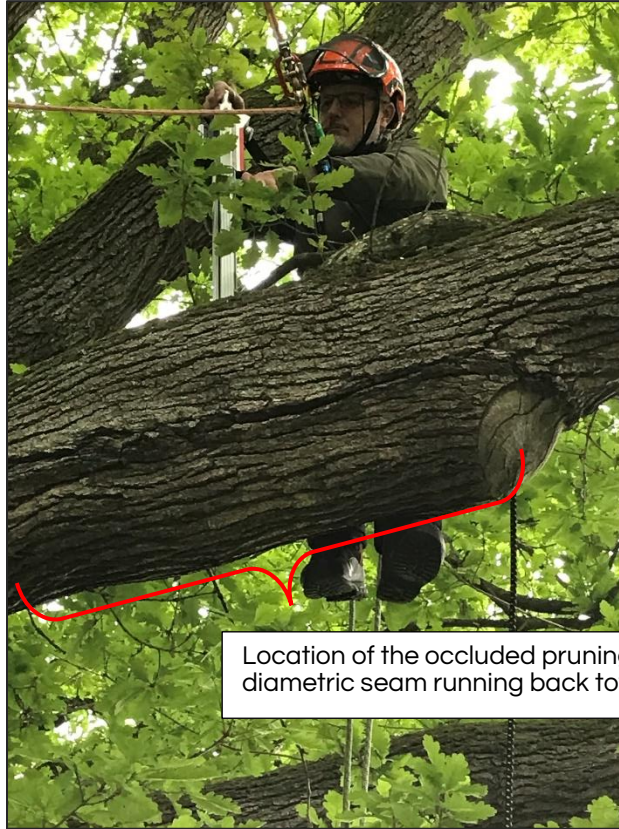
Drill Trace 10



- The drill trace indicates a slight change in resistance around c.20cm suggesting a possible area of altered wood
- The drill exits the stem section at c.38cm

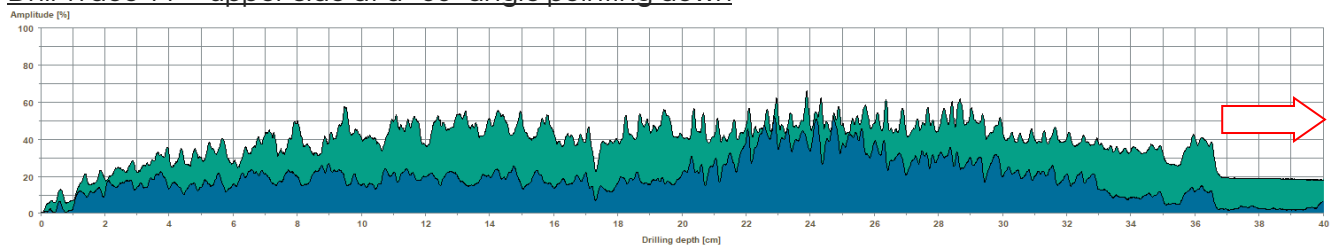
2 – Secondary Stem Section at c.4.7m heading north east

- On the underside of the stem section is an occluded wound of a removed tertiary stem section. Radiating back towards the main stem is a long seam which appears diametric in nature



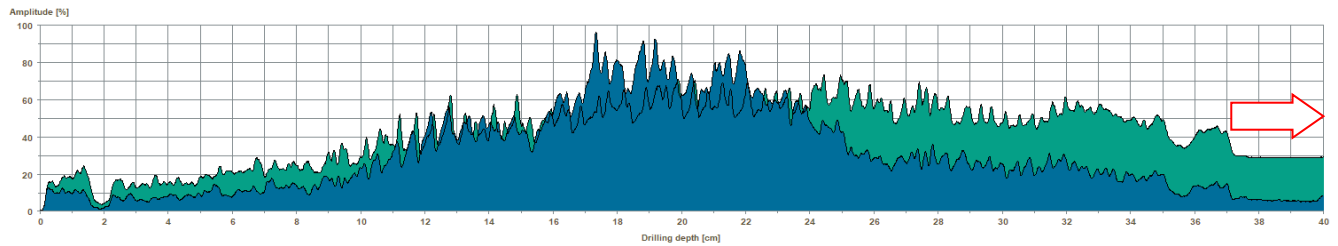
- To assess the condition of the inner wood structure, the Resi PD400 was used in two locations where the stem diameter was c.50cm – please see the drill traces below:

Drill Trace 11 – upper side at a -60° angle pointing down



- The drill trace indicates a decrease in resistance to the drill from c.26cm before entering an area of decay/hollowing from c.37cm
- This suggests that towards the centre of the stem section, the wood structure is becoming compromised due to the effect of decay

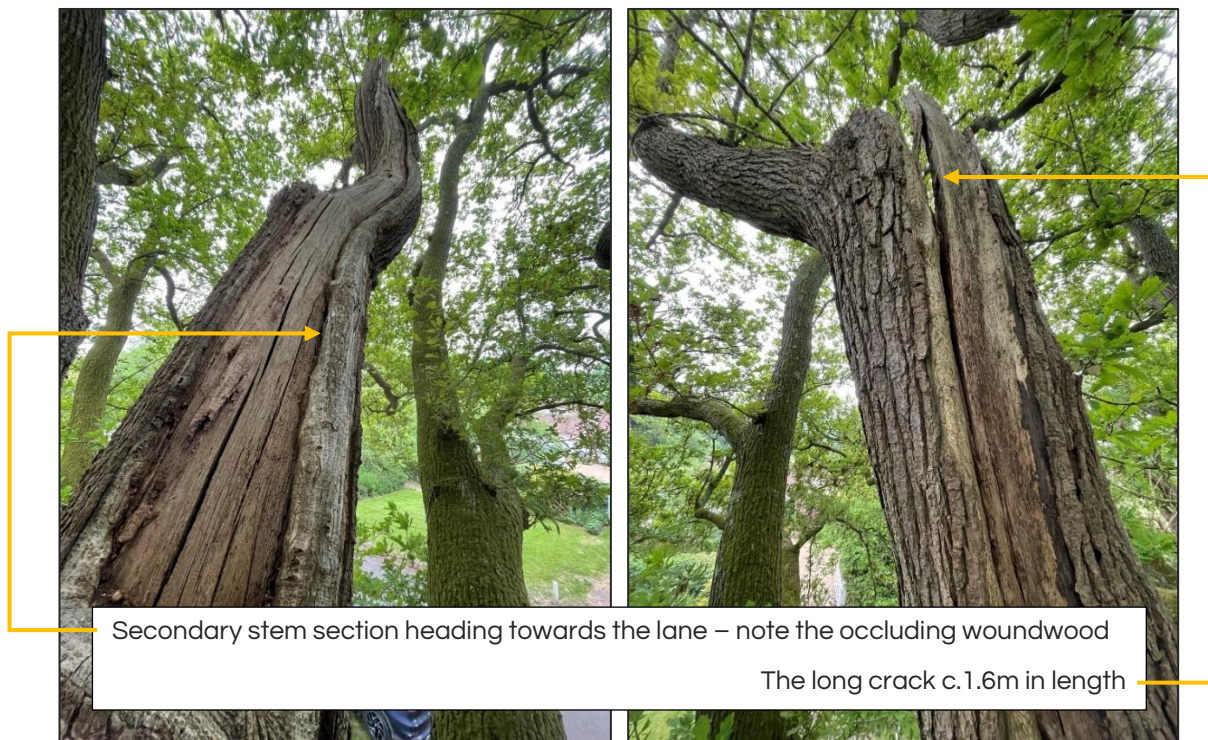
Drill Trace 12 – underside at a +40° angle pointing upwards



- The drill trace indicates a decrease in resistance from c.24cm before entering an area of decay/hollowing from c.37cm
- This suggests that towards the centre of the stem section, the wood structure is becoming compromised due to the effect of decay

3 – Secondary Stem Section at c.6m heading east

- A long stem section with a large open wound on its upper side starting from its attachment point with the main stem – see below. Woundwood¹ is being placed around the wound

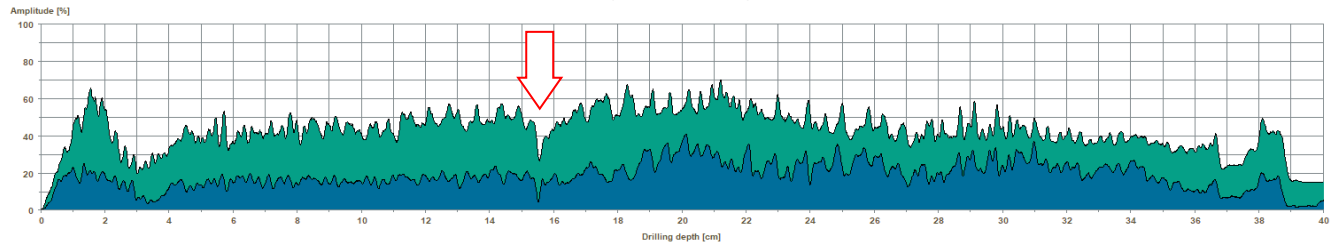


- The stem bifurcates c.4m away from the point of attachment forming two tertiary stems, one of which has been removed
- A crack has formed at the point where the tertiary stem was removed, which runs down the stem to a length of c.1.6m – see the right hand photo above

¹ Wound wood – occluding tissues forming around a wound (in preference to the ambiguous term 'callus')

- To assess the quality of the wood at the mid-point along the crack, the Resi PD400 was used – please see the drill trace below:

Drill Trace 13 – upper side of stem at a -17° angle pointing down



- The drill trace indicates an increasing resistance to the drill with a sharp drop at c.15.5cm suggesting the drill breached the crack that's migrating down the stem section
- The drill exited the stem section at c.39cm

4 – Central Crown Secondary and Tertiary Stem Sections

- Within the central area of the crown area number of stems sections with areas of bark missing along their lengths with the majority extending in a westerly direction; however, one does extend out towards the lane – see the photos below:



- Many of the sections have occluding woundwood forming
- However, in some places, the outer edge of the bark layer is becoming friable in nature suggesting decay is continuing unchecked

5 – Secondary Stem Section at c.4.5m heading west

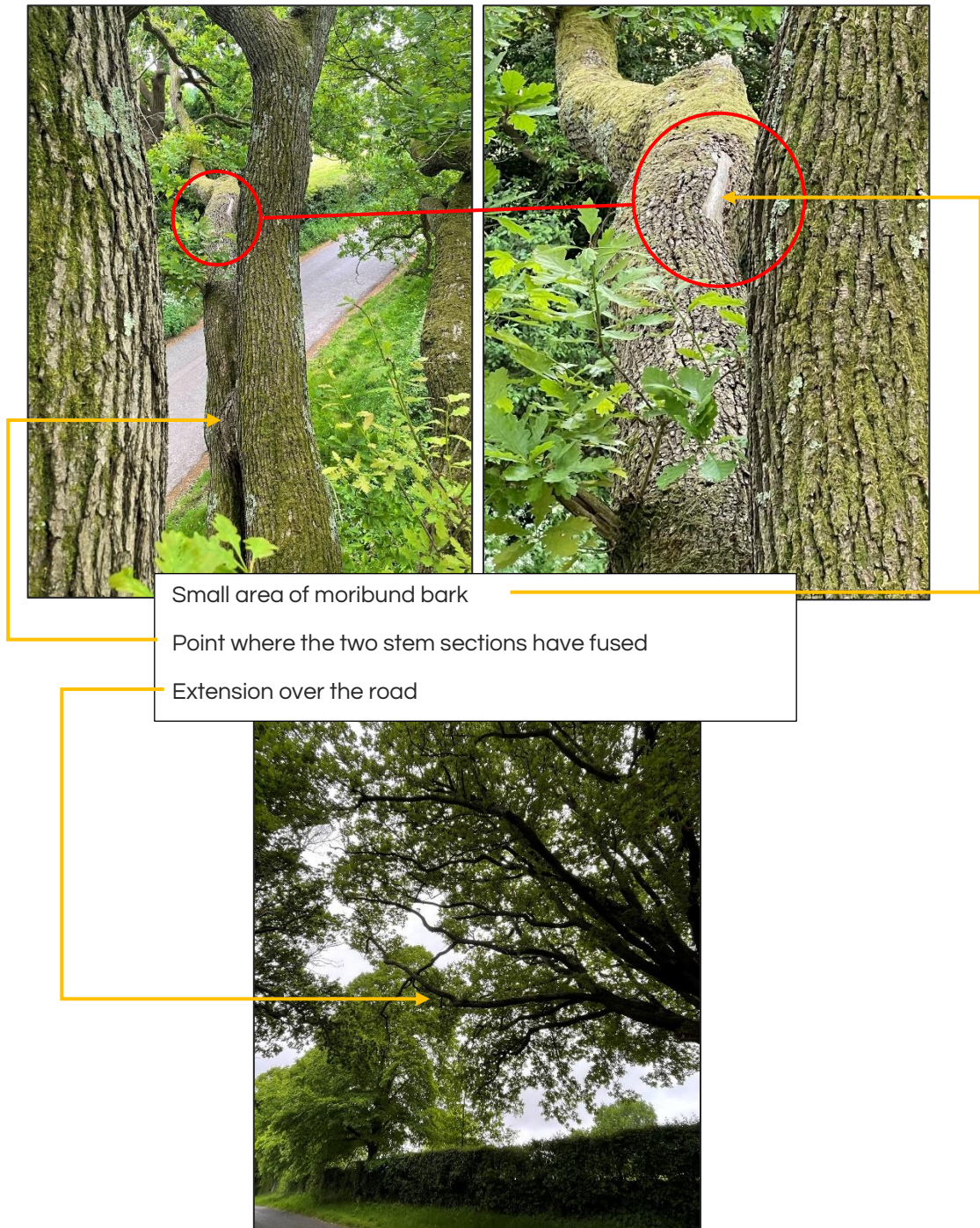
- A truncated stem section with c.70% of the bark layer missing from its point of attachment to the end of the pruned stem – see below:



- Approximately 1.5m out from the point of attachment are fruiting bodies of the decay fungus *Daedalea quercina* (Oak mazedgill). It is saprotrophic on dysfunctional and/or dead sections
- The new, low fence can be seen below the western crown spread

6 – Secondary Stem Section at c.4.8m heading south

- A long stem section that has fused with its neighbour directly above, both head south over the lane
- The bottom section has small area of moribund bark on its upper side – see below



5.0 Summary of Results

Ground Level Detailed Decay assessment

- The tomogram indicates high sonic velocity across the level of the assessment suggesting the cross section is free from any decay or dysfunction; however, a number of the drill traces contradict this
- The Picus sonic tomography unit works by timing how long it takes for sound waves from one measuring point to reach the other measuring points; the resultant tomogram is an interpretation of those times
- The sound waves can be slowed and disrupted not only by wood exhibiting areas of decay, dysfunction or hollowing but also by deeply included buttress roots where the two opposing faces of bark act as a barrier. Cracks within the wood structure can also impede the sound waves
- Drill Trace 1 and Drill Trace 9 were undertaken where deeply fluted buttress roots have formed and it is my opinion that the drill was following the included bark layer and not an area of decay; where the drill encountered resistance, it had reached sound wood
- Drill Trace 5 undertaken at MP14, the location of the *Pseudoinonotus dryadeus* fruiting bodies, does indicate extensive decay has formed
- Drill Trace 6, which was undertaken pointing towards the area of fruiting bodies and not towards the centre of the tree. This was done to 'pick up' any decay that maybe migrating away from the point of the fungus, which it does
- Drill Trace 7 also indicates a slight change in resistance towards the end of the assessment suggesting an area of dysfunction has been reached
- The lightening in the brown colour around MP14 does suggests a change in wood structure which has been confirmed by the three drill traces

Aerial Assessment of Principal Branching Structure

1 – Secondary Stem Section

- The drill assessment does not indicate any significant change to suggest an alteration in the wood structure

2 – Secondary Stem Section

- The assessment from both sides of the stem suggests an area of dysfunction within the central area of the stem. However, either side of this area, the wood exhibits high resistance to the drill and therefore, sound wood
- This stem section is being shortened as part of another phased piece of work, and in my opinion, this should help to alleviate any loading on the area of dysfunction

3 – Secondary Stem Section

- The crack extends down the stem for c.1.6m, however, at its mid-point, the drill trace indicates the wood structure is sound with only a small crack forming at c.15.5cm to suggest its presence
- There is a risk that the stem could fail at the 'pivot' point where the crack meets the sound wood. In my opinion, this is unlikely as the surrounding crown structure is acting as a buffer from any wind loads that could otherwise affect it

4 – Central Crown Secondary and Tertiary Stem Sections

- The new low level fence erected beneath the western crown affords members of the public some protection should any stem section fail
- However, the fence does not fully encapsulate the westerly crown meaning any failure of the upper branches outside the fence line, could result in them reaching the ground where members of the public are allowed
- The tertiary stem section that heads eastwards towards the lane is short and in the event it were to fail, would more than likely become suspended

5 – Secondary Stem Section

- *Daedalea quercina* (Oak mazegill) is a saprotrophic decay fungus where it lives on dead and dysfunctional wood. It is not known to cause failure of the host branch or stem section
- Its presence alone is not a cause for concern but does allude to the degradation of the wood structure

6 – Secondary Stem Section

- The small moribund bark on the upper surface of the stem section suggests an area of dysfunction is beginning to form, sufficient to cause the decline of the bark layer at this point
- At the time of the assessment, I do not consider the area to warrant any further action

6.0 Conclusion

- The tree has been categorised as a veteran, which can be defined as a tree with the physical characteristics of an Ancient tree but is not ancient in years compared to other trees of the same species
- Therefore, its management must take into account the vulnerability such an aged tree has in relation to improper management
- The tree appears to be in GOOD physiological condition with good-to-adequate extension growth. However, as the tree ages, the crown will begin to retrench² which itself will bring further management issues
- The erection of the low level fence is a good start to help reduce the footfall beneath the westerly crown spread and in doing so, reduce compaction on the rooting system that inhabits the upper c.60cm of soil. It would have been even better if the fence mirrored the crown spread as parts of the branching structure extend past the fence line
- The east and southerly crown spread overhang the lane, which is regularly used by pedestrians, cyclists and vehicles. The management of this section of the crown should take this level of usage into account
- It was noted that a stem section had failed across the lane, the reason for which is unknown. A further stem section had also failed into the recreation ground side of the tree
- A condition known as Summer Branch Drop (SBD) can affect large, undefective stem sections on a number of tree species, oak being one of them
- The phenomena, which is poorly understood, occurs on mature and old trees and involves the failure of branches that are close to horizontal, after prolonged periods of dry summer weather
- SBD is thought to be relatively frequent in the afternoon and soon after heavy rain
- Therefore, the failure of the two stem sections recorded may be due to SBD, if the time of year matches. Alternatively, they may have been due to the age of the tree and part of the retrenchment process
- They may also have failed for reasons, such as decay, cracks etc., that are no longer evident
- The ground level decay assessment did not highlight any issues that would warrant further investigation
- The decay fungus *Pseudoinonotus dryadeus* forms a selective delignification white rot where the lignin is removed preferentially (over the cellulose) which eventually leads to hollowing. The tree can

² The progressive reduction in the size of the crown of an old tree by means of the dieback or breakage of twigs and small branches, accompanied by the enhanced development of the lower or inner parts of the crown – *Ancient and other veteran trees: further guidance on management*

stand for many years on the 'stilts' that are formed by the intact buttress roots, giving it its common name of Eiffel Tower Bracket. When confined to the centre of the tree, failure seldom occurs

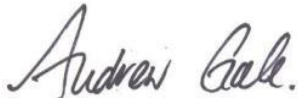
- *Gymnopus fusipes* begins as a parasitic fungi before becoming saprotrophic on the dysfunctional and/or dead roots of the host tree. As the white rot breaks down the sapwood of the roots, failure of the root is possible in extreme cases
- The aerial assessments did highlight some issues that may affect the structural integrity of the stem sections
- At the time of the assessment, I do not believe there to be an immediate need to recommend a pruning regime as any alterations in the tree's ability to diffuse the wind load could impact on other branches
- However, this may not always be the case and I would therefore recommend an assessment in three years of the reports date or, within the current survey period for the remaining tree stock managed by the Parish Council
- I would also recommend regular, inspections by the Parish Council's Tree Warden who will be better placed to assess any changes, particularly after extreme weather events, such as wind gusts in excess of Force 10 on the Beaufort Scale and after prolonged periods of dry weather during the summer months

7.0 Recommendations

- Undertake a ground level visual assessment of the crown structure which extends over the lane every twelve months
- Undertake a ground level decay evaluation in three years' from the reports date
- Maintain the tree as part of the inspection regime for the Parish Council's tree stock
- This time frame should be shortened if the trees local environment changes significantly or further fruiting bodies emerge from the basal area of the stem, after extreme wind events and after prolonged drought conditions

This concludes my report.

Signed:



Andrew Gale *Dip Arb L6 (ABC) M.Arbor.A*

Date: 18th May 2022



8.0 Appendix 1

Survey Key

Tree No.	Relating the tree being assessed	
Species	Common name in English	
Scientific name	The current scientific name will be used	
Height	Measured using a TruPulse digital clinometer and shown in metres (m)	
Crown Spread	Measured using a TruPulse digital clinometer and shown in metres (m)	
Age Class	Young [Y]	recently planted or established within the last 5 years
	Semi Mature [SM]	a well-established youngish tree but far from full maturity
	Early Mature [EM]	long established nearing its full size but not fully mature
	Mature [M]	fully mature tree that has met its full size
	Late Mature [LM]	a fully mature tree that has passed its peak; may exhibit areas of decline
	Veteran [V]	a tree with the physical characteristics of an Ancient tree but is not ancient in years compared to other trees of the same species
	Ancient [A]	a tree that has past full maturity and is old or aged in comparison to other trees of the same species
Physiological Condition	GOOD FAIR POOR MORIBUND DEAD	no significant health problems some symptoms of ill health significant symptoms of ill health in a serious and irreversible decline not alive
Tree Structure	Main Stem	The stem, from ground level up to the point at which it bifurcates
	Primary Stem Section (PSS)	The larger stem sections that emanate from the main stem after bifurcation; form the main crown structure
	Secondary Stem Section (SSS)	The stem sections that emanate from the primary stem sections that contribute to the inner crown structure
	Tertiary Stem Section (TSS)	The stem sections that emanate from the secondary stem sections that contribute to the inner and outer crown structure
	Subordinate Branch Structure (SBS)	The smaller diameter branches that help form the inner and outer branch structure; leaf bearing twigs emanate from these to form the crown

Appendix 2

Beaufort Scale

Beaufort Number	Name	Knots	MPH	Effects Observed on Land
0	Calm	Under 1	Under 1	Calm, smoke rises vertically
1	Light Air	1-3	1-3	Direction of wind is shown by smoke drift but not by wind vanes
2	Light Breeze	4-6	4-7	Wind felt on face, leaves rustle, ordinary wind vane moved by wind
3	Gentle Breeze	7-10	8-12	Leaves and small twigs in constant motion, wind extends light flag
4	Moderate Breeze	11-16	13-18	Raises dust and loose paper, small branches are moved
5	Fresh Breeze	17-21	19-24	Small trees in leaf begin to sway, crested wavelets in inland waters
6	Strong Breeze	22-27	25-31	Large branches in motion, whistling heard in telegraph wires, umbrellas used with difficulty
7	Near Gale	28-33	32-38	Whole trees in motion, inconvenience felt in walking against the wind
8	Gale	34-40	39-46	Breaks twigs off trees, generally impedes progress
9	Strong Gale	41-47	47-54	Slight structural damage occurs – chimney pots, slates removed
10	Storm	48-55	55-63	Seldom experienced inland, trees uprooted, considerable structural damage occurs
11	Violent Storm	56-63	64-72	Very rarely experienced, accompanied by widespread damage
12	Hurricane	64 and over	73 and over	