

Nicola Webster
Hilton Parish Council
Hilton
Cambridgeshire

11th August 2025
Ref: 11846

Dear Hilton Parish Council,

Re: Picus Sonic Tomograph and IML PD 500 Micro Drill testing of 1x English oak at The Green, Hilton.

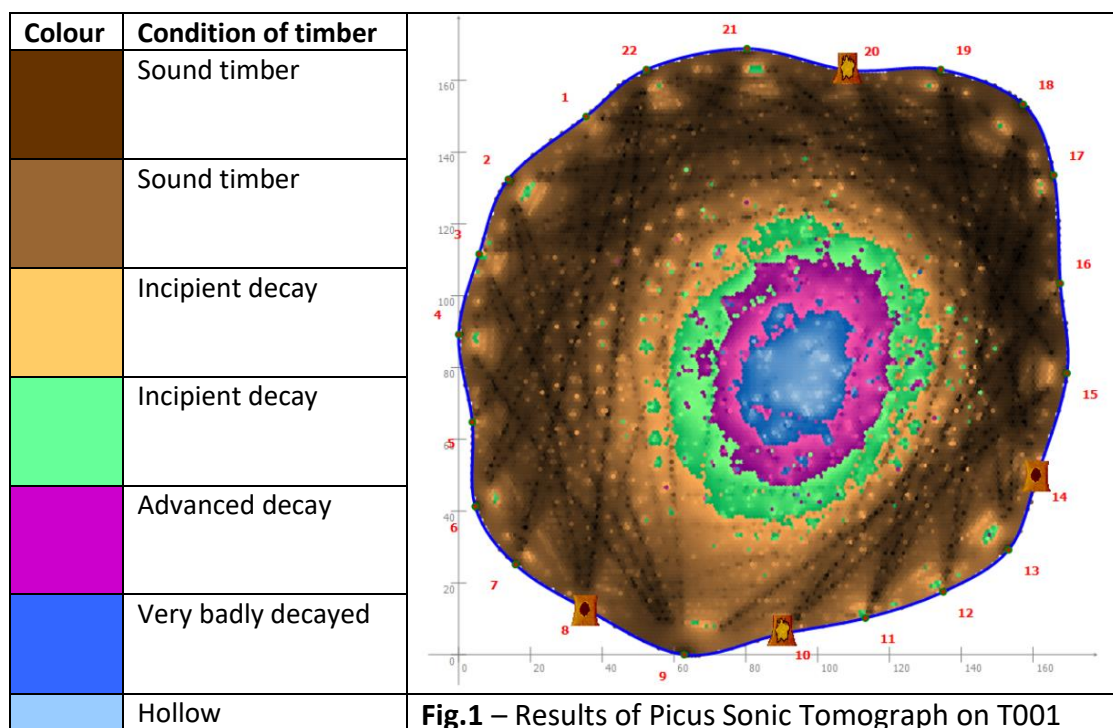
T001 – English oak (*Quercus robur*)

1. T001 is a large, mature specimen growing on The Green, in proximity with an access track. The tree appeared to be in full leaf at the time of inspection. There is evidence of failed branches on the east aspect.
2. In addition to the failed branches, it is reported that the tree is host to the fungal pathogen chicken of the woods (*Laetiporus sulphureus*). At the time of inspection, the fungus was not visible on the tree despite it being a typical time of year for it to be present.
3. The Picus test was undertaken at approximately 1m above ground level. Drill tests were located close to the stem base, at approximately 1m and approximately 1.5m.

Picus Sonic Tomograph

The Picus uses a series of sensors positioned around the stem circumference to both send and receive sound waves generated by the tapping of the sensors with a hammer. Once all the sensors have been tapped the software generates a tomograph depicting the condition of the wood as a series of colours dependant on the speed of the sound waves between the sensors. As sound travels more quickly through healthy wood and more slowly through deteriorating/dead wood the tomograph generated should, if correctly interpreted, give an accurate depiction of the levels of decay within the tree. For detailed information on the 'Picus 3' Sonic Tomograph, please refer to the appended information sheet.

The tomograph depicts the varying levels of decay as differing colours which can roughly be interpreted as follows, however these can alter dependent on the type of decay evident;



Analysis of Picus test results:

Referring to Figure 1 above, the image is a cross section of the stem at approximately 1m above ground level. Each red number is the position of a sensor that was attached to the tree during testing. The sensor located at “1” points north. There were bark defects found at sensors 10 and 20. There were narrow basal cavities at sensors 8 and 14. The grey axis lines measure in centimetres.

There is a clear central decay in the middle of the stem. This decay is considered to be advanced, worsening towards the centre of stem (the purple and blue zones). There is also a solid ring of wood between the defect and the bark. There is between 320mm and more than 500mm of solid wood at any point across the cross section. This indicates that there is a thick wall of wood still present.

The wood decay between sensors 9-11 suggest a correlation of less solid wood in proximity with the defects found in the bark surface. This matches the hollowing that was found with a sounding mallet when the tree was being inspected immediately prior to the Picus test.

Supplementary Tests: To further ascertain the extent of internal decay in relation to residual wall thickness of healthy sapwood, the Picus test was supplemented with testing by means of IML PD 500 Micro Drill. The combined test results, together with the visual appraisal of the tree has been used to provide a management recommendation.

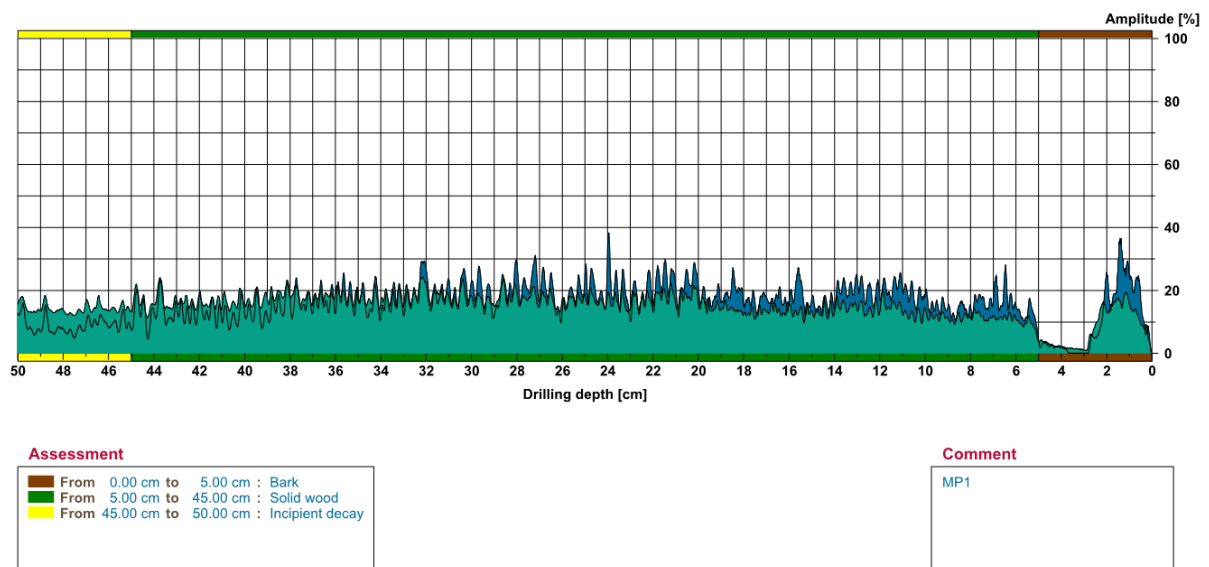
IML PD 500 Micro Drill Assessment: The IML PD 500 Micro Drill is a calibrated micro drill which measures the resistance to the progress of a 500mm long, 2mm diameter drilling needle bit. The results are appended as a graph (one for each test performed) which displays two colours; blue represents the feed rate and green represents the penetration resistance. The graph is read from right to left and can be interpreted to evaluate relative wood strength, decay pockets, variations in ring growth, structural condition of cell walls and tree responses to environmental conditions.

The variation in resistance results in increases and decreases in the amount of torque applied to the drill shaft. By means of sophisticated mechanical and electronic sensors, variations in torque are translated into graphical output which depicts the internal conditions encountered by the drill at the specific point of drilling. Each of the appended drill tests undertaken is supplemented by a brief description of the analysis and discussed in the conclusions section below. The location of the drill tests align with the sensor positions from the Picus, referenced as measuring point (MP) followed by the red number on the tomograph. Not all tests have been included in this report but they are available upon request.

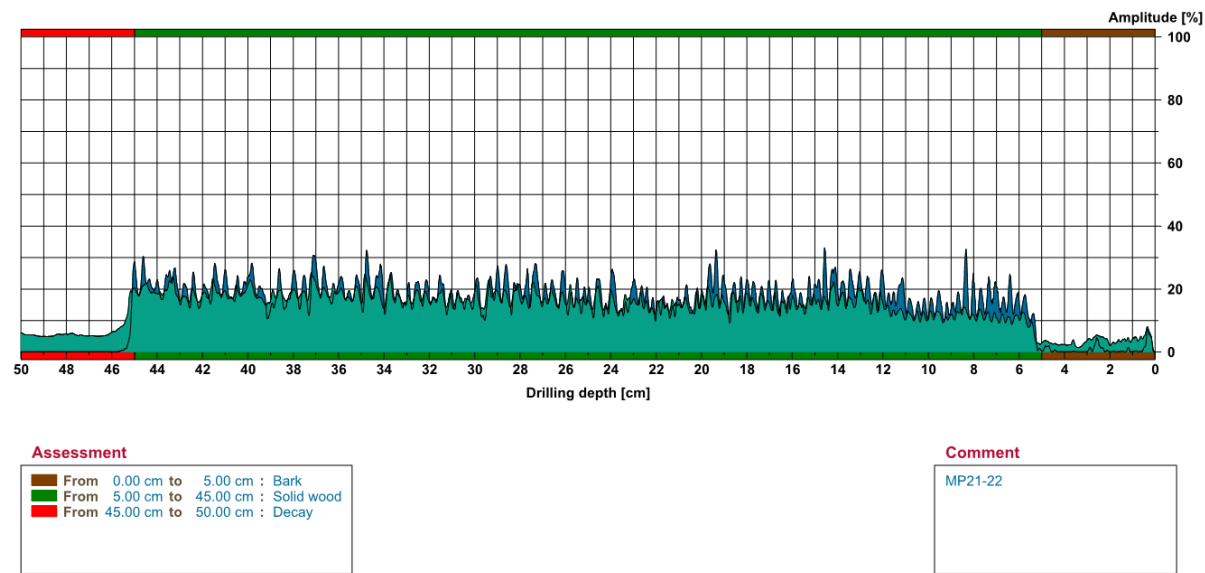
IML PD 500 Micro Drill Testing Locations

Test No.	Location of test
Drill 1	Applied at 1m into the stem at MP1
Drill 2	Applied at 1m into the stem between MP21-22
Drill 3	Applied at 1m into the stem at MP20
Drill 4	Applied at 1m into the stem at MP16
Drill 5	Applied at 1m into the stem at MP14
Drill 6	Applied at 1m into the stem at MP 10
Drill 7	Applied at 1m into the stem at MP 8
Drill 8	Applied at 1m into the stem at MP 7
Drill 9	Applied at 1m into the stem at MP 4
Drill 10	Applied at 1m into the stem at MP2

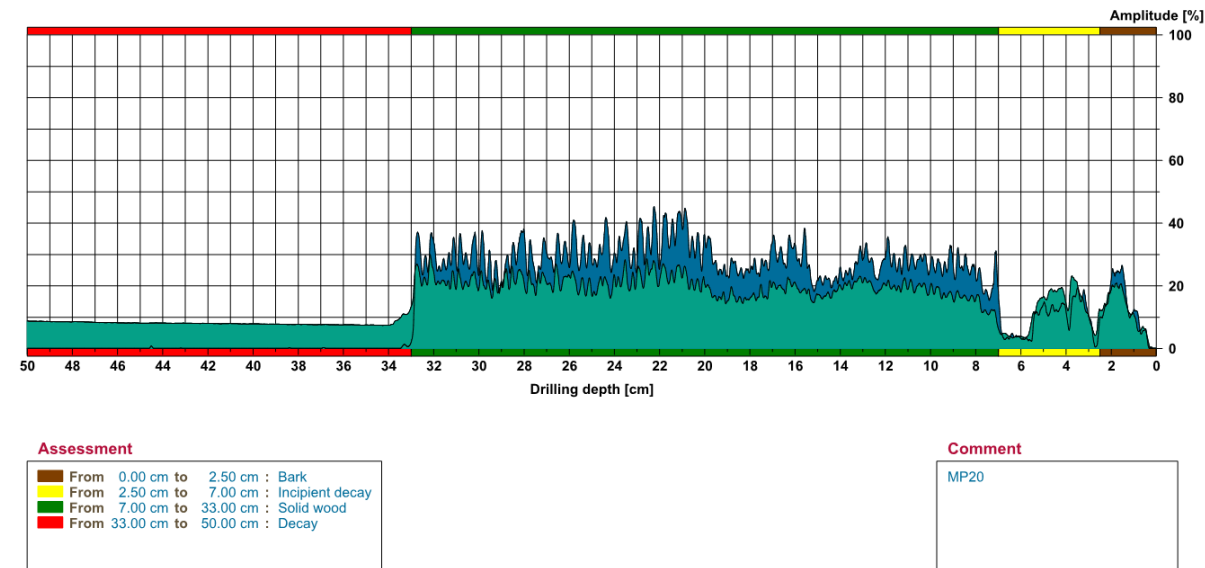
Drill 1



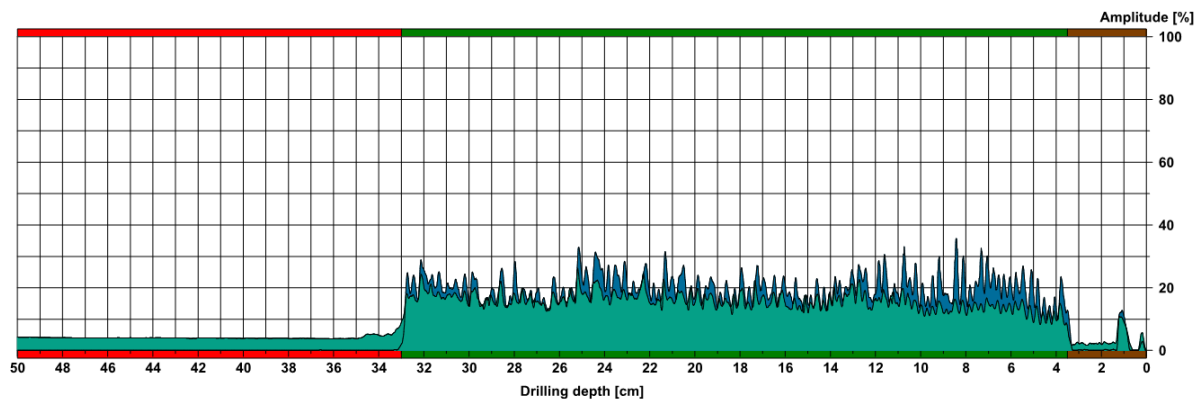
Drill 2



Drill 3



Drill 4



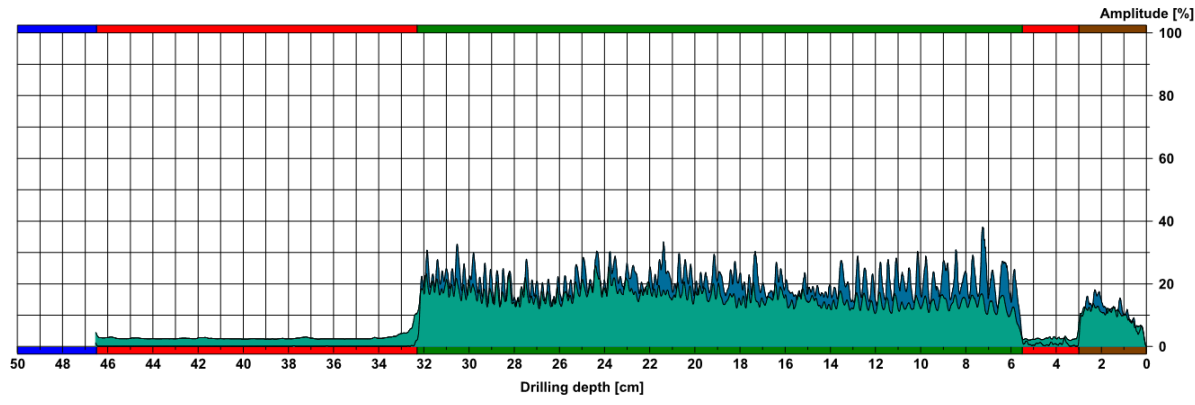
Assessment

From	0.00 cm	to	3.50 cm	:	Bark
From	3.50 cm	to	33.00 cm	:	Solid wood
From	33.00 cm	to	50.00 cm	:	Decay

Comment

MP16

Drill 5



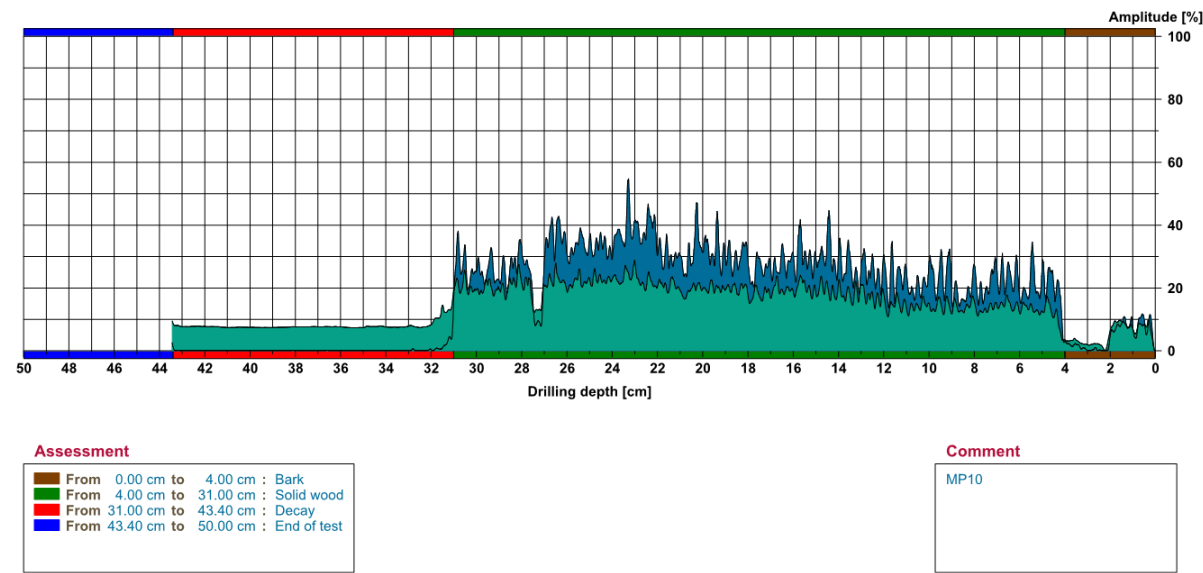
Assessment

From	0.00 cm	to	3.00 cm	:	Bark
From	3.00 cm	to	5.50 cm	:	Decay
From	5.50 cm	to	32.30 cm	:	Solid wood
From	32.30 cm	to	46.50 cm	:	Decay
From	46.50 cm	to	50.00 cm	:	End of test

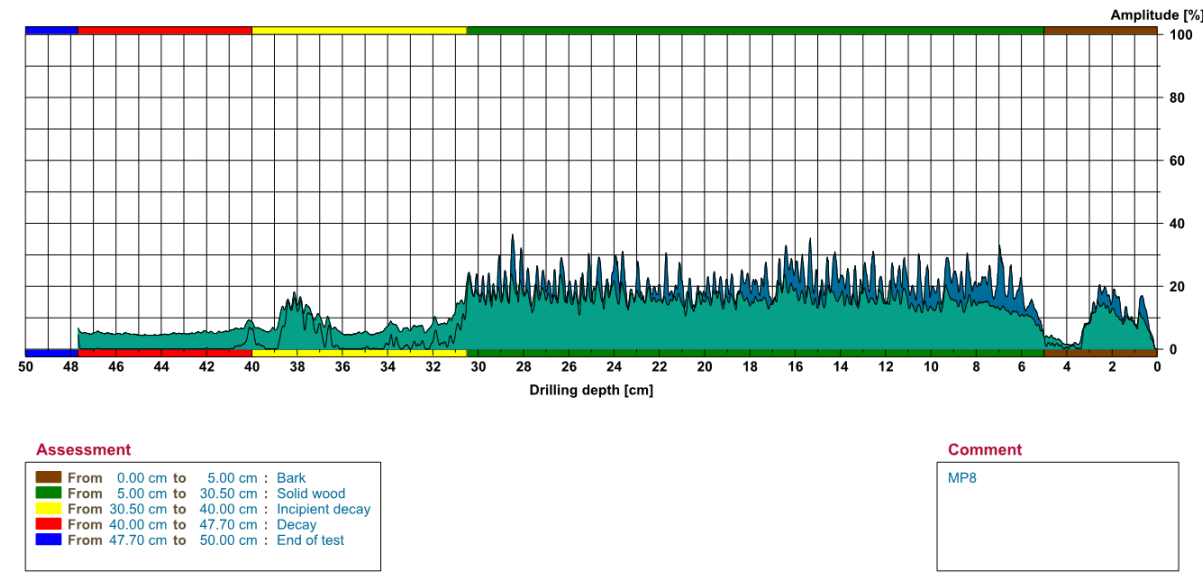
Comment

MP14

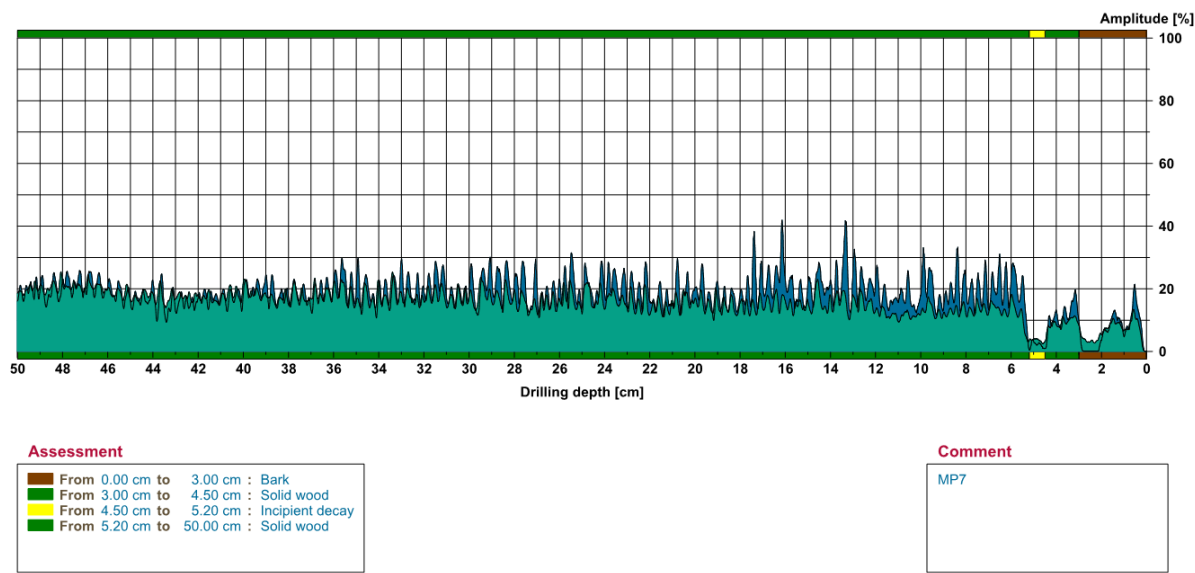
Drill 6



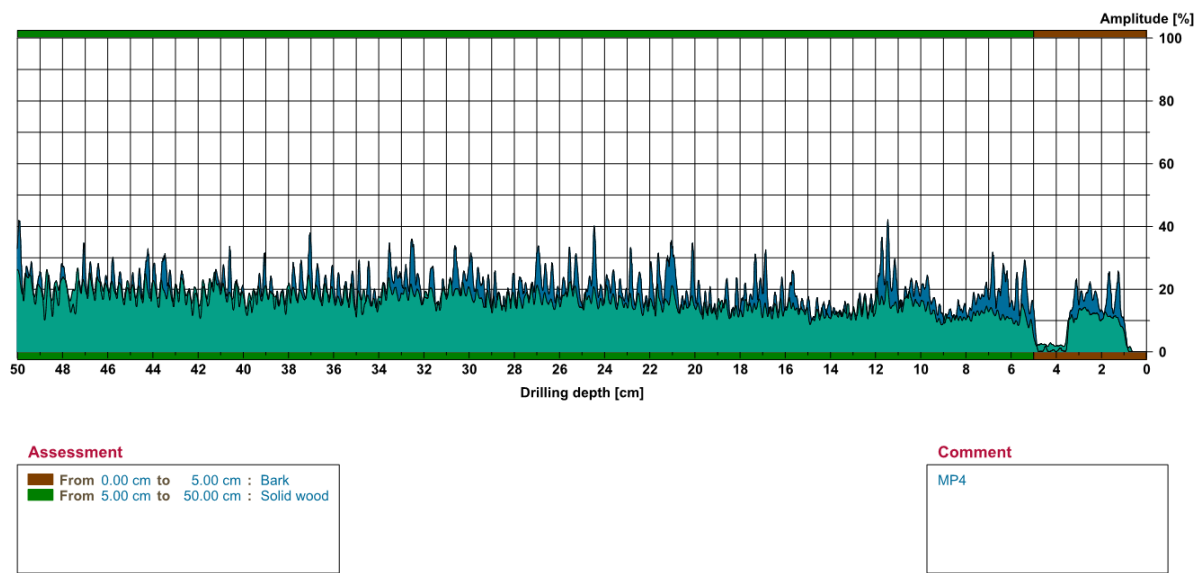
Drill 7



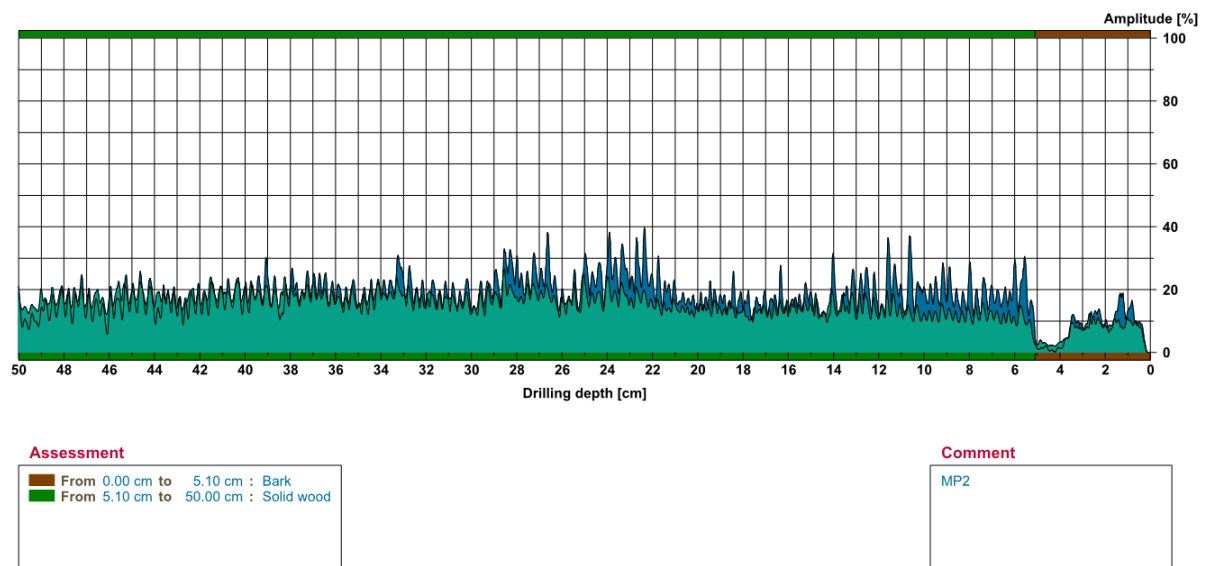
Drill 8



Drill 9



Drill 10



Analysis of IML PD 500 Micro Drill test results:

Broadly, the results from the drill testing aligns with the tomograph. The tests at MP2 and MP14 are a particularly good comparison to the Picus data as one shows a long extent of solid wood (drill 10 at MP2) and the other shows an extent of solid wood that falls away in terms of resistance in the wood where decay is evident (drill 5 at MP14). The drill tests have been taken on all aspects of the stem and concentrate on the areas of dysfunction on the stem.

The drill tests a maximum of 50cm of wood and the diameter of the stem at the height of testing is so large that the drill needles cannot reach into the centre of the tree. This results in an area of the cross section of the tomograph that cannot be tested by the drill. However, each drill test can still be measured against the Picus data and they produce very similar results, indicating that both pieces of equipment are finding commensurate levels and extent of solid wood and decay.

Conclusions and Works Recommendations

To conclude, the decay analysis tests were successful and advanced decay is present in the heartwood of the tree. The drill results appeared to broadly match the tomograph from the Picus, although it can only measure 50cm into the stem.

As part of this assessment, the potential risk that the tree might exhibit is an important factor into any works recommendations following the test results. T001 is located north of an access track that serves multiple dwellings but is otherwise set away from roads and structures. There is a temporary fence set up around the perimeter of the tree, inhibiting access beneath the crown and the area immediately around the tree. This location and these measures help to manage the risk posed by the tree.

It is recommended that the Picus and drill tests are repeated in July 2026 to measure any advance in the level of decay. Annual reinspection is recommended to establish a better understanding of the fungal activity in this tree.

The fence that has been erected around the tree should be retained to prevent access beneath the crown. The vegetation within the enclosure should not be managed in order to further dissuade access. Consideration could be given to erect a more permanent fence.

It is likely that the fungal pathogen will continue to subsist in the tree and advance the decay. With the continuation of the decay, the condition of the tree will deteriorate. As a result, it is recommended that tree surgery is undertaken to remove branches accounting for approximately 5% of the crown volume. These branches should be no larger than 100mm at the point of pruning and all cuts must be taken at an appropriate pruning point or union, in accordance with BS3998. This surgery will seek to mimic natural retrenching in order to a) reduce the potential for falling branches, b) stimulate reaction growth in response, and c) reduce weight in the crown.

I trust that the above is useful and provides answers to the questions regarding T001. If you have any further queries, please do get in touch.

Yours sincerely

A handwritten signature in dark ink that reads "Alexander Turner". The script is cursive and fluid, with the first name and last name clearly distinguishable.

Alex Turner