



Arbortrack Consultancy Services

## PICUS 3 TOMOGRAPH REPORT



**Fig Tree, Davies Park, Brisbane**

**October 2020**

Arbortrack Consultancy Services

[REDACTED]  
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Document reference: PIT/2010/20



## PICUS TOMOGRAPH REPORT

**Client:** [REDACTED]

**Location:** Davies Park, Brisbane

**Date of Inspection:** 20<sup>th</sup> October 2020

**Inspector:** [REDACTED]

**Our reference:** PIT/2010/20

**Instructions received:**

I am instructed by [REDACTED] Treescience Pty Ltd, to carry out a Picus 3 tomography inspection to assess the structural condition of a Fig Tree growing in Davies Park

A summary of the method of inspection used is appended to this report **Appendix A**

**Tree Species:** Fig Tree (*Ficus benjamina*)

**General Description**

The tree is approximately 17 metres high with a crown spread of 13 metres. It is mature to over-mature and has a slightly sparse crown. There is some minor deadwood throughout its crown and a number of cavities throughout the crown. It is of high amenity value and landscape importance and makes a significant contribution to the Davies Park.

At the time of the inspection there was evidence of an advanced infection of *Phellinus* on several areas of the main stem. There is also a small cluster of fungal fruiting bodies on the south side of the trunk towards its base.

[REDACTED] has been instructed by Brisbane City Council to provide a report recommending the future management of this tree. His findings are in a separate report to the City Council and should be read in conjunction with this report.

This report is prepared to provide an insight into the structural integrity of the tree at 140cm and 10cm above ground level and involves the testing of the stem at these heights. The marker shown for the lower test by Brisbane City Council was at approximately 30cm above ground level. However, on closer examination, [REDACTED] requested the lower inspection be carried out at 10cm.



## Results of inspection

### T1 Sonic Tomography Result of Stem at 140cm above ground level (20.10.2020)

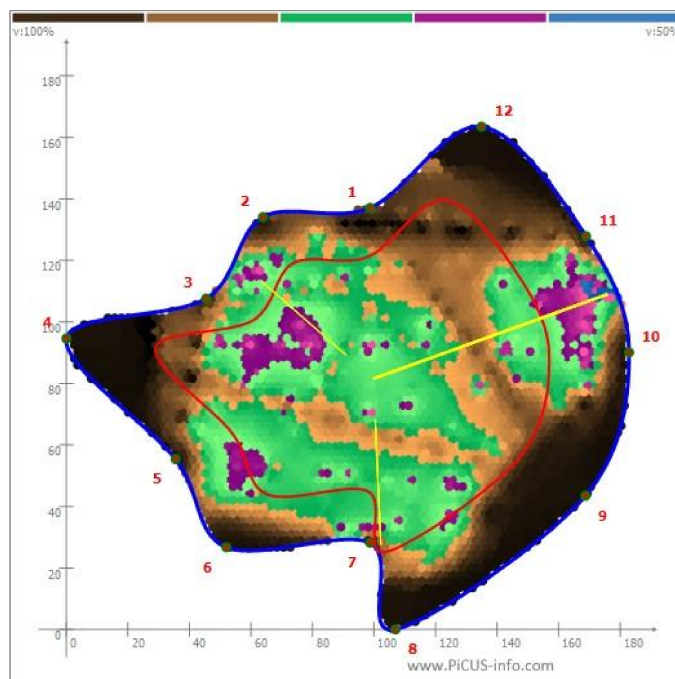


Photo 1 – Showing level of Picus test at 140cm above ground level



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## T2 Sonic Tomography Result of Stem at 10cm above ground level (20.10.2020)

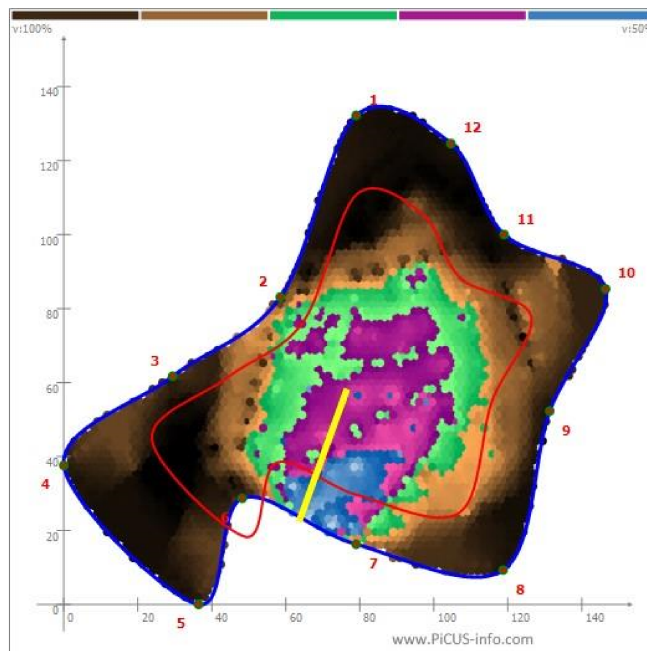


Photo 2 – Showing level of Picus test at 10cm above ground level



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## Observations

The black/brown colours show the extent of the sound wood, which is only around the stem wall. The green colour represents damaged/dysfunctional wood. The violet and blue colours denote a cavity, a crack, or decay. The redline is shown in this test to help illustrate the required residual sound wall thickness at the test heights. The yellow lines show the possible presence of cracks in the stem.

Measurement at 140cm above ground level (AGL), shows the green and violet colours are evident within the stem wall at several levels, where the fungus is beginning to penetrate the stem wall, which illustrates the possible progress of the fungi as it continues to attack the sound wood of the trunk.

Measurement at 10cm above ground level (AGL), The blue, green and violet colours only penetrate the required residual wall thickness in two areas. One at MP2 and the most noticeable area between MP 6 and MP7 where the fungal fruiting bodies are clearly visible.

Sonic velocities vary according to species, seasons, water contents, etc., sometimes even within the same tree. This makes it difficult to assign “sharp” or definite colour borders. To avoid this problem, the Picus calculates “relative velocities” which means all velocities recorded at a certain level are compared with one another. This shows us where the sonic waves travel slower, compared to the “fastest” areas.

There is an option with the Picus 3 software of using an “SoT 1” or “SoT 2”.

Using the SoT 1 method tends to show the artefacts caused by incorrect calculation of the intersection of the beelines between measuring points. The version SoT 2 widely ignores those incorrect intersections and should be used on trees with major cracks, co-dominant trees and off-centre defects. Hence the reason for using this method on this occasion.

Given this is a well-established fungi infection, SoT 2 provides a better insight into the condition of this tree.

If the SoT 1 calculation method is used on this tree, the resulting tomograph shows the amount of diseased or dysfunctional wood at the level of the inspections as being far greater than the actual condition of the tree at the time of the inspection.

## Recommendations

These will be discussed by [REDACTED] of Treescience PTY Ltd in a separate report.



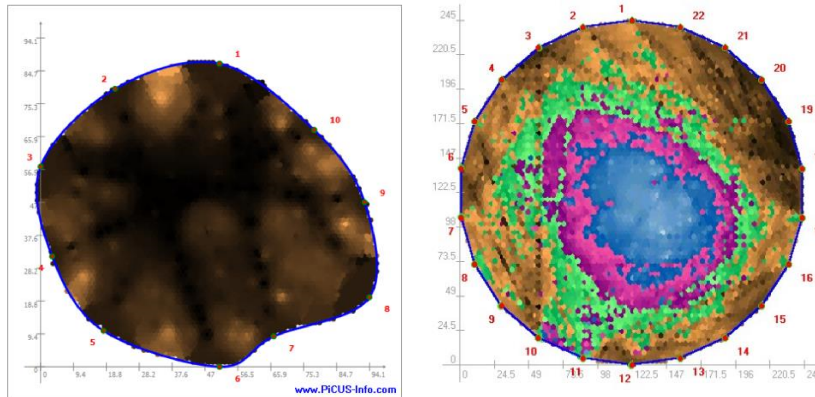
## APPENDIX A

### Method of Inspection

Following a visual inspection of the tree it was further investigated using a Picus 3 sonic tomography unit. Brief details of the operating systems of the equipment are given below. The measurement levels of the survey are given as the height above ground level taken at measuring point 1.

### Decay evaluation

The **Picus sonic tomograph** uses the relative velocity of sound waves induced across the stem to compose a colour-shift image. Dark areas correspond to higher velocities and hence, denser wood. Decay (or hollowing) results in lower sound speeds and a shift to lighter colours, with violet and blue/white indicating more significant decay. Examples of a sound tree (on the left) and one with decay/hollowing are shown below:



### The Equipment



The electronic free shape callipers (resting against the tree) ensure efficient, accurate measurements are taken. The Picus 3 sonic tomograph is strapped to the tree with its sensors running from either side to the orange markers around the base of the tree. The radio hammer is resting against the base of the tree below the tomograph.

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