

Habitat tree at 3457 Warburton Highway, Warburton

Background

Council has managed a large tree at 3457 Warburton Highway, Warburton for many years. The tree is a large *Eucalyptus cypellocarpa* (Mountain Grey Gum) and has been cabled due to faults at the base (see photo 2 below).

In late 2022 a qualified arborist recommended that the tree be removed. A tomography test in 2023 confirmed that there was extensive decay at the base and that there was a crack from the stem union to the ground (see figures 1 and 2 below).

A contractor could not remove the tree due to a protestor in the tree. Council commissioned Ironbark, an environmental arboriculture company, to provide an options report to manage the risk. They recommended cutting to a height of 10m and having a 10m radius exclusion zone.

The tree has now been cut to 10m (see photo 1 below) and this report assesses the residual risk.

Condition of the tree

The tree was cut to 10m on 1 June. A cable at 8m is still in the tree and is not under tension, indicating that removing the crown of the tree has reduced the load on the base of the trunk.

There is only a small amount of leaf canopy left, which means that sugar production is limited. In response to this the tree may produce epicormic shoots (regrowth to replace the foliage lost), or very limited regrowth, or die. It is not possible to gauge the response accurately at this time.

Risk

I have done a risk assessment of the tree following the work (see figures 3 and 4 below).

The risk in figure 3 comes out at low, but it is important to note that this is dependent on a fence being erected to stop people from getting within the fall range of the remaining trunk. Due to the size of the tree, the 10m radius must be from the bark to all points of the compass, not from the centre.

Figure 4 shows the risk if there is no exclusion zone. It comes out as moderate.

The risk assessment below in figures 3 and 4 is for a three-year time frame, and another assessment will have to be undertaken at that time.

Future assessment and works

As well as undertaking the risk assessment in three years' time as mentioned above, the tree will also need to be assessed annually to monitor the regrowth. Large epicormic shoots may need to be pruned as they can become large, but are not well attached, with failure possible.

Other works will be undertaken to improve the soil condition.

Paul Mechelen

Paul Mechelen 03-07-2023

Photo 1



Photo 2



Figure 1

Tree Location Details
Tree Number
Test Number & Location
Botanical Name
Common Name
Test Height
Tree Circumference

The Sonic Tomograph test result indicates the percentage of the test area that is sound (high density) wood, incipient wood (wood being altered by the fungus) or active fungus and decayed (low density) wood. The tree was previously tested at approximately the same height in June 2016 and the results of that test, and the recent test are:

	2016	2023
Sound wood	22%	12%
Incipient wood	9%	5%
Active fungus & decayed wood	69%	83%

The circumference of the trunk at the test height has increased by approximately 43 cm since the 2016 test, and it is acknowledged erosion of the soil at the base of the tree has lowered the ground level in the years between tests. Therefore, the current test height is lower on the trunk than the 2016 test.

Notwithstanding the change in test heights, comparing the two test results shows that the percentage of sound wood has decreased, and the percentage of active fungus and decayed wood has increased over the 6½ years since the last test in 2016.

The active fungus progressed further through the heartwood since the 2016 test causing extensive degradation to the structural integrity of the trunk at the test point. Additionally, the test result shows that the tension wood in the split primary union of the co-dominant trunks that traverses the test height from sensors 2-3 through to sensors 13-14 is totally dysfunctional.

The test result shows that there is some structural compression wood at the test height. At the test height, the test result shows at sensor 6 there is 28 cm of sound wood; at sensor 10 there is 17 cm of sound wood; and at sensor 20 there is 43 cm of sound wood. Furthermore, it is observed that new wood growth increments are occurring in the compression wood at sensors 5, 6, 19, 20, 21 and 22.

Carpark
1
1 of 2 – Middle of primary union
Eucalyptus cytellocarpa
Mountain Grey Gum
1000mm above ground level at sensor one
8630mm at test height

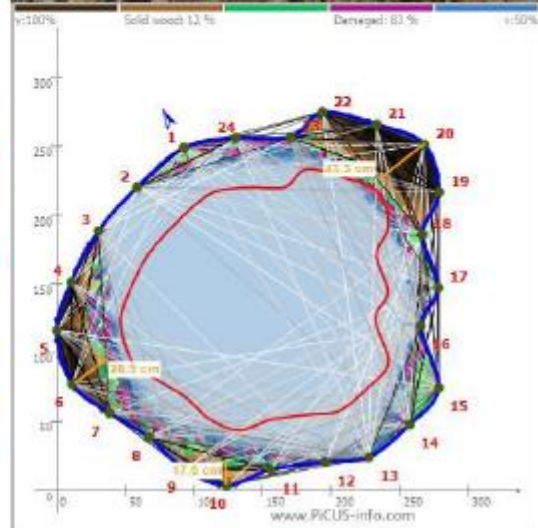


Figure 2

Tree Number
Test Number & Location
Test Height
Tree Circumference

The Sonic Tomograph test result indicates 15% of the test area is sound (high density) wood. There is 5% of incipient wood (wood being altered by the fungus). The remaining 80% is active fungus and decayed (low density) wood.

The fungus in the test result is associated with the degradation seen in the lower test point. The split primary union of the co-dominant trunks traverses the test height from sensors 3-4 through to sensor 14-15.

The active fungus has spread through the heartwood reaching the outer trunk between sensors 2 and 4; between sensors 8 and 10; between sensors 12 and 15; and between sensors 23 and 24. The test result shows that the fungus has caused significant degradation to the structural integrity of the trunk and primary union of the tree.

The progression of the fungus at the test point has confined the structural wood is to the compression wood of the co-dominant trunks and primary union. At the test height, the test result shows at sensor 6 there is 45 cm of sound wood; at sensor 11 there is 18 cm of sound wood; at sensor 16 there is 24 cm of sound wood; and at sensor 21 there is 35 cm of sound wood. Furthermore, it is observed that new wood growth increments are occurring in the compression wood at sensors 6, 7, 11, 20 and 21.

1
2 of 2 – top section of the primary union
1500mm above ground level at sensor one
8700mm at test height

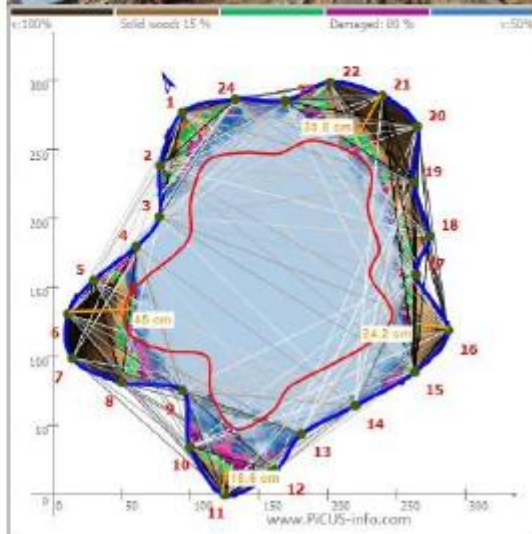


Figure 3

The risk in the scenario of the establishment of an exclusion zone (10m in radius) around the trunk:

Matrix 1: Likelihood Matrix

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat Likely	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat Likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat Likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2: Risk Rating Matrix

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very Likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Following the completion of the 10m radius exclusion zone, the residual risk is *low*.

Figure 4

The risk in scenario of not having a 10m radius exclusion zone:

Matrix 1: Likelihood Matrix

Likelihood of Failure	Likelihood of Impact			
	Very low	Low	Medium	High
Imminent	Unlikely	Somewhat Likely	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat Likely	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat Likely
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2: Risk Rating Matrix

Likelihood of Failure & Impact	Consequences of Failure			
	Negligible	Minor	Significant	Severe
Very Likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat Likely	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Without a 10m radius exclusion zone, the residual risk is **moderate**.