Picus: London Highgate

Client:

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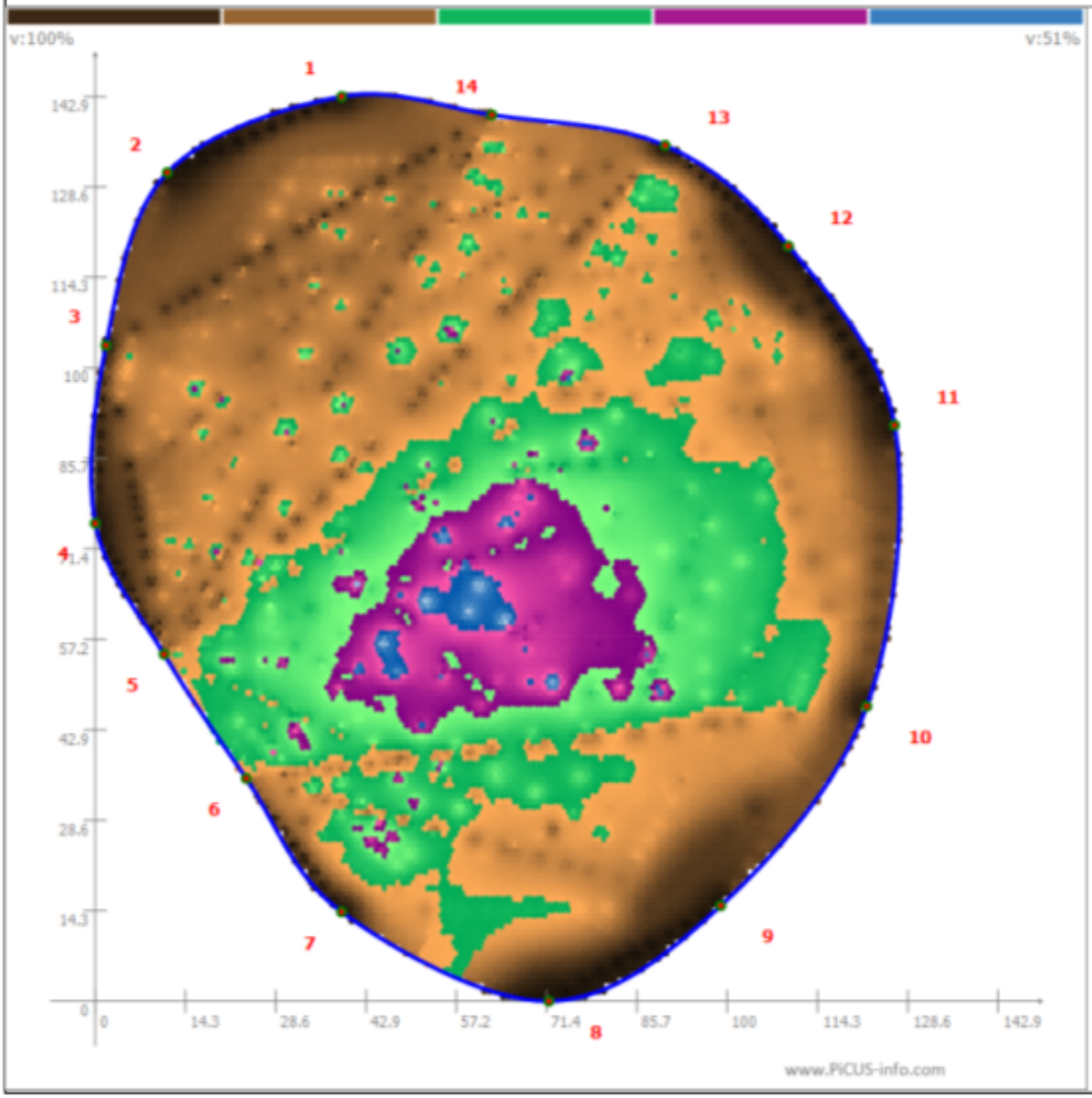
Tree species:	Cedar of Lebanon	Tree height [m]:	16.5
Town:	London	North at measuring point:	1
Neighbourhood:	Highgate	Crown spread [m]:	
Road:	The Bank	Position of measuring point 1:	0
		Trunk circumference (130cm height)[cm]:	4340
Number of tree:	1	Tomography level at height [cm]:	325
Measure date:	11/30/2018 3:57:00 PM		



Comments:

T1 is a historically significant, fully mature Cedar of Lebanon of high amenity value, in a prominent location and subject to a Tree Preservation Order. The tree stands on gently rising, unsurfaced ground approximately 10m to the east of some tennis courts, and 8m to the north of a bench / forest school area at The Channing School, Highgate. There is evidence of pedestrian traffic below the tree.
Tree height = 16.5m. Diameter at breast height (DBH; 1.5m) = 1382mm.
Physiological condition – good.

Structural condition (VTA) - The tree arises as a single stem at ground level with good buttress formation. The stem divides into three second order stems at 4m with bark inclusions and limited reaction wood. The geometry of the bole appears to be stable at present but the bark inclusions could provide a means for crack propagation / entry of decay. An open decay cavity was observed at 3.8m on the SW side, immediately adjacent to the main union of the secondary stem on this side. The hollow opening was c. 10cm in diameter. The cavity behind the opening was probed manually and found to be >300mm in lateral diameter and >600mm in vertical diameter; i.e. the sides of the cavity were not reached. Material inside the cavity showed features of cubical brown rot. No fungal fruiting bodies were visible but likely causative organisms include Sparassis crispa and Phaeolus schweinitzii. Sounding mallet strikes returned hollow sounds in the vicinity of the opening, extending around the stem below the opening and secondary stem to the S, extending downwards in a 10cm wide column below the opening to ground level and in a 15 x 15cm area at approx. 2m above ground on the E side of the main stem.

Structural condition (Sonic tomography) – Tomography was carried out at 3.25m above ground, just below the opening and in the region of hollow mallet sounds described above. North is at Measuring Point 1 (MP1); the opening was above MP6 & 7. The scan revealed the presence of decay in the approximate location of the secondary stem union and aligned with it. A wide area of 'incipient decay' was found to extend around the decay representing wood infected by the fungus and likely to become significantly degraded in the foreseeable future. The average of all maximum sound velocities (1767ms-1) was normal though at the upper end of the range for softwood indicating that the tomography data is of good quality. The difference between 'good' and 'decayed' wood velocities was 49%, again indicating data reliability.

Interpretation – Taken together, the visual and tomographic observations indicate that a progressive brown rot decay is present which has produced a substantial weakening of the SW secondary stem union. Brown rot decay is unpredictable: affected limbs and unions can fail without warning. The likely primary mode of failure is therefore separation of the SW secondary stem from the main bole at approx. 4m above ground. The failing part of the tree can be expected to be 12m long, placing the sports courts and forest school within target range. No significant obstacles to limb descent were observed.

THREATS assessment –
Failure score: Primary decay fungus; 8 points.
Target score: constant pedestrian use, raised by one category due to the presence of children; 40 points.
Impact score: limb in excess of 500kg, unrestricted descent, fatalities likely; 10 points
Hazard score: 8 x 40 x 10 = 3200.
Threat category: 6, SERIOUS. Close target area and remediate within 7 days.

Remediation – The ability of the affected limb to separate from the tree and make contact with ground targets must be prevented. Options are:
1. Close the target area permanently and exclude all individuals from entering. Given the current use of the area, this would be an unrealistic proposition.
2. Remove the secondary stem to the SW. This would create an opening in the canopy facing prevailing winds which would result in the rapid loss of further crown elements. It would also create a large wound close to the decayed area resulting in the rapid acceleration of the decay into other stem unions and the main stem itself. An increased risk of further branch loss and eventual loss of the entire tree would be foreseeable outcomes.
3. Install a non-invasive bracing system. Because loads cannot be calculated with accuracy, the correct number, positioning and rating of bracing elements cannot be calculated. Therefore, there can be no certainty that the braces will either prevent limb failure or arrest the descent of the limb should it become detached. Visual and tomographic re-inspection of the tree after significant weather events and / or annually (whichever is sooner) together with aerial inspection and adjustment of the braces would also be required. Even if the braces could be installed with confidence, given the progressive nature of the decay this approach could only buy time before option 2 would have to be employed.
4. Reluctantly, I have to conclude that the only viable means of abating the risk from T1 is removal of the entire crown to the level of the main unions at 4m above ground. Because the stem itself is apparently sound, the remaining standing trunk could be retained with habitat spaces created in it artificially. Alternatively, it could be transformed into a sculpture thus retaining some value for decades to come.