

Ground level calculations

Each year, my path is filled with the material that drops from the tree every time there is a strong wind or heavy rain, and the depth of material dropped onto the path is at least 10 mm. Over the course of a year this might happen, say, 8 times, giving a total depth of 80 mm. The area of the path is about 10 square metre, so this represents a volume of material of about

$$10 \times 0.08 = 0.8 \text{ m}^3$$

So the volume of material covering the path is approximately 0.8 cubic metre per annum.

Suppose my path represents one eighth of the total area under the tree, then the total amount of material dropping from the whole tree would be:

$$0.8 \times 8 = 6.4 \text{ m}^3$$

If this accumulated over thirty years, then the total amount would be:

$$6.4 \times 30 = 192 \text{ m}^3$$

Suppose the total area under the tree is 80 square metre, then the thickness of material deposited under the tree over the 30 year period would be:

$$192 \div 80 = 2.4 \text{ m}$$

Suppose this is compressed by a factor of 4, then the thickness would be:

$$2.4 \div 4 = 0.6 \text{ m}$$

The tree has been there for at least three centuries, and might have been dropping material at this rate for perhaps one century, so it would be reasonable to expect the ground level to have increased by more than one metre over this period. The current ground level under the tree is 1.5m above the ground level on the other side of the wall, so this seems to be a sensible analysis. This would have the effect of raising the tree, as it will maintain its base at its local ground level, so we end up with a tree whose base is 1.5m above the surroundings ground level, and therefore whose roots are going to grow into the wall at quite a high level, perhaps 1m above the wall base, thus causing pressure and problems.

It is the responsibility of the tree's owner to maintain the ground at its original level, and this clearly hasn't been done by successive owners of the property. The problem is that when this situation is reached, simply pruning the tree, even very severely, will not solve the problem, because the ground level needs to be reduced substantially. But to do so will probably kill the tree, whose base is now at a much higher level, so simply reducing the ground level won't be an effective solution either.

Conclusion

The only solution that is guaranteed to make the situation safe is that the tree is removed, the ground level reduced and the wall either rebuilt (as recommended in the report) or supported by a solid auxiliary structure.