

*under:* the Resource Management Act 1991

*in the matter of:* an application by Ryman Healthcare Limited for resource consent to establish and operate a comprehensive care retirement village at 100-104 Park Terrace and 20 Dorset Street, and 78 Park Terrace, Christchurch

*between:* Ryman Healthcare Limited  
*Applicant*

*and:* Christchurch City Council  
*Consent Authority*

Summary of evidence of John David Thornton on behalf  
of Christchurch City Council

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Dated: 27 January 2021

## SUMMARY OF EVIDENCE OF JOHN DAVID THORNTON ON BEHALF OF CHRISTCHURCH CITY COUNCIL

1. My full name is John David Thornton. I am the Environmental Consents Arborist based in the Parks Unit of the Christchurch City Council (Council). My qualifications and experience are detailed in my statement of evidence dated 3 December 2020. I have been a member of the NZ Arboricultural Association since 2002. I am here providing an assessment of the Arboricultural aspects of the proposed developments for the two Park Terrace sites, 78 Park Terrace and 100 - 104 Park Terrace.

2. I confirm that I have read the Code of Conduct for Expert Witnesses and that I agree to comply with it.

### Ground Penetrating Radar (GPR) Scan for the Common Lime T271

3. Since my evidence was lodged more information has been provided regarding the Common Lime tree. Under section 36. of my submission of 3 December 2020 I noted that it was agreed that a Ground Penetrating Radar scan was to be carried out around the Common Lime (*Tilia x europaea*) T271 /Tree ID Number 3300 to ascertain where the major roots lay and the extent of the root system. The GPR uses radio waves to capture images below the surface of the ground in a non-invasive way. This was arranged by Arborist Mr Alan Parker and carried out on 2 November 2020

4. This was due to my concerns about the close proximity of the proposed excavation work to the Scheduled Common Lime Tree for the basement and building construction at 78 Park Terrace. The building footprint is estimated to be 6.2 metres from the tree base at the closest point, which is not a large distance for given the size and maturity of the Common Lime tree. The Common Lime tree is a very mature specimen tree and is estimated to be at least 80-85 years old, but is possibly older. Such mature trees do not respond well to disturbance and damage to their root systems generally.

5. On Thursday 21 January 2021 I attended a site meeting with Arborist Alan Parker to inspect the roots detected by the GPR along the perimeter of the proposed basement excavations, and discuss the options for working around the tree with regard to removal of the stump of the Incense Cedar nearby.

6. As the GPR scan has revealed less root mass than one would normally expect in proximity to the base of a very large Common Lime tree such as this one, the proposed site work should have less of an impact on the tree than I originally anticipated would likely be the case.

7. As with all below ground scenarios, tree root presence is very variable and there are no certainties involved without sufficient investigation, as all tree situations are different to some extent. A general rule in modern Arboriculture though, is that the root mass of a tree will normally extend well beyond the tree's canopy edge, or dripline.

8. There was only a single large root discovered of approximately 80 mm in diameter (horizontally – vertical dimension was not yet determined) located at 'Point 6' in Mr Alan Parkers Appendix A – Root Mass Investigation outlining the GPR scan results. This was a somewhat surprising result both to myself and Mr Parker, as we expected more root mass to be present.
9. The presence of a single large root should not present a major issue either biologically or structurally, as other roots detected in the excavation perimeter were considerably smaller. Although the 80 mm root is substantial, and ideally it would be retained, cleanly cutting a single root of this size should not destabilise the tree or cause any severe decline in its biological health.
10. I anticipate there will be some biological impact on the tree though, due to the size of the root, and there may be some minor decline in the state of the tree over time, but it is highly probable it would recover from this eventually. There should not be any effects on the structural stability of the tree.
11. There is a slight chance some type of wood rot fungus such as the *ganoderma* varieties, will get into the severed root end and cause decay. However as the *Tilia* species is a hardy one compared to more susceptible species such as Walnuts, Oaks and Beeches, then it is much less likely this will be the case. Also Mr Parker has indicated that the 80 mm root will be reduced back from the basement excavation line to enable new root growth to occur more easily.
12. The former Scheduled Incense Cedar located several metres from the west side of the access way from Peterborough street, was cabled to the Common Lime with a horizontal cable, and to a concrete block buried in the ground to the north of the Cedar. This cabling was done when the site was developed in the mid 1990's, due to some excavation around the Cedar, which was thought might destabilise the tree at the time. The stump will be ground out and removed, and care will be needed when this takes place due to the reasonably close proximity of the stump to the Common Lime tree, the stump being located approximately 6 metres away from it.
13. With regard to the proposed pruning method of the Common Lime tree due to the proximity of the clutch piling machinery, I see this as mainly just a question of two different approaches to the same issue. My experience in the past for this this type of situation has been to judiciously prune the tree limbs back from the path of the machinery, to allow unimpeded operation of the machinery, and to also reduce the potential for broken or damaged limbs that would have to be removed or pruned back later.
14. Piling equipment is typically quite tall and can thus potentially impact on large tree canopies to their detriment. Generally, it is proposed by Arborists I deal with that careful pruning of an undamaged limb is preferable to trying to fix up a damaged one. A very similar scenario to this was encountered with one of the Scheduled London Plane trees in the Christ Church Cathedral Reinstatement Project, that both Mr Alan Parker and myself have been involved in. In that case it was agreed to prune some substantial limbs back on then tree, to enable a large crane to fit between the tree and the Cathedral, to lift a very large metal brace onto its southern side.

15. However, there is the advantage of the alternate method that Mr Parker proposes in that you minimise the risk of over pruning the tree before the operation, if it turns out that the actual clearance needed was less than anticipated. Each situation can be different, and to me this is not a vital aspect of the work affecting the Lime tree. It is quite feasible that both could be employed, by first removing what is likely to be needed for clearance, and after if there is more tidying up to be done this also done after the piling work.
16. There is also the third possibility that has not yet been raised, which was employed by the project manager of the St Pauls Church Restoration project in Madras Street, at my suggestion, to enable scaffolding to be inserted between the rear of the trees and the building. This involved the use of heavy-duty strops to pull the canopy away from the building, which enabled the trees to be retained while the work proceeded. Although a much larger specimen tree it is possible that the technique could be used for the Common Lime.
17. I also note that the correct dripline calculation for the Common Lime tree as defined in the Operational District Plan rules under Chapter 2 *Abbreviations and Definitions*, is to take half the height of the tree and drop that down onto the ground from the base edge, and then take a circle around the tree base. This is because the tree is a tall, upright specimen, not a broad spreading one. As the height of the tree is just over 21 metres tall according to my Nikon Laser rangefinder, this makes the official dripline approximately 10.5 metres from the base of the tree (not the centre). Thus the excavation for the basement, being approximately 6 metres from the base (at the closest point) is *well* inside the dripline, being more than 4 metres inside, not just slightly inside as has been stated on the application.

#### Containment Pruning and Revised Planter Containers

18. In my opinion I think that the pruning of trees to maintain them at an artificial height limit is not good arboricultural practice as such, and consider that are likely to appear somewhat unnatural. Trees in a more natural environment grow to a variety of heights and canopy widths. Although containment pruning is possible for maintaining the trees within certain physical parameters, generally this applies to restricting the width of the canopies of trees from infrastructure, not height reduction as such, although this can occur with trees located underneath utility lines to maintain clearance from the wires.
19. Many of these proposed trees in the two sites are destined to be managed to a constant height well below what they normally would achieve, regardless of their usual mature heights. I think that the pruning of all these trees to maintain them at an artificial height limit is not ideal. This is also the opinion of Council Arborist Mr Laurie Gordon of the Technical Services Design Team, whom Council Landscape Architect Jennifer Dray has consulted for comment, and mentions in her evidence.
20. With regard to the proposed containment pruning regime I agree with Mr Alan Parker that a more regular pruning regime of the trees is preferable to a longer time interval. Under section 25. Of his evidence he suggests that 2-3 years is more preferable to 4-6 years. I note though that the

Landscape Management Plan supplied by the applicant, details the maintenance which is to be undertaken with respect to the trees, as being trimmed annually.

21. The document from Sean Dixon dated 24 June 2020 under section 9. Maintenance mentions annual trimming of the trees. He also states that the pruning will be done by qualified Arborists, not the normal gardening team, which is important as height reduction of trees should only be
22. done by experienced Arborists who know the correct technique for such height reduction pruning. Removal of the growth control hormones in the top of the tree will result in uncontrolled regrowth. As a part of design revisions, a small number of trees have been identified to be allowed to grow to their full height, in response to Council Officer Reports. This is an improvement though not as much of an alteration as could be achieved in my opinion.
23. I also provided some comment in my evidence in relation to the raised tree planters which will be located on top of the proposed basement carpark podium. I concur with the further comments by council Landscape Architect Jennifer Dray regarding the applicants proposed modifications to the planting plans. I acknowledge that there have been changes made to the design of the raised planter containers to increase the size of some of them, and to increase soil volumes by connecting the soil volume areas to give the trees greater volume for root mass.
24. I agree this would be of some benefit for the trees located in these planting areas. However, a design that allowed more natural tree planting pits with adequate space for natural tree growth to be utilised in the site development would have been preferable. Trees can be grown in inhospitable and constrained environments, such as in the street scape, which is full of hard surfacing, underground utilities, limited soil volumes, the hot sun and often dry soil conditions. However it is far from ideal for trees to be trying to survive in these sort of conditions and such constraints usually lead to many street trees being replaced due to their premature demise.
25. The conditions in which the trees will be experiencing in the Park Terrace sites will not be as extreme, but most will still be in a limiting and constrained environment for the trees, many who will not be able to reach their natural size.