Arboricultural Impact Assessment

Proposed Comprehensive Care Retirement Village

78 Park Terrace

APConsulting, 1/37A Main Road, Christchurch 8081
M: 022 139 1617 E: alan@apconsulting.co.nz

CONTENTS

1.0 INTRODUCTION

Ryman Healthcare Limited are seeking resource consents for the construction and operation of a comprehensive care retirement village ("Proposed Village") at 78 Park Terrace ("Peterborough site") and 100 Park Terrace and 20 Dorset Street ("Bishopspark site") in Christchurch (collectively referred to as the "Site").

The Peterborough site contains one Common Lime tree, which is listed in the Schedule of Significant Trees (as T 271) in the Christchurch District Plan ("District Plan"). The tree is located on the western aspect of the Peterborough Street frontage.

The purpose of this report is to assess the potential effects of the Proposed Village on the tree, and make recommendations to provide for the protection of the tree during the construction of the Proposed Village.

2.0 EXISTING ENVIRONMENT

2.1 Tree Survey

I visited the Peterborough site on the 9th of March 2020 to inspect the tree. At the time of the visit the weather conditions were fine and dry, providing optimal surveying conditions.

2.2 Site, Slopes and Boundaries

The Peterborough site has an uneven surface over its entire area, predominantly consisting of compacted metal. The site is currently used for carparking.

The subject tree is positioned within 1 metre of the western boundary, at the Peterborough Street end of the site.

The fallow area at the base of the subject tree is surrounded predominantly by compacted metal driveway access for carparking on both sites, with a descent in level to the footpath of Peterborough St

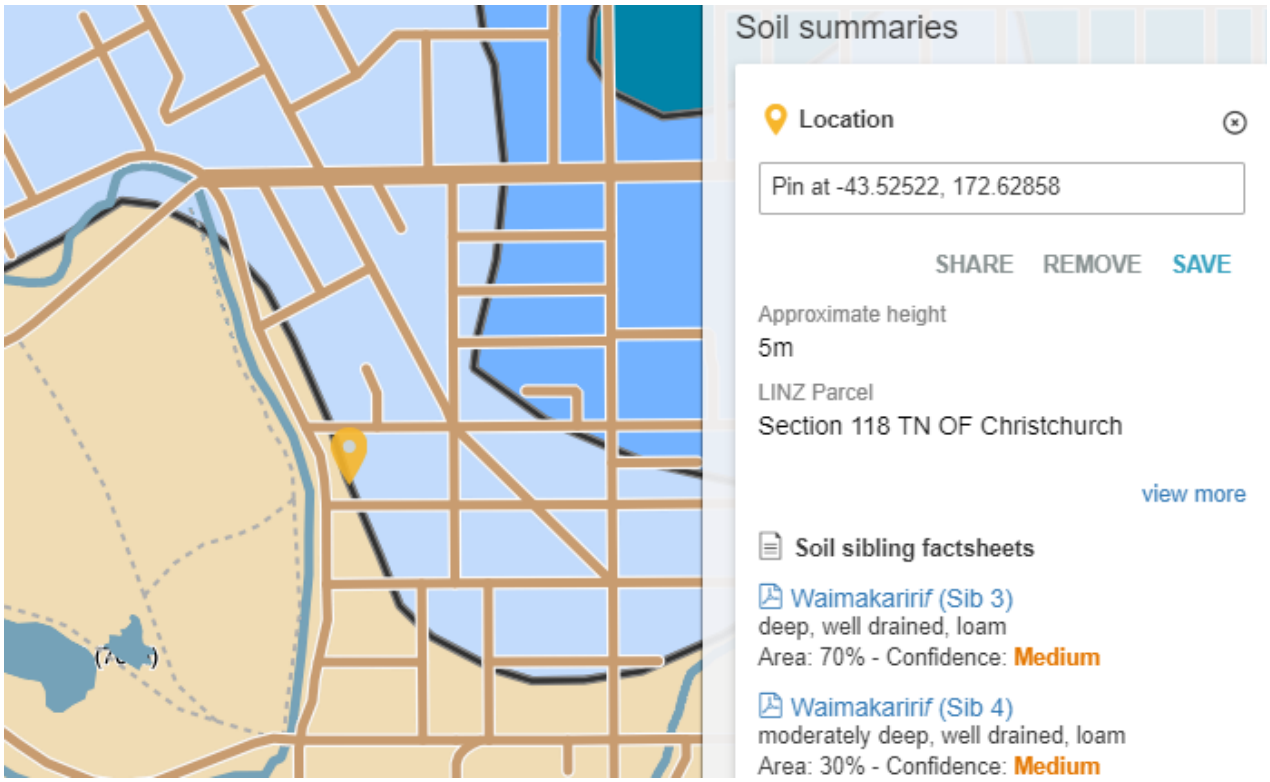
The tree root environment is favourable in that it is currently fallow with an un-disturbed layer of natural leaf litter. There has been some colonisation by self-seeded shrubs.

2.3 Underlying Soils

Waimakarir*if,* loam soils, which provide optimal drainage characteristics and high fertility, ideal for agriculture and tree growth (See figure 1 below) underlie the site.

It is however reasonable to expect that the original soil characteristics at the Peterborough site may have changed over the years due to site development.

Figure 1,[1] *S-map Soil Report, Landcare Research New Zealand Limited 2011-2015, Manaaki Whenua, dated: 5th September 2017.*



2.4 Tree Details

Site address	78 Park Terrace, Peterborough Street frontage	
Species:	Common Lime *Tilia x europaea*	
Height:	20 m	
Crown Spread:	N – 7.8 m S – 6.1 m E – 7.3 m W – 7.4 m	
DBH (at 1.4m):	1.0 m	
Health:	3, Fair	
Form:	3, Fair	
Overall Condition:	3, Fair	
Tree Protection: **Significant Tree, T 271 as listed in District plan** Tree Health and Form are based on the Christchurch City Council Tree Condition Rating System.		
Tree Health; Fair, representative of the species, based on foliage colour and density. Minor naturally occurring deadwood present.		Tree Form; Fair, representative of the species. Buttress root flare is evident indicating minimal soil level changes close to the base. Crown has descended to ground level at the northern & eastern aspects.

3.0 PROPOSED VILLAGE

The Proposed Village is described in the Assessment of Environmental Effects. At the Peterborough site, the Proposed Village will provide 80 independent apartments across Building B07 and Building B08. The Proposed Village has been designed to provide for the retention of the tree.

Drawing B07. A1-010 (Appendix 2) shows that the excavation for the basement carpark, to a depth of approximately 3.4 metres, will extend just inside the crown spread (dripline) of the subject tree to the north of the tree, and just outside the dripline at the eastern aspect.

The Landscape Concept Plan provided by Design^2 (Appendix 3) similarly shows the edge of the basement wall in relation to the dripline of the tree.

The basement excavation will be constructed using a clutch pile system. This requires vertical holes to be drilled into the existing grade, reinforcing and concrete are then installed, then the internal excavation takes place.

The vertical walls of Building B08 are located approximately 2.0 metres east of the dripline and 1.0 metre north of the dripline of the tree.

A flight of 5 steps will be located east of the subject tree, at the Peterborough Street frontage outside of the dripline. The steps will provide a transition from the existing footpath level at Peterborough Street to the Peterborough site, which is elevated by approximately 600 mm, separated by a retaining wall at the boundary.

A boundary fence/wall will be constructed along the southern boundary of the Peterborough site, west of the stairs. The fence will be constructed on a minimal number of piles to support a beam from which the fence/wall will be built.

4.0 PLANNING CONTEXT

Pruning of the tree is a restricted discretionary activity in accordance with Rule 9.4.4.1.3 (RD1), and works within the dripline of the tree are a restricted discretionary activity under Rule 9.4.4.13 (RD5) of the District Plan. The matters of discretion require the consideration of:

- The character and degree of modification, damage, or destruction of the values that make the tree/s significant;
- The extent to which the works will or may adversely affect the health or structural integrity or visual appearance of the tree;
- The duration and frequency of the activity and the effect on the tree;
- The degree of impact on landscape character, and ecological, cultural, heritage and neighbourhood amenity values;
- Whether any proposed compensation for the loss of the significant tree/s fully mitigates the loss of landscape and environmental benefits within 15 – 20 years;
- Extent of benefit or need for activity/works; and
- The extent of benefits associated with the use and development of the site for activities anticipated by the zoning for the site, including the use of the site for residential

development, taking into account the cumulative effect of multiple protection provisions (e.g. setbacks from water bodies, heritage items).

The relevant objectives and policies seek the following outcomes:

- The maintenance and enhancement of the contribution of significant trees to landscape character, amenity, heritage and cultural values (Objective 9.4.2.1.1);
- The enablement of the maintenance and management of trees in recognition that works may be necessary to enable the use and enjoyment of the property, and to minimise the risk from trees to property / buildings (Policy 9.4.2.2.4);
- The felling of trees is limited except where there are no reasonable alternatives to retaining the tree, uncles the tree is compromising the use and enjoyment of a property (Policy 9.4.2.2.7).

5.0 ASSESSMENT OF EFFECTS

The basement will encroach into the dripline of the tree, but the encroachment is minimal (.0036%, of the 669m^2 dripline with a radius of 14.6 metres). It is highly likely that construction plant will be in contact with the tree at the south-western corner of the basement, because the crown of the tree overhangs the basement line by approximately 1.4 metres. Potential effects of this contact range from no damage to broken branches.

The vertical walls of the new building are located at a sufficient distance from the crown of the tree to ensure that there are no clashes with this construction element.

The flight of steps is located outside the dripline, so there will not be any impact on the tree.

The boundary fence / wall shown at the southern aspect of the site, will be minimal, considering the construction methodology will require approximately 4 piles to span 8 metres.

The area within the dripline, between the deck and western boundary will be left as low management garden, with no change in soil levels, and planted appropriately.

Crown lift

The lower branches of the crown of the tree have descended to ground level at the northern and eastern aspects. To provide for utilisation of the outdoor area and to allow for late afternoon sun from the west, it is proposed that the crown be lifted.

Soil hydrology

There is potential for the soil hydrology to change as a consequence of the excavation for the basement, following on from the clutch pile installation.

The changes in soil hydrology will be dependent on;

- The duration between excavation and construction of the basement wall and the
- Season in which the excavation takes place

Changes in hydrology can be mitigated through management controls, including temporary irrigation and / use of mulch to reduce moisture transpiration from the soil surface.

Overall assessment

The tree has fair overall health and form. The Proposed Village has been designed to provide for the retention of the tree, and the maintenance of its landscape character and amenity values. The construction of the Proposed Village has the potential to cause some minor impacts on the tree, but works within the crown area and dripline have been minimized and the effects can be appropriately mitigated through the application of standard methods, as detailed below. The lifting of the crown of the tree will provide for the ongoing use and enjoyment of the property

6.0 RECOMMENDATIONS

To ensure the tree is protected the dripline area dripline area must be retained in its current state It is recommended that prior to any construction or pot holing activities on the Peterborough site that protective fencing is installed to isolate the dripline area for the duration of construction. The fencing should only be relaxed to allow for manual access for the landscaping activities.

- The recommended fencing is 1.8 metre hurricane type panels, secured to avoid any movement.
- Contractors working on the Peterborough site should be briefed regarding the no-entry policy for the dripline area. Any requests for ingress should be considered in consultation with the appointed arborist.
- To avoid contact of raw concrete with root mass during the infill of the clutch piling, it is recommended that the top 2 metres of the piles be lined with a heavy grade PVC or similar impervious material.

To mitigate the potential effects of contact with the tree by construction plant, to the northern aspect of the crown during the clutch piling installation, it is recommended that maintenance pruning be carried out as necessary, on completion of the clutch piling installation..

The Appointed Arborist for the Peterborough site should meet with the contractor prior to tree work commencing so that a clear and concise brief can be provided.

Rules for significant trees on private property

General pruning

Pruning is permitted if it meets the following criteria:

- roots less than 25mm in diameter at the point of cutting
- removal of broken branches, deadwood or diseased vegetation
- removal of branches with structural faults, e.g. cracks, splits, decay, cavities, torsion, bleeding/sap flow
- removal of branches less than 50mm in diameter at point of cutting in the bottom third of the tree (measured from ground level to the top of the canopy), where the natural shape, form and branch habit of the tree is retained.

The following additional pruning work is permitted only if it is carried out by a qualified works arborist, or in accordance with advice from one:

- removal of branches physically interfering with existing buildings or pedestrian and vehicle accessways
- removal of branches 50mm–100mm in diameter at point of cutting in the bottom third of the tree (measured from ground level to the top of the canopy), where the natural shape, form and branch habit of the tree is retained
- removal of foliage in the top third of the tree, of no more than 10 per cent over any three-year period, with the maximum amount removed in any one year limited to no more than five per cent, and the natural shape, form and branch habit of the tree is retained.

If a tree is causing a hazard to electricity lines or airport approach slopes it should be pruned to remove the hazard. The work must be carried out by or under the supervision of a qualified arborist. For electricity clearance work, the arborist must be engaged by the utility company.

It is recommended that the crown lift be achieved by the removal of secondary branches, i.e., collar cut at the main stem, as opposed to end reduction.

7.0 CONCLUSION

Provided the recommendations set out in section 6 are implemented, the scheduled tree at the Peterborough site will be maintained as part of the amenity of the Proposed Village and appropriately protected during the construction process.

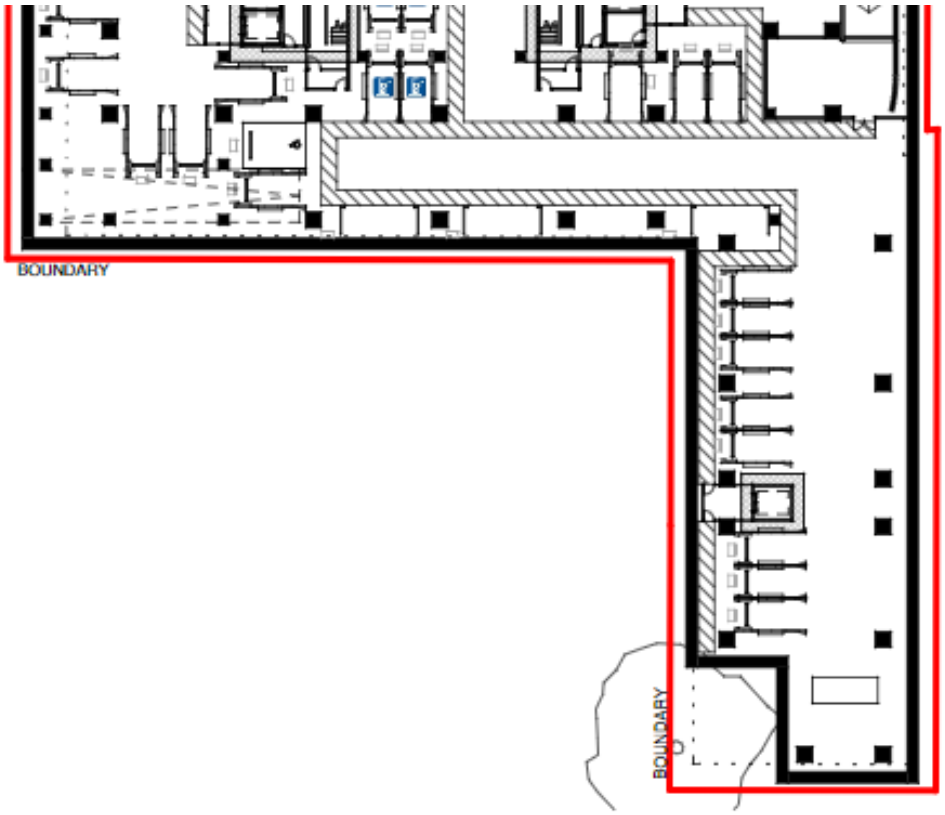
Appendix 1; CCC Tree Condition Rating System

Tree Condition Rating System February 2015

Description	Non-existent	Very Good	Good	Fair	Poor	Very Poor
Assessment of Tree Health.	Asset is no longer present or cannot be found	Exemplar for species. No more than approximately 5% foliage density loss, discolouration or disease, below ideal leaf size or shoot growth, dieback, dead wood or other disorders.	Above average for species. Approximately 6-10% foliage density loss, discolouration or disease, below ideal leaf size or shoot growth, dieback, dead wood or other disorders.	Representative of species. Approximately 11-30% foliage density loss, discolouration or disease, below ideal leaf size or shoot growth, dieback, dead wood or other disorders.	Below average for species. Approximately 31-70% foliage density loss, discolouration or disease, below ideal leaf size or shoot growth, dieback dead wood or other disorders.	Tree dead or state of severe decline. More than approximately 70% foliage density loss, discolouration or disease, below ideal leaf size or shoot growth, dieback, dead wood or other disorders.
Assessment of Tree Form (shape & structure). The condition score for Tree Form shall be the worst of the structure and shape grades (i.e. the highest number).		Exemplar for species. No more than approximately 5% of overall canopy shape missing or modified or misshapen. No structural defects or abnormalities (including roots and trunk taper).	Above average for species. Approximately 6-10% of canopy shape missing or modified or misshapen. Defects (including roots and trunk taper) do not affect structural integrity or continued well-being of tree.	Representative of species. Approximately 11-30% of canopy shape missing or modified or misshapen. Defects (including roots and trunk taper) present, but can be rectified in order to maintain the structural integrity and continued well-being of tree.	Below average for species. Approximately 31-70% of canopy shape missing or modified or misshapen. Tree maintenance unlikely to improve the framework or the continued well-being of tree. Defects (including roots and trunk taper) result in loss of structural integrity, may be mitigated but unlikely to be rectified.	Tree dead or state of severe decline. More than approximately 70% of canopy shape missing or modified or misshapen. Total loss of structural integrity of tree. Tree maintenance cannot improve the framework or the continued well-being of tree. Defects (including roots and trunk taper) result in loss of structural integrity, and cannot be mitigated or rectified.
Overall Condition Rating	**0**	**1**	**2**	**3**	**4**	**5**

The single overall condition score for a tree is worst of the health and form grades (i.e. the highest number).

Appendix 2, Site Plan, Warren & Mahoney



Appendix 3; Landscape Concept Plan, Design[2]