Mark Roberts
Roberts Consulting
17 Epsilon St,
Dunedin 9011
e: mark@robertsconsulting.co.nz
p: +64 21 508 255

ROBERTS
CONSULTING

September 11, 2017

RE: LUC-2017-372 (request to remove listed tree T790)

Amy Young
Planner, City Planning
Dunedin City Council
PO Box 5045
Dunedin 9058

Dear Amy,

On Wednesday September 6, Alan Worthington (DCC, City Planning) contacted me and requested that I conducted a site visit of 8 Michie Street to assess a Silver beech (*Nothofagus menziesii*) listed as significant tree T790 of schedule 25c. I am a consulting arborist based in Dunedin [Appendix one].

The tree was visually inspected from ground level on the afternoon of September 7, 2017. The weather was calm and clear. The tree was assessed for condition and potential risk to the house at number 8 Michie Street and those using the house including the patio and/or accessing the house and/or the patio at number 8 Michie Street.

1 Assessment and observations

1.1 At the time of assessment, the tree was in good health; it was evenly foliated, exhibiting good vigour and vitality [image one].
1.2 The tree had a relatively evenly foliated canopy and small amounts of deadwood typical for the species.
1.3 There is a history of previous pruning work (crown lifting and internal thinning), which appears to have been conducted in accordance with accepted industry practice.
1.4 There is an open cavity on the eastern side of the trunk at approximately two meters. The cavity extends up the centre of the trunk for about one meter [image two]. The cavity is not recent and there was considerable response growth on either side of the opening.
1.5 The tree had good trunk taper and root flare, and the root plate appeared to be stable.
1.6 The trunk is on a slight lean towards the house. The lean appears to be a phototrophic response more so than the result of a gradual or sudden trunk or root-plate movement.

I have assessed the tree using the International society of arboriculture's Tree Risk Assessment Qualification (TRAQ) [Appendix two] tree risk assessment tool. Given a five-year time line, the tree poses a low risk to the house at number 8 Michie Street and a low risk to the occupants of the house and those accessing the house at number 8 Michie Street.

2 Arboricultural comment on the 9 arguments for removing the tree:

1) The tree has damaged and will continue to damage the path, patio and house at 8 Michie Street

i) There are several parts to this argument

i.i) Damage to the path and patio from roots.

Evidence of this damage is given as water ponding and/or cracks in the brick work. The ponding of water from the drive on the path may be as a result of part of the path being lifted by tree roots or a section of the path settling over time. The same can be said for the patio; that the ponding of water on the patio and/or cracks in the brick work may be as a result of part of the patio being lifted by tree roots or a section of the patio settling over time.

If the path or patio has been lifted by tree roots, then this is possibly as a result of the construction materials and the type and/or depth of basecourse used. If a surface has low or no permeability, moisture can be drawn to the underside of the surface. As result moisture being present roots may be attracted, and given enough time those roots may have expanded causing the surface above to lift. Correct selection of materials and construction may have prevented this from happening in the first place.

i.ii) Damage to the roof and rain gutters caused by leaf litter and plant material.

Leaves and plant material have and will continue to fall onto the house at 8 Michie Street. The leaves will continue to collect in the rain gutters and roof valleys. It is possible that the build-up of leaf litter and plant material could cause damage.

i.iii) Damage to the roof and rain gutters caused by falling branches.

It is common for Nothofagus retain deadwood (dead branches). The Silver beech (*Nothofagus menziesii*) at 8 Michie Street has some deadwood in it, and some of that deadwood is positioned over the roof and rain gutters of the house. Unless it is removed, it is probable that some deadwood will fall onto the house. Due to the size of the deadwood and the fall distances involved it is unlikely that the falling deadwood will cause any actual damage to the roof and rain gutters.

i.iv) The tree has damaged and will continue to damage the house.

At the time of my assessment I did not observe any structural damage to the house that appeared to have been caused by the tree T790. There is reference to the Smaill report noting 'potential damage' and Peter Waymouth notes that, "... [he] did not observe any foundation disturbance ... "

ii) The Waymoth report notes that damage to the path and patio may be as a result of "... clay shrinkage caused by water uptake by the tree." If this is the case, then the removal of the tree may result in the clay soil expanding due to water not being removed by the tree and the ground

around the house may 'heave' [Ground heave is the upward movement of the ground usually associated with the expansion of clay soils which swell when wet]. Removal of the tree may actually cause structural damage to the house.

2) The tree endangers those who use the high traffic areas of path and patio
   i) The tree poses a low risk to those walking on the path and/or using the patio. This risk rating was generated using TRAQ taking into account the occupancy of the target in the target zone.

      In relation to trees, a target zone is defined in the International society of arboriculture's TRAQ as the area where a tree or tree part is likely to land if it were to fail. In this situation, the largest target zone would be a circle centred at the middle of the trunk with a radius of 1.5 times the height of the tree.

      The targets are listed as 'those who use the path and patio'. One of the main factors when determining risk [the risk of target being impacted by a tree or tree part] is to determine how long the target is the target zone; this is called to as the Occupancy rate.

      Using TRAQ methodology, the occupancy rate of people using the path and patio at 8 Michie Street would be at the highest Occasional [equal to low-use footpaths, and low-use sections of parks].

      With the tree being in good health and free of obvious structural weaknesses and/or large dead branches, and the area within the target zone being defined as the path and patio it is improbable that if the tree or a tree part were to fail it would impact on someone on the path or patio.

   ii) Under Detailed Arguments Point 9, the applicant notes that by removing the tree other trees including existing totara trees could grow. I cannot see how the removal of one tree and replacing it with a potentially larger one will reduce the dangers caused by trees to those who use the path and patio

3) The tree poses a danger to the house and its occupants
   i) Assessing the tree using the International society of arboriculture's TRAQ tree risk assessment tool. The tree poses a low risk to the occupants inside the house.

      This is calculated based on the target zone of 1.5 times the height of the tree, the occupancy rate, the fall distance of the tree or tree part and the protection factors afforded by the house.

   ii) Assessing the tree using the International society of arboriculture's TRAQ tree risk assessment tool. The tree poses a low risk to the house.

      This is calculated based on the condition and location of the tree.

4) The tree shades that house causing on-going loss of solar energy and loss of house value
   i) I am unable to provide comment on this point

5) Leaf fall from the tree creates an annual cost to clear leaves of $500
    i) I am unable to provide comment on this point

6) The garden is adversely affected by low light and water levels caused by the tree canopy and roots
    i) This is an inconsistent argument. Under Detailed Arguments Point 1, the applicant states that water is trapped and unable to drain away into the lawn and in Detailed Arguments Point 9, the applicant lists nine existing smaller trees growing beneath the canopy on T790.

7) The tree restricts access of vehicles required to repair a slip currently endangering the house.
    i) The tree restricts vehicle access to the slip in the same way the house and patio also restrict vehicle access.

8) The STEM assessment of the tree is incorrect in several aspects
    i) The application and interpretation of the 1991 STEM assessment is consistent with current use and best practice.

9) Planting over 30 years has more than compensated for the loss of amenity caused by the removal
    i) I do not agree that restoration and revegetation of a private valley and bush on the applicant's property more than compensates for the removal of a road side tree on public land.

As per your request I have provided a relatively concise report. If you require me to expand on any of the details provided, or supply documentary evidence to support any of the content in this report please do not hesitate to ask.

This tree condition assessment has only considered known targets and visible or detectable tree conditions at the time of the inspection.

Yours sincerely

Mark Roberts
Owner - Roberts Consulting Ltd

Image one: Showing the foliage cover of Significant tree T790

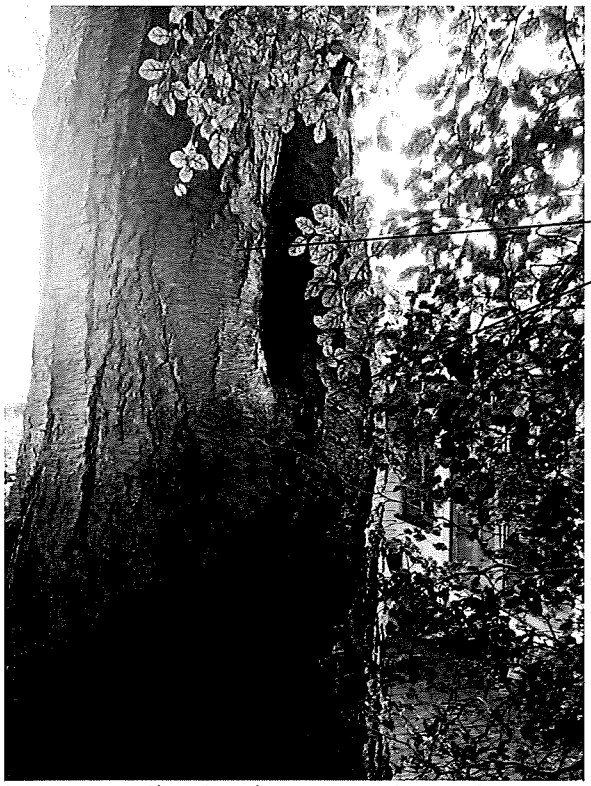

Image two: Showing the open cavity on the eastern side of the trunk of Significant tree T790

Appendix one: **Curriculum Vitae of Mark Roberts**

Experience

I currently run my own arboricultural consultancy practice based in Dunedin, New Zealand. It is an independent consultancy providing tree assessments, tree management and maintenance plans, expert witness and council hearing representation, quality and system auditing, policy and procedure development and educational services

2005 - 2016 I was the Academic Manager of Thoughtplanters, an arboriculture training provider based in New Zealand, Australia and Singapore.
Amongst other achievements I gained and accreditation with the New Zealand Qualification Authority (NZQA) and the Australian Skills Quality Authority (ASQA)

1999 - 2005 I was a Trainer and then progressed to be Programme Manager for Arboriculture at the School of Natural Resources - the Otago Polytechnic (Dunedin, New Zealand)

1996 - 1998 I was the Operations Manager at Ivan Earl and Associates, an arboriculture company in Melbourne Australia where I ran tree crews and managed private, council and utility line clearance works

1989 to 1995 I was a climbing arborist working in Cambridge (NZ) Sydney (AU), Cambridge (UK), Nelson (NZ), London (UK) and Sydney (AU)

Academic Qualifications

National Diploma in Adult Education and Training
2015 - Otago Polytechnic, Dunedin (NZ)

Tree Risk Assessment Qualification (TRAQ) *Approved Instructor*
2013 - International Society of Arboriculture (USA)

Tree Risk Assessment Qualification (TRAQ)
2012 - International Society of Arboriculture (USA)

New Zealand National Certificate in Horticulture (Arboriculture) Level 4
2004 - Otago Polytechnic, Dunedin (NZ)

University of Otago, Dunedin (2004) Papers on:
Principals of Environmental Management
Environmental Politics
Environmental Ethics

Bachelor of Science (Botany)
2003 - University of Otago, Dunedin (NZ)

Certified Arborist
2003 - International Society of Arboriculture (USA)

Diploma of Horticulture (Amenity)
1988 - Massey University, Palmerston North (NZ)

Professional Affiliations

I have been awarded honorary Life Membership of both the New Zealand Arboricultural Association and the International Society of Arboriculture

2002 - 2015 I served on the Executive Committee of the International Society of Arboriculture holding the position of President form 2014 - 2015

2000 - 2009 I served on the Executive Committee of the New Zealand Arboricultural Association holding the position of President form 2002 - 2004

Professional representation

Seoul, Korea. September 2017
United Nations, Food and Agriculture Organization (FAO)
The myth of the urban forest

Washington DC, USA. August 2017
International Society of Arboriculture
Critical thinking in arboriculture - Applying what we know to what we do

Canberra, Australia. April 2017
Arboriculture Australia
Critical thinking in arboriculture - Applying what we know to what we do

Auckland, New Zealand. November 2016
New Zealand Arboricultural Association
Risky Business 2 - putting risk into perspective

Melbourne, Australia. February 2016
Arboriculture Australia
Risky Business - putting risk into perspective

Taipei, Taiwan. November 2014
Council of Agriculture (Department of Agriculture and Forestry)
Tree protection during development - a New Zealand perspective

Appendix two: T**ree Risk Assessment Qualification (TRAQ)**

Tree Risk Assessment Qualification (TRAQ) is a tree risk assessment program developed by the International Society of Arboriculture (ISA).

TRAQ is based on the ISA's Best Management Practice (BMP) for Tree Risk Assessment. The ISA BMP is consistent with the International Standards Organisation (ISO) standards; ISO 31000 Risk Management ISO 31010 Risk Assessment Techniques, the American National Standard Institute (ANSI) A300 Part 9 Tree Risk Assessment, the German 'Guideline for Traffic Safety Inspection of Trees (2010)' and other national standards.

TRAQ provides a standardized and systematic process for assessing tree risk by using two 4x4 risk matrices to produce a qualitative risk rating. The first matrix is used to determine the relationship between the likelihood of failure and the likelihood of impact. The second matrix generates a risk rating based on the potential consequences and the likelihood of failure and the likelihood impact.

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