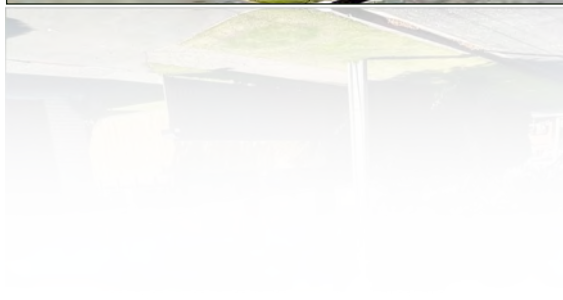


Greentrees Tree Report
for listed Pin Oak (T666)
27 King St, Mosgiel



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17.04.24

Phillipa & Darren Bain
27 King St
Mosgiel 9024

Tree Report for a listed Pin Oak tree (T666)
27 King St, Mosgiel3

Dear Phillipa & Darren,

Introduction

Thank you for engaging me to report on the listed Pin oak tree (T666) at your home in Mosgiel. While I have climbed & pruned your Pin oak in July/August 2020, this report is concerned solely with aspects of tree safety into the future & to provide independent professional advice. You have expressed the wish to have the Pin oak removed due to the possibility of major branch failure in gales, either from the sou'west or nor'west quarter.

Recently I mentioned to you that I had attended 1 whole tree Pin oak failure (girdling root) & 1 partial Pin oak failure (horizontal crack) within a 5km radius of your house during the last year due to sou'west gales. In the partial failure case the cabling (installed 2015) held & averted substantial potential damage to a house. In addition, another 2 Pin oaks were found to have advanced root collar rot & were subsequently removed. All 4 large Pin oak trees stood on the Taieri & were of a similar age & stature, as your tree.

Tree Risk (refer to pages 10 -11)

Tree risk assessments are established using a systematic qualitative methodology developed by ISA (International Society of Arboriculture - USA) & in worldwide use since 2013. The check list approach covers many aspects pertaining to each tree. The assessment process employs 2 matrices to arrive at a risk rating. Firstly, the likelihood of failure is measured against the likelihood of impacting a target. The result is then measured by a second matrix against the severity of consequences. A resulting risk rating is produced & may then be reduced by mitigation measures. The aim is to provide sound guidance to the risk manager or tree owner.



STEM (Standard Tree Evaluation - Monetary refer to pages 6 -9)

STEM is the accepted evaluation method used by many city councils throughout the country, since its inception in 1996. It is primarily used to establish a list of protected trees within a town or city by council. Dunedin requires a scheduled tree to obtain 147 STEM points to be a protected tree on the 2GP District Plan. When a tree has been removed without an owner's permission there is provision to calculate a notional value as a guide to a settlement. My form contains this provision, which I have adapted after careful consideration of the original STEM text, written by landscape architect Ron Flook. With the monetary valuation in mind, restraint is required when applying field values for the tree '*amenity*' & '*condition*', which culminate in the total score. For it is from this score, that a fair & reasonable monetary value may then be calculated.

Inspection of whole tree

Root Collar

With regard to the root rot mentioned above the owners gave permission to drill 3x 6mmØ holes to a depth of 200mm into the buttress roots to ascertain whether any root collar rot was present. All drilled holes produced healthy white wood '*frass*' as expected. This finding indicates that sufficient sound holding wood exists at present. However, in my recent experience of dissecting 2 large rotten root collars it does not necessarily rule out the presence of nascent rot or fungal decay even in apparently healthy trees. It is critical to understand that any root collar rot or girdling roots can severely compromise structural integrity of large trees (ie whole tree falls in gales).

Trunk

Completely solid wood on lightly tapping or '*sounding*' with a hammer. A sharp report for sound wood & a dull drummy sound for weaker wood (ie basic resonance test)
Passed test A++

Upper Canopy

On inspecting your Pin oak recently in March 2024, I was able to compare photos from July 2020 when I pruned the tree. The large dense canopy foiled any attempt to see every detail of the architectural structure from the ground but having previous winter photos has been helpful, to see the skeletal branch structure. No large broken branches were seen hanging aloft at present. There is a photo from July 2020 showing a hanger above the street power wires, as a reminder that falling branches during gales often cause havoc with electricity networks. (Refer TRAQ report)

Past Pruning

Being a healthy robust Pin oak shows in the woundwood response growth from previous canopy raising & has produced neat callus circles in the mid-canopy. This indicates that the process of internal chemical defence known by arborists as CODIT is functioning optimally, in defending against decay fungi & other agents.

CODIT is an acronym coined by Dr Alex Shigo (US forest service pathologist) who discovered how internal defence in trees worked & he called it '*compartmentalisation of decay in trees*'. CODIT has become the basis of modern arboricultural diagnostic methodology.

The canopy has been raised over the house to let more light in & over the electricity street wires for a minimal clearance of at least 1.5m. The electricity regulations 2003 & variations allow the network operator Aurora to make the 1st trim free of charge & all subsequent trimming of trees becomes the tree owner's cost.

Discussion

This 20m high Pin oak is at maturity (65 yrs) with a life expectancy of between 100 to 120 years according to USDA Silvics v2 US (US Forest service manual) & may enter senescence within the next 20 to 25 years. It is a fast growing Oak species with a relatively short life span compared with say English Oak at 500+ years. Pin oaks naturally grow well in Mosgiel having a deep clay loam soil & high water table. This tree has grown prodigiously in the 34 years since 1990. (Refer to DCC_GIS_archival.rates.maps on pages 12 -13).

On the assumption that Pin oak T666 is about 50% to 70% through its life span, the question arises as to the maintenance costs. Keeping branches out of the electricity street wires or a large branch dropping onto the house roof in a gale, are part & parcel of this picture. While pruning/cabling in the canopy would mitigate the risk of branch failure from causing harm to some extent, it will come at cost. While extending the urban forest cover is a laudable goal, a pinch-point arises where large trees are standing in small spaces close to a house & electricity street wires.

(Refer to STEM assessment 2024 -As per Flook Pin Oak marked down on 'form' due the above)

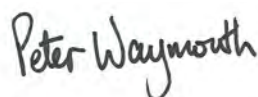
Conclusion

In the light of the above & the following pages, only 2 mitigating options emerge:

1. Prune & cable the Pin Oak (T666) in order to maintain the tree for another 20 to 35 years of its potential life expectancy.
2. Remove the Pin Oak (T666) from the DCC 2GP District Plan.

If you have any further queries please contact me.

Yours sincerely,



Peter Waymouth

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STEM: Specific Tree Evaluation_Monetary

After Flook 1996
see below for full explanation

Client	Philipa & Darren Bain	P	027 546 3293	Date	26.04.24
Address	27 King St, Mosgiel 9024	M	03 489 7636	Lat	-45.883051°S
Email	pip@a1electrical.co.nz			Lon	170.351431°E
Species	Pinoak (<i>Quercus palustris</i>)	H	≤ 20m	DBH	≤ 0.8mø
		S	≤ 20 m	Age	≤ 65 years

1. Condition of tree (points)	3 (10%)	9 (30%)	15 (50%)	21 (70%)	27 (90%)	Score
Form (structure / appearance)	imperfect	average	standard	choice	fine	15
Occurrence (frequency in locality)	frequent	common	occasional	scarce	rare	9
Vigour/Vitality (health)	poor	adequate	fair	good	excellent	15
Function (usefulness)	small	useful	practical	strong	robust	15
Age (years)	10 yrs+	20 yrs+	40 yrs+	80 yrs+	100yrs+	15
Subtotal Points						69

ref.
pg
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2. Amenity values (points)	3 (10%)	9 (30%)	15 (50%)	21 (70%)	27 (90%)	Score
Stature (greater of height or spread)	3m - 8m	9m - 14m	15m - 20m	21m - 26m	27m+	15
Visibility (from unseen to landmark)	0.5km	1.0km	2.0km	4.0km	8.0km	3
Proximity (presence of other trees)	forest	woodland	group 10+	group 3+	solitary	21
Role (as landscape element)	lesser	modest	select	prime	notable	15
Climate (Micro-ecological effect)	slight	normal	valuable	vital	critical	15
Subtotal Points						69

ref.
pg
20

ref.
pg
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3. Valuation (based on replacement cost equivalent) ✖	Σ	Calculations	
		(1. + 2.)	69
a. Total Points (Condition of tree + Amenity values = Total points score)	a	TP = a	138
b. Unit cost - 10 x 1yr trees (H = 0.4m, S = 0.2m, DBH = 0.02mø) ★	b	∴ (138TP x 180) = b	24840.00
c. Cost of planting (10 tree-holes 0.5mø x 0.25m depth, plant & mulch)	c	3hr @ \$40/hr = c	120.00
d. Maintenance period (over equivalent period to approx tree age) ✚	d	(55 x 10 x 4) = d	2200.00
e. Wholesale value (Negotiable value range wholesale to retail) (gst incl)	e	(a x b) + (c + d) = e	27160.00
f. Retail Value (NB all costs shown include gst) (2 x e) #	f	Negotiable Value	54320.00



NZ-0039BTM

Explanation of terms used above

✖ Flook formula for wholesale value (a x b) + (c + d) = e.

★ Unit cost based on 10 replacement seedling 1yr trees @\$18.00 each = \$180.00 (or alternatively maybe interpreted as 1 tree @\$180.00)

✚ Maintenance equivalent = Age of tree x 10 replacements x \$4.00 p.a. (or alternatively 1 replacement tree as above)

Retail Value is twice wholesale ⇒ (2 x e) = f.

N.B. This monetary tree evaluation form is adapted from an article in the ISA - Journal of Arboriculture 28(1) Jan 2002. In order to allow for unique field values within the matrices for database applications, many field names have been changed. These changes do not affect either the statistical or functional outcomes of the Flook methodology.

Pinoak *Quercus palustris*)
27 King St, Mosgiel
27.05.20



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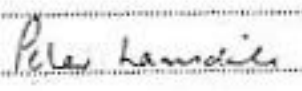
STANDARD TREE EVALUATION FORM

Pinoak T666

Date	16.5.01					
Tree	Oak					
Address	27 Kings St (pm)					
1446						
Height (m)	Radius (m)		Circumference (m) @ 1.2m			
CONDITION EVALUATION						
Points	3	9	15	21	27	Score
• Form	Poor	Moderate	Good	Very Good	Specimen	21
• Occurrence	Predominant	Common	Infrequent	Rare	Very Rare	15
• Vigour & Vitality	Poor	Some	Good	Very Good	Excellent	15
• Function	Minor	Useful	Important	Significant	Major	15
• Age (Yr)	10 Yrs+	20 Yrs +	40 Yrs +	80 Yrs +	100 Yrs+	15
Subtotal Points						69

AMENITY EVALUATION						
Points	3	9	15	21	27	Score
• Stature (m)	3-8	9-14	15-20	21-26	27+	15
• Visibility (km)	0.5	1.0	2.0	4.0	8.0	3
• Proximity	Forest	Parkland	Group 10+	Group 3+	Solitary	27
• Role	Minor	Moderate	Important	Significant	Major	15
• Climate	Minor	Moderate	Important	Significant	Major	15
Subtotal Points						75

NOTABLE EVALUATION						
Recognition Points	Local 3	District 9	Regional 15	National 21	International 27	Score
Stature						
• Feature						
• Form						
Historic						
• Age 100+						
• Association						
• Commemoration						
• Remnant						
• Relict						
Scientific						
• Source						
• Rarity						
• Endangered						
Subtotal Points						
Total Points						156

Arborist


Based on STEM - A Standard Tree Evaluation Method



Pinoak T666

27 Kings Street



Quercus robur (Oak)

16.05.01

Tree No 1446



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