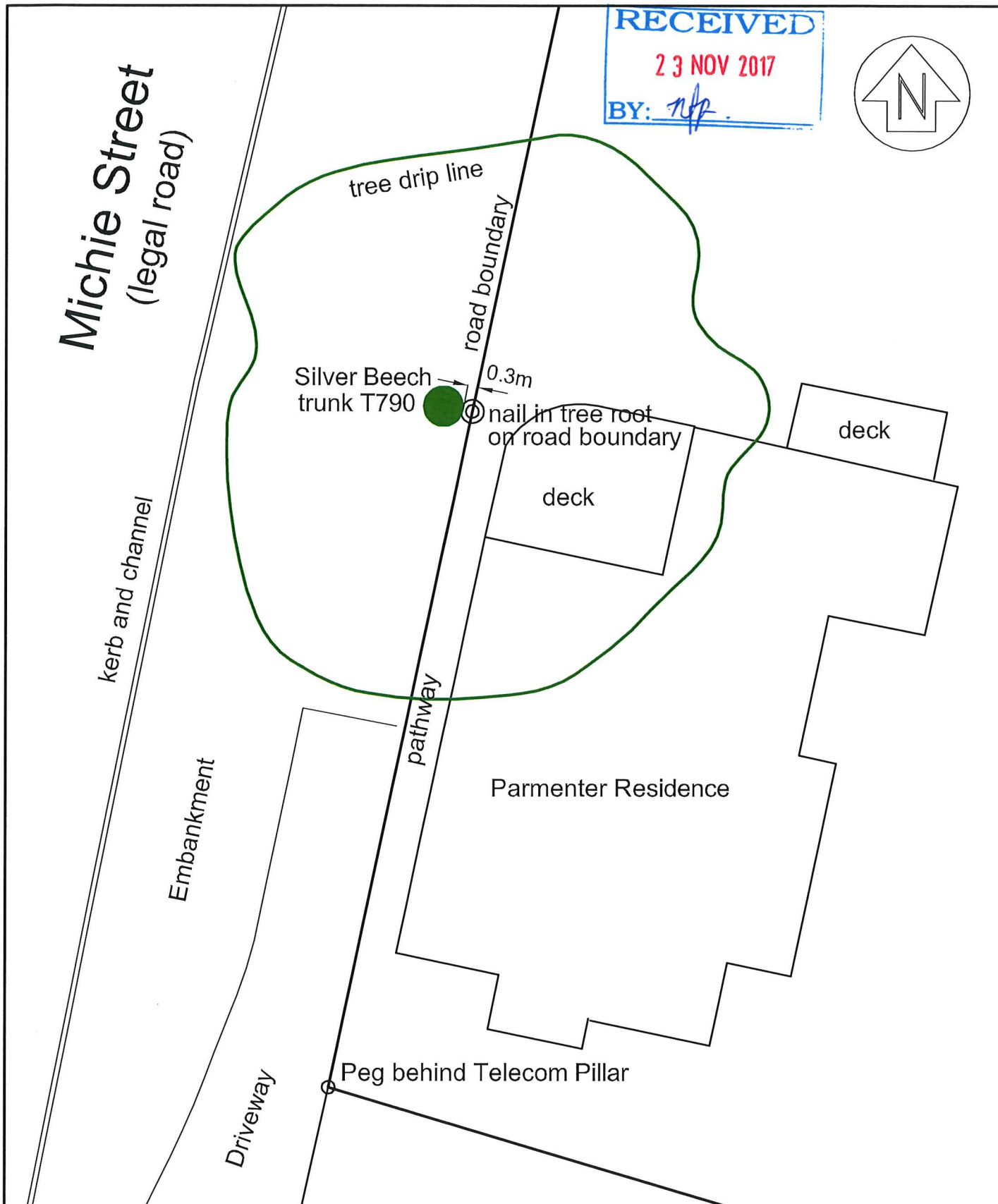




Plan of 8 Michie Street Road Boundary and Silver Beech T790

terramark
setting new boundaries
Surveying, Resource Management & Engineering
Dunedin 03-4774783 Mosgiel 03-4897107 Balclutha 03-4180470

Job No: 11736	Scale: 1:150 @ A4
Date: Aug 2017	Plan #: 11736/T1



14th July 2017

Mr G Parmenter
8 Michie St
Dunedin 9011

Building Report

Property damage relating to Significant Tree, DCC# T790 on Road Reserve adjoining at 8 Michie Street, Dunedin.

Defect Assessment

Patio foundation located under T790 dripline; Cracking and uplift (Reference photo 1, tag 1, 2, 3 & 4 also photo 2, 3, 4 & 5)

Cause of damage; Incremental growth of underground tree roots encroaching from roadside tree T790

Remedial Options (requiring DCC resource consent)

1; Demolish and rebuild patio incorporating bridging components to allow sufficient clearance and future growth of tree roots

2 Demolish and rebuild patio Remove T790 tree and roots to prevent future damage

Patio paving located under T790 dripline; Ponding with rainwater due to uplift at perimeter foundation (Reference photo 8)

Cause of damage; Incremental growth of underground tree roots encroaching from roadside tree T790

Remedial Options (requiring DCC resource consent)

1; Demolish and rebuild patio incorporating bridging components to allow sufficient clearance and future growth of tree roots

2 Demolish and rebuild patio, remove T790 tree and roots to prevent future damage

Concrete path located under T790 dripline; Uplift / displacement causing ponding of rainwater (Reference photo 7)

Cause of damage; Incremental growth of underground tree roots encroaching from roadside tree T790

Remedial Options (requiring DCC resource consent)

1; Demolish and rebuild path incorporating bridging components to allow sufficient clearance and future growth of tree roots

2 Demolish and rebuild path, remove T790 tree and roots to prevent future damage

House foundations located under T790 dripline; at risk of displacement / uplift (Reference photo 7)

Risk of damage; Incremental growth of underground tree roots encroaching from roadside tree T790

Remedial Option (requiring DCC resource consent)

1 Remove T790 tree and roots to prevent future damage

Barry Smaill

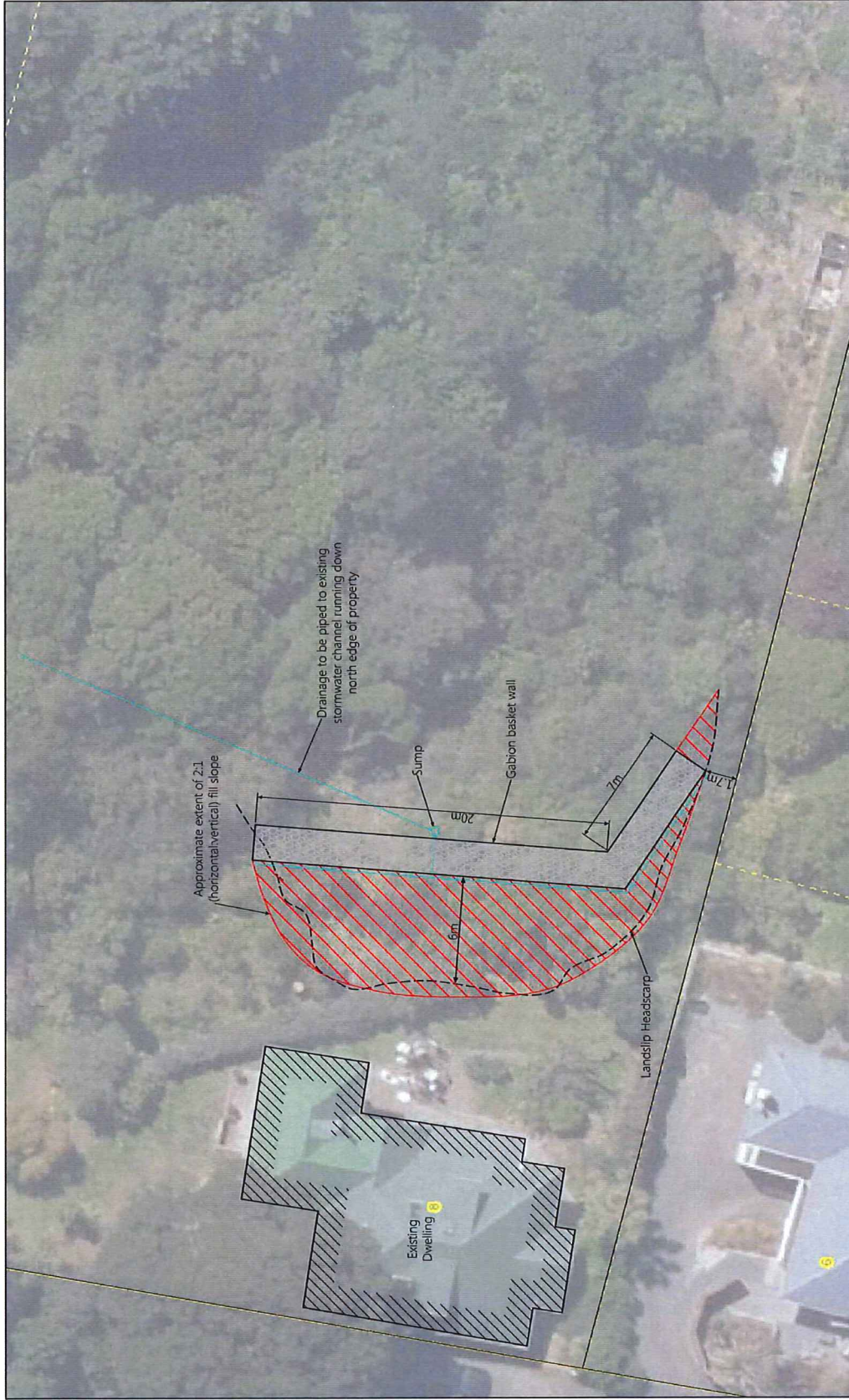
Licenced Building Practitioner # 119890



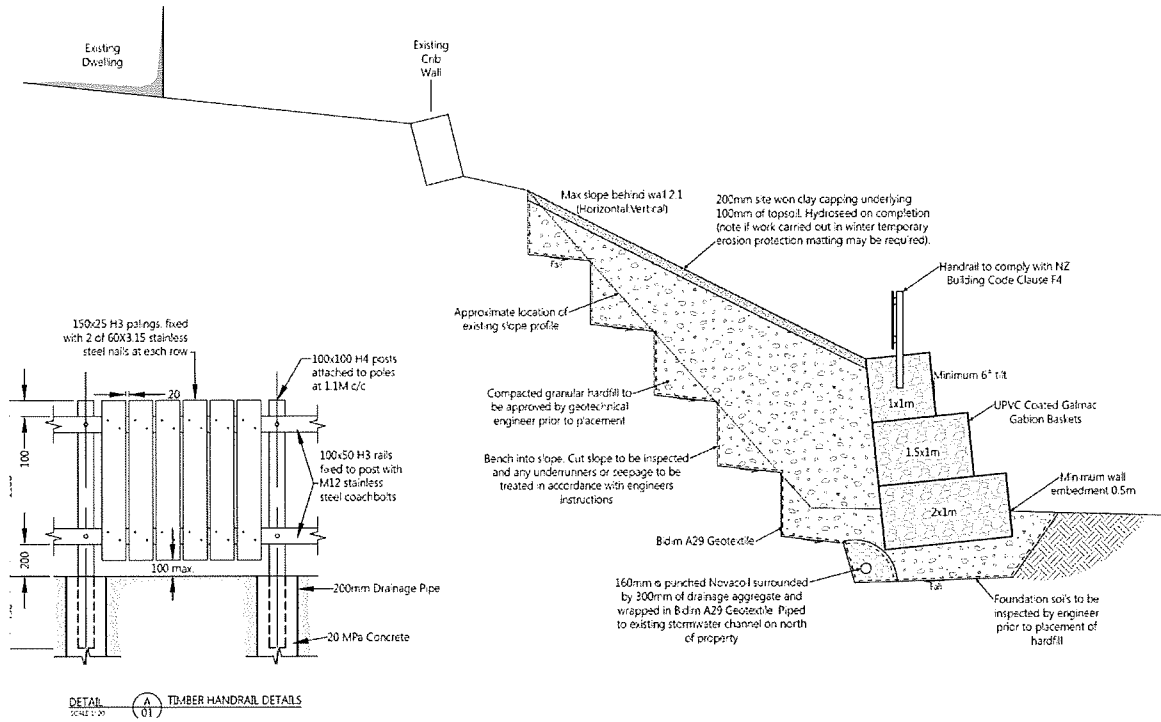
P O Box 7113 Dunedin 9040
M | 021 678 601

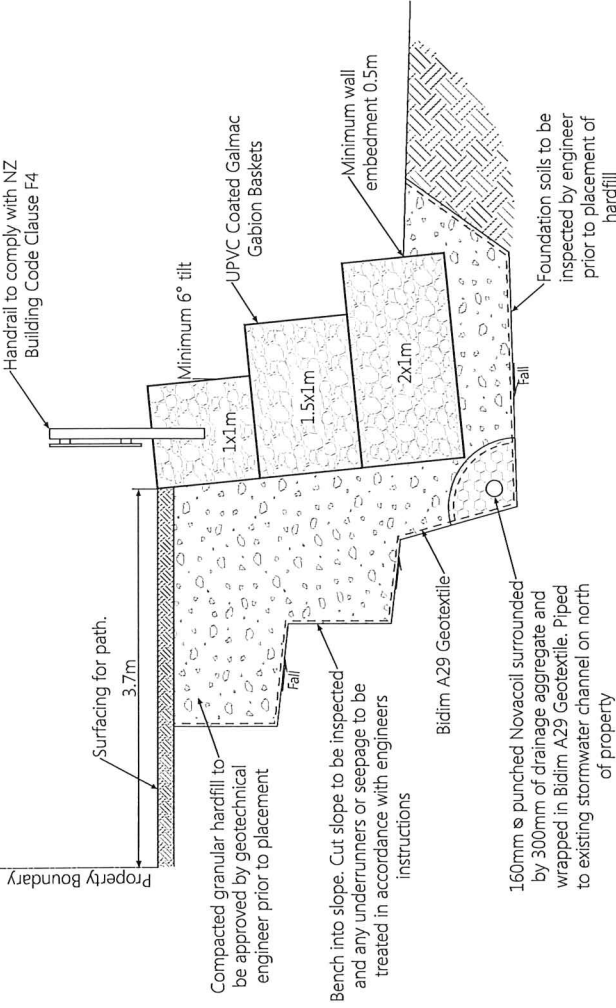
84 Preston Crescent Dunedin 9011
P | 03 453 5002

smaillbuild@ihug.co.nz
F | 03 453 5040

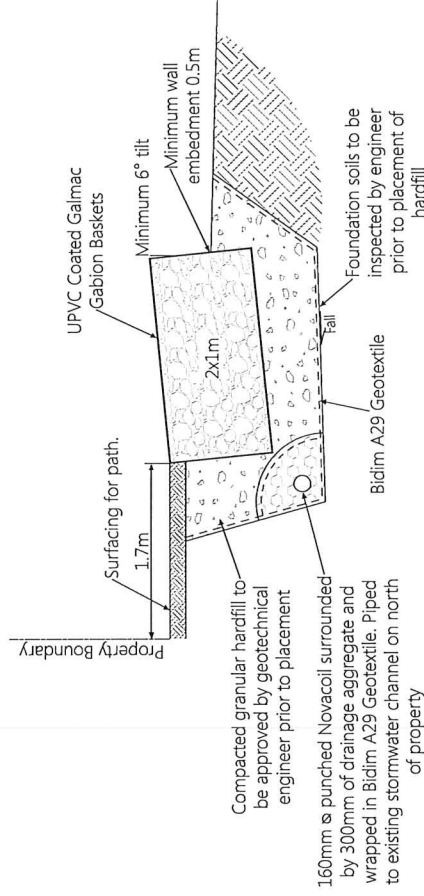


GEOSOLVE Level 1, 70 MacAndrew Road, South Dunedin www.geosolve.co.nz		Graeme Parmenter 8 Michie St, Dunedin Gabion Wall Design Site Plan	
DRAWN: [] CHECKED: [] APPROVED: [] SCALE: 1:200 PROJECT NO: 150857	DATE: [] DATE: [] DATE: [] PROJECT NO: 150857	PROJECT NO: 150857-01 REV: 0	PROJECT NO: 150857-01 REV: 0



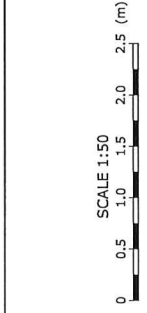


Cross Section B



Cross Section C

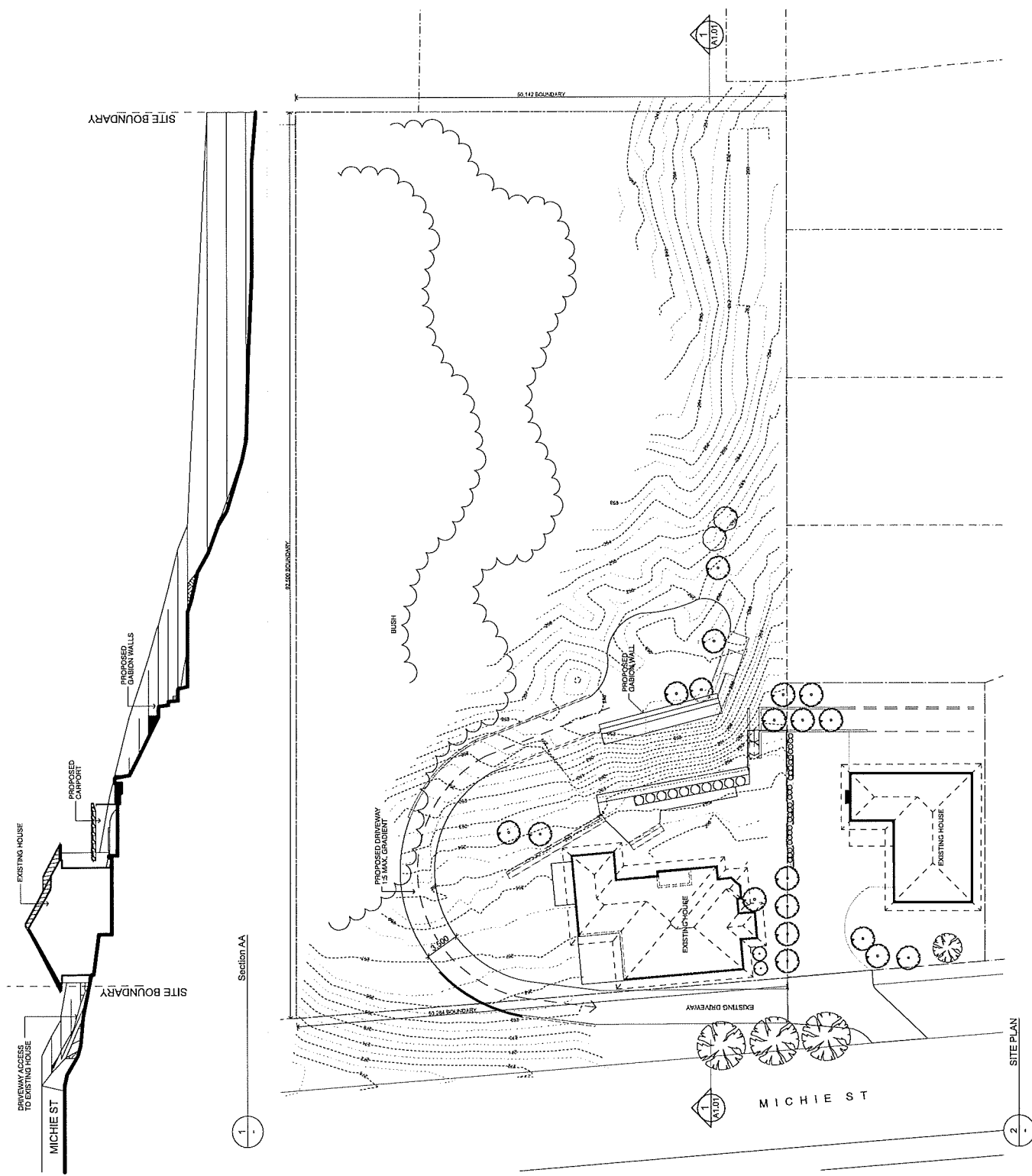
- Notes:
1. Gabion wall to be constructed in accordance with manufacturers recommendation and specification
 2. Engineer to approve gabion type
 3. Erosion protection to be installed in accordance with manufacturers recommendation and specification



DRAWN	SEP 17
DRAFTING CHECKED	SEP 17
CEM	SEP 17
APPROVED	SEP 17
CAD FILE	150657 Gabion Wall Cross Section
PROJECT No	AS SHOWN
DWG No	150657-03

Graeme Parmenter
8 Michie St, Dunedin
Gabion Wall Design
Southern Wall Cross Section

REV
0



 SUR ARCHITECTURE A 28 House, Level 6, 144 Conqueror Street PO Box 10000 Mata City mat@sur-architecture.com	All drawings to be read in conjunction with typical detail sheets. Do not scale drawings. Any drawings which must be submitted for consent prior to construction. Copyright Reserved 2015 Sur Architecture Ltd. These drawings, plans, designs and specifications are subject to copyright. They must not be used, altered, reproduced or copied, in whole or in part, without the prior written consent of Sur Architecture Ltd.	Job Title MICHIE ST PROJECT 8 Michie St Dunedin New Zealand Project # 1511	Drawing Name SITE PLAN 1:100 @ A1 SCALE: 1:100 @ A3 Drawing Status: RESOURCE CONSENT	REVISION  DIRECT No: A1.01 ISSUE 1	DATE DRAWN BY CHECKED BY DATE	Drawn by: MFC Date: 2015/11/17 / Checked by: JH/2015/11/17
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11/22/2017

Gmail - DCC tree hearing



Graeme Parmenter <graemeparmenter7@gmail.com>

DCC tree hearing

Dane Steffensen <Dane@clearwatercivil.co.nz>

13 November 2017 at 12:38

To: "graeme.parmenter@honeylane.nz" <graeme.parmenter@honeylane.nz>

Good afternoon Graeme,

I have given some thought to how the two scenarios would affect our construction methodology and have come to the following conclusions;

If trucks were able to gain access to the base of your property we would not require the use of the tracked dumper or the smaller excavator for loading material. This would greatly improve efficiency and we estimate a potential cost saving of approximately \$18,000 over the projects total value. These savings come from lower plant operating and labour costs. We expect we would also cause less disturbance to the Michie St residents if we did not have to load/unload from the carriageway. While we always endeavour to follow best industry practice, removing our workspace from the public road corridor would also reduce risk of third-party safety incidents.

To summarise, I perceive the benefits of having access to your property suitable for trucks are as follows:

- Reduced plant and labour costs (I estimate an \$18,000+GST saving)
- Reduced construction timeframe through improved efficiency.
- Reduced congestion, hazards and noise for other Michie St users.
- Reduced level of traffic management required.
- Reduced risk of damage to DCC assets from having to unload rock onto the carriageway.

I hope this is of some use, please don't hesitate to contact me if you require any further clarification on the matter.

Kind regards,

Dane Steffensen

Contract Manager



7 Brighton Road

Review of application by Graeme Parmenter
for the removal of a Tawhai tree T790
by GreenTrees Ltd

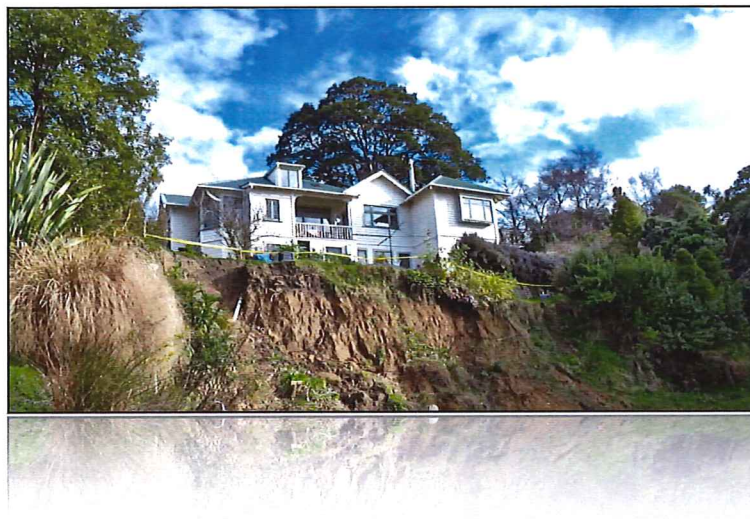
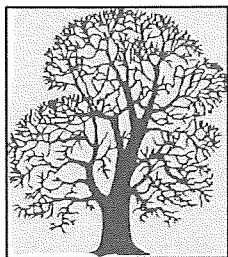


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GreenTrees Ltd

Peter Waymouth - Consulting Arborist
11 Bouverie St, Dunedin, NZ, 9010

p 03 473 8065
m 027 432 9646
e pw@greentrees.co.nz

22.08.17

Graeme Parmenter
8 Michie St
Belleknowes
Dunedin

Review of application to remove Tawhai tree T790

Dear Graeme,

Introduction

Thank you for inviting me to review your application in order to answer 2 specific questions put to you by DCC planner Amy Young in an email of 14.08.17. In addition, this report I will also contain a new STEM & tree risk assessment, plus a photo essay, & various location maps. My report will attempt to provide an unbiased view of the Tawhai tree T790, in the context of circumstances giving rise to your application for removal.

Questions

1.

Amy Young has asked firstly, whether there is risk of danger (*presumably to people or property*) if Tawhai T790 were to fall over or branch fall. The root plate & root collar are both sound & that being so, there is a very low likelihood of windthrow or uprooting. This view concurs with the Treescape report by Elena O'Neill in December 2016.

The second part to Amy's 1st question concerns branch fall, which I have taken to mean small deadwood ($\leq 60\text{mm}\varnothing$) falling out during storms. This a regular occurrence around the city after any major storm event because large old trees accumulate small deadwood high in the canopy at 20m+ height. One only has to visit the North Ground to see the debris strewn across the grass & road after a storm, after the deadwood is shaken out of the Oaks & Elms. Given that the Tawhai has been well maintained I would consider the danger to people & property in this instance, to have a low likelihood of causing harm.

N.B. It is unclear whether Amy Young is referring to major structural limb failure, but I will address this issue in my detailed tree risk assessment.

2.

The second question concerns the STEM Function (usefulness) score in the condition evaluation matrix. In referring to the STEM book by Ron Flook (1996) on page 19 he states clearly that 'usefulness' in the STEM evaluation context is about trees providing products in general (ie in flowers, fruit, foliage & timber). He then expands this broad approach at some length, but essentially it comes down to the 4 products listed above. From a nuisance standpoint, Flook makes it clear that *"If a tree is a nuisance it will receive very low marks"* for function. Flook is ever the pragmatic landscape architect, who consulted arborists & horticulturalists widely in the 90's before publishing his views in the 1996 STEM manual; now used throughout New Zealand. My STEM assessment for Tawhai T790 will attempt to follow the pathway set out by Flook.



NZ-0039BTM

STEM

The new STEM assessment for Tawhai (T790) is shown as 138 points, which is shy of the 147 points needed for acceptance as a protected tree in Dunedin, as far as I understand. You will note that each field has a unique value & that the percentage attributes are clearly shown, as stated by Flook. I chose not to include the historical matrix in my form over the monetary valuation section instead. The reason for this is simply to lessen any tendency to inflate the amenity or condition values because as the multiplier is applied in the valuation, it may cause an inflation of monetary value. In this way a consistency is inbuilt, by very carefully assigning the amenity & condition field values, in the first instance.

Tree Risk

The tree risk assessment uses a methods which ISA (*International Society of Arboriculture, USA*) developed over a 5 year period prior to global rollout in 2013. It centres around a process of the careful gathering of many field observations & measurements. These are viewed through 2 likelihood matrices to assign a risk rating. Provision is made to suggest mitigation options (eg pruning & cabling) in order to lower the residual risk rating. The aim is to provide a solution with an acceptable level of risk, which a client is prepared to carry at their sole discretion.

The main risk identified on inspecting Tawhai T790 is where the 2 large leaders bifurcate at about 4 m above ground. There is a seam running down the trunk for 0.5m which may conceal a split between the codominant leaders. The response growth showing at the joint would suggest some fractional movement. It is noted as a double leader in the 2001 STEM report, which is generally seen as a 'red flag' among arborists. Under normal conditions there would be little chance of massive failure causing 50% of the canopy to collapse. However in extreme conditions, this may not be the case & therefore the risk rating becomes 'Moderate'. Mitigation by pruning & cabling as specified on the tree risk form, would be required by the owner to lower the risk rating.

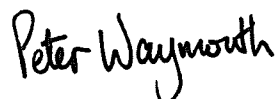
Large codominant leaders equal to half the diameter of the mainstem (aspect ratio 1 : 2) are seen as an inherent structural weakness & explains why the double leader was noted in STEM 2001 (Baird & Lonsdale).

Summary

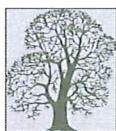
I find that the STEM evaluation is below par in my estimation for a listed tree & that the double leader requires a supplemental support (cabling system) in order to reduce the risk of harm to people & property.

It is my hope that this information may be useful to you but please do not hesitate to contact me if you require further clarification.

Yours sincerely,



Peter Waymouth



STEM: Standard Tree Evaluation Method (NZ)
(Adapted from RNZIH - www.rnzih.org.nz - Ron Flook 1996)

Date: 22.08.17

Tree Evaluation for: Graeme Parmemeter, 8 Michie St, Belleknowes, Dunedin E graeme.parmemeter@honeylane.co.nz
GPS Lat -45.873529°S Lon 170.483655°E M 027 498 8058 P

Species: Tawhai (<i>Lophozonia menziesii</i>) T790	H ≤ 18.0m		S ≤ 16.0m		DBH ≤ 1.1m	Age ≤ 95yrs	
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	15	
Vigour/Vitality (health)	poor	adequate	fair	good	excellent	21	
Function (usefulness)	small	useful	practical	strong	robust	9	
Age (years)	10 yrs+	20 yrs+	40 yrs+	80 yrs+	100yrs+	21	
Subtotal Points						81	

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	15
Role (as landscape element)	lesser	modest	select	prime	notable	15
Climate (Micro-ecological effect)	slight	normal	valuable	vital	critical	9
Subtotal Points						57

3. Valuation (based on replacement cost equivalent) ✱	Σ	Calculations	
a. Total Points (1. + 2.)	a	81 + 57 =	TP = 138
b. Unit cost -10 x 1yr trees (H = 0.4m, S = 0.2m, DBH = 0.02m) ★	b	∴ (132 TP x 75) =	\$10,350.00
c. Cost of planting (10 tree-holes 0.5mø x 0.25m depth, plant & mulch)	c	3hr @ \$40/hr	\$120.00
d. Maintenance period (over equivalent period to approx tree age) ✚	d	(95 x 10 x 4) =	\$3,800.00
e. Wholesale value (gst incl)	e	(a x b) + (c + d) = e	\$14,270.00
f. Retail Value (2e) #	f		\$28,540.00



Explanation of terms used above

✱ Flook formula for wholesale value (a x b) + (c + d) = e. Ref. ISA - Journal of Arboriculture 28(1) Jan 2002

★ Unit cost based on 10 replacement trees @\$7.50 each = \$75.00

✚ Maintenance equivalent = Age of tree x 10 replacements x \$4.00 p.a.

Retail Value is twice wholesale ⇒ (2 x e) = f. Ref. ISA - Journal of Arboriculture 28(1) Jan 2002

NZ-0039BTM

Peter Waymouth ISA - BCMA (verify at www.isa-arbor.com) 11 Bouverie St, Dunedin 9010, NZ W greentrees.co.nz P 03 473 8065 M 027 432

Tawhai (*Lophozonia menziesii*) T790
8 Michie St, Dunedin



STANDARD TREE EVALUATION FORM

T790

Date	20-3-2001	
Tree	Nothofagus menziesii	
Address	8 Mitchu st	
	651	
Height (m)	Radius (m)	Circumference (m) @ 1.2m

CONDITION EVALUATION						
Points	3	9	15	21	27	Score
• Form	Poor	Moderate	Good	Very Good	Specimen	9
• 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+	21
Double leader						Subtotal Points 75

81

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	9
• Proximity	Forest	Parkland	Group 10+	Group 3+	Solitary	27
• Role	Minor	Moderate	Important	Significant	Major	15
• Climate	Minor	Moderate	Important	Significant	Major	9
						Subtotal Points 75

57

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

150

138

Arborist

Peter Hamisdale

Based on STEM - A Standard Tree Evaluation Method

Annotated by
Greentrees Ltd
Peter Waymouth
ISA - NZ-0039BTM
22.08.17



ISA Tree Risk Assessment form

Date: 22.08.17.

Peter Waymouth - ISA Board Certified Master Arborist

NZ-0039BTM

Tree Characteristics		Client: Graeme Parmenter		E: graeme.parmenter@honeylane.nz						
Genus	Lophozonia	Address: 8 Michie St, Dunedin		M 027 498 8058						
Species	menziesii									
Common name	Tawhai (Silver Beech)	Tools: Camera, probe, tape measure, etc		Time Frame: 360 days						
Age (approx)	≤ 95 years	Tree location (GPS / remote sensor)		Latitude	-45.873529 °S					
Live crown ratio (LCR)	≤ 66%	Assessor: Peter Waymouth		Longitude	170.483655 °E					
DBH	≤ 1.1mØ	(see over for details)								
Height	≤ 18.0m	Risk	Low	High	Risk Rating					
Spread	≤ 16.0m	Options	Moderate	Extreme	Moderate					
No.	Target Description & Assessment				Z1	Z2	Z3	O	M	R
1	People & property at 8 Michie St, Dunedin (specifically the house since the tree overhangs house completely in the southeast quadrant of its large canopy)							3	NO	NO
3										
Target Zones: Z1 = 100% Dripline, Z2 = 100% Height, Z3 = 150% Height, M = Move Target, R = Restrict Access? Yes/No										
O = Occupancy Rate, 1 = Rare, 2 = Occasional, 3 = Frequent, 4 = Constant										
Site Factors										
History of failures		None to date				Flat		Slope ≤ 5% East		
Site Changes		None	Grade?	Clearing	Hydrology?	Root Cuts	Describe: Historical - road batter lifted?			
Soil Conditions		Low Volume	Saturated	Shallow	Compacted	Paved over roots 15%	Describe: Brick Paving			
Prevailing Wind: Sou'west		Common Weather		High winds	Ice	Snow	Heavy rain	Describe: Under-runners?		
Tree Health & Species Profile										
Vigour	Low	Normal	High	Foliage	Leafoff	Dead	Normal.....%	Chlorotic...%	Necrotic ...%	
Pests					Abiotic					
Species Failure Profile		Branches	Trunk	Roots	Describe:					
Load Factors										
Wind Exposure	Protected	Partial	Full	Funneling	Crown Size	Small	Medium	Large		
Crown Density	Sparse	Normal	Dense	Interior	Few	Normal	Dense	Vines/Moss		
Recent or planned changes in load factors		None to date								
Tree Defects & Conditions Affecting the Likelihood of Failure										
Crown & Branches										
Unbalanced Crown	Dead Branches ≤50mmØ	Cracks				Lightning Damage				
Broken / Hangers	Number ≤50	Codominant: Central bark ridge indicates bark inclusion				Included Bark				
Over Extended Branches	Epicormics - none	Weak Attachments; Main stem bifurcates at height of 4m				Cavity/Nest hole ≤18% circ				
Pruning History		Lion Tailed	Previous Branch Failures				Similar Branches			
Cleaning	Thinned	Dead /Missing Bark				Cankers /Galls / Burls		Sapwood Damage / Decay		
Reduced	Topped	Conks								
Flush Cuts	Raised	Response Growth: Bulge on eastside of mainstem indicative response growth due to fractional joint movement at the point where the mainstream bifurcates.								
Other:										
Main Concerns: The STEM report Baird & Lonsdale 2001 mentions the 'double leader' since it is always a concern to an arborist, as a pertinent risk indicator. This moderate risk situation requires consistent monitoring, where people & property are nearby within the canopy surrounds.										
Load on Defect	N/A	Minor	Moderate	Significant						
Likelihood of Failure	Improbable	Possible	Probable	Imminent						
Trunk										
Dead / Missing Bark	Codominant Stems	Cankers/Galls/Burls				Root collar partially buried				
Abnormal Bark Color	Included Bark	Conks/Mushrooms				Conks / Mushrooms		Depth ≤10cm	N.B. only on roadside	
Sapwood Decay	Trunk Cracks	Poor Trunk Taper				Cavity.....% circ		Decay	Dead	
Heartwood Decay	Sap ooze	Lightning Damage				Sap Ooze		Cut/damaged Roots	Cracks	
Cavity/Nest Hole% circ	Depth.....cm	Leandegrees				Distance from trunk.....m		Soil Weakness	Root Plate Lifting	
Response Growth: Bulge mentioned above at interface of trunk & crown seeks to strengthen the bifurcated joint under normal loadings.		Response Growth: N/A								
Main Concerns: There is a possibility of failure at the bulge seam where the codominant leaders bifurcates since all the forces of a storm of 120kph+ are transferred throughout the tree. The bulge represents a weaker fulcrum, which if exposed to extreme windloading may fail.		Main Concerns: N/A								
Defect Load	N/A	Minor	Moderate	Significant						
Likeli..Fail	Improbable	Possible	Probable	Imminent						
Likeli..Fail	Improbable	Possible	Probable	Imminent						

International Society of Arboriculture takes no responsibility for conclusions/recommendations drawn from use of this form. Adapted by Peter Waymouth
ISA Board Certified Master Arborist (NZ - 0039BTM) from a data sheet produced for ISA Tree Risk Assessment Qualified (TRAQ) Arborists in 2013

ISA Tree Risk Assessment form

Date: 22.08.17.

Peter Waymouth - ISA Board Certified Master Arborist

NZ-0039BTM

Risk Categories																									
										LIKELIHOOD				Matrix 1		Matrix 2									
										FAILURE		IMPACT		FAILURE & IMPACT		CONSEQUENCES		RISK							
										FAILURE		IMPACT		FAILURE & IMPACT		CONSEQUENCES		Rate							
C							TAR-	i	p	p	i	v	m	h	u	s	i	v	n	m	s	s	of		
O		CONDITIONS					TAR-	g	e	t	m	o	r	m	l	e	i	n	o	i	e	i	e	Part	
N	TREE		OF	PART	FALL	GET	PRO	p	s	o	m	o	d	g	l	m	k	i	g	n	g	v			
D	PART		CONCERN	SIZE	DIST	No	TECT	r	s	b	i	w	w	i	h	i	e	e	k	l	o	n	e		
CD	TRP		COC	PS	FD	TN	TGP	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	RRP	
1	50% Crown		Failure at height 4m	40cm	4m	1	NO																	MOD	
2																									
3																									
4																									

Matrix 1. Likelihood matrix

Likelihood of Failure	Likelihood of Impacting Target			
	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

Matrix 2. Risk rating matrix

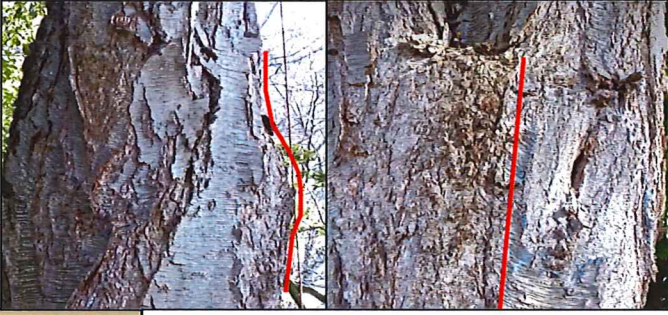
Likelihood	Consequences of Failure			
Fail&Impact	Negligible	Minor	Significant	Severe
Very Likely	Low	Moderate	High	Extreme
Likely	Low	Moderate	High	High
Somewhat	Low	Low	Moderate	Moderate
Unlikely	Low	Low	Low	Low

Notes, Explanations & Descriptions:

The seam bulge on the eastside of the trunk indicates response growth to fractional internal movement within the bifurcation joint. This can be remedied through reduction of wind loading by end weight reduction of long branches. Supplemental cabling support would mitigate the risk of catastrophic collapse of half the canopy onto the house in an extreme storm event. (ie 100mm rain in 8 hours, plus winds exceeding 120 kph+ from the Sou'west, with a heavy water laden canopy).

2 large branches have been removed from the main trunk long ago; one has sealed on the eastside, large rot pocket on the remains southside.

Red lines show closed seam & response growth bulge



Cabling WLL 2T



Mitigation Options

1 Thin canopy by ≤10% overall, reduce end-weighted branches (cuts ≤40mmØ), provide support through steel cabling system (minimum WLL 2 tonne).	Residual Risk	LOW
	Residual Risk	

Tree Risk Rating

Overall Tree Risk Rating	Low	Moderate	High	Extreme	Work Priority	1	2	3	4	
Overall Residual Risk	Low	Moderate	High	Extreme	Recommended Inspection Interval of:	180 - days				
Data	Final	Preliminary	Advanced Assessment needed	No	Yes	Type / Reason				
Inspection Limitations	None	Visibility	Access	Root	collar partially buried -	Describe:- Obscured on upper side by leaf litter				

