www.greentrees.co.nz

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

06.10.17

John Sule
DCC Senior Planner
P O Box 5045
Dunedin

Application on behalf of Ashburn Hall for work on DCC listed trees G096 & G097

Dear John,

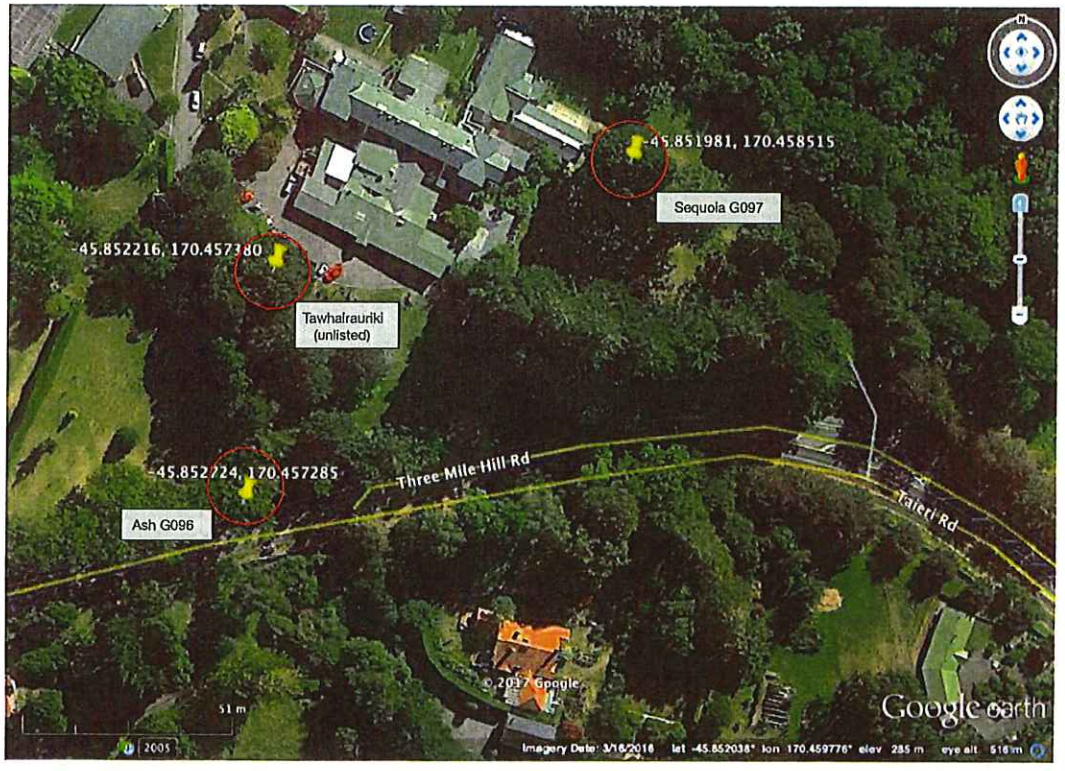
Please find attached, 2 applications for pruning & removal on behalf of Ashburn Hall for listed trees, which stand within their grounds. One is a simple maintenance job & the other is a removal proposal, where road safety is a concern.

All the relevant information is contained in each application, bar the certtificate of title number (C/T). If this is a problem then I can make a search through the QV property valuation website to obtain it, if necessary.

Yours sincerely,

Peter Waymouth

Ashburn Hall 496 Taieri Rd, Dunedin - tree map showing Sequoia(G097), Tawhairauriki (unlisted), Ash (G096) 07.07.17



DUNEDIN CITY COUNCIL
Kaunihera a rohe o Otepoti
CITY PLANNING

APPLICATION FORM FOR TREE MAINTENANCE OR EMERGENCY WORKS ON A SIGNIFICANT TREE

APPLICATION DETAILS

I/We PETER WAYMOUTH - GREENTREES LTD hereby apply for land use consent for work on a significant tree.

The work is for the purposes of: ○ Maintenance ○ Emergency Works

Tree Species: SEQUOIA District Plan Tree Number: G097

Name of Contractor: *(if known)* N/A

Description of Proposed Work:

○ Crown Raising ☑ Crown Clearing ○ Crown Thinning

○ Power Line Clearance ○ Work in Drip Line ○ Crown Reduction

☑ Other: CABLING

Assessment of the effects of the proposed work:

Inspection of existing cabling supporting the 2 mainstems is required for safety. Parts of the cabling system may need repair or replacement. Cleaning of the canopy can also be performed at this time (ie removal of dead, diseased & dying branches) End-weight reduction of some branches may also be required (pruning ≤ 5% leaf area)

SITE DESCRIPTION/LOCATION

Owner of the Tree: *(if not the applicant)* ASHBURN HALL

Address of the Property: 496 TAIERI Rd

DUNEDIN

Legal Description: LOT 1, DP 25915

ADDRESS FOR CORRESPONDENCE

Name: PETER WAYMOUTH - GREENTREES LTD

Address: 11 BOUVERIE ST DUNEDIN

Phone: Daytime: 027.432.9646 Fax:

E-mail: pw@greentrees.co.nz

OFFICE USE ONLY RMA: Prop ID: Person ID:

DECLARATION

I certify that, to the best of my knowledge and belief, the information given in this application is true and correct

Signature of Applicant(s): Peter Waymouth **Date:** 05.10.17

Signature of Tree Owner(s): **Date:**

CRITERIA FOR ASSESSMENT OF APPLICATION

This application will be considered with regard to the following matters:

- Assessment Matters 15.6.1, 15.6.2 and 15.6.3 of the Trees section of the District Plan
- Whether or not the work will benefit the health and growth of the tree
- Any alternative methods available to achieve the desired outcome
- Any previous applications involving trees
- The contribution the tree makes to the neighbourhood, both visually and physically
- The contribution the tree makes as a habitat for wildlife
- The extent to which the tree is structurally unsound in the opinion of the Council's Parks Officer – Trees.
- The applicant's need to obtain a practicable building area, access, parking area or install services etc

FURTHER ASSISTANCE

If you require any further help, please contact:

City Planning
Dunedin City Council
First Floor, Civic Centre
50 The Octagon
PO Box 5045
Dunedin
Phone 477 4000
Fax 474 3451
www.CityofDunedin.com

This is also where you can lodge your resource consent application. We are there to provide you with planning information. If you consider you need further planning advice, you may wish to discuss your application with an independent planning consultant.

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

Date: 10.07.17

Tree Evaluation for:	Neil Jones, Ashburn Hall, 496 Taieri Rd, Dunedin	E neilj@ashburn.co.nz
GPS Lat-45.851981°S	Lon 170.458515°E M	P 03.476.2092

Species: Sequoia *(Sequoiadendron giganteum)* G097 | H ≤30m | S ≤15m | DBH ≤3.5m | Age ≤105yrs

1. Condition of tree (points)	3 (10%)	9 (30%)	15 (50%)	21 (70%)	27 (90%)	Score
Form (structure / appearance)	imperfect	average	standard	choice	fine	21
Occurrence (frequency in locality)	frequent	common	occasional	scarce	rare	15
Vigour/Vitality (health)	poor	adequate	fair	good	excellent	27
Function (usefulness)	small	useful	practical	strong	robust	21
Age (years)	10 yrs+	20 yrs+	40 yrs+	80 yrs+	100yrs+	27
Subtotal Points						111

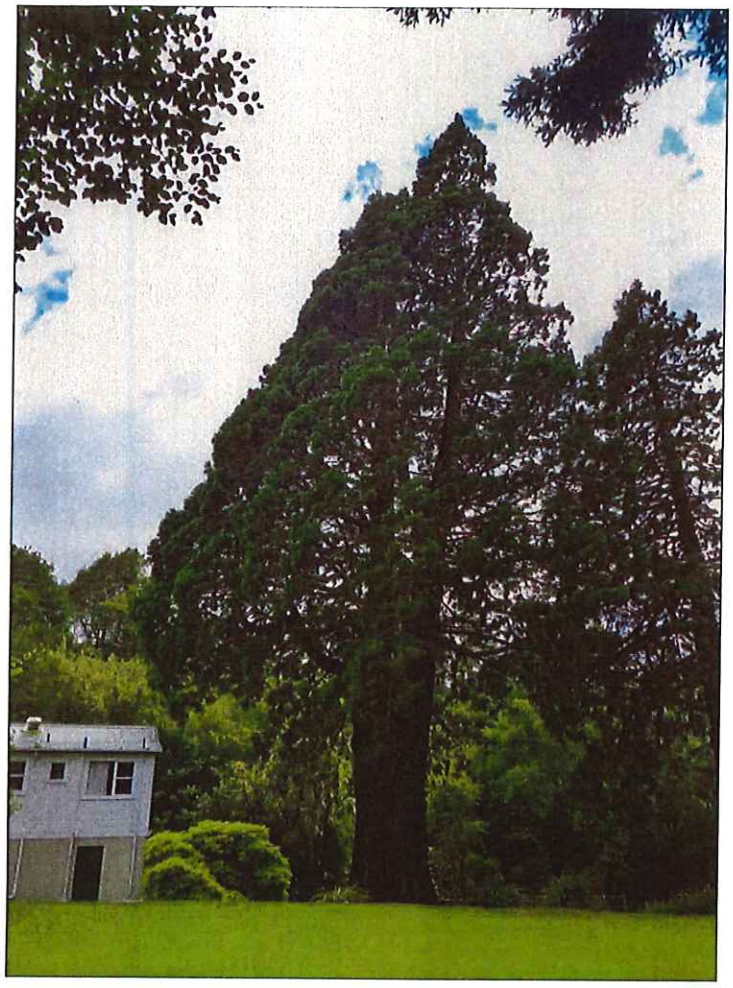
2. Amenity Values (points)	3 (10%)	9 (30%)	15 (50%)	21 (70%)	27 (90%)	Score
Stature (greater of height or spread)	3m - 8m	9m -14m	15m -20m	21m -26m	27m+	27
Visibility (from unseen to landmark)	0.5km	1.0km	2.0km	4.0km	8.0km	3
Proximity (presence of other trees)	forest	woodland	group 10+	group 3+	solitary	15
Role (as landscape element)	lesser	modest	select	prime	notable	21
Climate (Micro-ecological effect)	slight	normal	valuable	vital	critical	21
Subtotal Points						87

3. Valuation (based on replacement cost equivalent) ✠	Σ	Calculations	
a. Total Points (1. + 2.)	a	111 + 87 =	TP = 198
b. Unit cost -10 x 1yr trees (H = 0.4m, S = 0.2m, DBH = 0.02mø) ★	b	∴(198 TP x 75)=	$14,850
c. Cost of planting (10 tree-holes 0.5mø x 0.25m depth, plant & mulch)	c	3hr @ $40/hr	$120
d. Maintenance period (over equivalent period to approx tree age) ✚	d	(105 x 10 x 4) =	$4,200
e. Wholesale value (gst incl)	e	(a x b)+(c +d) = e	$19,170
f. Retail Value (2e) #	f		$38,340

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 9646

Sequoia *(Sequoiadendron giganteum)* G097



ISA Tree Risk Assessment form Date: 10.07.17

Peter Waymouth - ISA Board Certified Master Arborist NZ-0039BTM

Tree Characteristics		Client: Neil Jones - Gardener / Groundsperson		
Genus	Sequoiadendron (G097)	Address: Ashburn Hall	E neilj@ashburn.co.nz	
Species	giganteum	496 Taieri Rd, Dunedin	P 03.476.2092	
Common name	Sequoia	Tools: Camera, Tape, Probe, etc	Time Frame:	
Age (approx)	≤105 yrs	Tree location (GPS / remote sensor)	Latitude	-45.851981°S
Live crown ratio (LCR)	≤ 80%	Assessor: Peter Waymouth	Longitude	170.458515°E
DBH	≤ 3.5mø (2 stems)			(see over for details)
Height	≤ 30.0m	Risk / Options: Low / Moderate / High / Extreme		Risk Rating: Moderate
Spread	≤ 15.0m			

No.	Target Description & Assessment	Z1	Z2	Z3	O	M	R
1	People congregating under the canopy regularly	100%				NO	NO

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							Topography	Aspect
History of failures	N/A						Flat	Slope ≤ 5° NE
Site Changes	None	Grade	Clearing	Hydrology	Roots Cut?	Describe: Concrete pad under canopy		
Soil Conditions	Low Volume	Saturated	Shallow	Compacted	Paved over roots ≤ 2%	Describe: as above		
Prevailing Wind:	Common Weather		High winds	Ice	Snow	Heavy rain	Describe:	

Tree Health & Species Profile									
Vigour	Low	Normal	High	Foliage	Leafoff	Dead	Normal 90%	Chlorotic...%	Necrotic ...%
Pests	N/A			Abiotic	N/A				
Species Failure Profile	Branches	Trunk	Roots	Describe: Senescent trees are susceptible to root rots (low risk here)					

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								

Tree Defects & Conditions Affecting the Likelihood of Failure			
Crown & Branches			
Unbalanced Crown	Dead Branches .....cm	Cracks	Lightning Damage
Broken / Hangers	Number	Codominant: 2 massive leaders divide at height of 3m	Included Bark
Over Extended Branches	Epicormics	Weak Attachments	Cavity/Nest hole.....% 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: Small swelling (ears) at bifurcation of stems	
Other: Stems cabled at 10m & 20m (12mmø steel)			

Main Concerns: Inspection & replacement of cables as required, which are supporting the wind load as the 2 mainstems sway in gales. The concern being the heavy wind loads being transferred, through the bark inclusion at the basal junction of the 2 large stems (fulcrum).

Load on Defect	N/A	Minor	Moderate	Significant
Likelihood of Failure	Improbable	Possible	Probable	Imminent

Trunk			Roots & Root Collar		
Dead / Missing Bark	Codominant Stems	Cankers/Galls/Burls	Collar Buried / Not Visible	Depth.....cm	Stem Girdling
Abnormal Bark Color	Included Bark	Conks/Mushrooms	Conks / Mushrooms	Decay	Dead
Sapwood Decay	Trunk Cracks	Poor Trunk Taper	Cavity.....% circ	Sap Ooze	Cracks
Heartwood Decay	Sap ooze	Lightning Damage	Distance from trunk.....m	Cut/damaged Roots	Root Plate Lifting
Cavity/Nest Hole .....% circ	Depth.....cm	Lean .....degrees	Soil Weakness		
Response Growth: as above			Response Growth:		
Main Concerns: as above			Main Concerns: N/A		

Defect Load	N/A	Minor	Moderate	Significant	Defect Load	N/A	Minor	Moderate	Significant
Likelih..Fail	Improbable	Possible	Probable	Imminent	Likeli..Fail	Improbable	Possible	Probable	Imminent

DUNEDIN CITY COUNCIL

Application Form for Resource Consent

50 The Octagon, PO Box 5045, Moray Place, Dunedin 9058. Ph 477 4000
www.dunedin.govt.nz

Application details

I/We ON BEHALF OF ASHBURN HALL BY: PETER WAYMOUTH - GREENTREES LTD (must be the FULL name(s) of an individual or an entity registered with the New Zealand Companies Office. Family Trust names and unofficial trading names are not acceptable: in those situations, use the trustee(s) and director(s) names instead) hereby apply for:

☑ Land Use Consent ○ Subdivision Consent

Brief description of the proposed activity:

The removal of a large Ash tree T6096 standing by the stonewall entrance to Ashburn Hall, 496 Taieri Rd, Dunedin

Have you applied for a building consent? ☑ No ○ Yes, Building Consent Number ABA _____

The following additional resource consents from the Otago Regional Council are required and have/have not (delete one) been applied for:

○ Water Permit ○ Discharge Permit ○ Coastal Permit ○ Land use consent for certain uses of beds of lakes and rivers ☑ Not applicable

Site description

I am/We are the: Ashburn Hall (owner, occupier, lessee, prospective purchaser etc) of the site

Street Address of Site: 496 Taieri Rd Dunedin

Legal Description: LOT 1, DP 25915

Certificate of Title: VALUATION REFERENCE: 27841-51805

Address for correspondence

Name: PETER WAYMOUTH (Put your name here if you are preparing the application for someone else.)

Address: 11 BOUVERIE ST, DUNEDIN Postcode: 9010

Phone (Daytime): 027.432.9646 Fax: _____

Email: pw@greentrees.co.nz

Ownership of the site

Who is the current owner of the site? THE ASHBURN HALL CHARITABLE TRUST

If the applicant is not the site owner, please provide the site owner's contact details:

Address: 496 TAIERI RD, DUNEDIN Postcode: 9010

Phone (Daytime): _____ Fax: _____

Email: ashburn@ashburn.co.nz

Monitoring of your resource consent

Please estimate the date of completion of the work for which resource consent is required. Your resource consent may be monitored for compliance with any conditions at the completion of the work. (If you do not specify an estimated time for completion, your resource consent, if granted, may be monitored three years from the decision date.)

DECEMBER 2017 (month and year)

ISA Tree Risk Assessment form

Date: 10.07.17

Peter Waymouth - ISA Board Certified Master Arborist NZ-0039BTM

Risk Categories

							LIKELIHOOD								Matrix 1				Matrix 2				
															FAILURE				CONSE-				RISK
							FAILURE				IMPACT				& IMPACT				QUENCES				Rate
C						TAR-	i	p	p	i	v			m	h	u	s	l	v	n	m	s	s	of
O		CONDITIONS			TAR-	GET	m	o	r	m	l	l	e	i		n	o	i	l	e	i	i	e	Part
N	TREE	OF	PART	FALL	GET	PRO	p	s	o	m	o	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	large stem	stem failure at base	120cm	20m	1	NO																		MOD

CODES

2 x 12mmø Steel cables at 10m & 20m inspect & replace/repair (with turnbuckles)

Matrix 1. Likelihood matrix

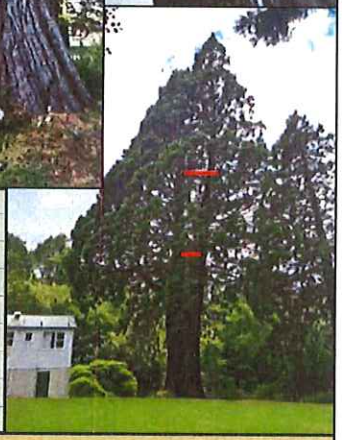
Likelihood	Likelihood of Impacting Target			
of Failure	Very Low	Low	Medium	High
Imminent	Unlikely	Somewhat	Likely	Very Likely
Probable	Unlikely	Unlikely	Somewhat	Likely
Possible	Unlikely	Unlikely	Unlikely	Somewhat
Improbable	Unlikely	Unlikely	Unlikely	Unlikely

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:

This Sequoia is a fine specimen & while it has structural flaw where the 2 stems divide. There is a bark inclusion shown in the photo (right) which indicates a weak attachment between the 2 stems at the base of the tree. The cabling of many years ago recognises the structural defect & has been installed to reduce the wind load leverage on the fulcrum / joint at the trunk base. The tendency of the joint to shear is shown in the response growth; dense tough woody protrusions added by the tree over the years as the joint moves internally on a fractional level. Arborists sometimes call these bulges 'elephant ears'.



2 large stems showing included bark or weak attachment

Mitigation Options

1. Inspect & replace / repair cabling as required	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:	5 years										
Data	Final	Preliminary	Advanced Assessment needed	No	Yes	Type / Reason										
Inspection Limitations	None	Visibility	Access	Vines	Root Collar Buried	Describe:										

Description of site and existing activity

Please describe the existing site, its size, location, orientation and slope. Describe the **current** usage and type of activity being carried out on the site. For example, discuss the bulk and location of buildings, parking provision, traffic movements, manoeuvring, noise generation, signage, hours of operation, number of people on-site, number of visitors etc. Please also provide plans of the site and buildings thereon. Photographs can help.

The large Ash Tree stands beside Taieri Rd overhanging the carriageway as far as the centre-line. Dead branches hang above the road & break off in small pieces during storms. As the tree declines larger pieces of wood may begin to fall onto the road.

Detailed description of proposed activity

Please describe the **proposed activity** for the site, giving as much detail as possible. For example, discuss the bulk and location of buildings, parking provision, traffic movements, manoeuvring, noise generation, signage, hours of operation, number of people on-site, number of visitors etc. Please provide plans showing what is proposed.

To remove the Ash tree to ground-level & grind out the stump prior to replanting with a sapling tree eg (liquidambar sp.)

District plan zoning

What is the District Plan zoning of the site? RR - Rural Residential

Are there any overlays that apply to the site e.g. in a Landscape Management Area, in a Townscape or Heritage Precinct, Scheduled Buildings on-site etc?

Breaches of district plan rules

Please detail the rules being breached by the **existing activity** on the site (if any). Also detail the degree of those breaches. In most circumstances, the only rule you need to consider is one rule from the zone in which your work is located. However, you need to remember to consider not just the Zone rules but also the Special Provisions rules that apply to the activity (from the Townscape, Landscape, Trees, Indigenous Vegetation and Flora sections of the District Plan) and also the General Provisions rules that apply to the activity (from the Hazards, Hazardous Substances and Earthworks, Subdivision Activity, Signs, Transportation, Environmental Issues and Utilities sections of the District Plan):

N/A

Please detail the rules that will be breached by the **proposed activity** on the site (if any). Also detail the degree of those breaches. In most circumstances, the only rule you need to consider is one rule from the zone in which your work is located. However, you need to remember to consider not just the Zone rules but also the Special Provisions rules that apply to the activity (from the Townscape, Landscape, Trees, Indigenous Vegetation and Flora sections of the District Plan) and also the General Provisions rules that apply to the activity (from the Hazards, Hazardous Substances and Earthworks, Subdivision Activity, Signs, Transportation, Environmental Issues and Utilities sections of the District Plan):

Rule 15-5-1 Removal of a listed tree in schedule 25.3

G096

Affected persons' approvals

I/We have obtained the written approval of the following people/organisations and they have signed the plans of the proposal

Name: N/A

Address The aspect is semi-rural with no houses standing

Name: nearby

Address

Please note: You must submit the completed written approval form(s), and any plans showing the proposal signed by affected persons, with this application, unless it is a fully notified application in which case affected persons' approvals need not be provided with the application. If a written approval is not obtained from an affected person, it is likely that the application will be fully notified or limited notified

Assessment of effects on environment

In this section you need to consider what effects your proposal will have on the environment. Discuss both positive and adverse (negative) effects. The extent of the assessment must be proportional to the degree of potential effects of the proposed activity

For controlled activities, it need only cover those matters to which the Council's control is reserved (refer to the relevant rule for the matters of control). For restricted discretionary activities, it need only cover those matters to which the Council's discretion is restricted (refer to the relevant rule for the matters of discretion)

Schedule 4 of the Resource Management Act 1991 provides some guidance as to what to include. Also refer also to the Council's relevant checklist and brochure on preparing this assessment. Also see the Ministry for the Environment's publication "A Guide to Preparing a Basic Assessment of Environmental Effects" available on www.mfe.govt.nz.

While the loss of a mature listed tree will impact negatively on the amenity value of the Ashburn Hall woodland, replanting will help to lessen this effect.

The main consideration is the safety of road users if large dead branches were to fall on the road way creating a hazard. (see attached Tree Risk Assessment)

(Attach separate sheets if necessary)

Declaration

I certify that, to the best of my knowledge and belief, the information given in this application is true and correct

I accept that I have a legal obligation to comply with any conditions imposed on the resource consent should this application be approved

I agree to pay all the fees and charges levied by the Dunedin City Council for processing this application, including a further account if the cost of processing the application exceeds the deposit paid

Signature of Applicant/~~Agent~~ (delete one): on behalf of Ashburn Hall Peter Waymouth

Date: 05.10.17

Privacy – Local Government Official Information and Meetings Act 1987

Under this Act, any person can request applications lodged with the Council. The Council is obliged to make available the information requested unless there are grounds under the above Act that justify withholding it. While you may request that it be withheld, the Council will make a decision, following consultation with you. If the Council decides to withhold an application, or part of it, that decision can be reviewed by the Office of the Ombudsmen

Please advise if you consider it necessary to withhold your application, or parts of it, from any persons (including the media) to (tick those that apply)

- ◯ Avoid unreasonably prejudicing your commercial position
- ◯ Protect information you have supplied to Council in confidence
- ◯ Avoid serious offence to tikanga Maori or disclosing location of waahi tapu

What happens when further information is required?

If an application is not in the required form or does not include adequate information, the Council can reject the application. In addition, section 92 of the Resource Management Act 1991 allows the Council to request further information from an applicant at any stage through the process where it is considered necessary to better understand the nature of the activity, the effects it may have on the environment, or the ways in which adverse effects may be mitigated

Fees

The actual deposits, fees and rates are set annually during the annual plan process. These are intended to cover the actual and reasonable costs of processing your application. Most applications require a deposit and costs above this deposit will be recovered. A current fees schedule is available on www.dunedin.govt.nz or from Planning staff. Planning staff also have information on the actual cost of applications that have been processed.

Further assistance

Please discuss your proposal with us if you require any further help with preparing your application. The Council does provide pre-application meetings without charge to assist in understanding the issues and completing your application.

Please note that we are there to provide you with planning information and we cannot write the application for you. You may need to discuss your application with an independent planning consult if you need further planning advice.

City Planning Staff can be contacted as follows:

In Writing: Dunedin City Council, PO Box 5045, Moray Place, Dunedin 9058

In Person: Customer Service Centre, Ground Floor, Civic Centre, 50 The Octagon

By Phone: (03) 477 4000, Fax: (03) 474 3451

By Email: planning@dcc.govt.nz

There is also information on our website at **www.dunedin.govt.nz**

Information requirements (two copies required)

- ☑ Completed and Signed Application Form
- ☑ Description of Activity and Assessment of Effects
- ◯ Site Plan, Floor Plan and Elevations (where relevant)
- ◯ Certificate of Title (less than 3 months old) including any relevant restrictions (such as consent notices, covenants, encumbrances, building line restrictions)
- ◯ Written Approvals
- ◯ Forms and plans and any other relevant documentation signed and dated by Affected Persons
- ◯ Application Fee (cash, cheque or EFTPOS only; no Credit Cards accepted)

In order to ensure your application is not rejected or delayed through requests for further information, please make sure you have included all of the necessary information. A full list of the information required for resource consent applications is in the Information Requirements Section of the District Plan

OFFICE USE ONLY

Has the application been completed appropriately (including necessary information and adequate assessment of effects?) ◯ Yes ◯ No

Application: ◯ Received ◯ Rejected

Received by: ◯ Counter ◯ Post ◯ Courier ◯ Other: _____

Comments:

_____

_____

_____

_____

(Include reasons for rejection and/or notes to handling officer)

Planning Officer: _____ Date: _____

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

Date: 10.07.17

Tree Evaluation for:	Neil Jones, Ashburn Hall, 496 Taieri Rd, Dunedin	E neilj@ashburn.co.nz
GPS Lat -45.852724°S	Lon 170.457285°E M	P 03.476.2092

Species: Ash *(Fraxinus excelsior)* G096	H ≤26m	S ≤18m	DBH ≤1.2m Age ≤85yrs

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	9
Function (usefulness)	small	useful	practical	strong	robust	15
Age (years)	10 yrs+	20 yrs+	40 yrs+	80 yrs+	100yrs+	21
Subtotal Points						75

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+	21
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						63

3. Valuation (based on replacement cost equivalent) ✠	Σ	Calculations	
a. Total Points **(1. + 2.)**	a	75 + 63 =	TP = 138
b. Unit cost -10 x 1yr trees (H = 0.4m, S = 0.2m, DBH = 0.02mø) ★	b	∴(138TP x 75) =	$10,350
c. Cost of planting (10 tree-holes 0.5mø x 0.25m depth, plant & mulch)	c	3hr @ $40/hr	$120
d. Maintenance period (over equivalent period to approx tree age) ✚	d	(85 x 10 x 4) =	$3,400
e. Wholesale value (gst incl)	e	(a x b)+(c +d) = e	$13,870
f. Retail Value (2e) #	f		$27,740

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
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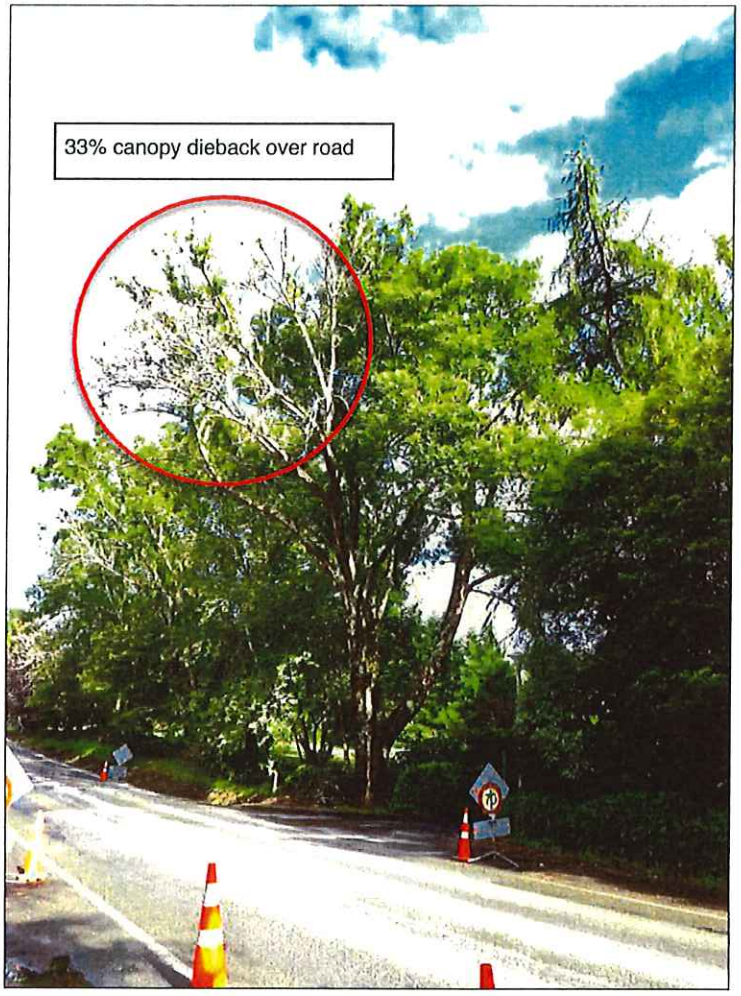
Ash *(Fraxinus excelsior)* G096



ISA Tree Risk Assessment form

Date: 10.07.17

Peter Waymouth - ISA Board Certified Master Arborist NZ-0039BTM

Tree Characteristics			Client: Neil Jones - Gardener / Groundsperson								
Genus	Fraxinus	(G096)	Address: Ashburn Hall			E neilj@ashburn.co.nz					
Species	excelsior		496 Taieri Rd, Dunedin			P 03.476.2092					
Common name	Ash		Tools: Camera, Tape, Probe, etc			Time Frame: 1 - year					
Age (approx)	≤ 85 years		Tree location (GPS / remote sensor)			Latitude	-45.852724°S				
Live crown ratio (LCR)	≤ 50%		Assessor: Peter Waymouth			Longitude	170.457285°E				
DBH	≤ 1.2mø						(see over for details)				
Height	≤ 26m		Risk	Low	High		Risk Rating				
Spread	≤ 18m		Options	Moderate	Extreme		High				

No.	Target Description & Assessment	Z1	Z2	Z3	O	M	R
1	Vehicles & pedestrians on Taieri Rd & entrance to Ashburn Hall	100%	100%	150%	3	NO	NO

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							Topography	Aspect
History of failures	Quantites of small deadwood drop from 15m occasionally in high winds						Flat	Slope.....% SW
Site Changes	None	Grade?	Clearing	Hydrology?	Root Cuts?	Describe: Historical road works?		
Soil Conditions	Low Volume	Saturated?	Shallow	Compacted?	Paved over roots 50%	Describe:		
Prevailing Wind: Sou'west	Common Weather		High winds	Ice	Some snow	Heavy rain	Describe:	

Tree Health & Species Profile									
Vigour	Fair	Normal	High	Foliage	Leafoff	Dieback	Normal 66%	Chlorotic...%	Necrotic 33%
Pests	N/A				Abiotic	Compaction / Root severance from road works?			
Species Failure Profile	Branches	Trunk	Roots	Describe: Ash:33% dieback in canopy caused by fungal decay in roots?					

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	33% dieback on large limbs overhanging road may fail in high winds							

Tree Defects & Conditions Affecting the Likelihood of Failure

Crown & Branches			
Unbalanced Crown	Dead Branches ≤ 10cmø	Cracks	Lightning Damage
Broken / Hangers	Number ≤ 4	Codominant: 3 large leaders	Included Bark
Over Extended Branches	Epicormics	Weak Attachments: several stems arising from one point	Cavity/Nest hole.....% circ
Pruning History	Lion Tailed	Previous Branch Failures: None showing	Similar Branches
Cleaning	Thinned	Dead /Missing Bark / Cankers /Galls / Burls	Sapwood Damage / Decay
Reduced	Topped	Conks	
Flush Cuts	Raised	Response Growth: Epicormic growth indicates stress in high canopy over Taieri road	
Other:			

Main Concerns: Ash dieback in 33% of the canopy may gradually progress, as the tree retrenches to smaller size. Dead branches may fail.

Load on Defect	N/A	Minor	Moderate	Significant
Likelihood of Failure	Improbable	Possible	Probable	Imminent

Trunk			Roots & Root Collar		
Dead / Missing Bark	Codominant Stems	Cankers/Galls/Burls	Collar Buried / Not Visible	Depth.....cm	Stem Girdling
Abnormal Bark Color	Included Bark	Conks/Mushrooms	Conks / Mushrooms	Decay	Dead
Sapwood Decay	Trunk Cracks	Poor Trunk Taper	Cavity.....% circ	Sap Ooze	Cracks
Heartwood Decay	Sap ooze	Lightning Damage	Distance from trunk.....m	Cut/damaged Roots	Root Plate Lifting
Cavity/Nest Hole .....% circ	Depth.....cm	Lean .....degrees	Soil Weakness		
Response Growth: N/A			Response Growth: N/A		

Main Concerns: Codominant stems appear structurally sound but create large leverage forces at the attachment point (fulcrum) in gales.

Main Concerns: Cut roots, soil compaction & grade change over time (due past road works) may have initiated entry of pathogenic decay fungi into the root system. It is likely that the canopy dieback is directly related the probability of a slow but gradual structural root rot occurring.

Defect Load	N/A	Minor	Moderate	Significant	Defect Load	N/A	Minor	Moderate	Significant
Likelih..Fail	Improbable	Possible	Probable	Imminent	Likeli..Fail	Improbable	Possible	Probable	Imminent

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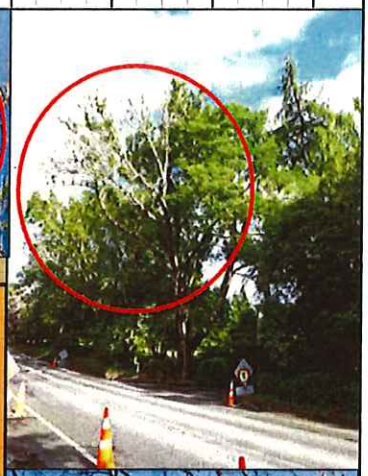
ISA Tree Risk Assessment form Date: 10.07.17 Peter Waymouth - ISA Board Certified Master Arborist NZ-0039BTM

Risk Categories

CD	TREE PART	CONDITIONS OF CONCERN	PART SIZE	FALL DIST	TARGET No	TARGET PROTECT	LIKELIHOOD FAILURE	LIKELIHOOD IMPACT	Matrix 1 FAILURE & IMPACT	Matrix 2 CONSEQUENCES	RISK Rate of Part
						TARGET	impact	impact	likelihood	consequences	
						PROTECT	A B C D	E F G H	I J K L	M N O P	
CD	TRP	COC	PS	FD	TN	TGP					RRP
1	Large branches	Failure in storms	10cm	10m	1	NO					High

CODES

Stress: Dead tip shoots & weak new shoots



33% dieback in upper crown due to stress of root rot?

Stability Root rot under road?

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 Fail&Impact	Consequences of Failure: 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: Red circles in the photos above show extensive shoot dieback evident (Feb 2017) in 33% the upper canopy, over Taieri road. The target area is shown as orange arc on the road & also delineates the canopy dripline. Below ground will be the most likely area (orange) where damaged roots exist. Honey fungus is a possible pathogen (present in Dunedin) which may be active. It is difficult to detect as the small sporadic mushroom clusters appear only briefly. The decay is gradual over many years despite the larger portion of the canopy appearing healthy. Structural instability becomes an major windthrow risk over time.

Mitigation Options

	Residual Risk	LOW
1. Felling to ground level, grind stump & replant (eg 2.5m Liquidambar styraciflua)		

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:	1 - year
Data: Final / Preliminary	Advanced Assessment needed			No	Yes	Type / Reason
Inspection Limitations	None	Visibility	Access	Vines	Roots Buried	Describe: Damaged roots may be under roadway

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