



Application Form for a Resource Consent

50 The Octagon, PO Box 5045, Moray Place
Dunedin 9058, New Zealand
Ph 03 477 4000
www.dunedin.govt.nz

PLEASE FILL IN ALL THE FIELDS

Application Details

I/We Kenneth & Brigid Hill (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: _____

Removal of a Registered Tree T358

Have you applied for a Building Consent? ☐ Yes, Building Consent Number ABA _____ ☒ No

Site location/description

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

Street Address of Site: 27 Cranston Street, Anderson's Bay, Dunedin. 9013

Legal Description: PT SEC 3 BLK II SO 1 ANDERSONS BAY SD, PT SEC 4 BLK II SO 1 ANDERSONS BAY SD

Certificate of Title: 280/62

Address for correspondence (this will be the first point of contact for all communications for this application)

Name: Ken Hill (applicant/agent (delete one))

Address: 27 Cranston Street, Anderson's Bay, Dunedin Postcode: 9013

Phone (daytime): 021 998670 Email: ken.hill@farra.co.nz

Address for invoices or refunds (if different from above)

Name: _____

Address: _____

Bank details for refunds

Bank Account Name _____

Account Number:

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Bank Branch Account Number Suffix

Ownership of the site

Who is the current owner of the site? Hill Family Trust

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

Address: 27 Cranston Street, Andersons Bay, Dunedin Postcode: 9013

Phone (daytime): 021 998670 Email: ken.hill@farra.co.nz

Monitoring of your Resource Consent

To assist with setting a date for monitoring, 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).

May 2018

(month and year)

Monitoring is an additional cost over and above consent processing. You may be charged at the time of the consent being issued or at the time monitoring occurs. Please refer to City Planning's Schedule of Fees for the current monitoring fee.

Detailed description of proposed activity

Please describe the proposed activity for the site, giving as much detail as possible. Where relevant, 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 proposed site plans and elevations.

Removal of a Lime Tree. The tree is approx. 20m tall and Ø12m.

Situated approx 30m from the street up a steep drive. Approx. 4m from NW corner of Dwelling on site Car parking area between tree and house. The tree is also only 5m from dwelling on neighbouring property. Close to power and phone lines of property.

2-3 persons using Chainsaws required to raise tree in manageable pieces. Stump grinding, small truck to remove debris. (refer photos of site and tree attached)

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. Where relevant, 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 existing site and buildings. Photographs may help.

Residential property 737m2 located at 27 Cranston Street, Andersons Bay, Dunedin 9013, Used solely for a family dwelling & off street parking (Refer photos etc. attached)

(Attach separate sheets if necessary)

District plan zoning

Area 3 - Residential

What is the District Plan zoning of the site?

Are there any overlaying District Plan requirements that apply to the site e.g. in a Landscape Management Area, in a Townscape or Heritage Precinct, Scheduled Buildings on-site etc? If unsure, please check with City Planning staff.

Nil

Breaches of district plan rules

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 rules you need to consider are the rules from the zone in which your proposal 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. If unsure, please check with City Planning staff or the Council website.

NIL

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: Brian & Wendy

Address: 25 Cranston Street, Andersons Bay, Dunedin

Name: _____

Address: _____

Please note: You must submit the completed written approval form(s), and any plans 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 required, but not obtained from an affected person, it is likely that the application will be fully notified or limited notified.

Assessment of Effects on Environment (AEE)

In this section you need to consider what effects your proposal will have on the environment. You should discuss all actual and potential effects on the environment arising from this proposal. The amount of detail provided must reflect the nature and scale of the development and its likely effect, i.e. small effect equals small assessment.

You can refer to the Council's relevant checklist and brochure on preparing this assessment. If needed there is the Ministry for the Environment's publication "A Guide to Preparing a Basic Assessment of Environmental Effects" available on www.mfe.govt.nz. Schedule 4 of the Resource Management Act 1991(RMA) provides some guidance as to what to include.

~~As a significant tree it has had a STEM assessed which includes Environment criteria, on that basis therefore its removal will effect the criteria as per the STEM assessment.~~

~~However as there are 1352 trees listed as significant in Dunedin the Environmental effects of it's removal should be minimal.~~

~~The leaf fall in autumn does clog storm water drains at the bottom of the street causing flooding during heavy or prolonged rain.~~

~~As weather events are becoming more frequent and more sever the chance of negative effects from leaf fall will inevitability increase.~~

As weather events are becoming more frequent and more sever the danger to property and/or persons has also significantly increased.

(Attach separate sheets if necessary)

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 lake beds and rivers ☒ Not applicable

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.

Subject to my/our rights under section 357B and 358 of the RMA to object to any costs, 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): _____ Date: _____

Privacy – Local Government Official Information and Meetings Act 1987

You should be aware that this document becomes a public record once submitted. Under the above Act, anyone can request to see copies of 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 may reject the application, pursuant to section 88 of the RMA. In addition (section 92 RMA) the Council can request further information from an applicant at any stage through the process where it may help to a better understanding of the nature of the activity, the effects it may have on the environment, or the ways in which adverse effects may be mitigated. The more complete the information provided with the application, the less costly and more quickly a decision will be reached.

Fees

Council recovers all 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. This can also be viewed on the Council website.

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 associated with your proposal and completing your application. This service is there to help you.

Please note that we are able to provide you with planning information but we cannot prepare the application for you. You may need to discuss your application with an independent planning consultant 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 Services 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)
- ☐ Bank account details for refunds

In addition, subdivision applications also need the following information

- ☐ Number of existing lots.
- ☐ Number of proposed lots.
- ☐ Total area of subdivision.
- ☐ The position of all new boundaries.

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: _____



**COMPUTER FREEHOLD REGISTER
UNDER LAND TRANSFER ACT 1952**

Limited as to Parcels

Search Copy



R. W. Muir
Registrar-General
of Land

Identifier **OT280/62**
Land Registration District **Otago**
Date Issued 28 November 1936

Prior References

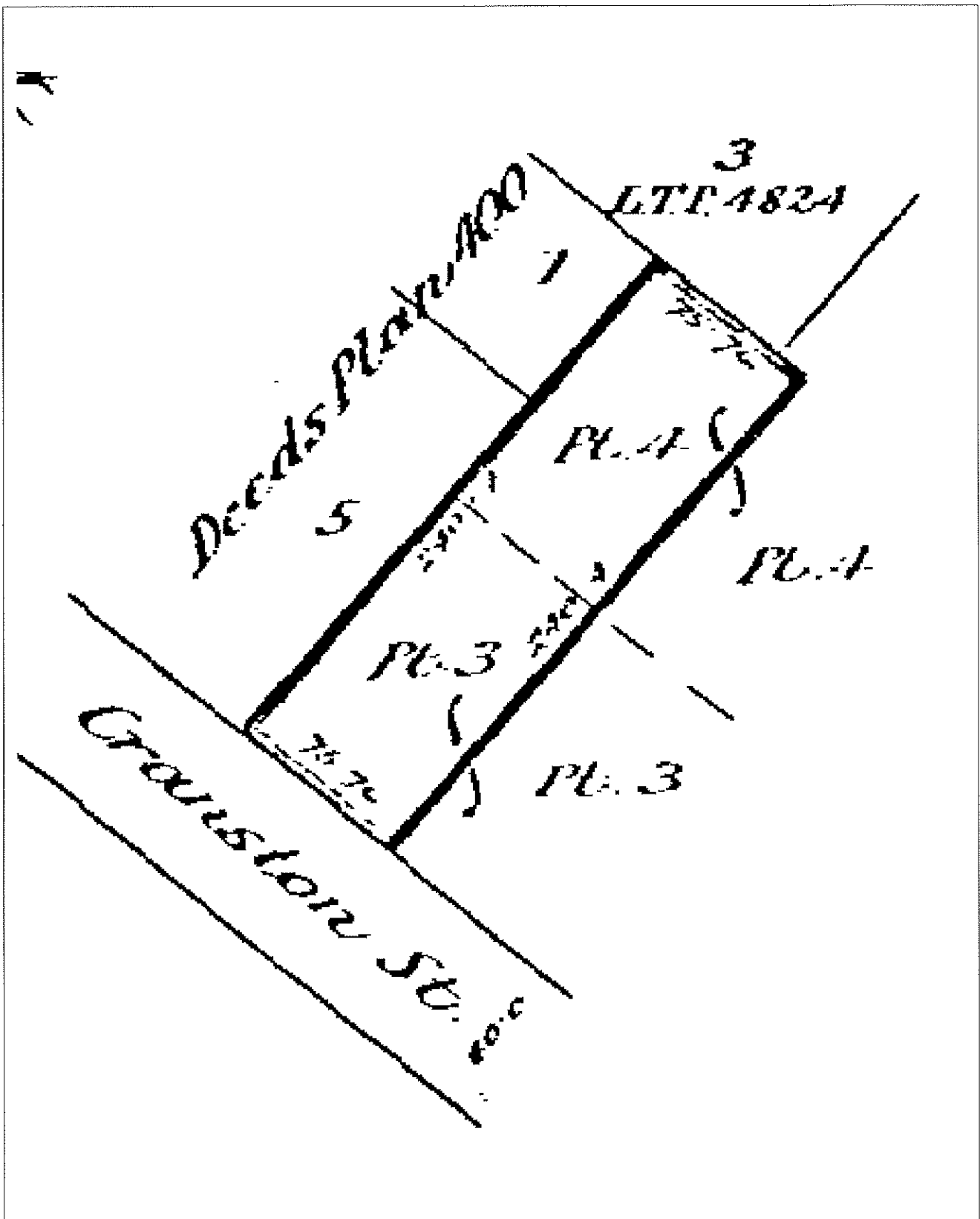
DI X329

Estate	Fee Simple
Area	737 square metres more or less
Legal Description	Part Section 3-4 Block II Andersons Bay Survey District

Proprietors

Kenneth David Hill, Brigid Geraldine Hill and Race & Douglas Trustees Limited

Interests



Reasons for Removal of Significant Tree

Danger:

One of the biggest perceived dangers from the location of this significant tree is its potential to damage property and injure people. Due to climate change, the number and intensity of severe weather events is increasing. Heavy and prolonged rain falls and gale force winds have increased hugely in the last few years, sub-tropical cyclones are now travelling further south and are now having an effect on Dunedin. Tornadoes are also now occurring more frequently in the south island.

4th December 2009 near Queenstown, a poplar tree fell on a passing car, this resulted in the fatality of the driver.

2nd Jan 2015 in Tinopai, north of Auckland a falling tree resulted in the death of a man.

25th Sept 2017, while female was driving her car a tree fell onto a vehicle resulting in severe injury.

4th Jan 2018, Otahuhu, Auckland a tree fell onto a car, in this case the female occupant luckily walked away.

6th Jan 2018 in Rotorua, protected tree fell onto a car, resulting in the death of the female occupant.

4th Feb 2018, in Te Puna, a tree landed on the van. 4 persons in the van escaped severe injury.

13th April 2018, in Auckland, a tree fell on a house

These are only a few of the very serious incidents; there are lots of near misses and damage to properties when roofs of homes have been smashed in endangering the owners and children inside.

Our neighbor's house is approx 5-6m from the tree and below the level of our property with the roof of their house level with our ground. Brian and his partner Wendy have on several occasions expressed concern in regards to the tree location and the vicinity of their home every time there is a storm forecast.

This makes us as owners (legally responsible for damage or injury resulting from the tree) acutely aware of these reported events and concerned because of our responsibilities to our neighbours and worried for our own wellbeing. We no longer feel willing to be responsible for these risks.

Health & Safety:

The tree in question is a Lime tree. It has very soft weak foliage that constantly breaks off spreading detritus everywhere. Frequently branches 1-2 inches thick fall down some long dead and broken off have been stuck up in the tree and can fall at any time not just on windy days.

The tree sheds foliage 3 x times every summer (excluding the broken branches and leaves from wind).

Blossom – Late spring fine petals carpet the ground and fill gutters on both our and our neighbor's houses. These can be slippery on the ground if wet and promote moss and algae growth on the driveway and steps (only access up to the house). The gutters fill and the petals block any mesh or brushes placed in the gutter to prevent them getting blocked up.

Seed pods – Late summer early autumn the hard round seed pods fall from the tree bouncing on the roof disturbing sleep, filling gutters, and covering the front steps and driveway. If left to dry out these seed pods become hard and are like small marbles and can be dangerous when walking down the steps and driveway.

Leaves – Late autumn the leaves fall again clogging gutters and covering the steps and driveway, these can be slippery when wet and if not constantly cleared promote algae and moss growth. The leaves get blown onto the

street and down to the storm water drains at the bottom of the street. Usually this drain gets cleared by the very considerate home owner who lives beside the storm water drain. If not cleared - flooding occurs fully across the street several inches deep during heavy rain falls.

Bird Feces – Late Autumn early winter there is a flock of birds (approx 100) roost in the tree over night producing bird droppings all over the driveway, and steps, and more than a few times on people when leaving for work first thing in the morning. It is impossible to get into the house without walking up the drive through all this and transferring it into the house resulting in potential health risks to this household in the form of respiratory conditions.

The constant maintenance required especially to clear the guttering is a serious safety issue. The access is only by extension ladder and the ground is sloping and adjacent car park area and driveway is broken and uneven because of the tree roots have lifted the concrete. Various methods (mesh and brushes) have been tried to keep gutters clear but the petals from the blossom clog the mesh and the seed pods clog the brushes

Dwelling integrity:

The effect of the tree roots is evident on the driveway and along the side of the house. Implication in time will be destabilization of the house foundations and a potential impact on the cost to continued insurance for our home. If the tree happened to fall against our house there may be limited damage due to its very close proximity but the chimney would be very much at risk and being tall and brick a very real danger to anyone in the bedroom directly below it.

If not constantly cleared the debris in the guttering builds up very quickly and corrodes the edges of the corrugate roof

The constant stories reporting poor outcomes in relation to insurance companies' obligation to their clients especially evident following the Christchurch earthquake (and most other recent weather events) further amplify our concerns.

Neighbours dwelling integrity:

Most of the above points also relate to our immediate neighbours home. The tree completely covers one corner of their house and they have the same issues with gutters, roof corrosion, moss and algae growth.

The potential risk of damage to their house is far greater than ours because their house is situated approx 2.5m below the level of our property. If the tree happened to fall on their house probably 3/4 of it would be destroyed.

The tree roots have broken the rock and concrete retaining wall between our 2 properties and become a danger to their young grand children to the extent they no longer use that part of their property. The tree roots have also caused damage to their plumbing pipes in the recent past and will likely cause more damage in the future.



Tree overshadowing driveway (looking down hill)



Tree overshadowing driveway (looking up hill)



Tree overshadowing neighbor's house



Broken concrete on driveway and car park area.



Sloping car park area and footing for extension ladder to access gutter (1 ¾ stories high)



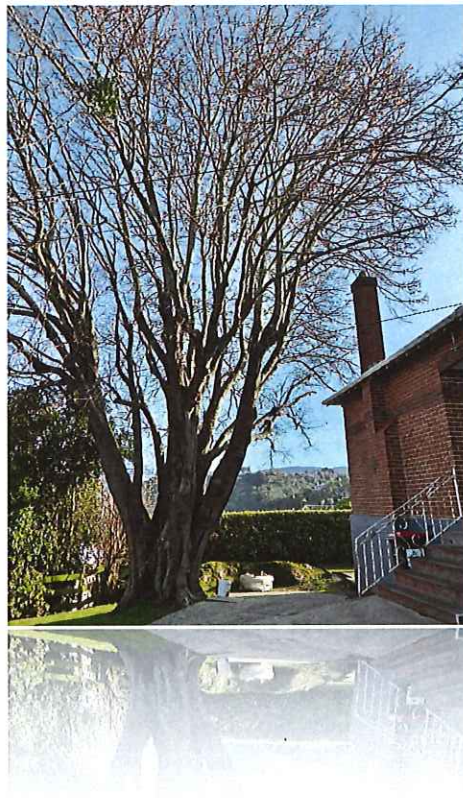
Seed pods on steps that dry out hard like marbles



Tree roots grown through retainer wall in neighbours section

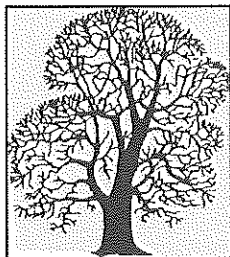


Greentrees Report concerning a
Small Leafed Lime Tree - T358
at 27 Cranston St, Dunedin



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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

14.07.18

Ken & Gerry Hill
27 Cranston St
Andersons Bay
Dunedin

Tree Risk & Evaluation report for a Lime tree (T358) at 27 Cranston St, Dunedin

Dear Ken & Gerry,

Introduction

Thank you for inviting me to give an opinion in regard to available options for the future of your listed Small Leafed Lime tree (*Tilia cordata*) - T358. In our recent discussion about your tree it is my understanding that honeydew drop in summer & autumn causes the sloping drive to become very slippery. In addition, gutters are regularly blocked due to leaf & twig drop year-round despite attempt to find products (eg gutterguard, etc) to keep them free of debris. While you have for many years managed these tasks as being part & parcel of owning a large tree standing close to your house, you also now have a concern about the damage caused by tree roots to a neighbour's retaining wall.

Tree Risk

The tree risk method used is qualitative assessment of the tree in question, which requires a number of key observations to be made in the field. The risk rating is derived firstly, by assessing the likelihood of failure against the likelihood of impact in a matrix. A resulting probability of failure/impact is produced, which is then passed through a second matrix whereby the failure/impact probability is combined with the severity of consequences to arrive at the overall risk rating.

The risk rating is shown as Moderate in top right of page 8 and mitigating options are at the bottom of page 9. The 2 options consist of: A. Prune & Cable or B. Remove tree completely.

Tree Evaluation

The STEM (Standard Tree Evaluation Method) has been used to conservatively estimate the notional monetary value of the tree. It is effectively an adjunct to your property value & is used on very rare occasions to settle disputes, where trees may have been removed nearby to unclear boundary lines. However, in this instance, it serves to restrain the assessor in terms of field/point allocations, since the final points score is subject to multiplication factors in the monetary calculation.

The final STEM evaluation is overleaf on page 4, showing a total score of 138 points for your Lime tree (T358).

I would hope that this report covers all the aspects of concern with your tree, that we discussed. Should you require any further information please contact me.

Yours sincerely,

Peter Waymouth

Peter Waymouth





STEM: Standard Tree Evaluation Method (NZ)

Adapted from RNZIH - www.rnzih.org.nz - Ron Flook 1996
see below for full explanation

Client	Ken & Gerry Hill	P	03.454.4270	Date	14.07.18
Address	27 Cranston St, Andersons Bay, Dunedin	M	021.998.670	Lat	-45.984568°S
Email	gerry.hill@otago.ac.nz			Lon	170.529891°E
Species	Small Leafed Lime (<i>Tilia cordata</i>)	H	≤20.0m	DBH	≤1.46mø
T358		S	≤16.0m	Age	≤83 yrs (AM8.8mm/pa)

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

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

3. Valuation (based on replacement cost equivalent) ※	Σ	Calculations	
a. Total Points (1. + 2.)	a	69 + 69 = 138	TP = 138
b. Unit cost -10 x 1yr trees (H = 0.4m, S = 0.2m, DBH = 0.02mø) ★	b	∴ (138TP 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	(83 x 10 x 4) =	3,320.00
e. Wholesale value (gst incl)	e	(a x b)+(c +d) = e	13,790.00
f. Retail Value (2e) #	f		\$27,580.00



NZ-0039BTM

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

N.B. This STEM evaluation form is adapted from Ron Flook's 1996 publication ISBN 0.473.04039.5

In order to allow for unique field values within the matrices for database applications, some changes have been made.

These changes in no way affect the intended statistical or functional outcomes of the original Standard Evaluation Tree Method.

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

Small Leafed Lime (*Tilia cordata*) T358
27 Cranston St, Andesons Bay Dunedin



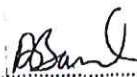
STANDARD TREE EVALUATION FORM

Date	8.8.01				
Tree	Change	Lime	Small Leaved Lime (<i>Tilia cordata</i>) T358		
Address	27 Cranston Street.				
Height (m)	20.0m	Radius (m)	16.0m	Circumference (m) @ 1.2m	4.6/π = 1.46m

CONDITION EVALUATION						
Points	3	9	15	21	27	Score
• Form	Poor	Moderate	Good	Very Good	Specimen	15
• Occurrence	Predominant	Common	Infrequent	Rare	Very Rare	15
• Vigour & Vitality	Poor	Some	Good	Very Good	Excellent	15
• Function	Minor	Useful	Important	Significant	Major	21
• Age (Yr)	10 Yrs+	20 Yrs+	40 Yrs+	60 Yrs+	100 Yrs+	21
					Subtotal Points	87

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	15
					Subtotal Points	81

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	168


 Peter Waymouth
 Arborist

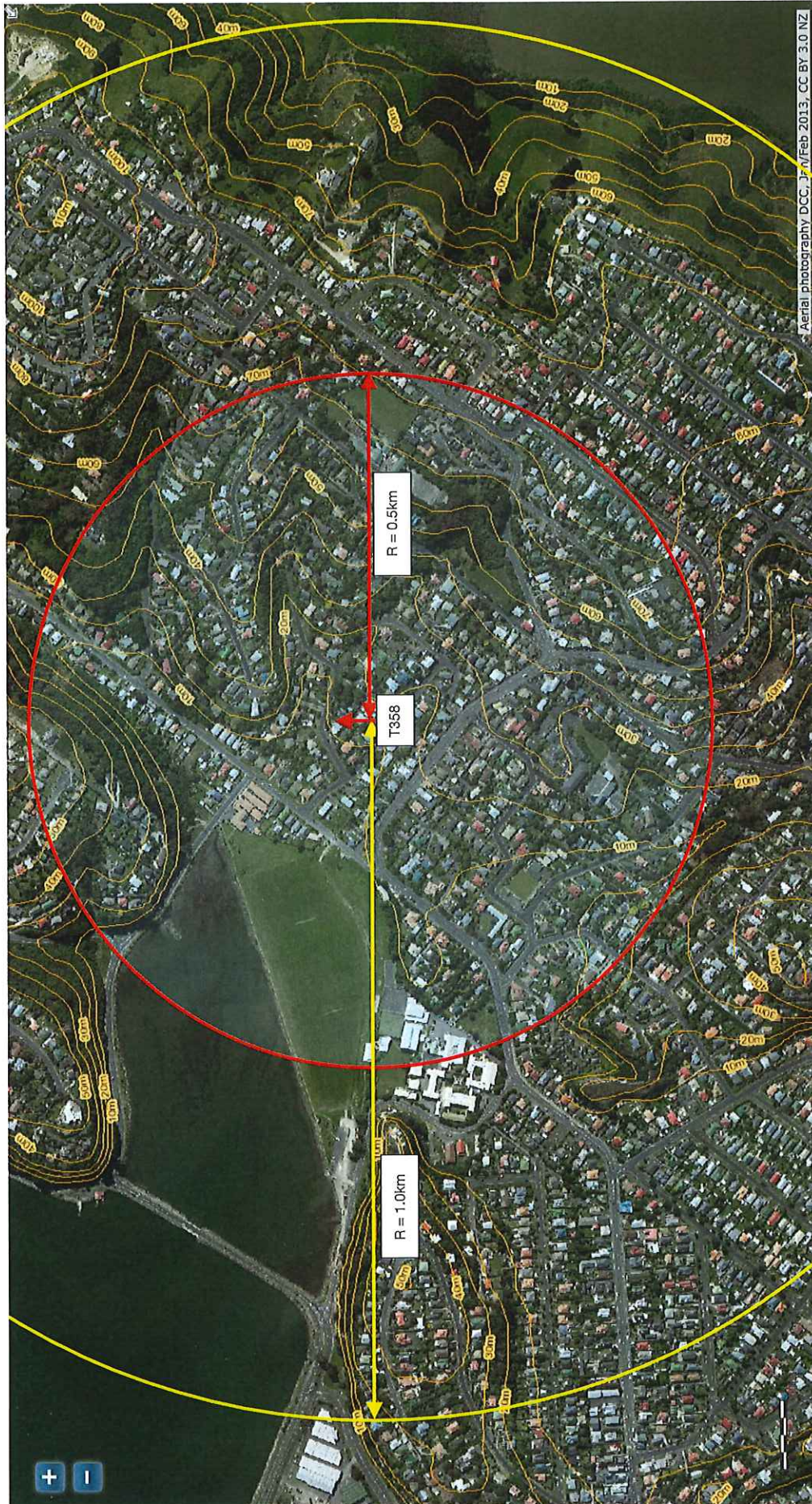
Based on STEM - A Standard Tree Evaluation Method



STEM Re-assessed 14.07.18. Greentrees Ltd

Peter Waymouth

DCC rates contour map shows position Small Leafed Lime tree (*Tilia cordata*) T358 relative to the surrounding topography.
The tree T358 could be viewed at $\leq 0.5\text{km}$ & blended into of the landscape at $\leq 1.0\text{km}$.



ISA Tree Risk Assessment form

Date: 14.07.18

Peter Waymouth - ISA Board Certified Master Arborist

NZ-0039BTM

Tree Characteristics		Client: Ken & Gerry Hill.		P 03 454 4270					
Genus	Tilia	Address: 27 Cranston St, Andersons Bay, Dunedin		M 021998 670					
Species	cordata			E gerry.hill@otago.ac.nz					
Common name	Small Leafed Lime	Tools: Camera, tape measure, probe	Time Frame: 1 year						
Age (approx)	≤83 yrs		Latitude	-45.894568°S					
Live crown ratio (LCR)	≤75%	Tree location (GPS / remote sensor)	Longitude	170.529891°E					
DBH	≤1.46mØ	Assessor: Peter Waymouth	(see over for details)						
Height	≤20.0m	Risk	Low	High	Risk Rating				
Spread	≤16.0m	Options	Moderate	Extreme	Moderate				
No.	Target Description & Assessment			Z1	Z2	Z3	O	M	R
1	Targets include 2 x houses & people within fall zone of major leader failure			100%	100%		4	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	None			Flat	Slope ≤5%		West		
Site Changes	None	Grade	Clearing	Hydrology	Root Cuts	Describe: See neighbour's property			
Soil Conditions	Low Volume	Saturated	Shallow	Compacted	Paved over roots ≤25%	Describe: Concrete drive			
Prevailing Wind: Southwest	Common Weather		High winds	Ice	Snow	Heavy rain	Describe: Spring storms		
Tree Health & Species Profile									
Vigour	Low	Normal	High	Foliage	Leafoff	Shoots	Normal ≤95%	Chlorotic...%	Necrotic≤5%
Pests	None apparent, aphids in summer/autumn (honeydew)			Abiotic	None apparent				
Species Failure Profile	Branches	Trunk	Roots	Describe: Occasional major leader failure (included bark junction)					
Load Factors									
Wind Exposure	Protected	Partial	Full	Funnelling	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	2 x Dead Branches 10cm		Cracks			Lightning Damage			
Broken / Hangers	Number		Codominant: 6 x main leaders			Included Bark			
Over Extended Branches	Epicormics		Weak Attachments - possibility of included bark			Cavity/Nest hole.....% circ			
Pruning History	Lion Tailed		Previous Branch Failures - none			Similar Branches			
Cleaning	Thinned		Dead /Missing Bark		Cankers /Galls / Burls	Sapwood Damage / Decay			
Reduced	Topped		Conks						
Flush Cuts	Raised		Response Growth:		Striations in bark indicate strengthening process at fulcrum				
Other:									
Main Concerns: Failure of a main leader at trunk union									
Load on Defect	N/A	Minor	Moderate	Significant					
Likelihood of Failure	Improbable	Possible	Probable	Imminent					
Trunk									
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		Leandegrees		Soil Weakness				
Response Growth: N/A					Response Growth: N/A				
Main Concerns: The 4 main & 2 minor leaders arise low on a large diameter trunk where all the exponential forces of southerly gales are concentrated into & through included-bark unions.					Main Concerns: Severance of major root in neighbour's property will be directly related to a large dead limb with sapwood fruiting body present.				
Defect Load	N/A	Minor	Moderate	Significant	Defect Load	N/A	Minor	Moderate	Significant
Likeli..Fail	Improbable	Possible	Probable	Imminent	Likeli..Fail	Improbable	Possible	Probable	Imminent

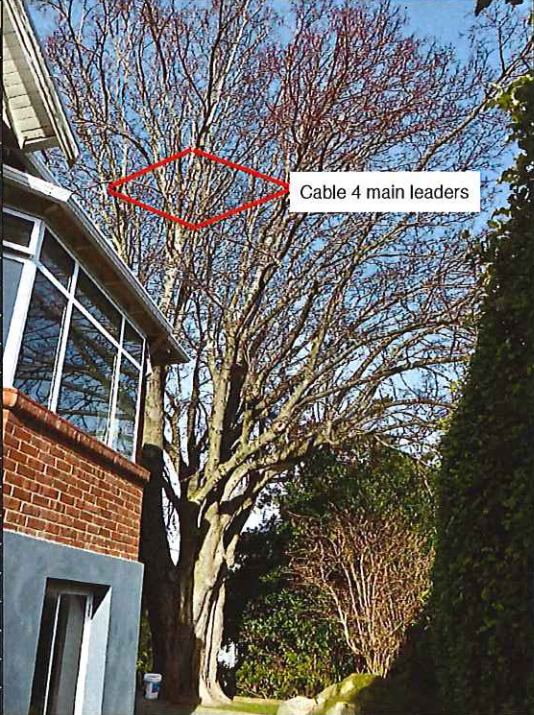
International Society of Arboriculture takes no responsibility for conclusions/recommendations drawn from use of this form. Adapted by Peter Waymouth
ISA Board Certified Master Arborist (NZ - 0039BTM) from a data sheet produced for ISA Tree Risk Assessment Qualified (TRAQ) Arborists in 2013

ISA Tree Risk Assessment form

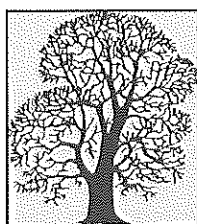
Date: 14.07.18

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	i	v	n	m	s	s	of
O		CONDITIONS								TAR-	m	o	r	m	i	l	e	i	n	o	i	l	e	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	CODES	
1	Main Leader	People & Property	50cm	10m	1	NO																			MOD	
 Uplift of paving due to large roots										 4 main & 2 minor leaders																
Matrix 1. Likelihood matrix															 Cable 4 main leaders											
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:																										
Potential structural weakness is evident in the upper right photo showing 6 main leaders arising from the same point on the trunk near the base. Each leader being 15m+ in length acts as long lever-arm on the junction/fulcrum with the trunk. The forces generated when such big leaders sway in gales are exponential. These joints do fail very occasionally without any internal rot being present within the stem. Major nuisance factors are roots causing damage to a neighbour's retaining wall, leaf/twig litter blocking gutters & accumulated honeydew making the drive slippery on approach to the front of the house.																										
Mitigation Options																										
1. Prune to reduce end-weight & install cable support system to mitigate potential failure risks associated with tree												Residual Risk	Low													
2. Remove tree & replant garden to a new landscape design with trees /shrubs												Residual Risk	Low													
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	Root Collar Buried	Describe:																				

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Tilia cordata

Tilia cordata (small-leaved lime, occasionally littleleaf linden^[1] or small-leaved linden) is a species of *Tilia* native to much of Europe. It is found from Britain through central Fennoscandia, to central Russia, and south to central Portugal, Spain, Italy, Greece, Bulgaria, Romania, Turkey, the Caucasus, and western Asia. In the south of its range it is restricted to high elevations.^{[2][3]}

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Description

Tilia cordata is a deciduous tree growing to 20–40 m (66–131 ft) tall, diameter 1/3 to 1/2 the height, with a trunk up to 1 m diameter. The bark is smooth and grayish when young, firm with vertical ridges and horizontal fissures when older. The crown is rounded in a formal oval shape to pyramidal. Branching is upright and increases in density with age.^[4] The leaves are alternately arranged, rounded to triangular-ovate, 3–8 cm long and broad, mostly hairless (unlike the related *Tilia platyphyllos*) except for small tufts of brown hair in the leaf vein axils – the leaves are distinctively heart-shaped. The buds are alternate, pointed egg shaped and have red scales. It has no terminal bud.^[4] The small yellow-green hermaphrodite flowers are produced in clusters of five to eleven in early summer with a leafy yellow-green subtending bract, have a rich, heavy scent; the trees are much

Tilia cordata



Tilia cordata leaves and flowers

Scientific classification 

Kingdom: Plantae

Clade: Angiosperms

Clade: Eudicots

Clade: Rosids

Order: Malvales

Family: Malvaceae

Genus: Tilia

Species: T. cordata

Binomial name

Tilia cordata

Mill.



Distribution map

visited by bees to the erect flowers which are held above the bract; this flower arrangement is distinctly different from



T. platyphyllos (left)
and *T. cordata* leaf
comparison

that of the Common Lime *Tilia × europaea* where the flowers are held beneath the bract. The fruit is a dry nut-like drupe 6–7 mm long by 4 mm broad containing one, or sometimes two, brown seeds (infertile fruits are globose), downy at first becoming smooth at maturity, and (unlike *T. platyphyllos* and also *T. × europaea*) not ribbed but very thin and easily cracked open.^{[2][5]}



Tree bumblebee on the small-leaved
lime

Ecology

The trees favour good, loamy sites, but can also be found on sandy, infertile soils, and are not thought to be drought resistant. Dormant shoots of *T. cordata* can resist winter frost temperatures as low as −34 °C.^[6]

In Britain *T. cordata* is considered an indicator of ancient woodland, and is becoming increasingly rare.^[7] Owing to its rarity, a number of woods have been given SSSI status. Cocklode Wood, part of the Bardney Limewoods, is the best surviving spread of medieval small leaved limes in England.^[8] Another site is Shrawley Wood in Worcestershire.^[9] Small-leaved lime was once regarded as holy and good for carving.^[10]

Trees in northern England were found to have established when the climate was warmer and have adapted to the cooling climate. Paleobotanical analysis of tree pollen preserved in peat deposits demonstrates that *T. cordata* was present as a woodland tree in the southern Lake District c 3100 B.C.^[11] In spite of the late migration of *T. cordata* into the Lake District, pollen diagrams from many sites show rapid expansion so that, within a few centuries, it had become plentiful and even locally dominant in the southern valleys. Maximum values for *Tilia* from all pollen diagrams available for the north of England show a conspicuous concentration of high values in the southern Lake District. At several sites among the limestone hills on both sides of the estuary of the River Kent, the curves for *Tilia*, although beginning about 4800 to 4000 B.C. then achieve values of at least 10% within a few centuries. At Witherslack values of this magnitude persist for a depth of 3 m which represents about 4000 years. For much of this period *Ulmus* is approximately 10%, *Quercus* 20% and the remaining arboreal pollen is largely that of *Alnus*. For a shorter period *Tilia* exceeds *Quercus* and reaches a maximum of 30%. The (Witherslack) basin is about 200 m in width, so that with distance correction factors applied this indicates that the surrounding woodlands on well-drained soils contained *Tilia*, *Quercus* and *Ulmus* in the proportions 4 : 1 : 1. Modern mature woodland trees were estimated to have germinated between 1150 and 1300 AD, making them around 800 years old. Precise age determination is impossible as heartwood at the centre disintegrates and therefore rings cannot be counted, and other methods are used.^[12]

Pests and diseases

The tree is fairly disease-resistant, though a common problem is leaf scorch where planted on dry soils, however leaf scorch is not a long-term problem as the leaves are lost in the autumn. Pests include Japanese beetles, aphids, lace bugs and various species of moths.^[13]

Cultivation and uses

Tilia cordata is widely grown as an ornamental tree. It was much planted to form avenues in 17th and early 18th century landscape planning. A famous example is Unter den Linden in Berlin. It is also widely cultivated in North America as a substitute for the native *Tilia americana* (American linden or basswood) which has a larger leaf, coarser in texture; there it has been renamed "Little-leaf Linden". It is popular as both a shade tree with its dense canopy, an ornamental tree with its architectural shape and a street tree. In the USA, *Tilia cordata* has been planted in Wellesley, MA; Modesto, CA; Chicago, IL; Indianapolis, IN; and Atlanta, GA as street trees.^[14] In Europe, there are espaliered trees owing to the ability to survive heavy pruning. *Tilia cordata* is an easy tree to train for bonsai when the training is not done all at once. Letting the tree recoup in between sessions over a period of several months creates a healthy, good-looking miniature tree.^[15] Prior to the advent of firearms, it was also commonly used for making shields (as referenced in *Beowulf*).

Tilia cordata survives best in a soil pH range of 5.0 to 8.0.^[16] and in USDA Hardiness Zones 3–7.^[17] The tree prefers moist, well drained soil, but can survive flooding; it is not highly drought tolerant.^[13] It does not do well in soils with high salinity.^[18]

Notable trees

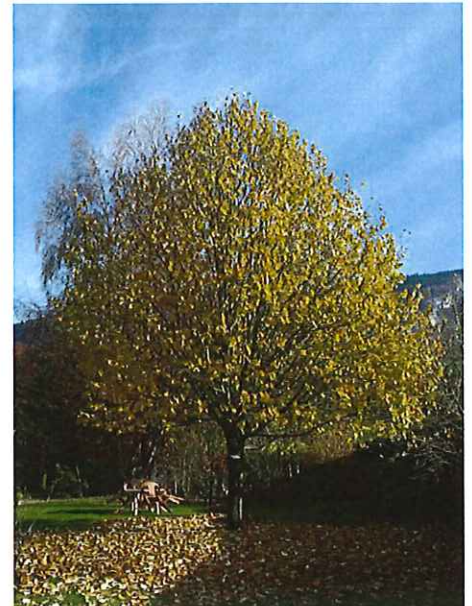
The Najevnik linden tree (Slovene: *Najevska lipa*), about 700 years old *Tilia cordata*, is the thickest tree in Slovenia. It is a place of cultural events, and every June a national meeting of Slovene politicians takes place under it.^[19]

Hybrids

- Common lime: *T. cordata* readily hybridises with *Tilia platyphyllos*; the hybrid is commonly known as common lime, *Tilia × europaea* (syn. *T. × vulgaris*).^{[2][20]}

Cultivars

- 'Corinthian' ('Corzam') – dense, uniform limb spacing creates a compact, pyramidal, formal shape; darker and smaller leaves; resistant to Japanese beetles.^[17]
- 'Greenspire' – the most common, a cross between the cultivar 'Euclid' and a selection from the Boston Parks, broadly used as a street tree, survives better under difficult conditions, overall a good looking, quick growing tree.^[17]
- 'June Bride' – significantly pyramidal habit, evenly spaced branches around a very straight central leader, glossier leaves, and 3 to 4 times as many flowers.^[17]
- 'Winter Orange' – rich red-orange-brown stems with reddish buds, can be cut back to grow long shoot extensions. An extraordinarily colored cultivar.



15-year-old lime-tree, Haute-Savoie, France

Linden flower tea



Mature fruits



Tiliae flos: Flowers (and impurities consisting of other parts) of *Tilia cordata* as commonly used in linden flower tea

In the countries of Central, Southern and Western Europe, linden flowers are a traditional herbal remedy made into an herbal tea called Tilleul (linden flower tea).^[21]

Honey

A monofloral honey is produced by bees using the trees and is widely used all over Europe. "Linden honey" is said to be nutritious and to have medicinal qualities. The young leaves can be eaten as a salad vegetable.^[22] Often cattle graze upon them.^[21]

Linden wood

The white, finely-grained wood is not a structurally strong material but a classic choice for refined woodcarvings such as those by Grinling Gibbons for medieval altarpieces, such as the Altar of Veit Stoss. Linden wood was the prime choice for the carvings in St. Paul's Cathedral, Windsor Castle, and Chatsworth.^[21] It is also commonly used for lightweight projects such as carved spoons, light furniture, bee hives and honeycomb frames.^[23]

Cultural significance

Tilia cordata is the national tree of the Czech Republic and the Slovak Republic.^[24] The leaf of *Tilia cordata* is also considered a national symbol of Slovenia.

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External links

- *Tilia cordata* (<http://www.euforgen.org/species/tilia-cordata/>) – distribution map, genetic conservation units and related resources. European Forest Genetic Resources Programme (EUFORGEN)

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