A guide to **WILDING PINES** in the Queenstown Lakes District.

QUEENSTOWN LAKES DISTRICT COUNCIL

CivicCorp

- **What are wildings?**
- **Why are wildings a problem in our district?**
- **Which species cause the most problems?**
- **How do we prevent / control wilding spread?**
- **What is the QLDC's wilding strategy?**
- **Do I need a resource consent to plant trees?**
- **Where do I get specialised help?**

Wildings is the name given to the unmanaged regeneration of introduced seedlings. Most of the spreading species are wilding Conifers and are found, irrespective of boundaries, on both public and private land.

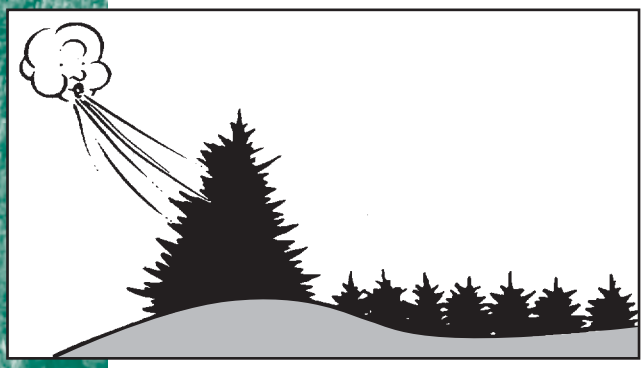
The Queenstown Lakes District Council has developed the Wakatipu Wilding Conifer Strategy to tackle the wilding problem, which poses a significant threat to conservation, landscape, recreation and farming values in the area.

The strategy's goal is to remove and control wilding spread where possible, through a strategically scheduled control programme, which relies on the support of other agencies and private landowners. Public awareness and education is also a priority to attract community support towards controlling and eventually eradicating the wilding problem in the Queenstown Lakes District.

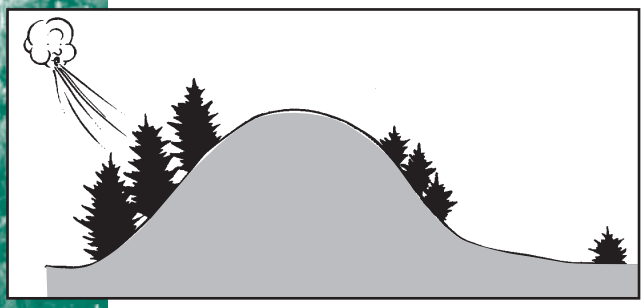
WHAT ARE WILDINGS?

'Wildings' is the term used for unintended natural regeneration or seedling spread of introduced trees. Most of the major spreading forestry species in New Zealand are conifers.

The majority of wildings grow close to the parent seed source and are termed fringe* spread. Wildings further afield are termed distant spread. They often grow from seed wind-blown from exposed take-off ** sites and usually occur as scattered outlier *** trees.



* Fringe spread, from 1 m to 200m from parent seed source, (where most seed falls). Usually dense.



** Exposed take-off sites are a common source of seed for distant spread, from 200m to kilometres. Usually occur as scattered outlier trees.

*** Outliers are individual trees sometimes kilometres from the nearest seed source.

WHY ARE WILDINGS A PROBLEM IN OUR DISTRICT?

Uncontrolled wilding spread currently threatens large areas of the district's visual landscape, conservation/ biodiversity, pastoral and recreational values.

- Many introduced conifer species grow vigorously in the Queenstown Lakes District and their seedlings can invade and out-compete areas of low, open vegetation (such as tussock grasslands), open shrublands and even regenerating forest communities. Grazing can control wildings to some extent and any changes to a grazing regime should be combined with wilding control.

Examples of unwanted wilding spread in the District

- Behind Queenstown township, Douglas-fir wildings are submerging native tussock/shrubland communities (above and below the natural tree line), and invading the margins and gaps of the beech forest within the One Mile and Two Mile Creek catchments. In some cases views from well used tracks are being blocked.

- Slopes on the 'iconic' landscapes of the Remarkables Mountains and Cecil Peak (across Lake Wakatipu from Queenstown) are being invaded by wildings. Outlier trees have already been removed to prevent the slopes being eventually dominated by conifers. The wilding invasion continues in these areas requiring regular removal.

- Douglas-fir is invading the diverse grey shrublands in the Roaring Meg area of the Kawarau Gorge, and similar communities within the Shotover, Arrow and Cardrona catchments. The wildings are impacting on shrubs such as Olearia, Coprosma, Melicytus, Carmichaelia, Matagouri, and particularly Olearia odorata (the scented tree daisy which hosts invertebrates (e.g. moths) which are unique to New Zealand.

WHICH SPECIES CAUSE THE MOST PROBLEMS?

The dominant wilding species of the Queenstown Lakes District is Douglas-fir (Pseudotsuga menziesii). Species which spread the most vigorously and pose the greatest threats include:

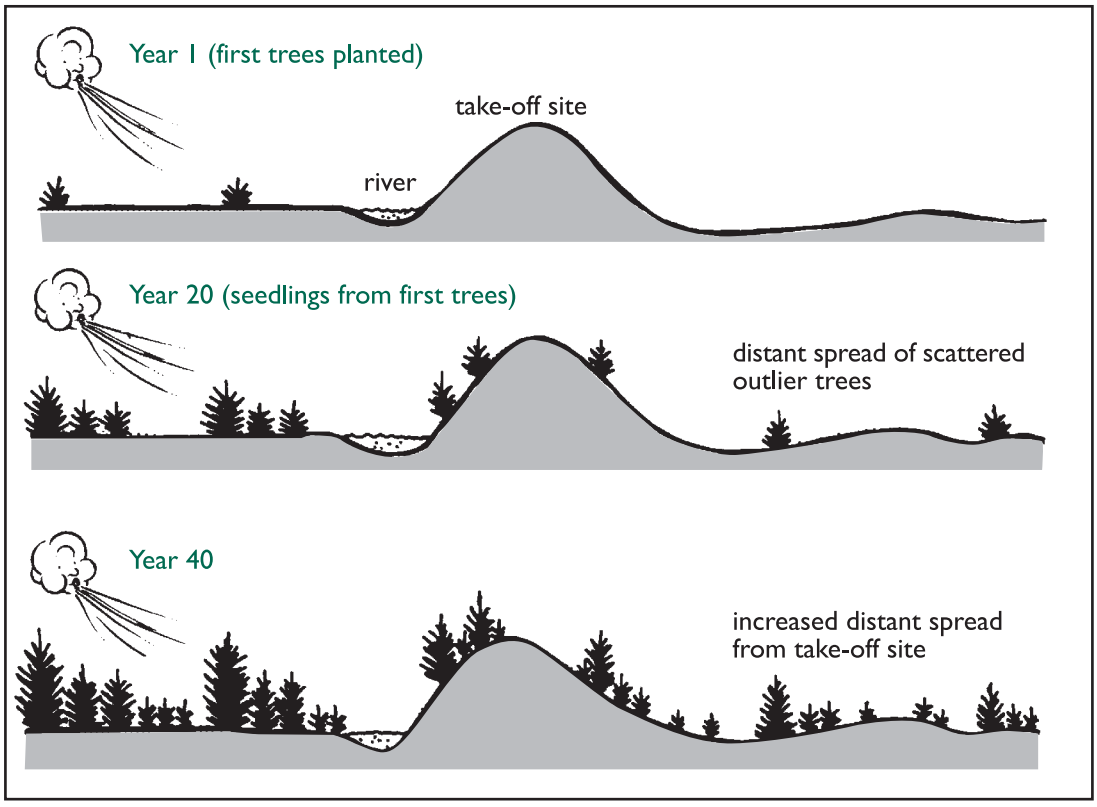
Common name	Botanical name
Contorta pine (Lodgepole pine)	Pinus contorta
Corsican pine	Pinus nigra
Scots pine	Pinus sylvestris
European larch	Larix decidua
Douglas-fir	Pseudotsuga menziesii
Maritime pine	Pinus pinaster
Radiata pine	Pinus radiata
Sycamore	Acer pseudoplatanus
Hawthorn	Crataegus monogyna

PREVENTING WILDING SPREAD

Prevention is better than cure!

Avoiding, or minimising the risk of spread from new plantings is made easier because wilding spread is predictable, and young trees are very visible before they reach cone-bearing age (often between 8-12 years). This predictability means a typical sequence of wilding spread in the high country can be constructed and informed property owners have a number of opportunities to intercept and stop this sequence.

Typical sequence of wilding spread in undeveloped high country from years 1 - 40



POTENTIAL SPREAD FROM NEW PLANTINGS CAN BE REDUCED BY:

- Careful siting – seed dispersal is mostly caused by wind. The main determinants of distance of spread are slope, aspect and exposure to the prevailing wind. Seed can be blown many kilometres from exposed slopes and ridges (take off sites) and planting should be avoided on these sites.

- Plantation / shelterbelt design and orientation. Align the shortest axis of a plantation to the prevailing wind. Use species not prone to wilding in shelter belts.

- Marginal planting. Most seed is disseminated from edge trees. Plant two rows of less spread-prone species along margins of plantations.

- Species selection. Where possible use species with zero or very low potential to spread (see recommended alternative species). Consult a landscape architect or forestry specialist, to identify the right species for the site, as well as for layout and design advice.

- Assessing wilding risk. The risk of wilding spread from all new plantings should be estimated using the Wilding Risk Assessment sheet. If a score of 12 or more (out of 20) is reached, then planting of the species on that site should be reconsidered. If planting goes ahead then a long-term commitment should be made to wilding removal. By altering the species, site or surrounding land management the score can be significantly reduced.

CALCULATING WILDING SPREAD RISK FROM NEW PLANTINGS

(Answer all 5 questions)

1. Species - spreading vigour

• Radiata and Muricata pine	1
• Ponderosa pine and Larch	2
• Corsican pine and Douglas-fir	3
• Scots pine and Contorta pine (Lodgepole)	4
	Enter score (1, 2, 3 or 4) here ☐

2. Species - palatability

• Radiata and Ponderosa pine	1
• Contorta pine and Larch	2
• Scots pine and Douglas-fir	3
• Corsican pine	4
	Enter score (1, 2, 3 or 4) here ☐

3. Siting

• Sheltered sites, or slopes facing NE to SSW (compass 45° to 200°)	1
• Sites partially exposed to N and W (200° to 45°)	2
• Sites fully exposed to N and W (200° to 45°)	3
• Take-off site - i.e. ridge tops, on or at base of slopes	4
	Enter score (1, 2, 3 or 4) here ☐

4. Downwind land use - within 200 m

• Developed pasture/regular stocking (sheep) or closed canopy scrub/forest	1
• Semi improved grazing/occasional mob stocking	2
• Extensive grazing only	3
• No grazing	4
	Enter score (1, 2, 3 or 4) here ☐

5. Downwind land use - from 200 m - 400 m

• Developed pasture/regular stocking (sheep) or closed canopy scrub/forest	1
• Semi improved grazing/occasional mob stocking	2
• Extensive grazing only	3
• No grazing	4
	Enter score (1, 2, 3 or 4) here ☐
	TOTAL SCORE ☐

CONTROLLING WILDING SPREAD

Control methods usually involve:

Physical removal

- Hand pulling seedlings (usually <50cm tall).
- Felling larger trees (using hand-tools such as loppers, hand saws, axes and chainsaws). It is absolutely essential that all green foliage is removed from the stump to avoid resprouting.
- Felling, combined with the application of herbicides to cut stumps is useful, where it is difficult to remove all live foliage due to stones (particularly in scree, gold sluicings, and tailings) or where there is thick vegetation at the base of the tree. Herbicide must be applied immediately after cutting conifer and hardwood stumps.

Use of herbicides

To defoliate or systemically kill trees. Results can be variable, especially if applied by aerial spraying, when full foliar coverage is difficult to obtain. Application from the ground, by spray gun is much more successful, but only practical on small trees. Contact local DOC office for information on effective treatments.

Ring barking

This requires the total removal of a ring of bark at least 2 cm or 1 inch wide and can be used on large, isolated trees. The method is not however always successful. Deep cuts are needed and it can take months or even years for the tree to die. If a herbicide is applied to the cut surface immediately after ring barking the process is more likely to be successful.

Grazing

Intensive or mob stocking at regular intervals helps keep seedlings in check, especially if combined with herbaceous seed over-sowing and topdressing with fertiliser (AOSTD). Wildings are very difficult to kill by grazing once they become woody (older than 2 years). Grazing can reduce biodiversity and its impact on nature conservation values needs to be carefully considered.

Burning

Control by fire can be effective, but success is determined by terrain, fuel density and weather. It should only be considered for dense stands. Burning can create an ideal environment for reinvasion, if it is not followed by the removal of all nearby seed source trees, and/or the replacement with an alternative dense ground cover (e.g. AOSTD or native cover). Fire can result in reduced biodiversity and appropriate consideration of its impact on nature conservation values is required.

WILDING CONIFER STRATEGY

In May 2004 the QLDC produced the Wakatipu Wilding Conifer Strategy which describes the extent of the wilding problem in the Wakatipu and prioritises sites for control in the period 2005-2008.

The QLDC is committed to containing wilding infestations, especially where council owned land contributes to, or exacerbates problems on surrounding land. The strategy also supports the removal of wildings from pastoral leasehold and private land.

To underline this commitment the QLDC has earmarked $100,000 a year for the next three years to be spent on wilding control on both public and private land in the Wakatipu alone. Support from private landowners is assisting with the programme which is being carried out on priority areas, where it will have the greatest ecological effect. Funds are also being directed into managing existing forests, such as Coronet Peak and Ben Lomond, to contain the spread and remove wildings where practical. The extent of the wilding problem in other areas of the district is also being identified and monitored.

WHAT DOES THE DISTRICT PLAN SAY?

You will need resource consent if you are:

- Planting vegetation exceeding 1.5 m at maturity within 50 metres of a road where more than 20 % of the road frontage or a continuous line of more than 10 metres would be created. (5.3.3.3 Discretionary Activities (xii) Planting of Vegetation – under reference).
- Planning any commercial forestry activities (5.3.3.3 Discretionary Activities vi Forestry Activities – under reference).
- Planting any exotic trees or shrubs into areas of Significant Indigenous Vegetation (5.3.5.1 v).
- Planning forestry activities or shelterbelt planting within 20 metres of the boundary of a neighbouring rural property (5.3.5.1 vii a) – under reference.
- Planning forestry activities or shelterbelt planting in alpine areas above 1070m altitude (5.3.5.1 vii b) – under reference.
- Planting any of the following species with potential for wilding (5.3.5.1 xiii):
  Contorta or Lodgepole Pine (Pinus contorta)
  Scots Pine (Pinus sylvestris)
  Douglas-Fir (Pseudotsuga menziesii)
  European Larch (Larix decidua)
  Corsican Pine (Pinus nigra)
  Radiata Pine (Pinus radiata)

Regional Pest Management Strategy (RPMS)

All district councils have to abide by RPMS produced by regional councils. In its RPMS, the Otago Regional Council (ORC) has declared Contorta pine (Pinus contorta) a pest plant, which is subject to total control within the Queenstown Lakes District (under Section 4.7.4 (i) page 30 of the RPMS). Under the RPMS land owners have until 2006 to remove Contorta pine.

SPECIES WITH A LOW SPREAD RISK

Provides an indicative (rather than definitive) description of species tolerance or preference

* Size :
- Tall – 20 m +;
- Medium 10 – 20 m;
- Small 5 – 10 m;
- Shrub < 5 m;
- Tussock like

** Primary shelter – first choice, tough, year-round resilience, very tolerant to wind, drought, foliage to ground level

*** Good / moist soil. Likely to perform well in dry, high country climates where soils are moist, but well drained or have good water-holding capacity

\+ Natives not naturally found in the district

Species	Deciduous	Conifer/ Hardwood	Size *	Fast / Slow Growing	Primary Shelter **	Wind Tolerant	Dry Soil Tolerant	Good/ Moist Soils Only ***	Comments
Mikimiki Coprosma propinqua	N	Hardwood	Shrub	Fast	#	#	#	#	Small leaved,branched shrub. Edge plantings around beech. Berries – birds, skinks.
Mikimiki Coprosma rugosa	N	Hardwood	Shrub	Fast	#	#	#	#	Use in mixed species shelterbelts.
Cabbage Tree Cordyline australis	N		Medium	Medium	#	#		#	
Korokia Corokia cotoneaster	Partly	Hardwood	Shrub	Medium			#	#	Use in mixed species shelterbelts.
Mt toe toe Cortaderia richardii	N		Tussock	Fast		#		#	Use in mixed species shelterbelts.
Koromiko Hebe salicifolia	N	Hardwood	Small	Fast				#	Use in mixed species shelterbelts.
Mt Ribbonwood Hoheria lyallii	Part – less so as it matures	Hardwood	Small	Fast				#	Attractive large 'shrub'. Sheltered sites, mixed species shelter belts. Flowers.
Lacebark Hoheria populnea	Part – less so as it matures	Hardwood	Small to Medium	Fast				#	Not naturally found in the Queenstown Lakes District. Use in mixed species shelterbelts.
Long-leaved Lacebark Hoheria sexstylosa +	Part – less so as it matures	Hardwood	Small to Medium	Fast	#	#		#	Not naturally found in the Queenstown Lakes District.
Kanuka Kunzea ericoides	N	Hardwood	Small	Fast	#	#	#		Prefers drier sites. Not naturally found in the Wakatipu.
Manuka Leptospermum scoparium	N	Hardwood	Shrub	Fast	#	#	#	#	
Mountain Beech Nothofagus solandri var var cliffortioides	N	Hardwood	Medium to tall	moderate			#	#	Use in mixed species shelterbelts.
Red Beech Nothofagus fusca	N	Hardwood	Tall	Fast Initially, Then Slow		#	#	#	Use in mixed species shelterbelts, will dominate eventually.
Scented tree daisy Olearia fragrantissima	Y	Hardwood	Small	Medium				#	Use in mixed species shelterbelts.
Olearia species e.g. O lineata,O odorata	Y	Hardwood	Small	Medium			#	#	Med/large shrubs. Edge plantings around beech. Important for invertebrates.
Flax Phormium tenax	N			Medium	#	#		#	
Kohuhu Pittosporum tenuifolium	N	Hardwood	Small	Fast	#	#		#	
Ribbonwood Plagianthus regius	Y	Hardwood	Medium	Fast	#	#		#	
Totara Podocarpus totara	N	Conifer	Medium to Tall	Slow	#	#	#	#	
Kowhai Sophora microphylla	N	Hardwood	Small	Slow to Medium			#	#	Use in mixed species shelterbelts.
Abies spp (true firs)	N	Conifer	Tall	Medium	Best soils only			#	Best spp – A. concolor (silvery hue), A. grandis, A. magnifica, A. spectabilis.
Betula spp (birches)	Y	Hardwood	Small	Fast		#	#		Best spp – B. populifolia, B. pendula/verrucosa, B. papyrifera. Autumn colour.
Carpinus betulus Hornbeam	Y	Hardwood	Medium	Slow				#	Autumn colours.
Castanea sativa Sweet chestnut	Y	Hardwood	Medium	Slow				#	Good drainage only. Edible nuts.
Cedrus deodara and C. atlantica Deodar and Atlantic cedar	N	Conifer	Medium	Medium	#	#	#		Deodar - attractive semi-drooping branches. Atlantic – more rigid habit.
Chamaecyparis Lawsoniana Lawsons cypress	N	Conifer	Tall	Medium	Better soils	#		#	Plantation potential. Dense green conifer – drooping foliage, sheds snow.
Cupressocyparis leylandii Leyland cypres's	N	Conifer	Medium	Fast	#	#	#		Plantation potential. Dense green conifer. Best clones - Ferndown, Stapehill.
Eucalypt spp	N	Hardwood	Medium	Fast		#	#		Open foliaged tree, pastel colours, variable bark. Best spp – E. pauciflora, E. coccifera, E. johnstonii, E stellulata (silvery).
Fagus sylvatica var. purpurea Purple beech	Y	Hardwood	Medium	Slow				#	Attractive. Autumn colours. Seems hardier than green form.
Juglans regia English walnut	Y	Hardwood	Medium	Slow				#	Good drainage.
Juniperus spp Juniper spp	N	Conifer	Small to Shrub	Slow		#	#		Small tree – almost shrubby Best spp: J. chinensis, J. communis, J. wallichiana.
Picea spp (Spruce spp)	N	Conifer	Tall	Medium	Best soils only	#		#	Conical trees with plantation potential. Best spp – P. abies (Norway Spruce), P. engelmanii, P. pungens (bluish), P. sitchensis (Sitka Spruce)- good in gravelly soils.
Pinus spp	N	Conifer	Medium to Tall	Usually fast	Often	Often	Often	Few species	The genus with the most potential hardy species.
P. coulteri Big cone pine	N	Conifer	Medium	Medium	#	#	#		
P. ponderosa Ponderosa pine	N	Conifer	Tall	Fast		#	#		Plantation potential. Limited spread on some sites.
5-needle pines	N	Conifer	Medium to Tall	Medium	Away from worst exposure	#		#	Other spp – P. hartwegii, P. heldreichii, P. resinosa. 5-needle spp more attactive (softer foliage). Best spp: P. aristata, P. flexilis, P. wallichiana.
Populus 'Lombardy' Lombardy poplar	Y	Hardwood	Medium	Fast	Better soils	#	#	#	Autumn colours.
Populus tremula Trembling aspen	Y	Hardwood	Medium	Fast				#	Autumn colours. Suckers locally.
Quercus spp Oak spp	Y	Hardwood	Medium	Medium				#	Autumn colours (Q. palustris – not suited for windy sites, Q. coccinea).
Sequoiadendron giganteum Sierra Redwood	N	Conifer	Tall	Medium	Better soils	#	#	#	Wellingtonia. Plantation potential. Majestic conifer. Does well in dry, gravelly sites.
Thuja plicata Western red cedar	N	Conifer	Tall	Medium	Better soils	#		#	Plantation potential. Dense green conifer.
Ulmus parvifolia. Chinese elm	Y	Hardwood	Small	Slow		#	#		Small leaved elm, small tree. Autumn colours.

FOR FURTHER INFORMATION

If you have any additional questions about wilding spread please contact -

Department of Conservation, Wakatipu Area Office, PO Box 811 Queenstown 03 442 7933
Department of Conservation, Wanaka Area Office, PO Box 93 Wanaka 03 443 7660
Queenstown Lakes District Council Private Bag 50072 Queenstown 03 441 0499
Otago Regional Council, Private Bag 1954, Dunedin 0800 474 082

CONTACTS AND WEB LINKS

Queenstown Lakes District Council – **www.qldc.govt.nz**

South Island Wilding Conifer Strategy – Department of Conservation – **www.doc.govt.nz**

Regional Pest Management Plans – Otago – **www.orc.govt.nz** Canterbury – **www.ecan.govt.nz**

New Zealand Landcare Trust – **www.landcare.org.nz**

New Zealand Trust for Conservation Volunteers – (for hands on help in eradicating wildings) **www.conservationvolunteers.org.nz**

Royal Forest and Bird Protection Society of New Zealand Inc – **www.forestandbird.org.nz**

New Zealand Farm Forestry Association – **www.nzffa.org.nz**

Ministry of Agriculture and Forestry – (for advice on shelterbelt planting and farm woodlots) **www.maf.govt.nz**

School of Forestry Canterbury University – (forestry species in the high country and wilding risk) **www.forestry.ac.nz**

References

Palmer, D.A., Ledgard, N.J. and Day, C. (2004): Wakatipu Wilding Conifer Strategy, Queenstown Lakes District Council, Queenstown.

Ledgard, N.J. and Langer, E.R. Forest Research (1999): Wilding Prevention. Guidelines for Minimising the Risk of Unwanted Wilding Spread from New Plantings of Introduced Conifers.

CivicCorp
www.civiccorp.co.nz

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CONTACT DETAILS

Please contact CivicCorp at either Queenstown or Wanaka offices between 8.00am and 5.00pm Monday to Friday.
If you are considering lodging a resource consent application please ask for an appointment to meet with our enquiries planner.

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www.qldc.govt.nz Property information can be found on the Queenstown Lakes District Council website. Information like: property information maps, underground services, District Plan maps, subdivision data, water bores.