BEFORE THE QUEENSTOWN LAKES DISTRICT COUNCIL

IN THE MATTER of the Resource Management Act 1991

AND

IN THE MATTER of the Proposed Queenstown Lakes District Plan

Brief of Evidence of Brian David Rance

For Director-General of Conservation

Terrestrial Ecology

21 April 2016

Submitter no. 373, 1080

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STATEMENT OF EVIDENCE

QUALIFICATIONS AND EXPERIENCE

1. My full name is Brian David Rance.
2. I am employed by the Department of Conservation (“the Department”) as a Technical Advisor – Ecology based in the Invercargill District Office. I have been employed by the Department since its inception in April 1987. Before this I was employed by Lands and Survey Department and the University of Otago.
3. In my current role I have responsibilities for terrestrial ecosystems and species. I have a national role, although I have a particular focus on the DOC’s Southern South Island Region which includes the Queenstown Lakes District (QLD). I am responsible for contributing to the management, conservation and restoration of ecosystems and threatened species.
4. I have extensive knowledge of the biodiversity, geography, landforms and biogeography of Otago and Southland. I have built up this knowledge from field work throughout Southland over many years from both professional and recreational involvement. I have worked within a wide range of ecosystems within Otago and Southland. I have extensive experience with assessing ecological values and have undertaken many botanical/ecological assessments for a wide range of activities on Public Conservation Lands (PCL), Pastoral Lease lands and private land, throughout Otago and Southland, including the QLD.
5. I have a sound knowledge of threatened plant species, including their ecology, distribution and threats within Otago and Southland, including the QLD. I was on the threat assessment panel for Vascular Plants resulting in the 2004 threat classification revision. I contributed to threat classification revisions for the 2008 and 2012 revisions. I am a member of the New Zealand Plant Conservation Network and the Otago Botanical Society.
6. I have a Bachelor of Science (Hons) from the University of Otago. I have been awarded the Loder Cup for outstanding achievements in plant conservation. I have been awarded a Queens Service Medal (QSM) for services to Conservation.
7. I have read and agree to comply with the Environment Court’s code of conduct for Expert Witnesses and have prepared my evidence in accordance with that code.
8. The literature or other material which I have used or relied upon in support of my opinions are as follows:
	1. De Lange P. J., Rolfe J. R., Champion P. D., Courtney S. P., Heenan P. B., Barkla J. W., Cameron E. K., Norton D. A. and Hitchmough R. A. (2013) Conservation status of New Zealand indigenous vascular plants, 2012. Department of Conservation, Wellington;
	2. McEwen, W. M. (editor) 1987. Ecological regions and districts of New Zealand, third revised edition (Sheet s). New Zealand Biological Resources Centre Publication No 5. Department of Conservation, Wellington;
	3. Ministry for the Environment and Department of Conservation 2007. Statement of National Priorities for Protecting Rare and Threatened Biodiversity on Private Land (Ministry for the Environment, 2007);
	4. Singers N. J. D. and Rogers G. M. 2014. A classification system for New Zealand’s terrestrial ecosystems. Department of Conservation, Science for Conservation 325.
	5. Williams PA, Wiser S, Clarkson B and Stanley MC 2007. New Zealand’s historically rare terrestrial ecosystems set in a physical and physiognomic framework. New Zealand Journal of Ecology 31(2): 119-128;
	6. The evidence of Mr Glenn Davis, Ecologist on behalf of Queenstown Lakes District Council.
	7. The evidence of Mr Geoff Deavoll.

SCOPE OF EVIDENCE

1. My evidence will cover seven main areas, these being:
	1. A brief overview of the Ecology and biodiversity values of the QLD.
	2. Significant Natural Areas within the Queenstown Lakes District Plan.
	3. Ecological Significance Assessment Criteria in the Queenstown Lakes District Plan.
	4. Threatened Plants within the Queenstown lakes District.
	5. Definitions used in the Queenstown Lakes District Plan.
	6. Wilding conifers and other wilding trees

**EXECUTIVE SUMMARY**

1. There is a huge amount of ecological and biological diversity found within the QLD. This ecological and biological diversity is not only characteristic of the area, it is unique and of national importance.
2. If the proposed Queenstown Lakes District Plan (PDP) relies on Significant Natural Areas (SNAs) as a mechanism to recognise and protect the extent and significance of the biodiversity remaining in the QLD, a large number of SNAs needs to be included in the plan. In my opinion, the identification of 147 SNAs can be considered a starting point, but it is likely that as additional information becomes available through development proposals further areas that meet the criteria to be SNAs will be identified.
3. In my opinion it is appropriate to include a comprehensive schedule of Threatened and At Risk plants for the QLD, as the inclusion of that information will enable informed decisions to be made under the plan. Ideally, the schedule should be updated in accordance with national reviews of the New Zealand Threat Classification System list.
4. In order to manage effects on threatened indigenous ecosystems, communities, habitats, flora and fauna the full range of activities that may affect them need to be identified. Activities that can adversely affect indigenous ecosystems and habitats include direct drilling, over-sowing of pasture species and irrigation, among others.
5. Wilding trees (particularly conifers) present a major threat to upland and alpine vegetation through much of New Zealand including the QLD. The controls proposed on planting of wilding conifers and other wilding tree species are likely to be effective in managing the threat of their spread.

OVERVIEW OF BIODIVERSITY WITHIN THE QUEENSTOWN LAKES DISTRICT

1. QLD has a huge ecological diversity. In particular the district:
* Has a diversity of landforms ranging from lowland valleys to the summits of high mountains in the nival zone.
* Has a diverse climate spanning from the wet, high mountains of the main divide in the west to the drylands of the Upper Clutha valley floor.
* Has a diversity of geology and resulting soils.
1. The ecological and environmental diversity present in the QLD results in an extraordinary diversity of ecosystems, communities, habitats, flora and fauna, and ecological sequences and gradients.
2. New Zealand has an extremely diverse physical and biological environment. To assist with describing that regional diversity New Zealand has been divided into a system of 268 Ecological Districts within 85 Ecological Regions (McEwan, 1987). Each Ecological District is a geographic area that has been defined on the basis of its characteristic physical and biological features.
3. Within the QLD area there is at least a major part of twelve Ecological Districts within four Ecological Regions. These are:
* The Dart, Arawata and Okuru Ecological Districts within the Aspiring Ecological Region.
* The Richardson, Shotover, Remarkable, Wanaka and Huxley Ecological Districts within the Lakes Ecological Region.
* The Pisa and Lindis Ecological Districts within the Central Otago Ecological Region.
* The Eyre and Livingstone Ecological Districts within the Mavora Ecological Region.

**SIGNIFICANT NATURAL AREAS WITHIN THE QUEENSTOWN LAKES DISTRICT PLAN**

1. In my opinion, the PDP includes criteria and processes for selecting Significant Natural Areas that are appropriate.
2. However, I note that there are additional factors. For example, many invertebrates have specific host plant (feed), habitat or environmental requirements, and for many species these requirements are not adequately known.
3. Regarding the exclusion of ‘protected lands’, such as public conservation lands, it should be noted that while some beech forests and alpine areas are protected, they do not give a true reflection of the significant vegetation of the district. Also the potential for changes to the protected status means no provision is made for currently unforeseen risks or different land uses. Also these exclusions mean that some special features such as ecological sequences are not adequately accounted for.
4. In reference to section 6.30 of Mr Davis’ evidence, where he discusses the process for identifying SNAs, I note that only 67% of the sites identified during the desktop phase were ultimately considered consistent with the significance criteria.
5. While many SNAs are scheduled in the PDP, there will still be examples of areas that have not been assessed or identified as SNAs for a number of reasons. For this reason it is important that the PDP provides for the significance of a site to be determined through development proposals so that appropriate rules will apply to activities affecting these values.

1. In my opinion two examples of significant indigenous vegetation are;
	1. a dryland terrace of the Clutha River north of Shortcut Road, Luggate;
	2. Lindsay tarn and associated ephemeral wetlands, adjacent to the Polnoon Burn on Branches Station
2. Both of these sites I consider to meet the criteria within the PDP, to be identified as a SNA. Those two sites serve as examples of the incomplete identification and mapping of SNAs in the PDP, and a reason why the PDP should provide protection for additional areas identified through development proposals.
3. An assessment of the dryland terrace of the Clutha River north of Shortcut Road, Luggate against the SNA ecological assessment criteria is provided in Appendix A of my evidence.
4. An assessment of the Lindsay tarn and associated ephemeral wetlands, adjacent to the Polnoon Burn on Branches Station against the SNA ecological assessment criteria is provided in Appendix B of my evidence.
5. I note that a number of submissions seek alterations or removal of SNAs from the schedule in Chapter 33. In my opinion, if SNAs are to be reconsidered and to ensure they are identified consistently, they should be identified in accordance with the accepted methods of assessing ecological values, rather than by considering the potential for development of the site.

**ECOLOGICAL ASSESSMENT CRITERIA**

1. I generally support the ecological assessment criteria suggested from Appendix G – Review of Appendix 5 Assessment Criteria – A discussion document (prepared by Mr Simon Beale of MWH NZ Ltd), which is discussed in Mr Davis’ evidence.
2. One of the criteria is the ‘Representativeness’ and to meet this criterion, the matter being assessed must be “one of the best examples”. In my opinion that is a very high standard to meet. Setting such a high standard will undoubtedly contribute to the ongoing loss of representative indigenous vegetation and biodiversity as controls or protection for indigenous vegetation and biodiversity will not be triggered until that vegetation type or ecosystem is heavily reduced and becomes rare. The consequence of a criterion which only results in protection of the ‘best example’ is that the ‘typical’ and ‘characteristic’ examples of indigenous vegetation and biodiversity of the QLD will be lost. In my opinion, to avoid the loss of typical or characteristic indigenous biodiversity in the region, the criterion for assessing ecological significance should refer to a ‘good example’ or ‘highly representative example’.
3. It is important to assess significance at a local scale. The scale suggested is the Ecological District, and the QLD contains at least 12 Ecological Districts. However, in some cases assessment at a finer scale, such as the land system, may be more appropriate (e.g. for lowland valleys surfaces of the Clutha Valley). Generally, assessment may be required at a range of scales (i.e. national, regional and local). An example is that a plant that is generally wide spread and common nationally (e.g. kahikatea), could be rare and restricted locally or regionally, or may occur in a different habitat. Another example is an ecosystem that is generally common nationally (e.g. silver beech forest) but can be locally rare (e.g. in dryland areas).
4. The importance of a site can often be because of the importance of a vegetation type or ecosystem and its association with the landform. This combination could be rare or unusual.
5. The four National Priorities for protecting rare and threatened native biodiversity of private land (MFE & Doc, 2007) are relevant to ecological assessments and, in my opinion, should remain included as criteria.

**LIST OF THREATENED PLANTS**

1. I agree with the evidence of Mr Davis and the Director-General’s submission regarding the retention of the schedule of threatened plants within Chapter 33 of the PDP. I note that the national review of the vascular threatened plant occurs approximately every five years. The most recent threat listing is the Conservation status of New Zealand indigenous vascular plants, 2012 (de Lange et al., 2012). If the PDP has the flexibility to refer to the most recent threat listing it will not become dated during its term.

**DEFINITIONS**

1. Indigenous vegetation can be cleared by a number of methods, including direct drilling, and over-sowing and irrigation. Direct drilling results in soil disturbance, over-sowing modifies indigenous vegetation and can result in its replacement by exotic vegetation, and irrigation can severely affect indigenous vegetation in lowland valley floor and dryland vegetation areas that are already severely depleted in their indigenous vegetation cover. Therefore, in my opinion, direct drilling, over sowing and irrigation are all methods of clearing indigenous vegetation that should be included in the definition of indigenous vegetation clearance.

**WILDING EXOTIC TREES**

1. The prohibition against planting listed species is an important tool in ensuring new wilding tree incursions are minimised, while control of existing problem areas can be focussed on.
2. The ten species of conifers listed in the proposed plan are all species that are well documented as being invasive species and which, due to their rapid spread and growth, pose a threat to indigenous biodiversity by competing for space that is currently dominated by indigenous species.
3. There has been some discussion around the potential to control wilding species by the use of sterile cultivars, and opposition to rules that would prevent the use of such cultivars. While there may be sterile cultivars available, in my opinion it would be difficult to establish that any plants to be planted are indeed sterile cultivars, and the administration of planning rules which include an exemption for such cultivators would be problematic.

END

Brian Rance

21 April 2016**APPENDIX A Lowland terrace of the Clutha River, north of Shortcut Road, Luggate**

 **Location and description:** This site includes a terrace and the adjacent terrace riser. The area is on the true right of the Clutha River, upstream of the “Red Bridge” on the Luggate to Hawea Flats Road. It is located to the north of Shortcut Road.

 



**Significance**

**Proposed Queenstown Lakes District Council Ecological Assessment Criteria**

1. Rarity & Distinctiveness
* The area is excellent example of dryland, lowland vegetation including cushionfield on terrace within the Pisa ED. Lowland dryland vegetation is threatened by continuing loss, modification and fragmentation.
* The area occurs on Inland outwash gravels which are a naturally rare ecosystem (Williams et al., 2007).
* The site contains a populations *Pimelea sericeovillosa* var. *pulvinaris*(threat status - At Risk: Declining), *Acaena buchananii* (threat status - At Risk: Declining) and *Raoulia beauverdii* (threat status - At Risk: Naturally Uncommon). These plants are all characteristic plants of dryland terraces. All are threatened by continuing loss, modification and fragmentation of their habitat.
1. Representativeness
* The area is a relatively large area and excellent example of dryland, lowland vegetation including cushionfield on terrace within the Pisa ED?
1. Diversity & Pattern
* The area contains a terrace and the adjacent terrace riser.
* The area contains patterning associated with soils and water retention.
* The area also contains a small but active fan system where an ephermeral stream flows from the terrace riser onto the terrace.
1. The Ecological Context of the Area
* The dryland vegetation adjoins and forms a continuum with the adjacent Public Conservation Land adjacent to the Clutha River.
* The terrace riser buffers the terrace from pastoral activity on the upper terrace system.

National Biodiversity Priorities (Protecting our Places (MfE, 2007)

* National Biodiversity Priority 1: To protect indigenous vegetation associated with land environments that have 20 percent or less remaining in indigenous cover.

The terrace and adjacent terrace riser both contain the LENZ (category N5.1c). This LENZ category is nationally identified as “Acutely Threatened”, with less than 10% of indigenous vegetation cover remaining. Importantly these land surfaces have never been cultivated and the indigenous vegetation retains dominance.

* National Biodiversity Priority 2: To protect indigenous vegetation associated with sand dunes and wetlands; ecosystem types that have become uncommon due to human activity.

There are no wetlands present..

* National Biodiversity Priority 3: To protect indigenous vegetation associated with “originally rare” terrestrial ecosystems.

The area contains an inland outwash terrace surface (i.e. considered to be part of a glacial outwash terrace that has been reworked by the Clutha River). As such it is a Naturally Uncommon Ecosystem, with a Nationally Critical threat status.

* National Biodiversity Statement 4: To protect habitats of acutely and chronically threatened indigenous species.
* The site contains a populations *Pimelea sericeovillosa* var. *pulvinaris*(threat status - At Risk: Declining), *Acaena buchananii* (threat status - At Risk: Declining) and *Raoulia beauverdii* (threat status - At Risk: Naturally Uncommon). These plants are all characteristic plants of dryland terraces. All are threatened by continuing loss, modification and fragmentation of their habitat.

**APPENDIX B Lindsay Tarn and ephemeral wetland systems, Polnoon Burn, Branches Station**

**Location and description:** This proposed SNA is in two parts. The northern system contains Lindsay Tarn, and a diversity of associated wetland systems within a matrix of fescue, short tussockland. The southern site includes a group of ephemeral wetlands within a matrix of fescue, short tussockland. Both sites lie between the lower Polnoon Burn and the Shotover River.

**Significance**

**Proposed Queenstown Lakes District Council Ecological Assessment Criteria**

Rarity & Distinctiveness

* The area is important as possibly the only example of kettle hole tarns within the Richardson ED. There are only two systems of kettle hole tarns within the Queenstown Lakes District. Further kettle hole tarns contain ephemeral wetland vegetation which is a naturally rare ecosystem (Williams et al., 2007).
* The wetlands contain areas of cushionbog wetland vegetation which is a naturally rare ecosystem (Williams et al., 2007).
* The wetland complex is set within a fescue short tussockland community. Fescue tussockland has become a rare ecosystem within the Richardson ED and the wider Queenstown Lakes district.
* The area occurs on Inland outwash gravels which are a naturally rare ecosystem (Williams et al., 2007).
* The site contains a population of tufted hair grass (*Deschampsia cespitosa*; threat status: At Risk – Declining). A population of c. 50 plants has been recorded. This is the only population of tufted hair grass known from the Shotover Catchment and within the Shotover or Richardson ED’s.
* Lindsays tarn and possibly some of the other tarns are likely to provide important habitat for indigenous fauna for part of their life cycle. Including providing feeding and moulting habitat for waterfowl and possibly spawning habitat for native fish species.

Representativeness

* This wetland complex is considered to be best habitat of its type within the Richardson ED and will be one of the best of its type within the Queenstown Lakes district.

Diversity & Pattern

* The area contains a range of wetland types and communities set in a short tussockland community.
* The vegetation reflects gradients of moisture, drainage and fertility.

The Ecological Context of the Area

* The wetland complex lies in a reasonably natural ecological setting in the Shotover Valley.
* The wetland complex is in close proximity to the huge Soho Properties QEII covenant.

**National Biodiversity Priorities (Protecting our Places (MfE, 2007)**

* National Biodiversity Priority 1: To protect indigenous vegetation associated with land environments that have 20 percent or less remaining in indigenous cover.

Parts of the southern ephemeral wetlands contain the LENZ category E4.1b which is ranked as At Risk (i.e. 20-30 % remaining). In addition there are areas Acutely Threatened LENZ (category K3.3), occurring relatively close to the south. The “Acutely Threatened” LENZ category is nationally identified as having less than 10% of indigenous vegetation cover emaining. However these areas have been cultivated and the indigenous vegetation has largely been removed. Within the wetland complex similar landforms are present however not identified as “Acutely Threatened”.

* National Biodiversity Priority 2: To protect indigenous vegetation associated with sand dunes and wetlands; ecosystem types that have become uncommon due to human activity.

There are a number of wetland areas present and these represent a variety of wetland communities.

* National Biodiversity Priority 3: To protect indigenous vegetation associated with “originally rare” terrestrial ecosystems.

Originally rare ecosystems present include

* + Moraines
	+ Inland outwash gravels
	+ Braided riverbeds
	+ Lake margins
	+ Cushion bogs
	+ Tarns
	+ Ephemeral wetlands
	+ Seepages and flushes

Note the last 5 of these 8 ecosystems are wetlands.

* National Biodiversity Statement 4: To protect habitats of acutely and chronically threatened indigenous species.

A population of tufted hair grass (*Deschampsia cespitosa*) (Status – Declining) was observed. Importantly a population of <50 plants was present, this is of conservation importance. This is the only recorded population known from the Shotover catchment.

A population of *Carex berggrenii* (Status – Naturally Uncommon) was recorded from the around the shore of Lindsay Tarn. It may be associated with other tarns in the Island block.

A population of *Epilobium insulare* (status – Data Deficient) was recorded from the around the shore of Lindsay Tarn. It may be associated with other tarns in the Island block.

Additional Value Statements

* The lower altitude parts of the property, especially those of flat or gentle topography have received a disproportionate amount of pastoral activity. Therefore on these areas the vegetation/topographical association are under the greatest pressure. They have limited indigenous vegetation remaining, those areas that retain ecological integrity and viable/healthy populations of indigenous flora are of importance.
* Wetlands are an uncommon feature within the Shotover Catchment. The wetlands within the development blocks remain relatively intact and include a range of wetland types and forms. These include some naturally rare and threatened wetland types. In addition some important threatened plant populations are present.
* The short tussocklands although modified retain a range of indigenous species. They are much reduced in extent and will be further reduced and modified through the proposed clearance activities. The short tussocklands retain “natural character” in an area that is becoming increasingly developed.
* The water course often retains either scattered shrubs, shrubland or other vegetation with an indigenous component. This vegetation forms a buffer to the streams and if maintained will assist to maintain water quality in the face of increasing development.