LINDIS MINIMUM FLOW HEARING

1) My name is John Davis, and I have been involved in farming in the Lindis Valley for over fifty years, apart from eight years in the 1970's when I worked in South Canterbury, six and a half years of that managing a 500 ha sheep farm on the plains near Orari.

2) I spent eight years on the South Island High Country committee of Fed farmers, the last term as Chairman, where I was heavily involved in the Tenure Review process. I was a founding member of the Otago Merino Assn, and was involved in the ground work to set up Merino NZ.

3) I was a Director of the Ultra Fine Merino Company, and Chairman of this group for several years, culminating in the selling of the Business to Earnscleugh Genetics and distributing substantial funds to the shareholders.

4) I was a Director of Tarras Water Ltd, and this unsuccessful attempt to establish an irrigation scheme for Tarras is of huge disappointment to me and the Tarras Community. Through the withdrawal of a corporate farm at the 11th hour and an increasingly difficult attitude from the ORC in a local body election year, the scheme did not go ahead.

5) Part two of the RMA, section 5, provides for managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic and cultural well-being, while safeguarding the life supporting capacity of air, water, and ecosystems.

6) 5c –avoiding, remedying or mitigating any adverse effects or activities on the environment. Environment includes people and communities.

7) Section 6(g) of the RMA includes the protection of customary activities. The Oxford Dictionary describes customary as the custom and established practices of a community. The current irrigation system in Tarras was established over 80 years ago, so qualifies as a customary practice.

8) By substantially reducing the flow in the Lindis River to a minimum flow of 750 litres/sec, has a detrimental impact on the customary practice of irrigation in the Lindis causing adverse effects on the local community which is against those principles of the RMA I have outlined above.

9) The ORC had already decided, after several Public Forums in Tarras, that they would be notifying a flow of 450 litres/sec. People were making decisions at that level, and to suddenly change it to 750 litres/sec without further consultation with the local community, beggars belief. Other organisations knew this before the Lindis Community. I heard it first at a meeting in Wanaka on the Lindis River fishery by Mr Morgan Trotter, and informed the local community, much to their shock.

10) Flow data for the Lindis has been very difficult to establish, especially as the river has been going dry for 80 or more years. A naturalised flow in very prolonged dry spells in the catchment is virtually impossible to establish, and is the one missing link in all the research.

11) I have maintained for many years, if the river was left to flow at a set rate, we have no idea what the outcome would be. The modelling was attempted by the ORC and these are their figures

Ardgour Flow = Lindis Peak Flow x 1.15944 + 50litres/sec

Why is 50 litres a static number ?

12) On 20th Feb there were 750litres/sec at Lindis Peaks x 1.15944 = 869 litres/sec + 50 = 919 litres/sec

13) With this calculation, tributaries are included, in some cases measured kilometres from the river. Most of these tributaries between the measuring stations go dry when there is a low flow in the river.

Even if the above calculation is anywhere near accurate, how much water is left for irrigation at .5 litre/sec/ha ? 169 litres/sec would be available after a 750 litres flow is removed. This would allow approx. 338 ha of land to be irrigated at 100% efficiency. This is the worst case scenario, but highlights very clearly the effect of the proposed minimum flow.

14) Even at1200 l/sec, which the Lindis hydrograph has recorded at or less for 60 days so far this season, and 47 days last season, the calculation would have 1441 litres/sec at Ardgour, take off 750 litres/sec for the minimum flow, this would leave 691 litres /sec or less available for irrigation.

The irrigation takes are 2300 litres/sec, and with a 750 litres/sec minimum flow, irrigators would be operating with a 70% cut in water, or put another way, a 30% reliability. This would get worse as the river drops.

With a minimum flow at 450 litres/sec, 991 litres/sec or less would be available for irrigation, which equates to 43% or less reliability.

15) This clearly shows the severe restraint irrigators would be under even with a 450 litres/sec minimum flow. As the river drops below 1200 litres/sec, which this calculation is based on, the reliability drops even further..

16) Our summer temperatures in the Lindis catchment, when compared to Canterbury, are much more fierce, with very little help from rainfall. We do not have the cloud cover, the coastal drizzle or the cool Easterly breeze to moderate the temperature.

17) I would urge the Regional Council to set about establishing a data set which includes rainfall, evapotranspiration, cloud effects, etc. for Central Otago, especially relating to the long periods of heat and low rainfall during the irrigation season. (Niwa figures. Appendix 1)

18) Starting fifteen years ago, we have installed 3 centre pivot irrigators, at considerable cost, to move to a more efficient irrigation system. Our son completed the work with the last pivot over previously border-dyked land.

This has involved a huge investment: the refencing, removing the borders, regrassing, new stock water systems, piping and other infrastructure.

This has allowed a reasonable degree of reliability with no minimum flow. Further development is very much tied to the outcome of this hearing.

19) Policy 6.4 of the Water Plan should allow for a considerable lead in time, as substantial change will be needed and significant investment required. We also need to know how the river will react.

20) I now wish to discuss our situation in the Lindis Valley. There are three properties in the Valley on the true right of the Lindis River. One is completely dry land, and the other two, including our property, have irrigation with rights issued in 1911. The dryland property has been in the same family ownership since 1910 when Morven Hills was broken up. The other two properties have changed family ownership just once since 1910, and have been in the present family ownerships for 55 and 57 years respectively. Both properties are now being farmed by the third generation.

21) The dryland property is very low cost, while the other two are reasonably high cost due to irrigation development and more cultivated down lands and flats.

22) With irrigation, stock are able to be fully finished, either within a single season, or wintered over and finished in the spring, shorn, and then sold when the meat schedule is highest. The same applies to cattle.

23) This season the dryland property sold their surplus lambs at $30 -$40 at the public Cromwell sheep sale at the height of the dry weather. These figures can be verified by PGG Wrightson. In our case, and the same would apply to the other irrigated property, all lambs will be carried over winter, fed on crops and supplementary feed, with a potential price of $100 per head, around $35 for wool, for a total of $135, at present prices. Of course more cost is involved as well, but is necessary to get a return on investment.

24) The same applies to cattle. The dryland property will sell calves at around $600, while the two irrigated properties will sell steers and heifers after wintering and summer grazing on grass at around $1400 for steers, and $1200 for heifers.

Sales figures for our property listed in Appendix 2

25) This dramatically shows the effect of having irrigation versus dryland.

26) Severely restricting irrigation with a 750litres/sec minimum flow, pushes the irrigation figures more towards the dryland figures, depending on the season, and

puts the complete management system at risk. Economic reports later on will demonstrate this.

27) This season, being very, very dry, has meant that some 2year heifers were sold as forward stores, because the irrigated finishing platform was at capacity with grazing weaned lambs and young stock from the hill country.

28) With our situation, and the irrigated neighbour, an added feature of irrigation is to be able to treat the hill and high country with leniency, thus protecting the hill country from overgrazing. This is a most important hidden attribute of irrigation in our climate, that cannot be stressed enough. Hence young sheep and cattle coming off the hill country to irrigated pasture relieves the hill country. It creates extra balance to the property.

29) I mentioned before my farming experience in Canterbury. While managing a farm at Orari during the 1970's, we installed an efficient irrigation system of the type called "end tow", virtually a pipeline on wheels shifted in double diagonal fashion twice a day. Central Otago, because of it's open water systems, bypassed what was considered efficient irrigation at that time, eg. end tow, side roll, solid set and big guns. Centre pivot irrigators were first invented in a crude fashion in the 1950's. It took 30 years of development and a change in circumstances before they became widely used in NZ.

Having had experience in both Canterbury and Otago, the conditions are completely different. Hotter temperatures and the low rainfall in Otago, for long periods, make irrigation restrictions a lot harder to cope with.

Percentages and averages, used in figures calculated for other areas, mask the true effect on the ground in Central Otago. This is borne out in figures by Grow Otago. Appendix 3

30) I now wish to talk about the aquatic values. Under Section 15.9 of the water plan the Council is charged with identifying significant native fish values when establishing minimum flows in a catchment not identified in Schedule 2a, which applies to the Lindis.

31) There are six properties totalling 19,000 ha in the middle Lindis area that went through the tenure review process, with a proposal agreed to in 2003. This was the only multi-ownership, cross boundary review that I am aware of. Within this

land area are the following tributaries, namely: Long Spur Creek, Short Spur Creek, Timburn Creek, Coal Creek, Nine Mile, Eight Mile, part of Camp Creek, and a connection to the Cluden Creek.

32) The Conservation Resources Report was done for this review after a variety of specialists visited all properties in the late 1990's. The section on aquatic fauna is attached as Appendix 4, and I now refer to it.

33) From these findings, one site in Short Spur Creek (tributary of Long Spur Creek) and one in Coal Creek, were identified to go into Conservation control and management. There was considerable expense incurred, including fencing, benching for the fencing, new gates, the creation of easements, and alternative stock water dams being built elsewhere. Appendix 5-maps

There was also a need to ensure physical barriers were in place to stop predation from trout. These were just two sites. There are probably many more in Smith's Creek, Passburn, Breast Creek, Camp Creek, McKenzie's Creek, Dip Creek, Camp Creek, Cluden Creek, Wainui Creek, and possibly others.

34) I am no fish expert, but logic would suggest that by putting a high minimum flow on the Lindis of 750 litres/sec for increased passage for fish will likely pressure the trout population to venture further up these tributaries and put the native species at risk.

Unless these populations of galaxias can be protected by physical barriers, they will be decimated.

This is in direct conflict with the recreational fishing lobby.

35) After a survey in the middle river at Elliot's Bridge was carried out by Fish and Game and the Upper Clutha Fisheries Trust, it is stated in Mr Morgan Trotter's submission, that juvenile trout numbers were moderate to common.

From this assumption, there are sufficient trout in the river now. They have adapted to the conditions over 80 years. Species do adapt.

36) There have been several comments about eels. When my brother and I were teens in the middle 60's, eeling was one of our favourite pastimes, and we caught

plenty. There are requests for a higher minimum flow to help the eel population in the Lindis, but we know when the Roxburgh Dam was commissioned, there was an abundance of eels in the river.

37) Rule 12.1.4 – The ORC has drawn maps dividing the catchment into areas, excluding parts of the catchment from using water from the Lindis when there is another potential source of water. This rule should apply to the total catchment.

38) From the submissions put into the ORC, people have expressed their opinions about the river.

A much more holistic approach to total river management needs to happen. Firstly , the ORC has made no attempt at mitigating a minimum flow by

a) Supplementation of water in low flow time from the Clutha.
b) Looking at allowing fish to navigate through a pipe – done elsewhere in the world Appendix 5
c) Removing gravel and improving the channel flow in the lower Lindis.
d) Enhancing flow by removing a large percentage of the willows, leaving strategic trees for picnic spots, camping and shade for fish. The river is sometimes not contained in its assigned course, as once it gets behind willows, severe erosion occurs. Appendix 6
e) Enhancing fishing experience by enacting d).
There have been several attempts since 1950 to "tidy the river", but it hasn't happened. This is a good opportunity to carry this out.
f) Better active fish management. There has been little interest in the Lindis as a fishery, going back to the days of the Acclimatisation Society.
If, as is claimed, this is so important for fish spawning, why is there no attempt to physically move small fish up or down stream in times of low flow ?
This is often done elsewhere.
There are several references in the Fish and Game submissions, that the Lindis **IS** an important fish spawning river.
Is means now, not was, not is going to be.

39) In my initial submission, I asked for a minimum flow of 250 litres/sec.

Since that time the Lindis Catchment Group has consulted with other interested parties, and proposed a plan of shifting large takes much further downstream.
If this could be implemented and the native fish protected, which was so important in our tenure review, I would be comfortable with 450 litres/sec., except for extremely dry conditions, when a lesser flow, as proposed by Fish and Game, could be enacted.

I would like the Panel to give consideration to the whole river system and a high priority to the wishes of the local community that live in the catchment. I would not like to see some, whom I would call environmental mercenaries who drop in for a cause and in the words of Councillor Michael Deaker " fight like ferrets in a sack to get an outcome, then move to the next cause and leave the local community to deal with the consequences.

3312

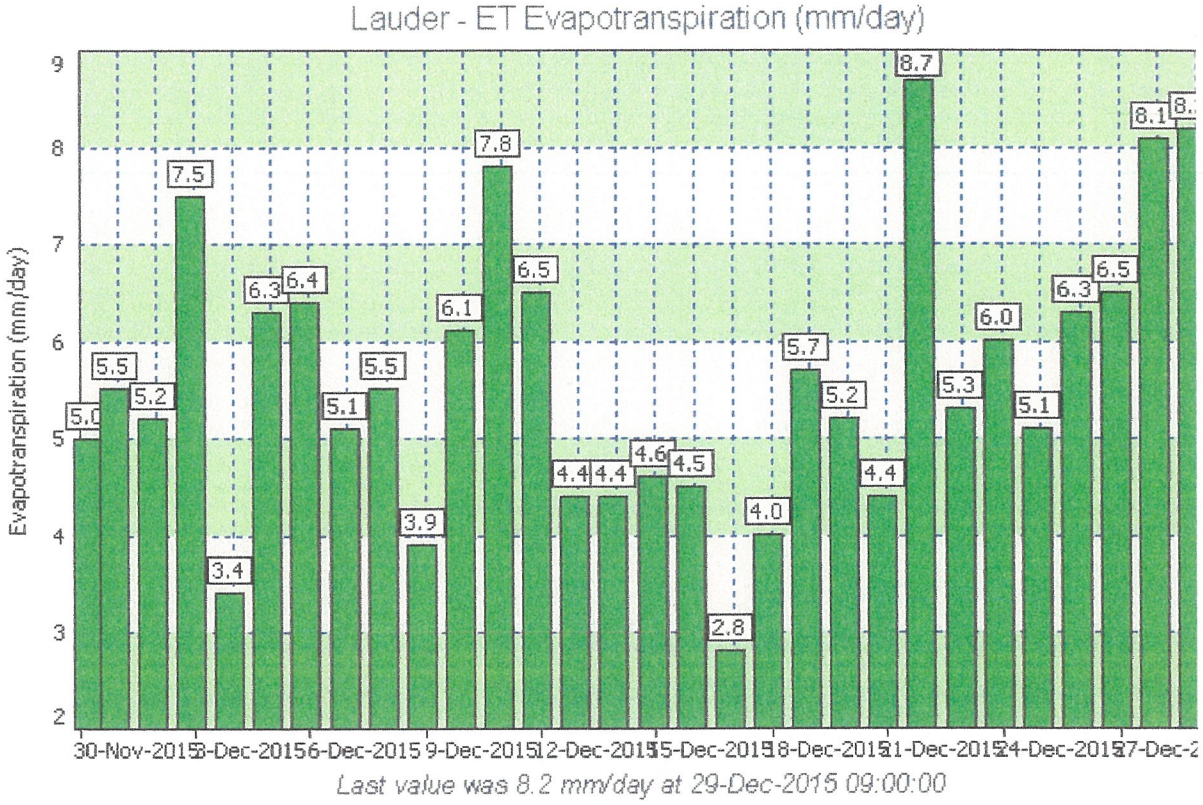
App 1.

Lauder

Evapotranspiration at Lauder

The Evapotranspiration figures displayed on this page are estimated evapotranspiration based on information collected Atmospheric Research, NIWA.

Graph showing the last 30 days Evapotranspiration



Graph showing the last 12 months Evapotranspiration

Longacre Station Limited

LIVESTOCK TRADING ACCOUNT Sheep

FOR THE YEAR ENDED 30 JUNE, 2015

Closing Stock Numbers	Opening Stock Numbers	Stock on Hand	Standard Value $	Closing Stock $	Opening Stock $

App 2.

This Year Numbers	Last Year Numbers	Statement of Trading	Average Price $	This Year $	Last Year $
		SALES			
		Lambs	78.35	38,938	191,809
		Ewes	49.51	80,560	58,412
		Hoggets	101.04	268,267	385,931
		Final Payments		136	-
		Total Sales		**387,900**	**636,152**
		PURCHASES			
		Lambs		-	53,294
		Ewes		-	26,068
		Rams	1,023.04	23,530	30,330
		Total Purchases		**23,530**	**109,692**
		Natural Increase		-	-
		Deaths and Missing			
		Increase in Stock at std Value			
		Net Cash Surplus (Deficit) from Trading		**364,370**	**526,460**

The attached notes and accountants statement form an integral part of these accounts. The information

Longacre Station Limited

LIVESTOCK TRADING ACCOUNT - Beef Cattle

FOR THE YEAR ENDED 30 JUNE, 2015

Closing Stock Numbers	Opening Stock Numbers	Stock on Hand	Standard Value $	Closing Stock $	Opening Stock $

This Year Numbers	Last Year Numbers	Statement of Trading	Average Price $	This Year $	Last Year $
		SALES			
		Steers	1,328.10	135,466	87,063
		Heifers	800.00	35,200	18,247
		Cows	932.75	72,755	3,794
		Bulls		453	-
		Final Payments		840	-
		Total Sales		**244,713**	**109,104**
		PURCHASES			
		Bulls	9,000.00	9,000	3,000
		Natural Increase		-	-
		Deaths and Missing			
		Decrease in Stock at std Value			
		Net Cash Surplus (Deficit) from Trading		**235,713**	**106,104**

growOTAGO®

App 3.

Climate Tables

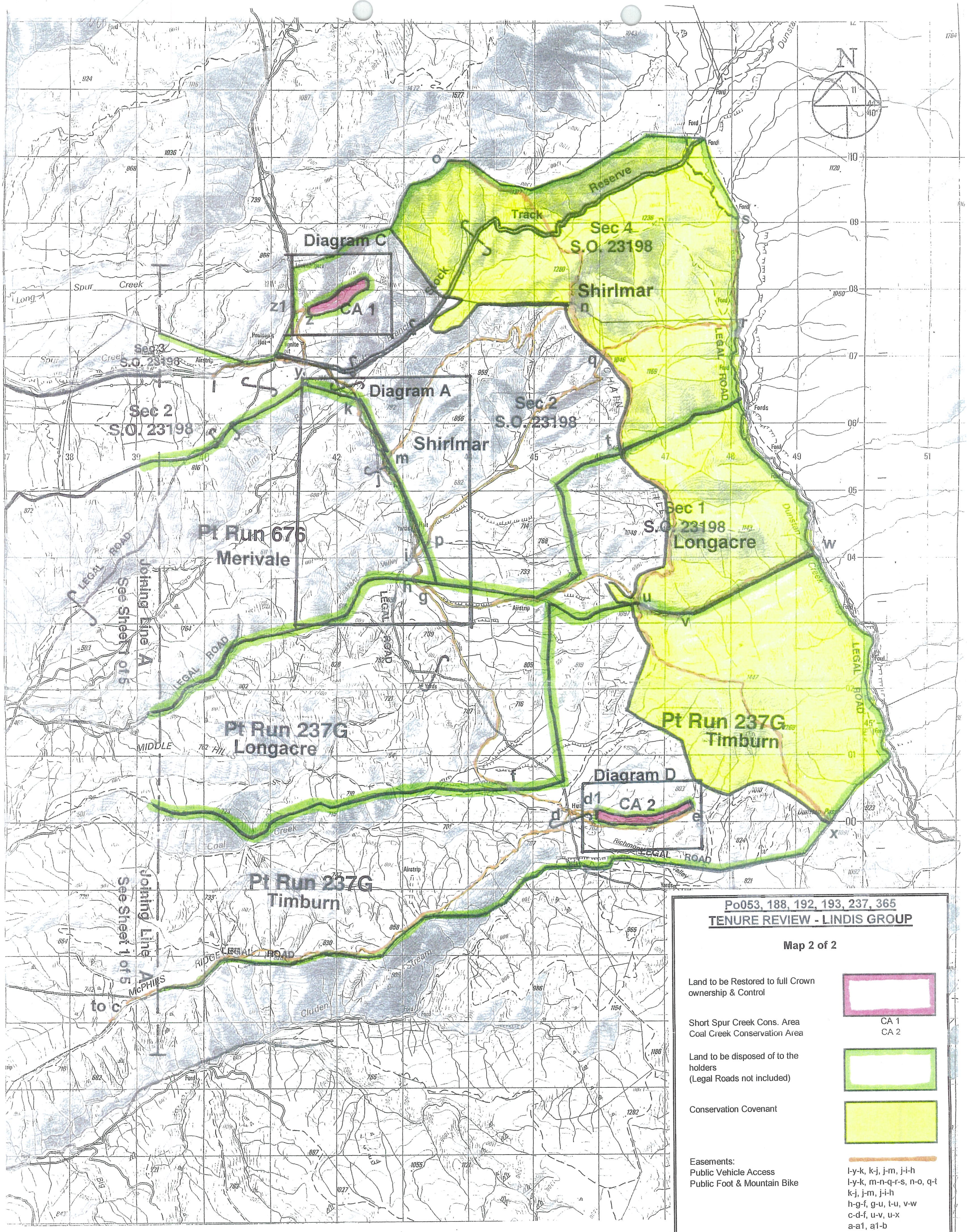
This page includes tables of the maximum and minimum values of many of the mapped climate paramet some additional parameters) for ten locations around the Otago region. These locations are: Alexandra, I Cromwell, Dunedin Airport, Dunedin (Musselburgh), Oamaru, Palmerston, Queenstown, Roxburgh, and For some parameters, e.g. soil temperature, solar radiation and wind gusts, only some of the above locati data. For further climate information from these or other Otago locations, please contact NIWA Climate Services on (04) 386 0300.

Maximum and minimum seasonal rainfall totals (mm) for 10 Otago locations. Summer = January – M Autumn = April – June, Winter = July – September, Spring = October – December.

			Summer		Autumn		Winter		Spring	
Location	**Network #**	**Period**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**
Oamaru	I50093	1983-1994	121.5	4.4	111.1	2.4	157.2	3.3	121	6
Palmerston	I50471	1969-2003	197.6	2	178.2	1.8	290.8	4.7	151.7	6.8
Dunedin Airport	I50921	1963-1991	198.4	5.1	180.8	7.6	135.5	11	155.8	17.6
Musselburgh	I50951	1918-1997	216.6	6.3	294.2	6.1	163.8	6.3	219.2	5.9
Queenstown	I58061	1872-2003	275.8	1.8	279	3.4	330.2	0.9	303.7	2.4
Cromwell	I59021	1950-1985	116	1.1	120.6	3.2	119.4	0.3	129.6	4
Alexandra	I59238	1984-1994	146.3	5.7	58.1	5.5	84.4	2.8	115.3	4.7
Roxburgh	I59431	1948-1987	124	2.8	110.4	4.6	92.3	0.3	134.6	3.5
Tapanui	I59921	1898-2003	250.2	10.2	370.5	10.4	225.8	4.2	221.5	7.7
Balclutha	I69273	1965-2003	210.9	7.3	156.5	6.1	131	6.3	240	14.9

Maximum and minimum seasonal number of rain days for 10 Otago locations. A day is counted as a the amount of rainfall on that day exceeds 1 mm. Summer = January – March, Autumn = April – June, V July – September, Spring = October – December.

			Summer		Autumn		Winter		Spring	
Location	**Network #**	**Period**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**
Oamaru	I50093	1983-1994	12	2	11	1	14	1	13	3
Palmerston	I50471	1969-2003	16	1	14	0	14	1	16	2
Dunedin Airport	I50921	1963-1991	16	2	15	2	16	3	17	3
Musselburgh	I50951	1918-1997	21	2	22	1	23	2	21	2
Queenstown	I58061	1890-2003	18	1	17	1	19	0	21	1
Cromwell	I59021	1950-1985	12	0	13	1	13	0	13	1


Po053, 188, 192, 193, 237, 365
TENURE REVIEW - LINDIS GROUP
Map 2 of 2
Land to be Restored to full Crown ownership & Control
Short Spur Creek Cons. Area
Coal Creek Conservation Area
CA 1
CA 2
Land to be disposed of to the holders
(Legal Roads not included)
Conservation Covenant
Easements:
Public Vehicle Access
Public Foot & Mountain Bike
l-y-k, k-j, j-m, j-i-h
l-y-k, m-n-q-r-s, n-o, q-t
k-j, j-m, j-i-h
h-g-f, g-u, t-u, v-w
c-d-f, u-v, u-x
a-a1, a1-b
z-z1, d-d1
Public Foot
Conservation Management
l-y-k, p-q-n, n-o, q-r-s
l-y-z, k-j-i-h, i-p
f-g-h, f-d-e, d-d1
Scale 1:50,000
K Taylor
20-May-03
Diagram A
Diagram C
Diagram D
CA 1
CA 2
Sec 4
S.O. 23198
Shirlmar
Sec 3
S.O. 23198
Sec 2
S.O. 23198
Sec 1
S.O. 23198
Longacre
Pt Run 676
Merivale
Pt Run 237G
Longacre
Pt Run 237G
Timburn
Joining Line A
See Sheet 1 of 5
Reserve
Track
LEGAL ROAD
Spur Creek
Coal Creek
Dunstan Creek
Cluden Stream
MIDDLE HILL
RIDGE
McPHIES
to c

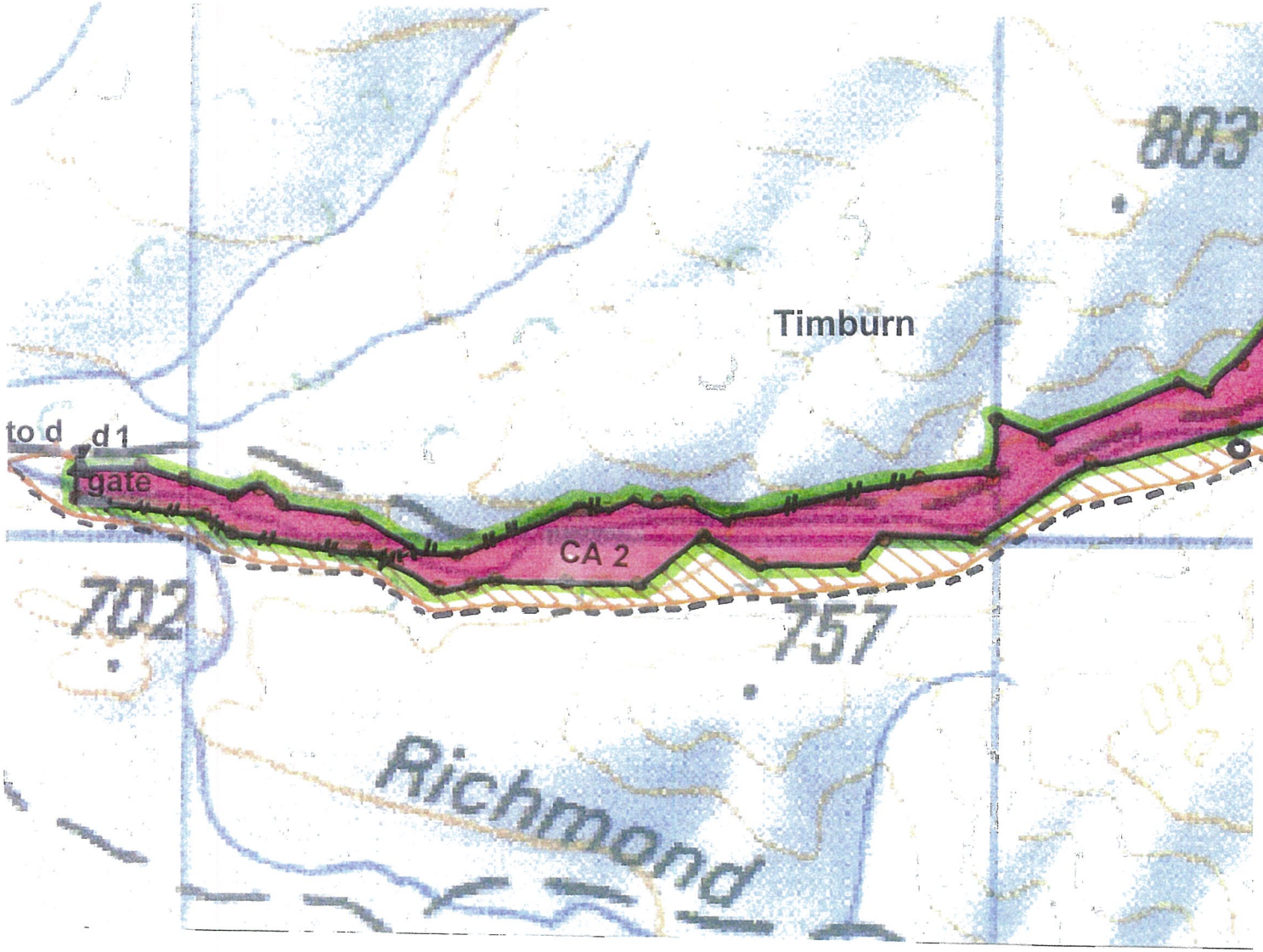
Merivale, Geordie Hills, Longacre, Nine Mile Statio
Shirlmar & Timburn

Scale 1:50000

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6(

OPUS
INTERNATIONAL CONSULTANTS

TERRALINK NZ LTD(Terraview)-DCDB Data as at -1.09.1999Title & Valuation data as at -1.09.1999Geode[illegible] data as at 11.10.97.
Cadastral Informatio[illegible]m LINZ Digital Cadastral Database (DCDB). CROWN COPYRIGHT [illegible]RVED.

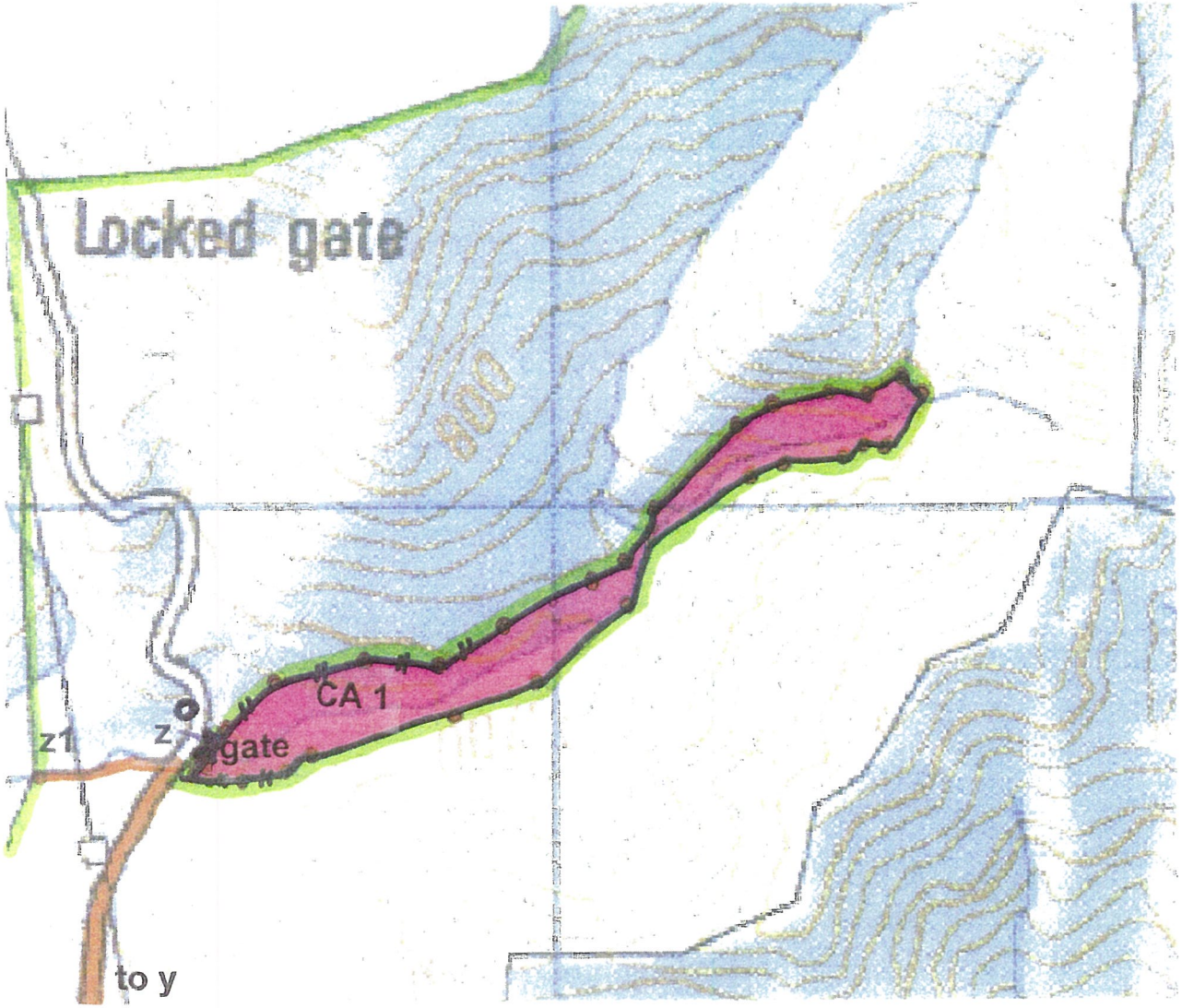


Po053, 188, 192, 193, 237, 365
LINDIS GROUP

Diagram D - Timburn

Land to be Restored to full Crown ownership & Control (Coal Creek Conservation Area)	CA 2
Land to be disposed of to the holders	
Easements:	
Conservation Management	d-e, d-d1
Public Access	d-d1
New Fencing	
Fence to be upgraded	
Gate	
Fencing access track	
Stock Water Holes to be formed	

Scale 1:22,000
K Taylor
8-May-03



Po053, 188, 192, 193, 237, 365
LINDIS GROUP

Diagram C - Shirlmar

Land to be Restored to full Crown ownership & Control	
Short Spur Creek Cons. Area	CA 1
Land to be disposed of to the holders	
Easements:	
Conservation Management	y-z
Public Foot Access	z-z1
New Fencing	
Fence to be upgraded	
New Gate	
Approx. location of water hole	

Scale 1:22,000 Approx
K Taylor 17-Nov-03

Aquatic fauna App 4.

Five freshwater fish species were recorded from the area, comprising two native species, the upland bully (*Gobiomorphus breviceps*) and the flathead galaxias (*Galaxias depressiceps*) and three introduced species, brown trout (*Salmo trutta*), rainbow trout (*Oncorhynchus mykiss*) and brook char (*Salvelinus fontinalis*). The most widespread species is brown trout which occurs in Long Spur Creek, Tim Burn and its tributaries, Coal Creek, Cluden Stream and Dunstan Creek and its tributaries. The other four species are either rare or are of restricted distribution. The flathead galaxias only occurs in areas where introduced salmonids are absent. These areas comprise the upper reaches of Short Spur Creek, one Tim Burn tributary, Coal Creek and one Coal Creek tributary (see map 2 for location). Flathead distribution is depicted on Map 2. The upland bully is found throughout the Tim Burn with highest densities occurring in the salmonid free areas. Brook char are restricted to Dunstan Creek and its tributaries, where its range is determined by the extent of permanent water. Rainbow trout occur in both Dunstan Creek and Cluden Stream but are rare.

Significance of Aquatic Fauna

From an aquatic fauna perspective the streams containing the flathead galaxias have the highest conservation values on the properties, especially the Tim Burn tributary (Shirlmar and Merivale pastoral leases) containing upland bullies with the flatheads. The galaxiids in this stream are not numerous but are in good condition while the upland bullies are amongst the largest recorded for the species anywhere. Flathead galaxias is restricted to Otago and Southland and is the only non-migratory galaxiid known from the upper Clutha catchment, its range in this region is very much reduced from its estimated pre-European distribution. Only six remnant populations are known from the upper Clutha, although more are likely to exist in the Lindis catchment. The status of such populations (if any) is unknown. Upper Clutha flathead galaxias populations appear to be morphologically distinct from other flathead populations and as such, protection of these populations is important to maintain the full range of diversity within the species.

U.S. NEWS

App 5

Farms Fight Release of Water for Fish

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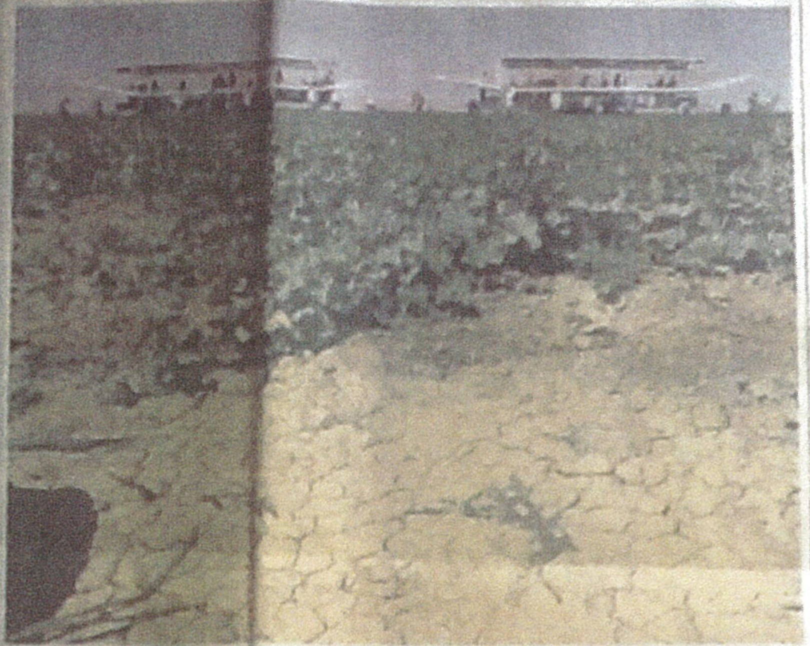

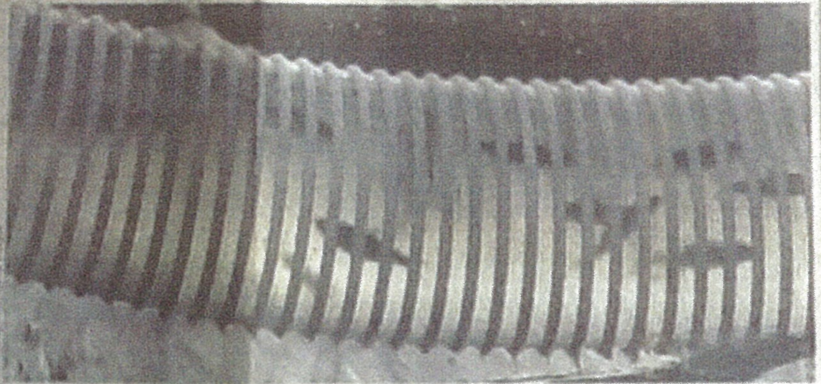

Cracked earth is visible at a drought-stricken cantaloupe farm, at top, near Firebaugh, Calif., last week. Young Chinook salmon, above, swim through a plastic pipe at a hatchery in the state earlier this summer.

Gun-Range Killing by Girl Sparks New Debate

The death of a shooting instructor at an Arizona gun range when a 9-year-old girl lost control of a powerful automatic weapon has raised the issue of age limits at such operations.

The girl, on vacation with her parents at the Last Stop shooting range in White Hills, Ariz., accidentally shot and killed the instructor, 39-year-old Charles Vacca, while firing an Uzi submachine gun Monday, officials said. The Mohave County Sheriff's Office said the recoil sent the weapon over the girl's head, its bullets striking Mr. Vacca, who stood next to her.

Mr. Vacca, who was shot in the head, was airlifted to University Medical Center in Las Vegas [illegible] Monday evening, the sheriff's office said in a statement.

Video of the incident released by the sheriff's office shows Mr. Vacca adjusting the girl's stance before saying, "All right, now go ahead and give me one shot," apparently before the gun was set on fully automatic. With her back to the camera, the girl successfully fires a single round at a target.

"All right, full auto," Mr. Vacca then says before the girl releases a series of shots, apparently losing control of the gun before the video ends.

The shooting touched off a debate on social media among gun-control advocates, parents and gun-rights supporters, with many questioning why the girl's parents would let her fire such a powerful weapon.

E.J. Montini, a columnist for the Arizona Republic newspaper, wrote: "Why would a shooting range allow a kid to handle an

Some Collectors Find Silicon Chips Addictive

App 6

The Lindis Pass, Otago. — *Otago Witness*, 6.11.1912.

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