IN THE MATTER of Otago Regional Council's Proposed Plan Change 5A (Lindis: Integrated Water Management)

Statement of Evidence by Niall Robert Nicoll Watson on behalf of Otago Fish and Game Council

Introduction

1. My full name is Niall Robert Nicoll Watson and I am the Chief Executive of Otago Fish and Game Council, a position I have held for 26 years. I was Manager of Otago Acclimatisation Society until the Government's Conservation Law Reform of the 1990s and prior to that I was a Fisheries Officer with Wellington Acclimatisation Society.

2. I have a BSc degree from Victoria University of Wellington and a Masters in Regional Resource Management from University of Otago.

3. I am familiar with the Lindis throughout its length but most of my involvement has been with the lower Lindis below Ardgour Road Bridge and particularly below the Becks Stackpoole race.

4. I have been involved in fish and wildlife survey work, flow monitoring and temperature monitoring on the river since about 2010. In addition I have received intermittent complaints about low and disconnected flows and stranded fish over the years since 1990 most probably because of the visibility and accessibility of the Lindis River bed from SH 6 to its confluence with the Clutha River. I have also overseen Fish and Game survey work on the river over the last decade and been involved in public meetings to discuss Lindis River flows and meetings with irrigators and other agencies

5. Otago Fish and Game Council ('Fish and Game') is the statutory management agency for sports fish and game birds within Otago Fish and Game Region which includes the whole Clutha catchment and the

Lindis River. The Council's functions and responsibilities are outlined in the Conservation Act s26P to s26S.

Functions include:

- Protection of sports fish and game habitats
- Participation in the planning process

6. Sports fish and game birds ('game' according to the Act) are defined and protected under the Conservation Act 1987 and Wildlife Act 1953 respectively. As public natural resources they are managed to provide recreational fishing and hunting for those who chose to buy fishing and hunting licences.

7. The Council reports annually to Parliament and its activities are guided by a statutory Plan (the Sports fish and Game Plan for Otago Fish and Game Region) approved by the Minister of Conservation. This plan is a statutory plan under s61, 66 and 74 of the Resource Management Act 1991 and regional and district councils need to have regard to it in the development of regional and district policies and plans including this plan change

8. This evidence is presented as non-expert evidence and is intended to provide added context for Otago Fish and Game's expert evidence and to provide background information to the Commissioners

Summary of Evidence

9. In summary, my evidence will address:

   a. Current state of Central Otago rivers and historical background to water allocation by way of mining privileges

   b. Transition from Mining Privileges

   c. RMA priority objectives

   d. Otago Fish and Game aims and management objectives

   e. Origins of 750 litres/second as a flow option

   f. Lower river ecosystem and amenity values

Current State of Central Otago River

10. Water in many Central Otago rivers and streams is completely diverted to out of stream uses, primarily irrigation, as a result of water allocation practices under mining law from the 1860s onwards (Hearn 1994).

11. Water was allocated originally for gold mining by the Wardens Court without consideration of the needs of the aquatic environment or of the finite nature of freshwater resources in source rivers and streams. As a result legal entitlements were issued for the taking of much more water than natural surface flows provided. Those rights, called 'Mining Privileges were a secure transferable property right in perpetuity with a strict enforceable priority

12. The resultant impact of this historic allocation regime on rivers and streams is to severely deplete flows so that river levels are unnaturally low where continuous flows are maintained (eg Lower Manuherikia) and in many cases to stop flows altogether (eg. Kye Burn, Sow Burn, Pig Burn Ida Burn, Cardrona River, Quartz Creek, Lindis River, Benger Burn, Low Burn, Bannock Burn).

13. As flows become low and then discontinuous trout and native fish become stranded and vulnerable to predation and mass mortalities (fish kills) and eventually all aquatic life is lost leaving dry river beds. In effect these rivers are subjected to severe artificial droughts every single year.

14. In attempting to manage mining privileges resource managers have distinguished between the actual water taken, which may be limited by surface flow available at the defined take point, and the water quantity approved in the mining privilege. Water that is legally available but cannot be taken because of the non-availability of water at the take point has been described as 'paper water'. Paper water is a problem in itself because there is an incentive to 'actualise' it in already overallocated catchments by shifting the point of take or building storage. This is possible also because histories of water use based on measurement, which has a bearing on future allocation, is limited. Mining privilege holders have been encouraged to 'use it or lose it'.

Transition from Mining Privileges to RMA consents

15. Major changes to water management came about with the passage of the RMA in 1991. The RMA requires that environment and amenity values be provided for (to varying degrees) in planning decisions. By comparison mining privileges are the polar opposite. When they were granted here was no provision for the environment and no recognition of the finite nature of resources.

16. Both the adverse impacts of mining privileges and their importance for irrigation were recognised by the lawmakers in the RMA by creating transitional provisions with a very long lead time. The RMA defined mining privileges as 'deemed permits' so existing takes could continue under the same conditions as before but the new privilege was limited to a 30 year life so that mining privileges not surrendered will expire in October 2021.

17. Fish and Game submitted on the development of the RMA at the time and argued for a much shorter phase-out period of 5 years because of the continuing adverse impacts on Central Otago stream ecosystems including the Lindis, and noting that 30 years phase out would unreasonably constrain water management planning for a generation. However the 30 year lead time was I understand seen as necessary in negating the case for financial compensation.

18. During that 30 year period irrigators could be expected to make alternative arrangements to meet their water needs given the new requirement for environmental flows within the RMA by:

    a. moving to more efficient methods of irrigation

    b. seeking alternative sources of water (eg groundwater; on-farm storage, community storage or takes from surface water sources where water was available without impact (eg: lakes or the Clutha River).

    c. changing farming practices.

19. There has been a lot of changes in irrigation in Central Otago over the last ten years but it appears to have been aimed at irrigation expansion rather than gearing up to provide for returning water for environmental flows to Central Otago rivers.

RMA Priority Objectives

20. RMA section 6, 7 and 8 objectives for surface water resources include maintaining the life supporting capacity of rivers, amenity and landscape values. Public access to and along rivers is also a priority because of the amenity afforded by healthy freshwater ecosystems for a range of human uses.

21. River ecosystems need to be seen holistically in terms of their functioning, health and productivity rather than to split them up into individual ecosystem components (eg. juvenile trout rearing, trout spawning).

Otago Fish and Game aims and management objectives.

22. Fish and Game takes an ecosystems approach to fisheries management activities in Otago because fish populations are wild and self sustaining. Healthy ecosystem functioning provides for a broad range of ecosystem components and intrinsic/amenity values.

23. The Sports Fish and Game Management Plan (SFGMP) for Otago (Otago Fish and Game Council 2015) notes that ... *the protection, maintenance, management and enhancement of rivers streams lakes and wetlands as habitats and ecosystems in vitally important in the maintenance of fish and waterfowl resources. The maintenance and enhancement of water quality, water quantity, water flow and water level regimes, and natural characteristics are essential requirements*

Origins of 750 litres/seconds as a minimum flow option

24. I took part in ORC's community consultations meetings on Lindis minimum flows and note that the understanding of river hydrology and fisheries has increased markedly over time. For example the accepted mean annual low flow (MALF) has increased by 15%, a major drying reach has been identified above Ardgour recorder, the refuge pool hypothesis has been discounted, and predation has been identified as a major cause of fish mortality.

25. The early range of flow options put up by ORC for discussion included zero, 400l/s, 750 l/s, 960 l/s 1200 l/s and 1600 l/s, at which time 1600 l/s was MALF.

26. 750 l/s first gained credence as a minimum flow option because it represented the point of inflection for juvenile trout habitat (the point below which habitat availability declined sharply with declining flows) derived from an IFIM habitat modelling exercise.

27. However ORC's first stated position on minimum flows put forward two options – 750 l/s if the proposed Tarras Water Scheme (providing an alternative source of water from the Clutha) went ahead, and 450 l/s if it did not go ahead.

28. This position may have been intended to encourage community support for the Tarras Water Scheme because of the higher flow but in my opinion it did the opposite – it undermined irrigator commitment to the scheme by raising expectations that water would continue to be available from the river.

29. Fish and Game supported the Tarras Water Scheme in the consent process but it did not proceed due to lack of support, however the consent has been utilised by Ardgour Pipeline Limited.

30. ORC's formal position was later amended to 750 in the light of new information on the inadequacy of 450 l/s.

31. In my view fish habitat modelling using IFIM is a useful tool in flow setting, but it is not the only tool and modelling should not be used in isolation from what is observed in real life. Modelling has been an over emphasised in flow setting cases including on the Lindis. Rather than using it as a basis for discussions on flow options with fisheries managers it has been applied as the be all and end all, too rigidly using a matrix approach based on a fishery significance grading and in the case of trout fisheries relying on a single criterion – angler use levels.

32. Based on angler use alone small streams tend to be locally important medium sized rivers are regionally important (eg Pomahaka) and large rivers are nationally important (eg Upper Clutha). This ignores the different values afforded by a diversity of waterway types and sizes or that locally significant streams can be high value.

33. In the SFGMP for Otago, sports fisheries criteria have been developed for significance grading covering a range of attributes including unmodified nature of the setting (a backcountry fishery), exceptional attributes (eg trophy sized trout), key spawning or rearing facility, and migratory pathway as well as levels of angler use.

34. In the case of the Lindis it qualifies both as locally important as a fishery in its own right and nationally important as a.. *'habitat that provides spawning ... and rearing areas for a nationally significant fishery'* (Lake Dunstan and the Upper Clutha).

Lower river ecosystem and amenity values

35. There has been a view held by some involved in the minimum flow setting process that the Lindis River below the Lindis Crossing bridge is a write-off and that flow restoration will not further improve that situation because of a range of factors including channel instability, lack of bed structure, high losses to groundwater, high water temperatures and a lack of observed values. There has even been a suggestion of an artificial flume to replace the natural channel to provide for fish passage. This is a badly distorted picture of the situation.

36. The river bed below Lindis Crossing is braided and clearly shows pool, run and riffle structure. These features are readily visible when the river is flowing but particularly when the riverbed is dry. It is a more mobile river bed than the single thread river above the bridge but that is a natural characteristic of braided rivers generally and the wading birds present clearly show that it needs to be seen in that light.

37. Water temperatures recorded by Otago Fish and Game Council do not show the extremes noted by ORC in its temperature recording. Those collected by hand held thermometers (Halford 2012a and 2012b) showed temperatures between 18 and 25 or 26 degrees C. with the higher temperatures being recorded in pools near the confluence after disconnection. Fish and Game staff have spent considerable time on the river but have not encountered lethal temperatures for either trout

and bullies where flows are connected and trout and bullies have been observed in that reach at low flows

38. While the Lindis is recognised for a range of river based recreational activities there has been little quantification of those activities. In fact the river is a very popular camping destination over summer with several large campsites along the depleted river reach (Halford 2014) and more upstream. Campers often have long term associations with the area. Those camp sites below and just above Lindis Crossing become non-viable when the flow ceases in late December or early January.

Conclusion

39. A minimum flow for the Lindis River needs to sustain a healthy and productive aquatic ecosystem and to remain connected in a meaningful way to the Clutha. That in turn will provide for recreational amenity including camping, swimming and angling and spawning/rearing facilities for the Clutha and Lake Dunstan

40. The Lindis trout fishery can be regarded as locally important in its own right but the river is also an integral part of the nationally important Lake Dunstan and Upper Clutha trout fisheries.

41. Fish and Game recognises there is strong competition for water within the catchment but considers that 750 l/s is too low to provide meaningful flows during high summer and has identified a flow of 1000 l/s as being an acceptable minimum.

References

Hearn, TJ 1994 Miners and Irrigators, The Struggle for Water in Central Otago, New Zealand Geographer 50(1) 1994 pp33-39

Halford 2012a Lindis River Flow Monitoring, Otago Fish and Game Council Report February 2012

Halford 2012b Lindis River Flow Monitoring - Supplementary Report, Otago Fish and Game Council Report October

2012

Halford, C 2014 Camping and Recreation on the Lower Lindis River, Otago Fish and Game Council Report April 2014

Otago Fish and Game Council 2015, Sports Fish and Game Management Plan for Otago Fish and Game Region 2015 -2025, Otago Fish and Game Council, Dunedin

COUNCIL REPORT
FEBRUARY 2012

Lindis River Flow Monitoring

Introduction

Monitoring of the lower Lindis River is being undertaken to provide information on flows and fish habitat values in advance of ORC's minimum flow setting exercise on the river. Fish and Game's position to date has been that a minimum flow should retain connectivity between the Lindis and the Clutha River as a bottom line.

ORC have suggested two summer minimum flows for the Lindis depending on whether or not the Tarras Water Scheme proceeds. If the scheme proceeds they suggest a minimum of .75 cumecs from October to May inclusive.

If the scheme doesn't proceed they suggest a minimum of .75 cumecs for October and November, dropping to .45 cumecs for December to April and then returning to .75 cumecs for May. This scenario assumes that while the lower river's flow will become discontinuous in the lower reaches there will be sufficient through-gravel flow to maintain fish stocks in 'refuge pools.'

The Lindis is an important trout spawning and rearing facility for the Upper Clutha River and Lake Dunstan and also supports a small river trout fishery in its own right.

Monitoring Programme

In early January four monitoring sites were established on the lower Lindis River downstream of the Lindis River Bridge on State Highway 8 to the Clutha River confluence.
River temperatures and fish observations at varying flows have been recorded and photos taken at four main photo points. Most monitoring was undertaken during flows between 400 and 1200 litres per second (l/s) recorded at the ORC Ardgour Flow Station which is situated approximately 2.8 kilometers upstream of the Lindis Crossing State Highway Bridge.

The Ardgour flow station records at 15 minute intervals but the flow information in this report has been recorded off an hourly schedule provided by the ORC.

Site Monitoring Recordings and Observations

The first inspections and recording was undertaken on the January 4 at 4pm when the flow was 0.926 cumecs. A series of observations continued for the week following as river flows varied and eventually dropping to a minimum of 0.428 cumecs at 8am on January 11. The weather at the time was very hot and dry with daytime temperatures peaking around 30oC. River

temperatures varied between 18 – 25oC with the majority of the observations done in the late afternoon to provide an indication of the higher temperature range.

On January 11 at 6.11pm the highest recorded temperature of 25oC was taken at site 4, 150 meters above the Clutha River confluence with the Ardgour flow recording 0.496 cumecs. Connectivity to the Clutha was lost and the large pools in the area had diminished in size substantially. Most of the braided sections that provided juvenile trout, bully and invertebrate habitat were significantly dewatered (dry in some areas) and unsuitable for maintaining aquatic life. It was estimated that it would take only a short time, possibly a day or two, with no connectivity for the pools to either dry up completely or for the increasing water temperatures to cause fish mortalities. There were no obvious subsurface flow contributions to pools.

It is important to note that while the lower river channel has well defined habitat features (pools, runs, and riffles) most pools while quite large in area are shallow at low flows (< .5 metre). With low flows they reduce in size away from overhanging banks or low bank vegetation so there is little refuge value. Willows only feature in two main locations, immediately below the SH bridge and upstream from the confluence causing slightly deeper pools to form.

The river started rising from January 12 peaking at 10.4 cumecs on January 14, so further information could not be collected until January 21 when flows lessened. We should get another opportunity in February when the lower river historically dries up.

Fish Abundance and Behavior.

Trout fingerlings or bullies were present in most of the runs and pools, and appeared to be behaving normally when flows were connected. Flows around 1 cumec seemed sufficient to retain a range of habitats but this declined with flows below that level. Temperatures at or above 20oC forced fish into the deeper water and available pools, and fish were observed motionless on or near the bed unless disturbed.

It is not known whether downstream migrating fish utilised the flushing flows the previous week as most of the pools on the 25th were holding fingerling trout. The river immediately upstream of the confluence has good juvenile habitat with overhanging banks and willow fall. It appears that fish are living there and will stay if flows are sufficient and water temperatures allow.

Beggs Stackpole Race

The Beggs Stackpole Race is situated 3.5 kilometers upstream of the Lindis Crossing Bridge. It is based on a mining privilege and is the priority take on the Lindis River with a permitted take of 0.278 cumecs. Maintenance of the race intake annually requires the formation of a bund across the river and in most seasons all remaining river water is taken leaving the entire river immediately downstream dry. Flash floods and general erosion of the bund is a common

occurrence which requires reconstruction so the lower river is often subjected to a lot of disturbance. Approximately 150 meters downstream of the take entrance water is diverted into the race proper and the excess take returned to the main river via a side channel. The race will inevitably capture downstream migrating juvenile trout which likely end up on the Bendigo Flats through flood irrigation.

This season the bund was constructed so that a small bypass flow was maintained in the main river channel at the point of take. This arrangement has not been observed before.

Conclusion

Initial observations show that flows of .45 cumecs are not sufficient to maintain connectivity to the Clutha River or sustain important juvenile trout habitat of any value in the refuge pools. Water temperature is an important component of the equation that requires consideration. Monitoring at the observations sites will continue and a further report will be provided with the gathering of more information.

Cliff Halford
Fish and Game Officer
30.01.12


Lindis River - SH8 Bridge down stream to the Clutha River Confluence
SH8 Bridge
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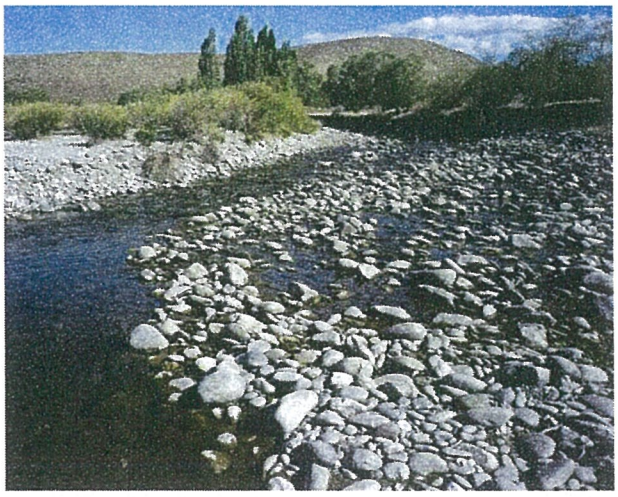
4
KEY: Photo Points
Image Date 16th February 2007

Lindis River photo monitoring sites with flow recordings from the Ardgour Flow Station 2.8 kilometers upstream

Site 1. Looking downstream with flow 448 l/s

Site 1. Looking upstream with flow 448 l/s

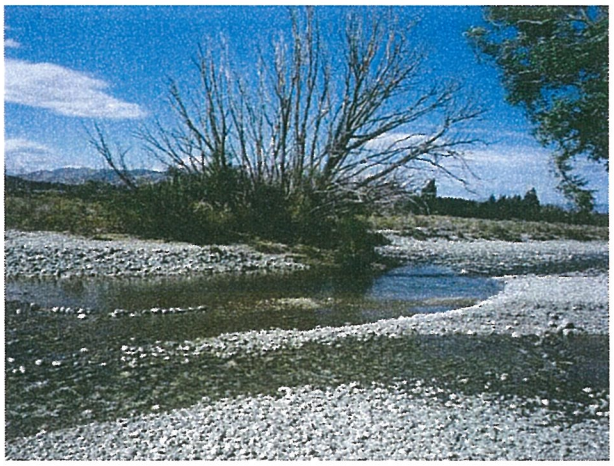
Site 2. Looking downstream with flow 448 l/s



Site 3. Looking upstream with flow 448 l/s

Note: All flow recordings were taken from the Ardgour Flow recorder and it is known that there is a gradual loss to groundwater so the flows represented in the photos will be less than indicated The following day from site 3 downstream flows ceased as shown in the final photo.

Site 4. Flow at 2342 l/s



Site 4. Flow at 1081 l/s

Site 4. Flow at 612 l/s

Site 4. Flow at 428 l/s

Note: In the final photo with connectivity lost, fish were present in the pool shown and others nearby. Water temperatures were 24-25oC and it was suspected that fish would perish quickly. Fortunately flows increased the following day connecting the pools but this does not commonly occur during the peak of summer.

COUNCIL REPORT
OCTOBER 2012

Lindis River Flow Monitoring – Supplementary Report

Introduction

In February 2012 Council considered a report on Lindis River Flow Monitoring (C Halford 2012).

ORC have suggested two summer minimum flows for the Lindis depending on whether or not the Tarras Water Scheme proceeds. If the scheme proceeds they suggest a minimum of 0.75 cumecs from October to May inclusive. If the scheme doesn't proceed they suggest a minimum of 0.75 cumecs for October and November, dropping to 0.45 cumecs for December to April and then returning to 0.75 cumecs for May. This scenario assumes that while the lower river's flow will become discontinuous in the lower reaches there will be sufficient through-gravel flow to maintain fish stocks in 'refuge pools.'

The February Council report concluded that flows of 0.45 cumecs were not sufficient to maintain connectivity to the Clutha River or to provide juvenile trout survival in the refuge pools.

This report provides additional monitoring information. Flow data has provided by the ORC from their Ardgour Flow Station.

January Low Flow Monitoring

On January 12, the lower Lindis was again monitored by Fish and Game (CH) in conjunction with ORC water resources staff starting at 12.50pm. The lower river was inspected from observation point 2 downstream to the Clutha River confluence. There was a noticeable increase in flow from the previous day which recorded 0.496 cumecs at 6.11pm.

ORC staff assumed the flow at the time was around 0.450 cumecs and considered it sufficient to support refuge pools with through gravel flows and some conectivity, However the flows recorded were in fact 0.644 cumecs at 12.00pm and 0.623 cumecs at 1.00pm at the Ardgour recorder. The actual flow at the time of observation depends on the time taken for a change in flow at the Ardgour recorder to move through to the river below the Lindis Bridge

Connectivity to some of the pools, with the exception of the pools near the Clutha river confluence, was partly regained with the additional flow showing that flow increases over a short period ie; within a day or so, were of some benefit. Juvenile trout were observed in most of the larger pools but few were seen in the very shallow runs.

ORC's Matt Hickey waded into a large pool at site 4 and noted that sub-surface temperatures were colder than the 24°C surface flow. This was verified with a 20°C reading. His opinion was that sub surface through - gravel flows provided cooler water to the pools. My view was that

while there may be some through –gravel flows the warmer surface flows hadn't fully mixed and pools would eventually heat up as flows diminished and temperatures increased. If sufficient through-gravel flows were occurring, pools wouldn't dry up quickly when connecting surface flows ceased.

Beggs Stackpole Race Inspection

On January 13 rain was setting in and the river rising sharply. Niall Watson and I inspected the Beggs Stackpole Race entrance to witness about 2/3 s of the flow diverted into the race and a bypass a short distance downstream directing water into the race proper, with the overflow returning to the main river. The flow at 10.00am was 1.432 cumecs.

New Zealand Freshwater Fisheries Miscellaneous Report No 120 (*D.J.Jellyman and M.L.Bonnett 1992*) - refers to entrainment of fish within the irrigation scheme and drift dive results showing that trout do enter the system, probably in reasonable numbers.

While entrainment and fish mortality has been suspected for a long time mining privileges don't expire until 2021. It is understood open race takes and alternative water use is being considered with the Lindis Water Management Scheme proposals so it is hoped this situation will be resolved.

February Low Flows
The river was inspected again in early February with the following results:

a) February 3 at 3.00pm

Water temperatures at sites 1-4 read 22°C, 22.5°C, 24°C and 25°C respectively. The flow record reading was 0.386 cumecs. There was minimal connectivity between pools. No fish were seen in the runs but fish were observed on the bottom of pools in a motionless state. When disturbed they were very sluggish.

b) February 5 at 9.00am

Temperatures at sites 1-4 read 22°C, 23°C, 24°C and 25°C respectively. The flow record reading was 0.431 cumecs. There was no connectivity with the pools at site 4 near the Clutha River confluence. No trout were observed but bullies were seen in the pools.

c) February 6 at 9.30pm

Temperatures read 22oC, 23oC, 24oC and 26oC respectively. The flow record reading was 0.336 cumecs. Surface flows had ceased at site 3 and some of the large pools had dried up completely. Two mallard ducks and a white faced heron were observed near a pool at site 4. On closer inspection dead worms and bullies were seen on the bottom of a pool which the birds were probably feeding on. No trout were observed. Some pools had dried up with others diminished in size considerably. The lower river was drying up very quickly.

No further inspections of the river were undertaken after February 6. River flow data showed the flow dropped to 0.051 cumecs on February 9 and fourteen days later flows increased to around 10 cumecs with rain in the catchment.

Conclusions

These inspects confirm that flows of 0.450 cumecs are not sufficient to maintain connectivity to the Clutha River or sustain juvenile trout habitat of any value in the refuge pools. Refuge pools heat up and diminish in size quickly when surface flows cease and any through - gravel flows don't appear sufficient to support fish life in refuge pools.

It is also important to note that refuge pools are not common on the lower Lindis, being restricted to an area downstream of the bridge and a few hundred metres of the confluence with the Clutha.

Monitoring of the observations sites will be continued through the 2013 dry period.

Recommendation

That this report be received

Cliff Halford
Fish and Game Officer
08.10.12


Lindis River - SH8 Bridge down stream to the Clutha River Confluence
SH8 Bridge
1
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4
KEY: Photo Points
Image Date 16th February 2007

COUNCIL REPORT
APRIL 2014

Camping and Recreation on the Lower Lindis River

Introduction

The Lindis River is presently over allocated to the extent that some river reaches go dry during summer low flow periods from October to April each year. Otago Regional Council is proposing to establish a minimum flow for the river in the near future and this report has been prepared to support that process.

The Lindis River provides recreational opportunities for campers, picnickers, swimmers, anglers and hunters. Campsites are a common feature along the river margin and this brief report provides some background information with observations by fish and game staff over the past summer.

Camping and Riverside Recreation

The lower Lindis is a very popular camping area over the summer holiday period from late December through February with the sites on the attached map (appendix 1.). During the Christmas and New Year period this year approximately 100 people were observed scattered along the lower river at various camp sites (see map)

Some of the encampments established above the Lindis Crossing have been used by family groups for more than 20 years with some of the larger parties exceeding 20 individuals. Campers engage in a range of river based activity including swimming fishing, and other passive recreation. It is common to see small dams constructed by children for swimming along the lower river.

The Lindis River confluence with the Upper Clutha River is a traditional camping site. Two campervans and 6 tents were seen in the area during late December 2013 with an estimated >15 people present and others observed on the river bed fishing at the confluence. This area is utilised regularly over the summer months.

During February, swimmers and picknickers were regularly seen upstream and downstream of the Lindis Crossing Bridge. On February 13 while monitoring tagged fish movements, two groups of swimmers were observed in the large pool immediately below the Lindis Crossing Bridge and upstream two small groups were observed at separate areas.

Recreational Fishing

The Lindis has local importance as a small stream fishery accounting for some 330 angler visits per annum during the seven month season (NIWA 2009). It sustains similar levels of use as other small streams in Otago such as Dunstan Creek ((360), Ida Burn (200), Kaiwera Stream(260), Deep Stream (210), Lee Stream (150) and Kye Burn (140).

Hunting
Duck hunting is undertaken along the river during the open game hunting season from May to July for mallard and May to August for paradise ducks. California quail are common around the river margin with the upland game season running from June to August.

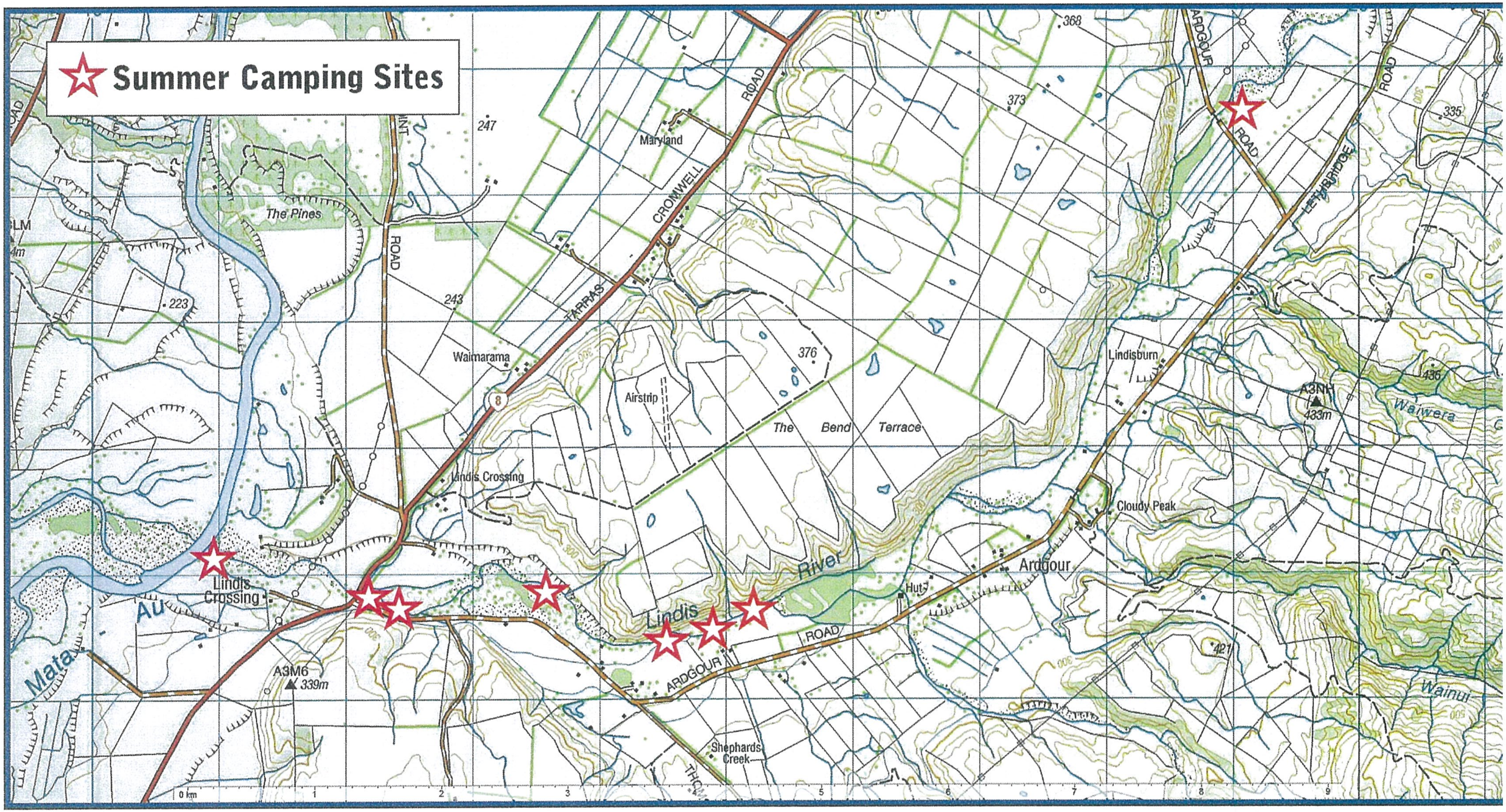
Rabbits are hunted on marginal strip and LINZ land, particularly on the lower river downstream of the State Highway Bridge. The river provides good hunting opportunities within a 20-30 minute drive from Cromwell.

Other Recreation
ORC's Lindis Catchment Information Sheet (2010) list recreational uses as including: trout angling, eeling, hunting (ducks, quail and rabbits), motor-biking, four-wheel driving, swimming, horse riding, kayaking, cycling, picnicking, camping and walking.

Conclusion
The lower Lindis is a significant recreational camping area over the summer holiday period. The river sustains a locally important small stream trout fishery and provides recreational hunting for waterfowl and small game as well.

Recommendation
The report be received

Cliff Halford
Fish and Game Officer
April 9 2014


Summer Camping Sites
The Pines
ROAD
247
243
223
Maryland
CROMWELL
ROAD
TARRAS
Waimarama
8
Lindis Crossing
Airstrip
376
373
368
The Bend Terrace
Lindisburn
A3NH
433m
436
Waiwera
LETHBRIDGE
ROAD
ARDGOUR
335
Cloudy Peak
Ardgour
Hut
Lindis River
ARDGOUR ROAD
421
Wainui
Shephards Creek
Lindis Crossing
Au
Mata
A3M6
339m
0 km
1
2
3
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