Toitu te Land whenua Information New Zealand

Crown Pastoral Land Tenure Review

Lease name : Rhoboro Downs

Lease number : Pt 093

Public submissions

These submissions were received as a result of the public advertising of the preliminary proposal for tenure review.

March 03

New Zealand Alpine Club Inc.

Founded 1891

7 May 2002

R A Ward Smith
DTZ New Zealand Ltd
PO Box 564
TIMARU

Dear Sirs

SUBMISSION : RHOBORO DOWNS TENURE REVIEW : PRELIMINARY PROPOSAL

I can advise that the NZ Alpine Club supports the proposal as notified, for tenure review of the Crown Pastoral Lease area of Rhoboro Downs.

We are supportive of the provisions made for public access to conservation areas.

We appreciate the opportunity to comment on this tenure review proposal.

Yours sincerely

Phil Doole
Secretary

South Canterbury Section, P O Box 368, Timaru

Submission No 2

10 May 2002

480 Rosewill Valley Rd
Timaru

Ray Ward-Smith
Knight Frank
Sofia Street
Timaru

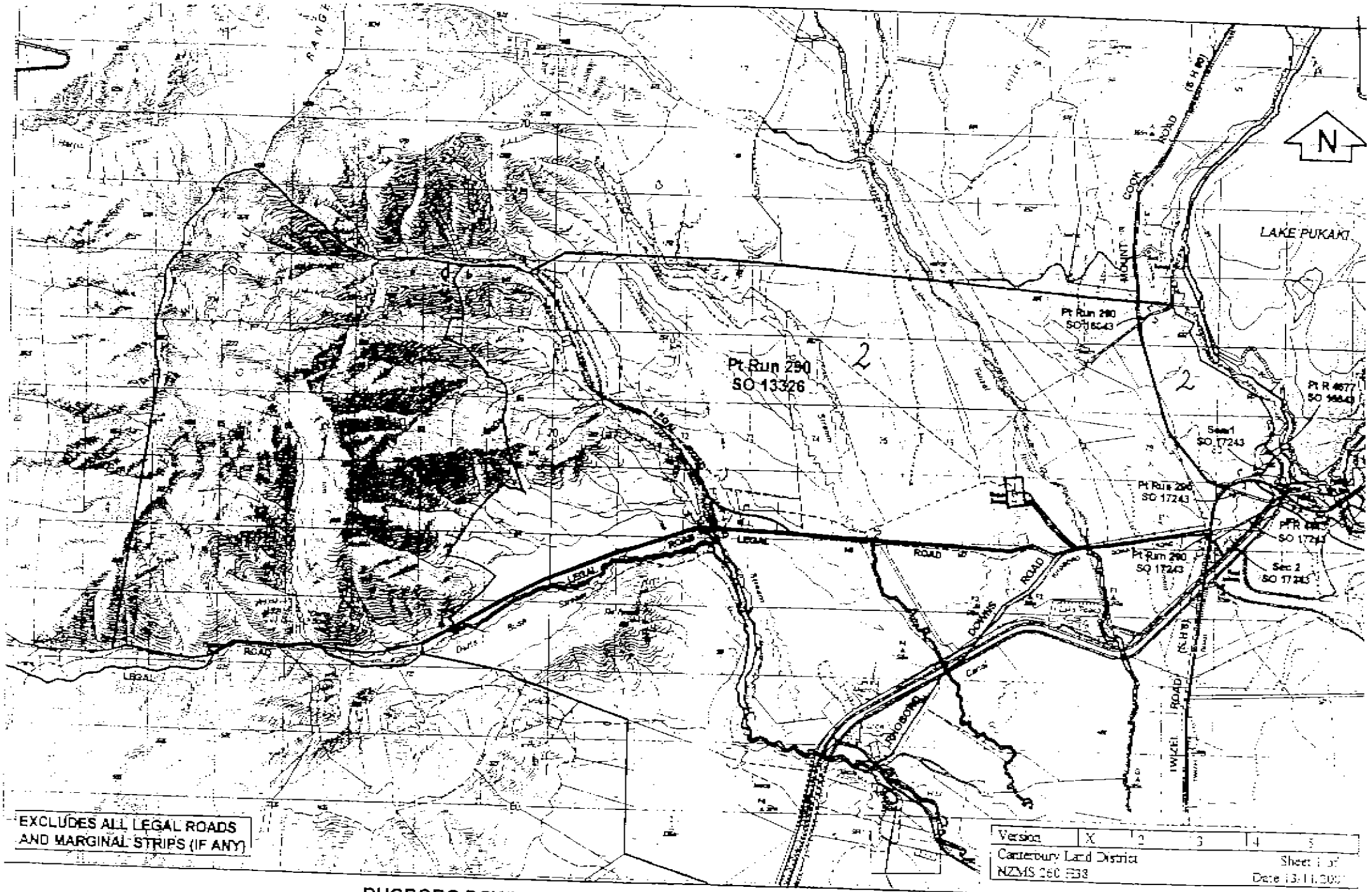
On behalf of the Temuka Tramping Club and the Timaru Tramping Club I would like to submit a submission on the preliminary proposal for tenure review for Rhoboro Downs.

Our primary concern is to maintain legal access ways for recreational usage including access over marginal strips and easement over existing formed access tracks for pedestrian and non-motorized use as of right, and motorized use by agreement. Any legal roads, whether formed or unformed, should remain as legal access ways.

For **Rhoboro Downs** (CB5C/1019 - Canterbury Registry) we agree with the area proposed to be designated as conservation area and emphasize the need for fencing this boundary, and the granting of the protective mechanisms and easements detailed. We would like to emphasize the need for public access for pedestrians, horse riders and non-motorized transport on the legal road on the southern boundary and beside Fraser Stream on the existing formed track as high lighted on the attached map, but also with 4WD access by agreement.
Access on the marginal strip of the Twizel River needs to be maintained.

Yours sincerely

Hazel Marshall



RHOBORO DOWNS (Secs 1 & 2 SO 17243, Pt Run 290, Pt R 4677 & 4443)

Scale 1:50 000

Dated 21/12/01

Submission No 3

Environment Canterbury
Your regional council

75 Church Street
PO Box 550
Timaru
Telephone: (03) 688-9069
Fax: (03) 688-9067
Website: www.ecan.govt.nz

RECEIVED
17 MAY 2002

16 May 2002

The Manager
DTZ New Zealand
P O Box 564
TIMARU

Dear Ray

RHOBORO DOWNS TENURE REVIEW PRELIMINARY PROPOSAL

In response to my enquiry of 23 April 2002, thank you for forwarding a copy of the Summary of the Preliminary Proposal for Tenure Review of Rhoboro Downs Pastoral Lease.

Through your involvement with the Rabbit and Land Management Programme and due diligence you will be aware that Council has a Land Improvement Agreement under Sections 30(3) and 30A of the Soil Conservation and Rivers Control Act 1941 registered on the lease title. This is to ensure that the conditions in the Rabbit and Land Management Property Plan are complied with and monitored and the considerable Regional Ratepayer/Government investment is protected for the term of the agreement (i.e. 20 years from 1 April 1990).

Council therefore requests that the agreement is brought down onto **all** new titles issued and seeks your assurance that this will happen as an integral part of the Tenure Review Process. This will ensure that Council approval is first gained under policy before the agreement can be discharged from any title.

My understanding is that you are also dealing with Ben Ohau (Pastoral Lease) Tenure Review which is well advanced. As this property also has a Rabbit and Land Management Property Plan agreement we anticipate that any titles issued will be treated in the same way.

To bring you up to date with Council Policy in regard to registered Land Improvement Agreements involving Pastoral Leasehold properties. It has resolved to retain and monitor all Soil and Water Conservation Plans entered into with the former Catchment Authorities involving land retirement and/or permanent destocking (including indigenous bush areas) in addition to those involved in the Rabbit and Land Management Programme. This encompasses 89 Pastoral Leases across the Canterbury Region with 51 of them appearing on a provisional list of properties (supplied by Department of Conservation) that have applied for Tenure Review.

Rather than us having to rely on the public notification process to discover when a property has reached the preliminary proposal stage. In future could you please ensure that Environment Canterbury is included on your early warning mailing list.

Our Ref: AG5T/1, AG5T/7, AG5T/31
Your Ref:
Contact: *N MacDonald*

I have forwarded a copy of the Rhoboro Downs Preliminary Proposal to Cathie Brumley (Senior Resource Management Planner) in our Planning Section in the Christchurch office who may wish to supply you with relevant information as to how the proposal impacts on Resource Management Act Policies.

Yours sincerely

Neil MacDonald for

Roger Gould
Team Leader Compliance Timaru

cc: Evan Walker, John Talbot, Mike Freeman, Cathie Brumley

Submission No 4

Rakaia Downs Tenure Review

RECEIVED 28 MAY 2002

Fencing off the three thousand hectares of high country on the western end of this property for conservation of shrubland and remaining tall tussock grassland is a logical and positive proposal. Use of an existing track for access to the northern side will make this area attractive to trampers, climbers and other recreational users.

Formation and fencing of a carpark at the southern end of access track b-b would enhance its use and reduce the possibility of unauthorised vehicles using the track. A similar area in the vicinity of Davis Bush would also be appreciated.

26-5-02

Submission No 5

Meridian Energy

- 4 JUN 2002

File:

30th May 2002

Mr R A Ward-Smith
Manager
DTZ New Zealand
P O Box 564
TIMARU

Dear Mr Ward-Smith

RHOBORO DOWNS TENURE REVIEW PRELIMINARY PROPOSAL

Thank you for your letter and information dated 19 April 2002 concerning the proposed tenure review for Rhoboro Downs.

Meridian Energy Ltd has no comment to make concerning the proposal.

We would however point out that Treasury has made a submission to the Mackenzie District Council to have the portion of the old Rhoboro Downs Road stopped/closed that runs through the Meridian core land of the Pukaki Canal. For clarification, it is that portion highlighted in yellow on the attached plan.

Yours sincerely

Paul Cain
Environmental Field Consultant
Twizel Office

Meridian Energy Limited

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25 Sir William Pickering Drive
PO Box 2454
Christchurch, New Zealand
Phone +64-3 357-9700
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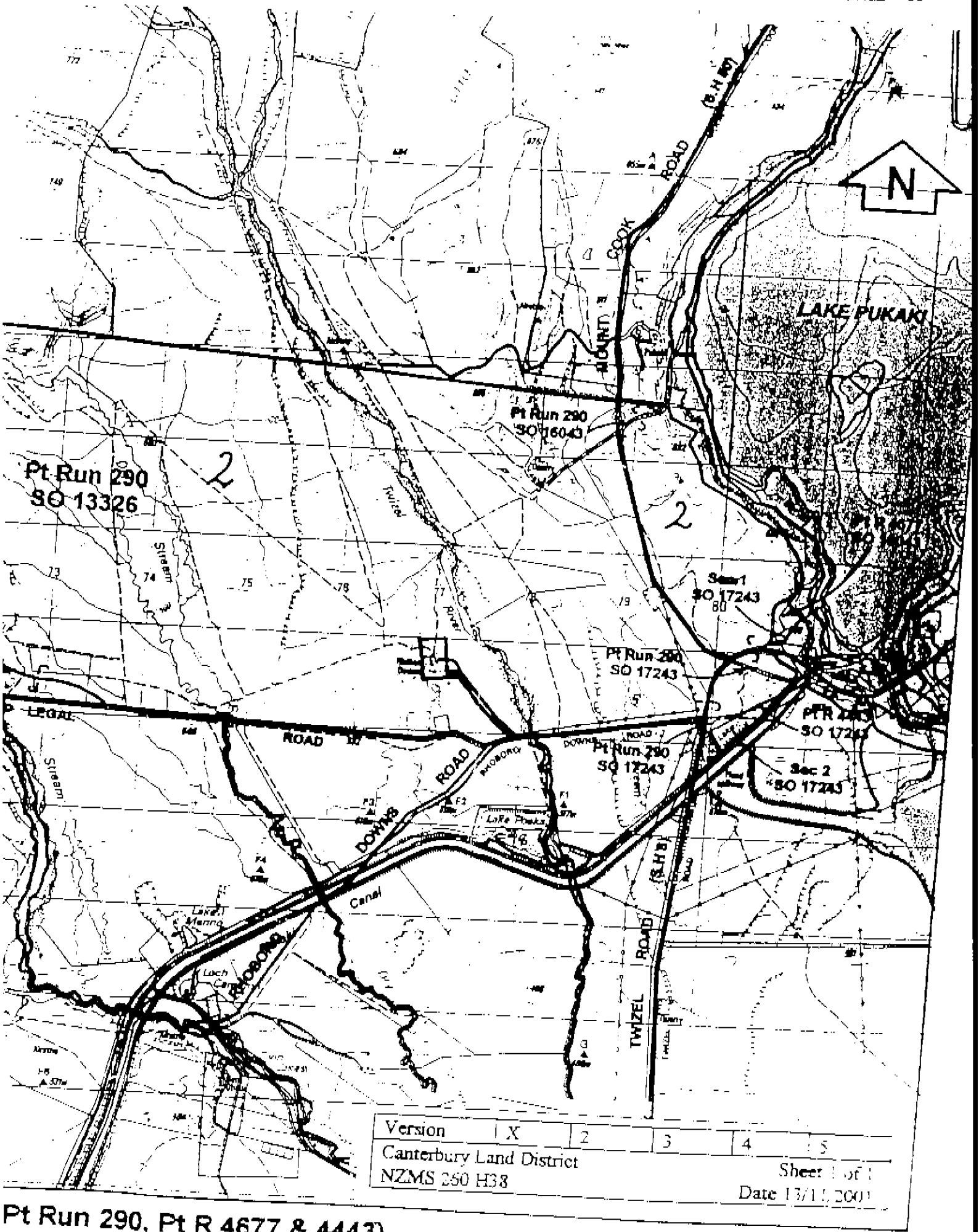

Pt Run 290, Pt R 4677 & 4443)

4000 4500 5000 5500 6000m

Dated 21/12/01

17 ... 2002

Canterbury Aoraki Conservation Board

13 June 2002-06-13

Manager
DTZ New Zealand
PO Box 564
Timaru

Dear Sir/Madam,

Subject: Rhoboro Downs Tenure Review Preliminary Proposal

Thank you for your letter of 19 April 2002.
(Your reference Pt 093.01 Rhoboro Downs).

The board' only comment is that public access rights need to be maintained for the marginal strip along the Twizel River, and the wetlands along side the Twizel river as well as the Fraser stream.

It is difficult to make further comment without actually visiting the area.

Thank you for the opportunity to make comment.

Yours sincerely

W Baker and T Todhunter
Joint convenors of the Lands Committee.

Serviced by Department of Conservation, Private Bag 4715, 133 Victoria Street, Christchurch
Telephone 03-379 9758, Fax 03- 365 1388

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85 Main Road
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taxidermist@orourkebros.co.nz

13 June 2002

Ray Ward-Smith
DTZ New Zealand Ltd.

Dear Sir,

On behalf of the S.C. branch of N Z Deerstalkers Assn. The preliminary proposal for the tenure review of Rhoboro Downs
Meets with our approval.

Yours Sincerely,

Lance O'Rourke
President

Ray Ward-Smith

From:
Sent: Wednesday, June 19, 2002 6:06 PM
To: Ray Ward-Smith
Subject: Rhoboro Downs pastoral lease - submission on proposed tenure review

To: Ray Ward-Smith, D.T.Z. New Zealand
P.O. Box 564 Timaru

Submission on: Proposed tenure review - Rhoboro Downs pastoral lease

Name:
Address:

Dear Ray

My submission is that the proposed tenure review of Rhoboro Downs does not go ahead in its current form.

My principal concern is that an extensive area of indigenous valley floor wetland vegetation, that was identified as having high conservation value in the botanical assessment of the lease early on in the tenure review process, has been proposed for freeholding. I do not support freeholding of this ecologically-valuable area.

The wetland is located on the terrace north of Darts Bush Stream (G.R. centre H38 705640). The wetland vegetation is a mosaic of damp red tussock grassland, sedgeland, cushion bog and moss bog with scattered stands of manuka on drier sites, and is more than 100 ha in extent it is traversed by a network of small creeks and seepages which drain east toward Fraser Stream. The indigenous vegetation here is still in excellent condition overall.

Such extensive valley floor wetlands are now a scarce and diminishing habitat in the intermontane basins of Canterbury, and remaining examples of these ecosystems should be a priority for inclusion in the Conservation Estate under the tenure review process. This wetland area is also habitat for the rare plant Carex tenuiculmis, a species that has been much reduced by habitat loss and grazing in other parts of the region.

I wish to be heard in support of my submission.

Submission No 10

South Canterbury Branch
29a Nile St
Timaru

FOREST & BIRD

ROYAL FOREST AND BIRD PROTECTION SOCIETY OF NEW ZEALAND INC

17.06.02

The Manager
DTZ Nz
P.O.Box 564
Timaru

Dear Mr R A Ward-Smith

Re: Rhoboro Downs Tenure Review Preliminary Proposal

Please accept the lateness of this submission because of the efforts that were made to obtain fuller information.

The Branch considers the natural and landscape values found on Rhoboro Downs, especially on the *back country*, to be highly significant and all those values should remain in full Crown ownership as part of the Conservation Estate. And the Dart Bush Terrace of about 130ha should also be included because of the significance of the ecosystems of tussock, shrublands and beech trees and other native vegetation around the Dart Bush Stream which are rare or uncommon in the Region.

We note that the area designated for conservation is around 3000ha while the area proposed to be disposed of by freehold to the holder is 4,626ha approximately, which appears to be an unequal division, not only in land area but possibly in monetary terms. The Branch has concerns that it should be seen that the Crown and the public of New Zealand receive fair and equal treatment with this and other tenure reviews.

Regarding the *Front Block* for freehold disposal, while much of the natural cover appears to have been lost there still are some remnants of vegetation and features which may warrant protection. There appears to be a tarn with tarn vegetation, located on the lower part of the property, S100 794833, which was identified in the NZ Protected Natural Area Programme, Mackenzie Ecological Region, as being a *"Site of Special Wildlife Interest, Outstanding Value"*. If this site still remains then these values should be protected or retained by the Crown.

We understand that there is a peat bog on this part of the property which has been fenced, if so it to should be protected or retained by the Crown.

Regarding access, this is an important issue for the Branch and we maintain that adequate access to the *back country*, at least for foot and other similar types of access, must be part of the this agreement. In particular, all the legal roads and paper roads must be retained

and open for public access at all times. And, that there should be marginal strips along all the important natural streams, in particular the Twizel River and the Fraser and Dry Streams.

All access ways for the public must be identified and unrestricted, except during adverse events such as at the time of high fire risk.

And, all the marginal strips, or riparian areas along the important natural streams, such as the Twizel River, and the Fraser and Dry Streams, be fenced out in order to maintain or enhance water quality and to protect and enhance riparian vegetation, such as sedges and shrublands.

Wilding trees, on part the property proposed to be freeholded, are another major concern for the Branch as these trees have the potential to spread seedlings much further afield and invade conservation areas on this and other neighbouring properties. So, the Branch asks that there be conditions imposed on the land transfer agreement that would require all the wilding trees to be removed or at the very least, contained to their present site.

Regarding the information provided, the Branch feels this was not adequate as there was a feeling of frustration that considerable efforts had to be made to obtain fuller information on the property, which proved somewhat difficult.

However, the Branch feels that Rhoboro Downs does have significant conservation and landscape values which should be retained by the Crown and managed by the Conservation Department for the long term. And, that the right of access should be provided for the public which will enable them to freely visit the areas proposed for conservation and retention by the Crown

We trust that our submission will be received in spite of being a day or two late.

Yours faithfully

Fraser Ross
for the SC Branch

Submission No 11

Royal Forest and Bird Protection Society
PO Box 2516
Christchurch Mail Centre
Ph 03 3666 317
Fax 03 3660 655

FOREST & BIRD

ROYAL FOREST AND BIRD PROTECTION SOCIETY OF NEW ZEALAND INC

17 June 2002

Ray Ward-Smith
Manager
DTZ
PO Box 564
Timaru

SUBMISSION ON PRELIMINARY TENURE REVIEW PROPOSAL FOR RHOBRO DOWNS, BEN OHAU RANGE

INTRODUCTION

The Royal Forest and Bird Protection Society (Forest and Bird) is New Zealand's oldest and most active voluntary conservation organisations. Formed in 1923 the Society has around 38,000 members in 56 branches around New Zealand. This evidence is on behalf of the Central Office. The Society's constitution requires it to:

> *"take all reasonable steps within the power of the Society for the preservation and protection of indigenous flora and fauna and natural features of New Zealand for the benefit of the public including future generations."*
>
> *"Protection of natural heritage includes indigenous forests, mountains, lakes, tussocklands, wetlands, coastline, marine areas, offshore islands and the plants and wildlife found in those areas."*

PRELIMINARY PROPOSAL

Forest and Bird understands the preliminary proposal to be:
1. That around 3,000 ha would be restored to full crown ownership and control as conservation land. This is Area 1.
2. That around 4,626 ha would be freeholded to the current lessee – Area 2.
3. A public access and management easement would be created along route "b-b" running across the property on the lower slopes of the Ben Ohau range from the legal road on Darts Bush Stream to Fraser Stream on the northern boundary of Rhobro Downs.

SUMMARY OF CONCERNS

Forest and Bird strongly opposes the preliminary proposal as failing to promote ecologically sustainable management and not adequately protecting inherent values. The proposal is contrary to section 24 of the Crown Pastoral Land Act 1998 (the Act or CPLA), in particular section 24(a)(i) and s24(b).

The parts of the proposal of concern where Forest and Bird believes changes are required are:
1) the failure to protect inherent values by restoring the following areas to full Crown ownership and management as conservation land:

a) the significant red tussock wetland on the terrace flats on the true left of Dry Bush Stream.
b) the area of shrublands and associated riparian communities in the valley between Long Spur and Spurs2 in a tributary to Fraser Stream identified as a Recommended Area for Protection (extended Pukaki RAP 4 Lower Fraser Stream) in the 1986 Pukaki and Ben Ohau Protected Natural Area (PNA) programme survey.
c) the Pukaki or Gladstone Flats wetland area on the northern boundary of Rhobro Downs identified as Pukaki PNA 3 Gladstone Flats.
d) the Dry Stream wetland near the southern boundary identified as Pukaki RAP 5 in the PNA survey.

2) The lack of recognition of the public interest in and high recreational values of the margins of Lake Pukaki and the absence of any public access or proposal to protect the lake margins.
3) The failure to identify and provide marginal strips along the length of Fraser Stream, Dry Stream, or the Twizel River.
4) The absence of any commitment of funding by LINZ to undertake wilding control. Current and previous lessees have failed to comply with the terms of their pastoral lease to keep the land free of weeds and pests. It is unreasonable that the costs of wilding control on future conservation land have to be borne by the Department of Conservation, rather than LINZ which has not adequately monitored or enforced lease conditions.
5) The need to commit to adequate funding sign-posting and marking legal roads on the property to provide for public access.

These concerns are dealt with in more detail below.

1. Significant inherent values not adequately protected

Section 24(a)(ii) is subject to section 24(a)(i) which means that reviewable land can only be freeholded if this promotes ecologically sustainable management. The DoC Conservation Resources report clearly describes the values of the red tussock wetland on the true left (north) of Darts Bush Stream, the shrublands in Fraser Stream between the spurs, and the Pukaki Flats wetland on the property's northern boundary. Section 24(b) enables the protection of inherent values. Neither of this nor the ecologically sustainable management will be achieved because significant areas with high and obvious inherent values are proposed for freeholding.

a) Dart's Bush Stream wetland (north bank) and flats - c130 ha.

The vegetation is a wetland mosaic of red tussock grassland, *Schoenus pauciflorus* sedgeland, *Oreobolus pectinantus* cushion bog and moss bog with scattered stands of manuka on drier sites. It extends over more than 100 ha. The DoC conservation resources report (1996?) states that the red tussock can be 1.5 metres high. [1] The wetland is traversed by a series of small creeks and seepages which drain east toward Fraser Stream. Extensive valley floor wetlands such as the Dart's Bush Stream one are now a rare and diminishing habitat in the inter-montane basins.

A botanical site inspection in 2000/01 as part of a rare plant survey for DoC showed that the wetland was still in excellent condition overall, although there were a couple of sites where local cattle damage and track damage is obvious and wilding pines in the Darts Bush catchment above the flats need control.

This wetland is quite distinct form the nearby Ben Ohau wetland (Pukaki RAP 6) which is more *Carex secta* swamp type vegetation (and also an important site). The Darts Bush Stream wetland is a stronghold for the rare plant *Carex secta var. tenuiculmis* and contains more than 60 plants

[1] Department of Conservation (1996?) Unpublished "Report to Knight Frank on Tenure Review of Rhobro Downs Pastoral Lease", p 3

of this species, including many juveniles. At present, this is the only known site in the Mackenzie Basin for this species. Protection of areas containing species threatened with extinction is a fundamental part of protecting inherent values. One bog pine also makes the area distinctive.

It is also significant because the presence of *Spaghnum* moss indicates that peat is being formed which is uncommon south of the Rakaia River at this altitude.[2] The wetland also has important hydrological values.[3]

The 4 August 2000 report from Knight Frank to the Commissioner of Crown Lands [4] allows irrelevant considerations to influence the recommendations on which areas should be freeholded. The lessees' concerns about *"the ongoing viability of the area to be designated freehold"* are not a relevant consideration under the CPLA.

The Knight Frank report also notes that the red tussock wetland close to Darts Bush Stream *"has not been developed but has the potential for development to hay paddocks."* Conversion of tall tussock wetlands to exotic pasture does not promote ecological sustainability given the extensive depletion of both wetlands and tall tussock in New Zealand.

Wetland systems and tall tussock grasslands should be a priority for protection through tenure review. Wetlands are one of New Zealand's most depleted and threatened ecosystems. More than 90 % of wetlands and around 95 % of fertile lowland wetlands have been destroyed. Around 90 % of the original extent (1840) of tall tussock has been destroyed. [5]

Wetlands are highly productive ecosystems which support a high diversity of indigenous plants and animals. They support a range of species which are adapted to living in wet conditions and which do not occur in other ecosystems. [6] Protecting inherent values and promoting ecologically sustainable management of wetlands requires an end to grazing and protection from destructive activities such as further tracking, cultivation and oversowing and topdressing. Grazing in and around wetlands reduces vegetation stature. This and the increased exposure to wind and

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[2] Ibid at p 9.
[3] Ibid at p 9.
[4] Unpublished "Report in Accordance with Crown Pastoral Land Standard 8: Preliminary Proposal Section 7 Preparation of Drafting Instructions for Preliminary Proposal Report on Consultation Report." No. R0338. Date 4 August 2000. Sent 8 August 2000 Timaru office to LINZ.

[5] Ministry for the Environment (1997) *"The State of New Zealand's Environment"* Ministry for the Environment and Government Print.
[6] As a Canterbury Regional Council report on the effects of grazing on Canterbury wetlands has noted: *"Many wetlands are in poor or deteriorating state of health. This is particularly so in lowland areas, but it also applies throughout much of the high country, except for those which are larger, wetter or at high altitude. The main reason for this include a reduction in water supply, increasing physical isolation, an increase in exotic plants, accelerated eutrophication and the effects of on-going grazing.*

"As wetlands become more isolated and reduced in size, they become increasingly vulnerable to outside influences through increased edge effects. The reasons for that are that edge effects, such as those from grazing, tend to extend further into smaller wetlands than larger ones, as they have a relatively small area."

"Numerous wetlands that were observed in earlier photos or maps, were much reduced in recent photos or had clearly deteriorated over time." From Davis, Mark (October 1999) ***"Canterbury Region Wetlands, Report and Preliminary Inventory. Part One: Desktop Review."*** Report U99/64 at p 41.

sunlight causes wetlands to dry out and shrink. There is a corresponding increase in exotic plants which displace indigenous plants.[7] The DoC report said *"fencing and destocking (of this wetland) are essential"*.[8] This advice has been ignored. Conversion to hay paddocks as contemplated by the lessee would involve cultivation and the destruction of inherent values.

Appendix 1 attached is an extract from Environment Canterbury's report "Canterbury Region Wetlands Report and Preliminary Inventory"[9]. It is disappointing that this preliminary proposal fails to recognise the high inherent values of wetlands, the impacts of pastoral farming on them and the urgent need for their protection.

Protecting the wetland and flats as an "island" in a sea of freehold would increases the likelihood of habitat fragmentation, and having activities such as earthworks or forestry in the upstream catchment adversely affecting the wetland's hydrological functioning. A boundary which followed landforms and which connected the wetland to proposed conservation land would allow better buffering. Having a tongue of freehold intruding into proposed conservation land is likely to increase fencing costs and create management conflicts in future. A more logical boundary would be to follow the terrace edge on the true left bank of Fraser Stream. (See Map 1 attached). This would allow the full extent of the Dart's Bush Stream wetlands to be included. Their extent if shown in Map 2 from Environment Canterbury's wetland inventory.[10]

Decision sought
Amend the boundary between Area 1 (proposed conservation land) and Area 2 (proposed freehold land) to include all of the Darts Bush Stream flats as conservation land. Make all of the area from the terrace on the true left bank of Fraser Stream conservation land. See revised boundaries on Map 1 attached.

b) Lower Fraser Stream shrublands – Extended Pukaki RAP 4
This area between Long Spur and Spurs 2 was recommended for protection as part of the extended Pukaki RAP 4 (Lower Fraser Stream) in the 1986 PNA programme survey. The relevant sections of the report are attached as Appendix 2.

As the August 2000 Knight Frank report notes this area has "high inherent values". DoC's Conservation Resources Report describes the extensive shrubland as having *"exceptional diversity, density, and a moderate native component to its groundcover which is not usual. It has a high level of naturalness and is buffered by the extensive manuka shrubland on the sunny faces, and Dracophyllum shrublands- tussock grasslands on the shady faces."*[11]

The area contains old man matagouri two metres or more high. Matagouri of this height can be several 100 years old. The DoC report states that *"native species diversity and cover is exceptionally good with, in addition to the common shrub species, Hoheria lyalli, Coprosma*

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[7] Davis Mark (October 1999) ***"Canterbury Region Wetlands, Report and Preliminary Inventory. Part One: Desktop Review."*** Report U99/64 at p 44.

[8] DoC 1996 report (Part 4 Justification and Recommendations) at p15.
[9] Davis, M (October 1999) Ibid.
[10] The solid black areas on Map 2 are discrete wetlands. The stipled black areas contain wetlands too numerous or difficult to map at 1:50,000 scale. Wetlands in the Environment Canterbury database have been identified using colour aerial photographs at 1:10:000 scale. The report includes a caveat that information has not been checked on the ground and may be unreliable. The report's author, Mark Davis is confident that the wetland information in Map 2 is reliable because it is based on recent aerial photographs at a detailed scale of 1:10,000 and his personal knowledge of the area.
[11] DoC 1996 report at p 9.

intertexta, C cheesemanii, scented tree daisy (Olearia odorata) porcupine shrub, with beech trees growing at the head of the valley." [12]

Fraser Stream also contains at least three Galaxiid species including the threatened koaro or *Galaxias brevipinnis*, alpine galaxid and long jawed galaxid. Its values for freshwater fish are high and should be recognised under section 24(b) of the CPLA. Protection of riparian vegetation is also essential to maintaining stream health and water quality. As New Zealand's leading freshwater fish scientist, Dr Robert McDowall has said: *"Look after the small streams.....(because) firstly native fish diversity is often highest in small streams – streams often only a metre or two across, well into the hills and enclosed deeply in the bush, often have rich freshwater fish faunal diversity. This is where many of our native fish are most at home. Secondly, only by protecting the catchments, that collect the water and feed it into bigger rivers, will the water quality of the bigger rivers be sustained."*[13]

Allowing the lower Fraser Stream area to be freeholded means that a good altitudinal sequence from riparian shrubland through to tall tussock grassland on the tops would not be protected. The broad faces and spurs of the Ben Ohau Range are a coherent landform. Freeholding and two different management regimes is likely to disrupt this coherence if OSTD and more tracking occurs and wildings are not controlled.

The proposed conservation land/ freehold boundary is inappropriate because it will allow continued grazing and stock ingress into the shrublands and lower parts of each of the tributaries of Fraser Stream. A fenced boundary which followed the true left bank of Fraser Stream would safeguard the stream and all of the valley floors from stock damage to vegetation, wetlands and water quality. It would also respect the landform.

The proposed Mackenzie District Plan does not control the clearance of indigenous vegetation below 900 metres asl or outside a limited number of Sites of Natural Significance which were generally identified prior to tenure review inspections. The only site on Rhobro Downs listed in the district plan is Dart's Bush, the small area of beech forest in the upper catchment. The district plan and the Resource Management Act will not adequately protect the values of Darts Stream wetland or Fraser Stream shrublands of the Gladstone Flats.

Decision sought
Include all of the Fraser Stream shrublands and all of extended Pukaki RAP 4 Lower Fraser Stream in land to be restored to full Crown ownership and protective management as conservation land.

c) Part of Pukaki RAP 3 Gladstone Flats (See Appendix 2 attached) c 30 ha
This area is on a small terrace on the true left bank of Dry Stream on Rhobro Downs' northern boundary. The 1986 PNA survey report identified this area (the bulk of which was on Pukaki Downs lease, now conservation land) as *"one of the best Chionochloa rubra grasslands in the entire Mackenzie Basin."* [14] It also contains one of the two large stands of bog pine remaining in the Mackenzie ecological region. A PASAC subcommittee report (Dr Brian Molloy) confirmed

[12] DoC, 1996 report.
[13] McDowall, R (August 2000) *"Hidden Treasures Exposed: Discovering Our Freshwater Fish Fauna"* Thomas Cawthron Memorial Lecture No 58, Cawthron Institute .

[14] Cooper, PJ (January 1986) "Pukaki and Ben Ohau District PNAs New Zealand Protected Areas Programme – A report detailing information collected during the 1983-84 survey of the Mackenzie Ecological Region concerning areas proposed for protection." Department of Lands and Survey.

its exceptional nature conservation values. [15] As such the area contains high inherent values which require protection through tenure review.

The DoC resources report confirmed that a diversity of native plants occur although red tussocks cover was sparse (1-10%). With stock removed and the wetland protected from agricultural development it is likely that red tussocks will recover as has occurred in the Black Rock Scientific Reserve on the Lammerlaw Range near Dunedin. Red tussock wetlands are too depleted for their restoration potential to be ignored.

This area could easily be included with the adjacent new conservation land simply by realigning the fenceline.

Decision sought
Amend the proposal to restore to full Crown ownership as conservation land, that part of Pukaki RAP 3 which is on Rhobro Downs and realign the fenceline so that it is joined with adjacent conservation land and protected from stock access.

d) Dry Stream Swamp – Pukaki RAP 5 (See Appendix 2 attached)
A 125 ha area of springfed swamp, wetland species and matagouri shurbland was highly ranked by the Wildlife Service as a wader breeding and feeding site. The 1986 PNA survey report noted that the area supported two pairs of black stilts, ten pairs of pied stilts, oystercatchers and other birds and said : *"There is an obvious need to protect the upstream springs as well as the swamps themselves"*[16].

Given the huge effort being put into increasing black stilt numbers through Project River Recovery it is important to safeguard habitat which black stilt may re-use if the population expands sufficiently to re-occupy parts of its former range. Agricultural development has damaged the values of this area. An expanded and fenced marginal strip, which includes the original swamp area and riparian setbacks to buffer the stream against non point source discharges, would better promote ecologically sustainable management than the current freeholding proposal. The fate of Pukaki RAP 5 and the ecological damage which farm development has done here highlights the risks involved in not securing for conservation those other areas with high inherent values such the Darts Bush Stream wetland and the Fraser Stream shrublands.

There are numerous instances on pastoral leases of significant natural areas being destroyed or damaged by pastoral or other development despite these areas being identified in scientific reports under the Protected Natural Areas programme and this information being readily available publicly, to the Commissioner of Crown Lands, and to landholders.

Decision sought
Withdraw Dry Stream Swamp Pukaki RAP 5 from the area proposed for freeholding and make it conservation land.

2. Public access to shores of Lake Pukaki
The DoC resource report said that *"public access to and along the shores of Lake Pukaki needs addressing"*[17]. Yet nothing has been done to provide this. State Highway 80 to Aoraki/Mt Cook runs close to the lake through the property. The road is a major tourist route. Public access to the

[15] DoC (1996) "Conservation Resource and Values of Pukaki Downs Pastoral Lease, Canterbury" at p 6. Unpublished report.
[16] Cooper PJ (January 1986).
[17] DoC, 1996 Rhobro Downs report at p 12

lake from State Highway 8 is difficult because of the hydro facilities and the steep slopes. The lakeshore area is likely to be highly desirable for subdivision and intensive lifestyle development, just as is occurring around Lakes Wanaka and Wakatipu . The development boom is likely to affect Lake Pukaki in future. Unless legal access is provided now, trespass rights of future landholders will significantly restrict public access, use, and enjoyment of the lake shore in future.

Lakes are very attractive and much valued for public recreation. LINZ has failed to recognise the strategic importance of thinking 20-50 years into the future and using the tenure review process to safeguard public access to and use of the lake shores for future generations. Once alienated through tenure review, Crown land cannot be returned except through purchase at considerable expense.

DoC maps show the Rhobro Hills boundary as extending to the lake edge. The DTZ map with the preliminary proposal show the boundary to follow the lake shore in places and to be inland of this elsewhere. Forest and Bird understands that land tenure associated with hydro development and taking of land under the Public Works Act is still being sorted out. A wide public land setback around all of the lake shore is needed to provide enough land for facility development in future eg lakeside picnic and recreational areas, walking tracks and to prevent the natural character of the lake from being overwhelmed by future building development.

Decision sought

Provide legal road or easement for public foot, mountain bike and possible future motor vehicle access from State Highway 8 (Aoraki/Mt Cook road) to the lake shore at the property's northern boundary along the line "z-z". There is an existing vehicle track which is suitable. See Map 1. The access should be sufficiently wide to accommodate road access for vehicles in future.

Provide for a 200 metre marginal strip around the lake from the edge of the lake bank to be conservation land either by making this conservation land or creating an extended marginal strip whose width from the top of the bank moves to accommodate any bank collapse from fluctuations in the level of Lake Pukaki. If a marginal strip already exists on the lake shore, use tenure review to extend this to provide a more useable area for public recreation and enjoyment.

3. Marginal strips needed on all streams

There was a clear message from the early warning meeting in Timaru on 28 November 1996 that marginal strips should be set off along all streams and the streams protected from stock. This is not shown as having been done on the proposal. Nor are there any proposals for fencing any of the streams in the area proposed to be freeholded.

Creation of marginal strips is fundamental to the extension of the Queen's Chain and the maintenance of the New Zealand tradition of public access to waterways. Section 24 of the Conservation Act 1987 clearly requires the laying off of marginal strips abutting lake and stream beds with an average width of 3 metres or more when any Crown land is disposed of. LINZ appears to be ignoring its statutory responsibilities by not directing its contractors to set off marginal strips.

Decision sought

Lay off 20 metre wide marginal strips along the length of Fraser Stream, Dry Stream and the Twizel River.

4. Wilding control
DoC estimated in 1996 that an initial knock down control operation would cost around $20,000 ha. Given that the problem has been created during LINZ and the Commissioner's administration of the pastoral lease with little or no action to address it or prevent further spread LINZ should fund the initial control programme and the proposal should include provision for this and a side agreement with the lessee to ensure that access is provided for this.

Decision sought
Allocate at least $20,000 (indexed for inflation since 1996) for wilding control to be undertaken as soon as possible.

5. Signage
Decision sought
Legal roads are often not used because the public is unaware of their location. The proposed easement "b-b" will be little used unless the legal road access to it from the Rhobro Downs Road is signposted and the proposed new legal road or easement along "Z-Z". The proposal should include provision for this though less intrusive signs are needed than those provided by Transit NZ on the Aoraki/Mt Cook Road to signpost access to the Ohau Conservation Area.

The opportunity to comment is welcome. Forest and Bird requests a copy of a map of the boundaries which DTZ Ltd recommends to LINZ and the Commissioner of Crown Lands subsequent to public consultation and a copy of the final boundaries.

Yours sincerely

E M Sage

Eugenie Sage
Regional field officer

Attachments

Map 1- revised boundaries as proposed by Forest and Bird
Map 2 - Darts Bush Stream wetlands from Environment Canterbury's "Canterbury Region Wetlands Inventory and Database"
Map 3 – Map of areas of conservation value including RAP boundaries from DoC's Conservation Resource Report.

Appendix 1 Extract on wetland functioning and degradation from Environment Canterbury's "Canterbury Region Wetlands Inventory and Database"

Appendix 2 Pukaki RAP 3, RAP 4 and RAP 5 descriptions and maps from Cooper, PJ (January 1986) "Pukaki and Ben Ohau District PNAs New Zealand Protected Areas Programme – A report detailing information collected during the 1983-84 survey of the Mackenzie Ecological Region concerning areas proposed for protection." Department of Lands and Survey.

Appendix 1 - "Canterbury Region Wetlands - Database + Inventory"

2.4 Functioning

Wetlands perform a number of functions, which are summarised below:

Biological

- Wetlands provide habitat for a high diversity of plants and animals. Seasonal wetlands are important for part of the life cycle of waterfowl, as they provide food sources at different times of the year (Robinson, 1995). Wetlands along the coastal fringe of the Canterbury Plains are part of an important chain of coastal wetlands used by waterfowl and waders along the South Island's east coast. Wetlands are important for the life cycle of many fishes, eg, inanga spawning in estuaries.

- Riparian vegetation is important for providing habitat and shelter for fauna, and effectively acts as a transition between wetland communities and adjacent dryland communities. These transitions are known as ecotones, and are very important as they contain a high species diversity comprising representatives from each community type. Riparian vegetation also acts as a buffer for animals living within a wetland.

Hydrology

Based on Carter (no date), except for the last bullet, which is based on Cunningham (1980).

- Wetlands function as sponges and are important for flood storage and absorbing run-off during storms. The greater the storage, the less flooding is likely. In Canterbury this may only be significant in parts of the high country, where wetlands can comprise substantial portions of some catchments.

- Wetlands tend to maintain steady water flows in streams and rivers, and maintain flows during drier periods. There has been considerable debate about this issue, but Campbell (1998) states: "it is a common misconception that vegetated wetlands have very high evaporation losses: in many cases actual evaporation rates are far below open water rates." Again, this function is most likely to be evident in the high country where there is a higher density of wetlands, and where many of them are interconnected. Sphagnum bogs may be particularly important in this regard as this moss can absorb up to 26 times its own weight in water (Buxton 1991).

- Wetlands provide for groundwater recharge and discharge, depending on the locality of the wetland. In the upper parts of catchments, discharge often occurs, while recharge tends to occur lower down.

- Wetlands effectively function as sinks and reflect the processes and activities that occur in their wider catchments. This is an important concept when considering their management.

Water Quality Based on Carter (no date), and Johnson and Brooke (1989).

- Wetlands maintain and improve water quality by trapping, precipitating and transforming sediments and nutrients. Wetland plants contribute to water quality by adding oxygen and taking up nutrients.

- Wetland plants buffer wetlands from incoming sediments and nutrients, though topography and substrate can also provide buffering effects.

- Wetlands reduce shoreline erosion by reducing water speed and absorbing wave energy.

2.5 Importance

Wetlands are widely acknowledged as important ecosystems that have many values and uses. In Canterbury, most of the original wetlands have been lost, and those remaining therefore assume a greater importance. The values of wetlands are summarised as follows:

Ecological

Wetlands are highly productive ecosystems, which support a high diversity of indigenous plants and animals. Their proximity to each other means that their collective value is often greater, as it increases the range of habitats available at different times of the year, eg, for bird feeding. Wetlands often contain a mosaic of communities, which further adds to their overall value. Many wetland biota are highly specialised and adapted to living in wet conditions, and do not occur in other ecosystems.

Cultural

Wetlands are important to Maori, having been traditionally used for a long period of time as a source of food and other resources. Water has a special significance, and discharges of human waste into water bodies are of particular concern. Concerns have also been expressed about the effects of water abstraction and the effects of uses on the habitat of traditional fish species (CRC 1998).

Scientific/Educational

Wetlands are places where ecological processes such as plant succession and hydrology can be studied. Water quality and specific biota are often of interest, and less modified wetlands serve as important benchmarks for assessing the effects of changes in other wetlands. Wetlands sometimes contain evidence of past conditions in the form of fossils and pollen.

Economic

Wetlands are often important areas for farming. Their soils are usually fertile and when drained, they often provide fertile soils for farm production. In drier periods, they are usually important for grazing, enabling the removal of stock from areas where there is less feed available. They are also used for stock watering and sometimes for water abstraction. Wetlands have other economic uses such as commercial fishing and tourism.

Landscape

Wetlands often contribute to wider landscape values as they provide visual diversity and interest. This is particularly so in less developed areas, but even in modified farmland and urban areas, they add interest to the landscape and provide examples of formerly widespread landscape types.

Recreation

Wetlands provide for a number of recreational uses including boating, swimming, fishing, bird watching and waterfowl shooting.

representative areas to be identified, and there is also likely to be a terrestrial and vegetation emphasis. For these reasons, it is clear that some wetlands would not have been visited or assessed.

- Tenure review surveys have tended to be relatively comprehensive and detailed in Canterbury, but there is not a particular focus on wetlands and it is inevitable that some parts of a property will not have been visited. The issue of naturalness also arises, such that more-modified wetlands at lower altitudes may not be identified.

- Parts of the region have not been assessed from aerial photos, and other parts have been assessed using different methods. In finalising the wetland database, some sites were cross-checked while others were not. This does not mean that the database is not a useful record of wetlands. It is the only composite one available in the region, but it does have limitations which reinforce the need to undertake field verification to ensure the data is as accurate and up to date as possible.

4.2 Wetland distribution in the region

When reviewing the distribution of wetlands in the region, it is important to consider them in the context of their ecological districts. The following information is based on the wetland database and my general impressions of wetland distribution in the region:

- The highest density and number of wetlands are found in the high country, particularly in the intermontane basins. This reflects a number of factors including higher precipitation, variations in landform and topography, the influence of glaciation and the inherent difficulties of developing land in an area with climatic and soil limitations. There are many large wetlands associated with river floodplains and terraces, fans and basins receiving drainage from adjacent hillslopes. Flushes and seepages are very widespread, typically occurring at breaks in slope; while some are substantial, most are small. Many occur at higher altitudes and are often associated with tarns in basins, though these areas were not assessed by the study as they were considered to be under less threat than lower altitude areas (see 3.3.2).

- Wetlands are reasonably common in the foothills of the high country, but they are less common than further inland. This probably reflects less topographic variation, less glaciation, lower precipitation and more intensive land use. It is

acknowledged, however, that the foothills were only partly assessed by this study and the situation could prove to be less clear than indicated. Despite this, it is quite obvious that flushes and seeps are common in the foothills, particularly on footslopes.

- Wetlands are sparsely scattered in lowlands, though there are concentrations in certain areas. In general, the plains, downlands, coastal hills, and Banks Peninsula are not notable for their wetlands. The coastal fringe of the plains is the most obvious exception here. There are major wetlands associated with Te Waihora (Lake Ellesmere) and Wainono Lagoon, and there are a number of other lagoons and estuaries. Lagoons are typically associated with the river mouths. A reasonable number of smaller wetlands are present, though they are much reduced from their original extent.

- There is a tendency for people to underrate the value of smaller and modified wetlands (Robinson 1995), but it is important to consider them in a wider ecological context. Many of them occur in areas that have been subjected to burning, vegetation clearance, drainage, oversowing and topdressing and grazing for a long period of time. For these reasons, most wetlands remaining in such areas are very modified and restricted in their distribution. They do, however, contain remnants of the indigenous flora and fauna of the ecological districts in which they occur and thus the genetic materials for future restoration initiatives. It is not appropriate to compare the condition and value of wetlands between ecological districts, as the history of wetland formation and land use is likely to be quite different. On this basis, when assessing the significance of wetlands, the threshold of wetland modification will be very much lower for the plains than for the Heron Basin, for example.

4.3 Ecological health of wetlands

While field verification was not undertaken, comments can be provided about wetland health in the region based on past survey experience, the identification of wetlands through air photo interpretation and the application of ecological principles. The term wetland health broadly refers to the ecological functioning of a wetland. A healthy one functions relatively naturally and is self-sustaining in the long term under current use or management. With increasing modification, exotic plants become more prominent and the vegetation structure alters. An unhealthy wetland will not function naturally, is

most likely to have a disrupted water supply and will not be self-sustaining. If current use and management continues and the water supply is not reinstated, the wetland will eventually cease to exist. On this basis the following observations are made about wetlands in the region:

- Many wetlands are in a poor or deteriorating state of health. This is particularly so in lowland areas, but it also applies throughout much of the high country, except for those which are larger, wetter or at higher altitude. The main reasons for this include a reduction in water supply, increasing physical isolation, an increase in exotic plants, accelerated eutrophication and the effects of on-going grazing.

- As wetlands become more isolated and reduced in size, they become increasingly vulnerable to outside influences through increased edge effects. The reason for this is that edge effects, such as those from grazing, tend to extend further into smaller wetlands than larger ones, as they have a relatively small area.

- Numerous wetlands that were observed in earlier photos or on maps, were much reduced in recent photos or had clearly deteriorated over time. Some examples are shown below in Figure 4 to illustrate this trend.

- Even in more natural wetlands, degradation trends are still likely to be occurring, particularly through the influence of grazing. These changes are most evident around the edges of a wetland or within drier parts of a wetland, where grazing impacts are greater and exotic plants are more prominent. Alpine wetlands are perhaps least likely to be degrading where they are not subjected to grazing, though hare browsing may still be significant.

4.4 Wetland threats

Many wetland threats were observed from aerial photos, and others such as burning, grazing, oversowing and topdressing are known to be widespread. These threats are expected to be impacting on many wetlands or are likely to do so in the future. The main threats are discussed below, with less common ones being listed in the database key in Appendix 4.

Drainage

Drainage alters natural water levels, the most extreme effect being complete destruction of a wetland. Usually, the effect will be more subtle, and over time it is likely to occur in combination with other threats such as stopbanking and grazing. Typically its effect will be a reduced water table adjacent to a drain, and an associated reduction in wetland vegetation there. Exotic plants are likely to become increasingly prevalent as the wetland dries out, and soil shrinkage is also likely. Grazing pressure is likely to increase as the wetland dries out. The release of sediments and organic compounds is likely to have downstream water quality effects. Wetlands can also be drained through the diversion of inflows.

Stopbanking

Stopbanks are usually found adjacent to rivers, river mouths or along low-lying parts of the coast. Their purpose is to prevent flooding, erosion and the natural meandering of watercourses. They frequently prevent the natural development of wetlands in these localities, thus reducing wetlands generally. Existing wetlands may also deteriorate where stopbanks disrupt water flows. Other river control works can have similar effects.

Grazing

Grazing is probably the most widespread and pervasive threat to wetlands in the region. Few wetlands are protected from grazing animals through formal protection or fencing, except on conservation land. Even there, grazing animals can still be present as areas may not be fenced or fences may not effectively exclude the animals.

Figure 5 is a generalised model that illustrates degradation in a red tussock wetland, partly caused by grazing (though such changes usually result from a combination of factors – refer to 4.5). Similar structural changes also occur in other wetland types in response to disturbances such as grazing and burning.

The effects of grazing include reduced vegetation stature and density, and the spread of exotic plants through seeds in dung, on hooves and opening of the indigenous vegetation to give exotic plants a competitive advantage. Other effects are more subtle and insidious because they cannot be seen. Desiccation is likely to increase as vegetation density and stature decreases, due to an increase in air circulation and exposure to sunlight. Pugging and compaction of the soil surface, and the breaking up

of turf and cushion vegetation exacerbates the desiccation process. Grazing beyond the immediate wetland and around feeder streams and flushes potentially reduces the water supply to the wetland through similar mechanisms.

Another effect is an increase in nutrients from dung and urine, which favours plants and animals tolerant of higher nutrient levels. Where open water or watercourses are present, the effect of increased nutrients can be obvious through algal growth. Increased nutrient levels are associated with increased sedimentation, resulting from trampling and reduced sediment trapping as the vegetation becomes less dense.

Oversowing and topdressing exacerbates these changes by increasing introduced plants, which attract grazing animals, thereby accelerating the changes. The increase in nutrients through fertiliser can be through direct application to the wetland, or indirectly through streams and run-off.

As a wetland dries out, structural changes are likely to occur in the vegetation, the general tendency being the development of earlier successional stages in the vegetation and a reduction in height.

While the above effects are common to sheep and cattle, there are differences reflecting their behaviour and different body weights. Cattle have a particular liking for wetlands and will often congregate in the wettest parts. By virtue of their weight, they cause severe soil pugging and damage to stream banks, and thus increased sedimentation. They produce substantial volumes of waste and a corresponding increase in nutrients. Despite their smaller size, sheep cause considerable damage to wetlands. With rotational grazing, their numbers can be high and in these circumstances, their impacts on wetlands can be severe, particularly in dry periods. Sheep can break the surface of fragile turf and cushion vegetation, directly exposing water to evaporation. Even when stocking rates are not high, sheep often congregate in wetlands, directly depositing waste into them and causing soil compaction.

Burning

The burning of wetlands was more common in the past than it is now. It does however, still occur, particularly in red tussock wetlands or where flushes are burnt within a targeted tussockland. Fires can also be accidental. Burning has the effect of reducing vegetation stature and density, increasing the proportion of exotic plants (through the creation of more open habitats and the ingress of seeds), encouraging grazing and contributing to the drying out of a wetland. It can also cause an increase in nutrients through ash deposition. Burning of surrounding vegetation can contribute to the drying out of a wetland by reducing soil moisture levels over time. The contribution of burning to wetland degradation is partly illustrated by Figure 4.

Cultivation

Cultivation within a wetland has the obvious effect of destroying at least part of the wetland. When it occurs beyond wetland boundaries its effects are more indirect, but they may still be very damaging. The cultivation of inlet streams (eg, Lake Denny, Ashburton Lakes) is likely to result in an influx of sediments and nutrients, leading to accelerated eutrophication, especially if the water body is small or shallow. Cultivation of adjacent land or land more distant in the catchment can have a similar effect depending on the topography, drainage pattern, vegetation type and the occurrence of significant rainfall events afterwards.

Farming

Farming can be broadly categorised into intensive and pastoral farming. The former typically involves regular application of fertiliser and lime, cultivation, intensive grazing and sometimes cropping and irrigation. Pastoral farming involves extensive sheep-grazing with more intensive grazing in localised areas where soil types and topography are suitable. Oversowing and topdressing is undertaken on favourable sites, but over large areas it is not affordable or there are soil and climatic limitations, which work against this practice. With both types of farming, there is generally a combination of threats that impact on wetlands and which often have a cumulative effect.

Exotic plants

In the context of retaining the natural character and functioning of wetlands, many exotic plants such as grasses and herbs are considered to be weeds as they contribute

to the degradation of wetlands. This occurs primarily through the displacement of native plants and their indirect effect of attracting grazing animals. Examples of troublesome weeds affecting wetlands include broom, gorse, and willows. The latter are a major problem in wetlands because of their ability to establish and spread from vegetative portions that break off from parent plants. They frequently block waterways, thereby altering water levels, and they can also alter faunal habitat by colonising the edges of water bodies and watercourses. Some aquatic weeds are a problem as they can replace indigenous plants and reduce light penetration (Buxton 1991).

Forestry

Commercial forestry, woodlots and shelterbelts can have major impacts on wetlands. Microclimatic changes can result from a reduction in sunlight and the alteration of wind circulation patterns, which in turn can alter plant distribution. The most severe effect (other than direct replacement of a wetland) can be a reduction in the water table. This effect has been identified in New Zealand and overseas, and can cause reduced stream flows and discrete water bodies to dry up more frequently. Site preparation, roading and harvesting can also impact on wetlands through effects such as increased sedimentation and the ingress of exotic plants.

A related problem with forestry is the potential spread of wilding trees, though these can also spread from shelter belts and amenity plantings. They are primarily a problem in the high country where strong winds spread the seeds, and grazing levels are often insufficient to control the seedlings. This is a concern in retired lands now administered by DoC. Wilding trees tend not to be such a problem in lowland areas, as more intensive grazing prevents their establishment. Wilding trees can have similar effects to planted forests, especially where they have a high density.

Effluent disposal

Wetlands have often been used in the past to dispose of effluent, and this practice still occurs. This may include chemical waste, animal waste, warm water from industrial use, and human sewage. Discharges can be from point or non-point sources. There may be different levels of treatment or none at all. Effects can range from the killing of fish and other fauna, to altering nutrients and water temperature, which in turn can alter the distribution and dominance of plants and animals.

Appendix 2 Pukaki - Ben Ohau District
PNAs in Protected Areas Programme"
Cooper PJ et al (Jan 1986)

PUKAKI PNA 3 - GLADSTONE FLATS

PNA Report Description

Grid Reference : S 100 710810

- red tussock grassland — on Piedmont slope
- bog pine scrub — on Piedmont slope
- fescue tussock grassland — on Piedmont slope

One of the best C. rubra grasslands in the entire Mackenzie Basin. The majority of the tussocks are pure C. rubra with little or no hybridism. There are few weeds. Chionochloa rubra and Oreobolis in hollows grade into fescue tussock grassland on better drained surfaces. This area contains an excellent community of Dacridyum bidwillii, one of the two large stands remaining in the region. This PNA forms part of an altitudinal sequence with the Upper Gladstone Valley PNA in the Ben Ohau district (PNA 3).

Area: 530 hectares

Altitude: 610-825 metres

Additional Information

Vegetation: — Excellent red tussock land with a dense canopy. Chi Rub 5, Ore Pec 3, Sch Pau 2, Jun Eff 1, Mon Fon, Pol Jun, Hie Pra, Agr Ten, Cel Gra, Gon Agg, Luz Ruf, Ani Fle, Vio Cun, Poa Col, Ele Acu, Spa Cri.

— Bog pine on dry margins to red tussock with some bare ground. Dac Bid 5, Cop Pse 1, Heb Sub, Chi Rig, Car Gra, Cop Pro, Ole Cas, Fas Nov, Hym Alp, Luz Ruf, Pim Pse, Hie Pil, Rao Sub.

This is a relatively dry red tussock community which grades into fescue tussock towards the edge of Dry Stream.

Fauna: No specific information.

Physical: This PNA is a district block or island of material of the Balmoral Formation. The soils under and about the bog pine are Bendhu soils (included in the Ohau and Dalgety sets but more closely akin to the Pukaki set). Bendhu soils are well drained and are derived from loess and fluvioglacial alluvium. Topsoils and subsoils are thin and have very weak structure. Low in nutrients and very prone to wind erosion.

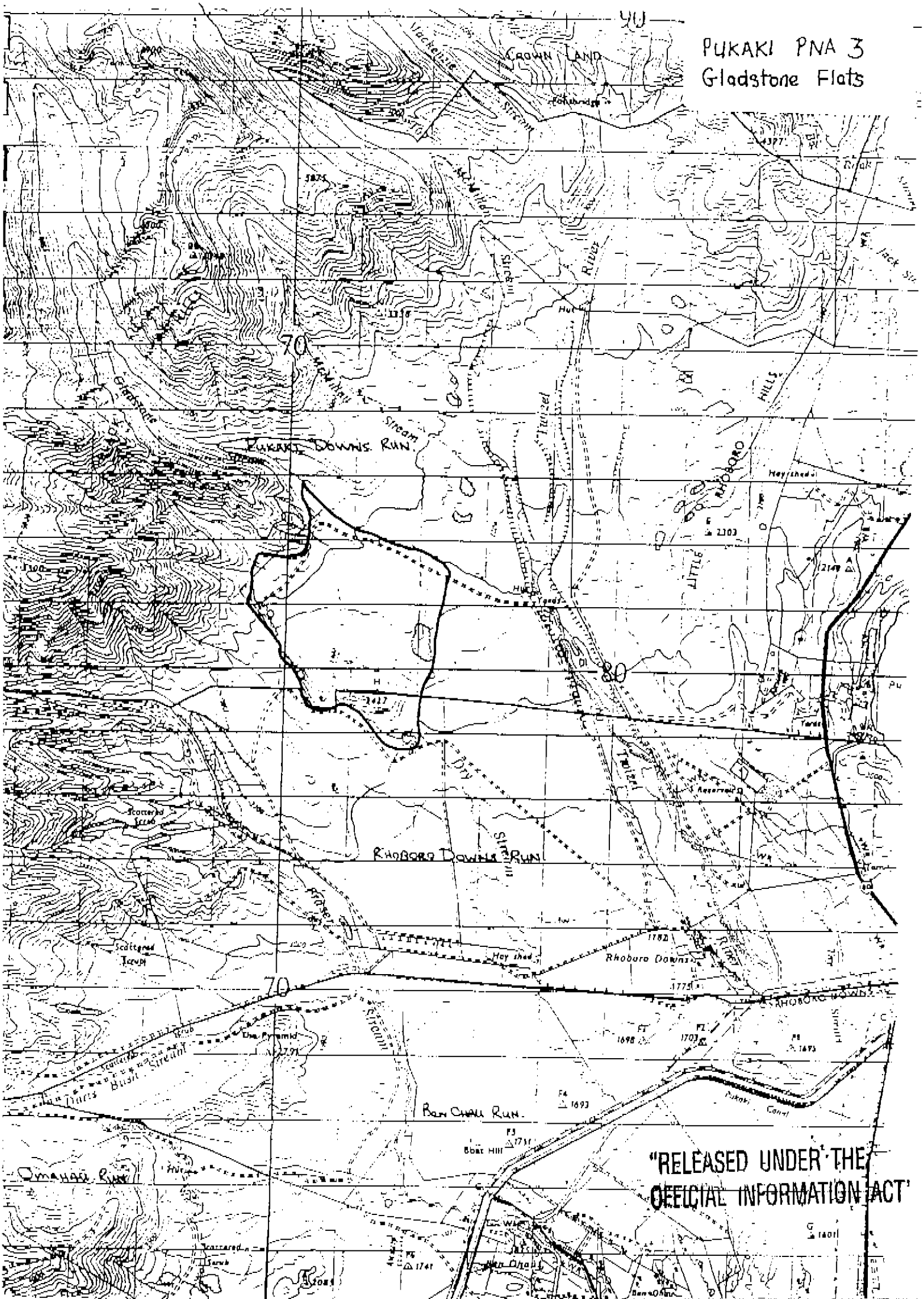
The red tussock is on Cox soil (which are included with the Dobson set). They are imperfectly drained shallow to deep silt loam to fine sandy loam soils, but with drainage and management have good potential for pastoral development.

The more steeply sloping areas on this PNA have Cass soils. These tend to be well drained mainly shallow silt loam soils with bright yellowish brown to strong brown subsoils. Low nutrient status and medium water holding capacity. Potential for semi-intensive pastoral development.

Rainfall: 800-900 mm

Tenure: Pastoral Lease.

For continuum with PNA Ben Ohau 3, this PNA could be extended further to the north east but it is suggested that the extent of the rest of PNA not be reduced. This is the only area with bog pine and extensive dry red tussock in the Pukaki district.


PUKAKI PNA 3
Gladstone Flats
Crown Land
Pukaki Downs Run
Rhoboro Downs Run
Ben Ohau Run
Rhoboro Downs
Rhoboro Hills
Little Rhoboro Hills
Pukaki Canal
Boar Hill
The Pyramid
Hay shed
Scattered Scrub
"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

PUKAKI PNA 4 - LOWER FRASER STREAM

PNA Report Description

Grid Reference: S 100 700770

- "Site of Special Wildlife Interest, Outstanding Value"
- matagouri/coprosma scrub on Alluvial Terrace

This area is highly ranked by the Wildlife Service as a wader breeding and feeding site. This is a typical example of a streambed scrubland.

Area: 40 hectares

Altitude: 610-670 metres

Reference: Wildlife Service (1978)

Additional Information

Vegetation: Stream channel shrubland vegetation. Dis Tou 4, Ros Rub 3, Chi Rig 3, Cop Pro 2, Not Cli 1, Hoh Lya, Aci Aur, Car Gra, Cor Plu, Ach Mil, His Pra, Cya Fra, Agr Ten, Gau Ant, Cya Col, Pte Aqu, Wah Alb, Tri Pra, Fes Nov, Pra Col, Mue Axi, Hyd Nov, Agr Sca, Hol Lan, Hel Bel, Heb Sal, Aca Spp, Dac Glo, Cel Hol, Epi Mel, Aca Cae, Rum Cri, Bul Ang, Pru Vul, Pol Ves, Cop Rug, His Inc, Tri You, Dey Ave.

Slight modification and moderate weed impact.

Fauna: This PNA was proposed on the basis of Wildlife Service's ranking of "outstanding". However, it appears to be ranked now as only moderate value for banded dotterel habitat.

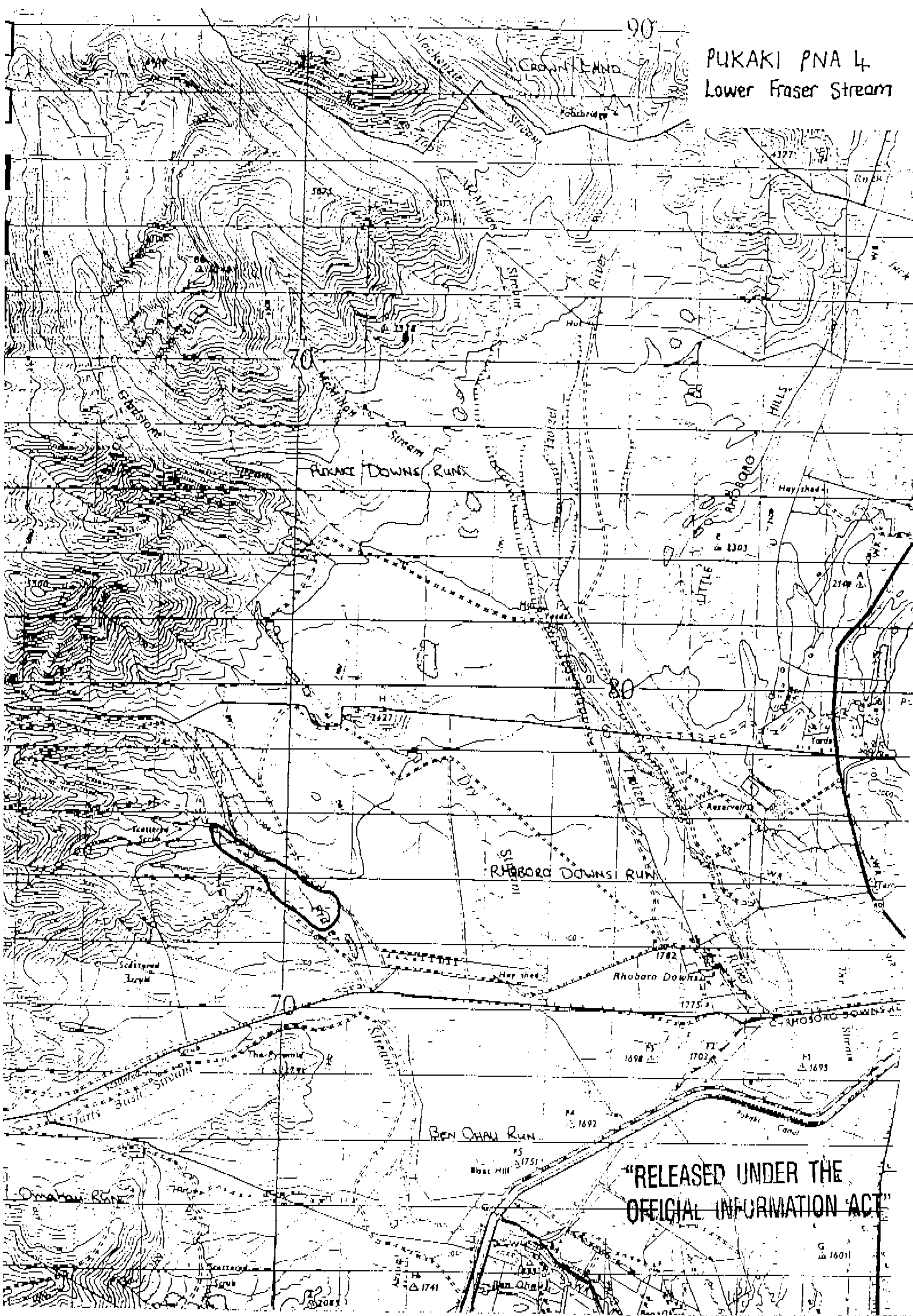
Physical: As with most stream channels in the basin, the Fraser Stream in PNA 4 is associated with Bendrose soils (included in the Tasman set). They are well drained mainly shallow and stony soils from recent alluviuum. They occur on younger flood plains and do not have a B horizon. Major limitations for any development. Fraser Stream is on Mt John formation deposits. Some streambank erosion.

Rainfall: 800 mm

Tenure: Pastoral Lease.

The boundaries of this PNA are relatively arbitrary, that is they indicate a general area rather than being strict boundary proposals.

Recreation: The Fraser Stream has been virtually fished out because of its close proximity to Twizel township; although it is still a very important area for trout spawning, particularly since the demise of the Ohau River. Popular Stream also for waterfowl shooting. Late summer water flows get very low.



PUKAKI PNA 5 - DRY STREAM SWAMP

PNA Report Description

Grid Reference: S 100 734765

- "Site of Special Wildlife Interest, Outstanding Value"
- matagouri scrub

on Valley Terrace Flood plain

This area is highly ranked by Wildlife Service as a wader breeding and feeding site. The vegetation consists of common wetland species and river course matagouri scrub.

Area: 125 hectares

Altitude: 535-565 metres

Reference: Wildlife Service (1978)

Additional Information

Vegetation: River course Discaria community with moderate weed impact and oversown. Typical of stream channels on these piedmont slopes adjacent to the Ben Ohau Range.

Dis Tou 4, Agr Ten 3, Ant Odo 2, Ver Tha 1, Cor Car, Hie Pil, Mue Axi, Hie Pra, Cil Vul, Pru Vul, Cel Hol, Car Deb, Tri Rep, Cor Plu, Hol Lan, Ros Rub, Hyp Rad, Rao Ten, Cir Arv, Aph Arv.

Fauna: This PNA was proposed on the basis of a Wildlife Service ranking of "Site of Special Wildlife Interest, Outstanding Value". Black stilt breeding habitat.

The extent of the actual wetland is considerably smaller than the PNA boundaries suggest. Another adjacent, very similar wetland has not been included and this is of great concern to Wildlife Service. These springfed swamps support two pairs of black stilts, ten pairs of pied stilts, oyster catchers etc. There is an obvious need to protect the upstream springs as well as the swamps themselves.

Physical: The soils in this area are mapped as Buscot (which are included in the Dobson set). They are imperfectly drained soils from fine textured alluviuum. With high nutrient status and high water holding capacity they have high potential for agricultural development.

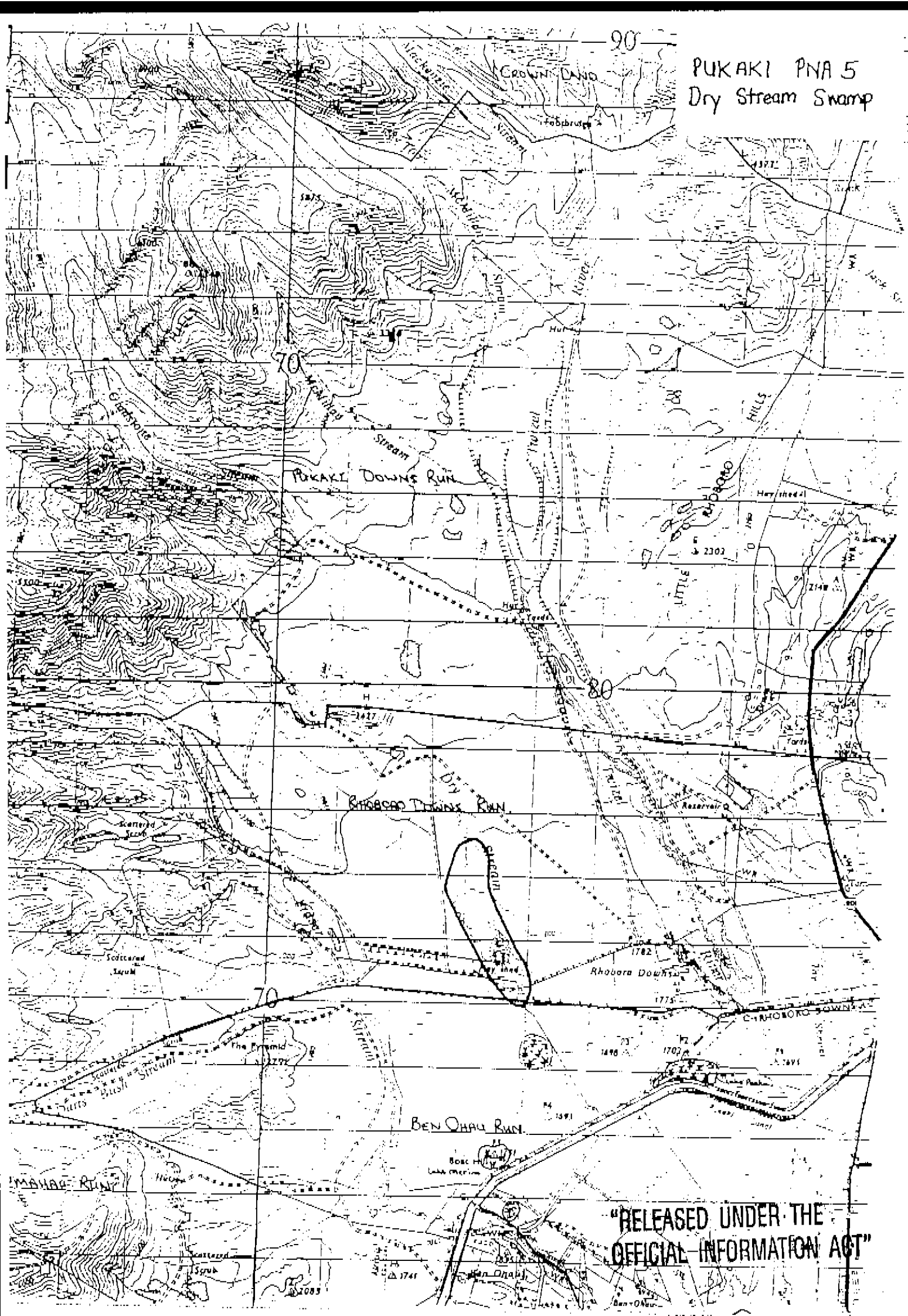
Rainfall: 800 mm

Tenure: Pastoral Lease.

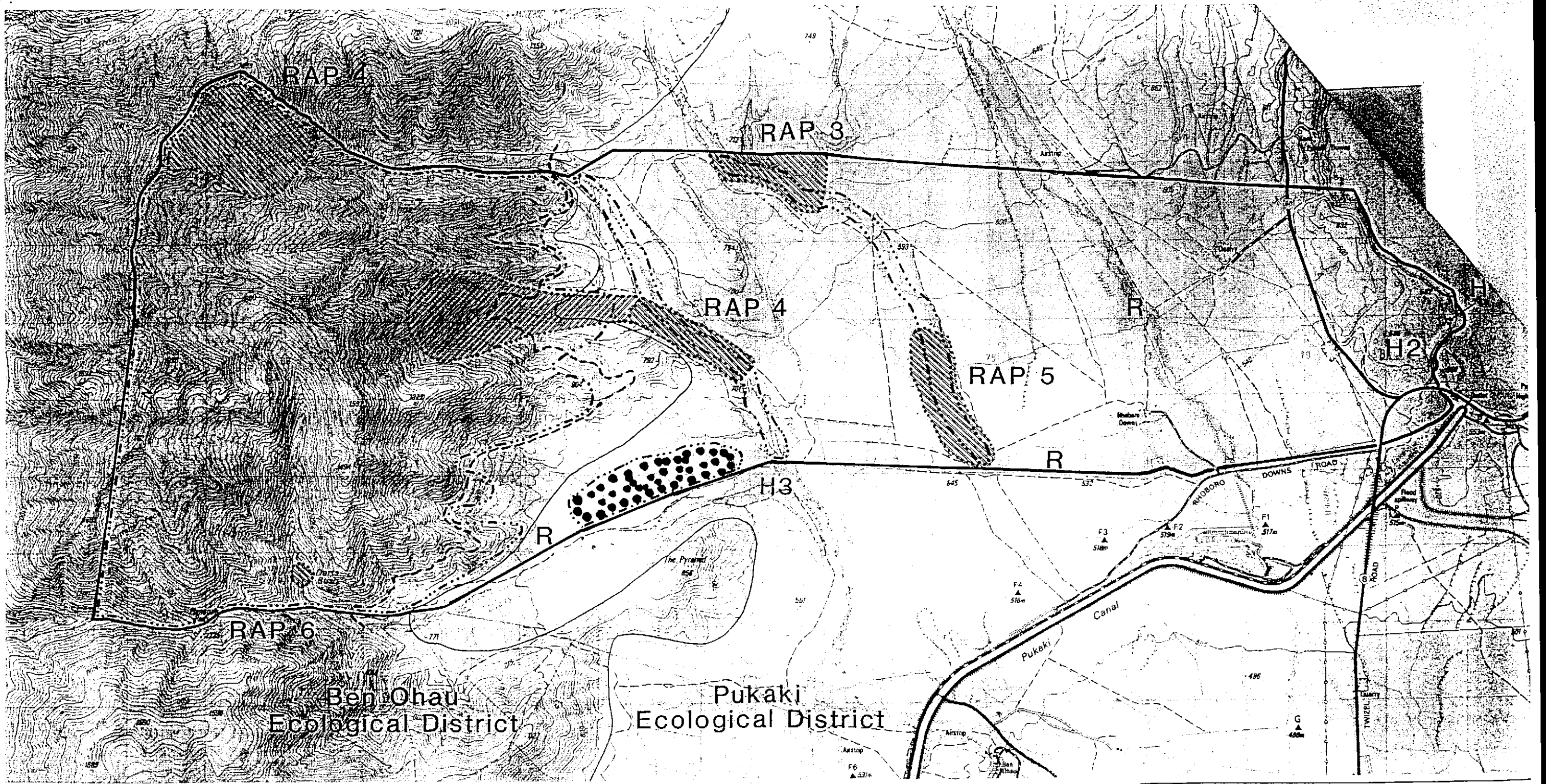
The boundaries of this PNA are relatively arbitrary, that is they indicate a general area rather than being strict boundary proposals.

In this area, of note to New Zealand Wildlife Service, is Lake Poaka created by the Pukaki hydro-canal damming the Twizel River. There are about four springs providing good quality water to the lake. It is becoming important for wildlife, and is a breeding site for black stilts. GR NZMS 1 S 100 775739. Lake Poaka is ranked as "outstanding" by Wildlife Service.

Another important area is at GR S 100 736727 "Boat Hill" the site of a MWD shingle borrow pit which removed the hill and created Lake Merino and upstream wetland. This lake is about 3 hectares in area and along with a similar smaller lake nearby on the south east side of the canal are a new important habitat for black stilts and common wetland bird species. Also ranked as outstanding by Wildlife Service.


PUKAKI PNA 5
Dry Stream Swamp
CROWN LAND
PUKAKI DOWNS RUN
RHOBORO DOWNS RUN
BEN OHAU RUN
MAHAR RUN
RHOBORO DOWNS
90
70
80
70
"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

Map2- "Canterbury Region Wetlands Inventory Database"
- Discrete wetlands
- Wetlands - too numerous to map



Key

--- Landscape value	H Historical
-·-·- Ecological value	—— Legal boundary
R Recreation value	—— Ecological district boundary
R.A.P.	Proposed R.A.P.

Darts Bush
Stream flats wetland
which also deserve
protection

map 3

Values

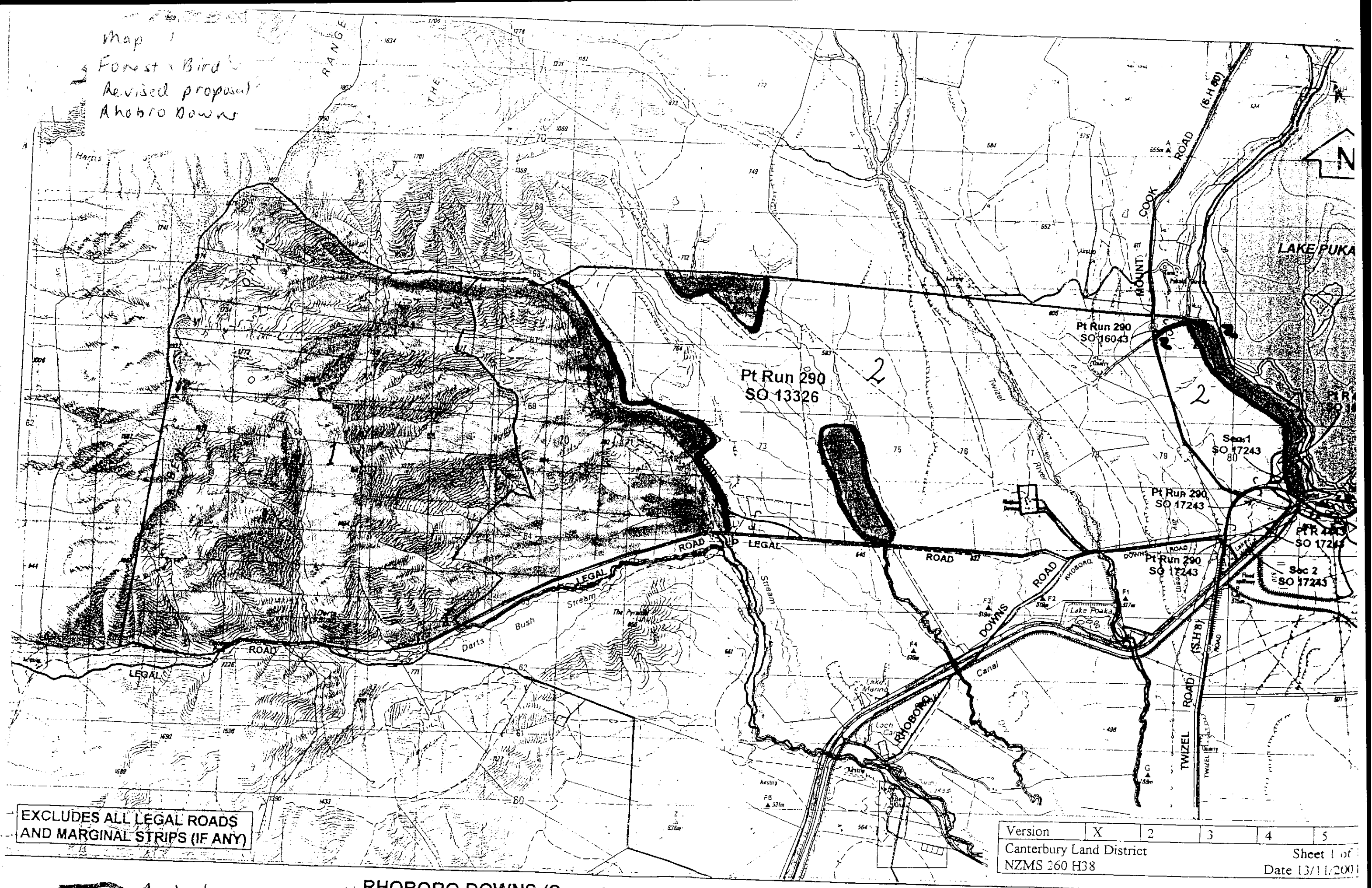
Rhoboro Downs

H38

1 0 1 2km

from DoC Resources Report

Map 1
Forest & Bird
Revised proposal
Rhoboro Downs



Version	X	2	3	4	5
Canterbury Land District					Sheet 1 of
NZMS 260 H38					Date 13/11/2001

Protect as conservation land plus lay off marginal strips on Fraser stream, Dry ~~Bush~~ Stream + Twizel River new easement

RHOBORO DOWNS (Secs 1 & 2 SO 17243, Pt Run 290, Pt R 4677 & 4443)

0 500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 8000m

Scale 1:50 000

Dated 21/12/01

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