

Crown Pastoral Land Tenure Review

Lease name : BOG ROY

Lease number : PO 310

Due diligence report (including status report) - Pt 2

This report and attachments results from a pre tenure review assessment of the pastoral lease for the purpose of confirming land available for tenure review and any issues, rights or obligations attaching to it. The information is gathered from files and other sources available to the LINZ contractor.

Part of the information relates to research on the status of the land, resulting in a status report that is signed off by a LINZ approving officer. The remainder of the information is not analysed for relevancy or possible action until required, and LINZ does not guarantee its accuracy or completeness as presented.

The report attached is released under the Official Information Act 1982.

January 05

"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

9. NOTWITHSTANDING the provisions of paragraph (a) of Clause 6 hereof any debit balance which may exist in the property account as at the 30th day of June 1991 shall be payable by the Landholder to the Council in two equal instalments on the 30th day of June 1992 and the 30th day of June 1993 and the payments thereof by the Landholder shall be credited to the property account.
10. NOTWITHSTANDING the provisions of paragraph (a) of Clause 6 hereof the Council may upon application made by the Landholder agree to defer payment by the Landholder in respect of any debit balance existing in the property account on the grounds that the making of any such payment would cause undue hardship to the Landholder and any such agreement by the Council may be given on such conditions as to alternative payment terms and other matters as the Council may deem appropriate.
11. DURING the term of this agreement the Landholder shall not without the prior written consent of the Council cut down remove mutilate damage or destroy any trees planted as part of the works referred to in the Plan and the Landholder shall use all reasonable means to preserve and protect such trees so planted **PROVIDED THAT** the trimming of lateral branches may be carried out without consent.
12. THE Landholder shall at all times during the term hereof keep and maintain the works referred to in the Plan at the Landholder's own cost and expense unless the Council and the Landholder agree in writing that it is unreasonable to do so.
13. THE Council by its members employees agents servants and contractors and their respective assistants may with the prior permission of the Landholder (such permission not to be unreasonably withheld) enter onto the land for the purpose of inspecting the land or any of the works or measures referred to in the Plan or to monitor pest populations or the condition of the land and in connection with such monitoring to take all samples of the soil and vegetation and pests that the Council may require and such persons may bring with them onto the land all vehicles machinery implements and things as the Council may deem necessary for such purposes **AND IT IS HEREBY FURTHER AGREED THAT** the foregoing provisions shall also apply to officers of the Ministry of Agriculture and Fisheries on official duties for the purposes of inspection and monitoring as aforesaid. For the purpose of facilitating if necessary the power of entry given to officers of the Ministry of Agriculture and Fisheries those officers shall be deemed to be agents of the Council.
14. THE Landholder shall when required by the Council supply to the Council all information and data necessary to assist the Council in its monitoring of pest

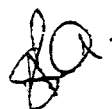
"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

populations and the condition of the land to enable the Council to evaluate the effectiveness of the Plan.

15. IF at any time during the term hereof the Landholder shall fail to carry out faithfully the provisions of the Plan or to observe perform and fulfil the provisions of this agreement and such failure shall continue for a period of fourteen (14) days after written notice has been posted by the Council to the Landholder requiring the Landholder to remedy any such failure then the Landholder shall upon demand made by the Council pay to the Council in full all grants provided by the Council in respect of the works carried out under this agreement or such lesser amount as the Council may determine having regard to the nature and effect of the breach together with any amount debited to the property account and which at the time of such demand has not have been paid by the Landholder to the Council. Should the Landholder be dissatisfied with either the Council's determination that there has been a breach of this agreement by the Landholder or the amount demanded by the Council then the Landholder may within fourteen (14) days of receiving from the Council notice of the breach or demand for payment by written notice to the Council refer the matter for determination by arbitration. Should the Landholder fail to make such payment the Council may take such action to recover any grants made as it shall consider necessary.

16. THE Plan and this agreement may be modified only by agreement in writing between the parties.

17. THE Landholder acknowledges that the grants provided for in the Plan in each year during the period referred to in Clause 3 hereof are to be funded in part by general rates to be levied by the Council on all rateable property in the Canterbury Region and as to the remainder by contributions to be paid to the Council by the Crown pursuant to an agreement dated the 12th day of June 1991 out of moneys appropriated by Parliament for the purpose and **IT IS HEREBY AGREED AND DECLARED** that if in any year during the period referred to in Clause 3 hereof the Crown should fail to make to the Council full payment of the contribution by the Crown in respect of such grants and should the Council not be willing to make up the deficiency in the contribution of the Crown then the Council shall forthwith give to the Landholder notice thereof in writing and as soon as practicable thereafter the Council and the Landholder shall review the Plan and the funding of the works and measures therein contained. In the absence of agreement between the Council and the Landholder as to any modification of the Plan and the funding of the uncompleted works and measures the respective obligations of the parties hereunder to carry out the uncompleted works and measures described in the Plan and to provide grants in respect of such works and measures shall cease. Any



"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

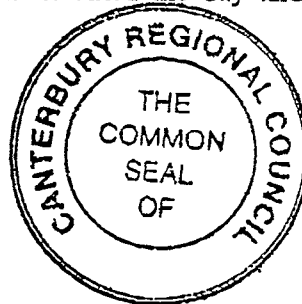
such cessation shall not be construed as modifying any other provision of this agreement.

18. ALL disputes and differences between the parties shall be submitted to the arbitration of a single arbitrator if one can be agreed upon or to two arbitrators (one appointed by each party) and their umpire (appointed by the arbitrators prior to their arbitration) such arbitration to be carried out in accordance with the provisions of the Arbitration Act 1908 or any then statutory provisions relating to arbitration. This clause shall not relate to the funding of the works or funding of the measures provided for in the Plan.

19. THE Landholder covenants with the Council that this agreement binds the Landholder and successors in title to the land. The Landholder covenants with the Council to perform and observe the terms and conditions upon which the Council makes grants in terms of this agreement and agrees that the Council may present this agreement for registration against the relevant land transfer documents relating to the land in the Land Registry to which the documents relate.

IN WITNESS WHEREOF these presents have been executed the day and year first hereinbefore written.

THE COMMON SEAL of THE
CANTERBURY REGIONAL COUNCIL
was hereto affixed in the presence of:



GROUP MANAGER, CORPORATE POLICY

SIGNED by the said KENNETH JOHN
ANDERSON in the presence of:

Bludnow.

(name)

Student (occupation)

of Camc

SIGNED by the said SUSAN ROWLEY
ANDERSON in the presence of:

S. L. Anderson

_____ (name)

Student (occupation)

of Da

"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

CANTERBURY REGIONAL COUNCIL
RABBIT & LAND MANAGEMENT PROGRAMME

RABBIT & LAND MANAGEMENT PROPERTY PLAN

BOG ROY
OMARAMA



"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

CANTERBURY REGIONAL COUNCIL
RABBIT AND LAND MANAGEMENT PROPERTY PLAN

BOG ROY STATION

Bog Roy
K & S Anderson
Private Bag
KUROW

CONTENTS

SUMMARY

1. INTRODUCTION
2. THE PROPERTY PLAN - BOG ROY
3. LOCATION/CLIMATE
4. LEGAL DESCRIPTION
5. MANAGEMENT
6. SUMMARY OF PHYSICAL FEATURES
7. RABBIT & LAND MANAGEMENT PROGRAMME
 - 7.1 Programme Objectives
 - 7.2 Land Management
8. LAND USE CONDITIONS AND MONITORING
9. FINANCIAL SUMMARY OF PROGRAMME
10. LAND IMPROVEMENT AGREEMENT
11. ACKNOWLEDGMENTS

APPENDICES

Appendix:

- 1 Cost Spreadsheets
- 2 Block Worksheet Assessments
- 3 Pest Control Programme
- 4 Factors Influencing Land Management Decisions
- 5 Land Management Decisions
- 6 Current Grazing
- 7 Future Cost Of Rabbit Control
- 8 Costings and Specifications
- 9 Land Use Capability, Depletion and Erosion
- 10 Assessed Grazing Capacity Back Block
- 11 Maps -
 - Blocks & Rabbit Control Units
 - Rabbit Control Programme
 - Land Management Programme
 - Land Condition
 - Monitoring

**CANTERBURY REGIONAL COUNCIL
RABBIT AND LAND MANAGEMENT PROPERTY PLAN**

PROPERTY NAME: Bog Roy
ADDRESS: K & S Anderson
Private Bag
Kurow

SUMMARY

This Rabbit and Land Management Programme for Bog Roy involves a five year programme incorporating Pest Control and Land Management work to achieve specifically agreed objectives.

The total estimated cost is \$161,924 (excluding farmer's labour on fencing) with the Ministry of Agriculture and Fisheries (MAF) and the Canterbury Regional Council (CRC) currently contributing a maximum of \$94,345 of Taxpayer/Ratepayer input and the farmer contributing \$40,235 through contributions and rates and \$8,990 directly in labour for fencing.

Note another \$27,345 will need to be contributed by the farmer to meet the overall contribution to this programme.

1. INTRODUCTION

The objective of the Rabbit and Land Management Programme is to improve the long term sustainability of the land resources in semi-arid areas where they are threatened by rabbits.


This will be achieved by the implementation of a rabbit and land management property plan. The property plan will be a cooperative plan developed between the landholder and the Canterbury Regional Council.

The overall aim of the plan is to:

- Achieve the long term protection of the land resource through wise land use and management.
- Coordinate rabbit control with appropriate land management.
- Prevent the development of bait or toxic shy rabbit populations.
- Achieve a reduction in the long term costs of rabbit control.

2. THE PROPERTY PLAN - BOG ROY

2.1 The agreed objectives of the plan on Bog Roy are:

- 2.1.1 Reducing the frequency of poisoning so as to prevent bait and toxin shy rabbit populations developing. The poison interval on most rabbit prone country has generally been at a 2-4 year cycle, including patch poisons.
 - 2.1.2 Reduce the long term cost of rabbit control.
 - 2.1.3 Improve the vegetative cover on the depleted rabbit prone land.
- 

- 2.1.4 To manage the land in a manner that minimises hieracium infestation and where possible reduces its incidence.
- 2.2 Previous Soil and Water Conservation works were carried out on this property with the Waitaki Catchment Commission. Works completed consisted of:
- | | |
|---------|--|
| 1958-61 | Conservation fencing and tree planting |
| 1980 | 4.98 km Erosion Control fencing |

A SWCP was drawn up for the property in the late 1970's involving Erosion Control Fencing and Windbreak tree planting. A Land Improvement Agreement was signed by Mr Anderson but not registered on the property title.

3. LOCATION/CLIMATE

Bog Roy homestead is situated on SH 83, 8 km west of Otematara. The property extends from the southern shore of the Ahuriri Arm of Lake Benmore to SH 83 and then across SH 83 along the true right bank of the Otamatapaio River, taking in the river flats for approximately 7 km upstream. Access is good for the whole property with the exception of the Back Block (bounding Lake Benmore).

3.1 RAINFALL

- Bog Roy is situated in a low rainfall area within the middle reaches of the Waitaki Valley.
- annual average rainfall is approximately 450 mm (recent averages lower than this).
- even distribution but wide annual variation.
- only slight changes in rainfall over property (perhaps slightly higher rainfall at top of Otamatapaio block).

3.2 TEMPERATURES

- extreme ranges summer - winter.
- no major altitude range on property means temperatures similar over property (altitude range 360-895 m).
- frost common and severe in winter, limiting growth.

3.3 SNOW

- 1-2 snowfalls per year but generally low stock risk.

3.4 WIND

- prevailing westerly - from north to south.
- north westerlies are hot and desiccating and can place vegetation exposed to these winds under severe moisture stress.
- south westerlies are mostly cold and associated with rain or snow.

"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

5.2 GENERAL MANAGEMENT

Bog Roy has been run by the Anderson family since 1919. Mr Ken Anderson, the current lessee runs this property in association with his family. His son, David, works on Bog Roy and also runs a lease property in the Hakataramea Valley. This property is run completely independent of Bog Roy.

Development through cultivation to lucerne was begun by Mr Anderson's father in the 1950's. This development has continued with up to 100 ha of lucerne, approximately 100 ha of flood irrigation and cultivation into improved pastures and subdivision fencing.

The original lucerne development was lost with the development of Lake Benmore in the 1960's (630 ha of land inundated).

Stock grazing has no set pattern. The ewes are set stocked at lambing over the entire property (excluding Back Block) with 1000 older ewes lambed on paddocks until weaning. After lamb marking the remaining ewes (1800) are mobbed up and rotated around the blocks (duration depending upon feed available). Stock movements are flexible and vary according to the season.

Of the hoggets wintered, at least half are culled at shearing and sold in the spring. The remaining hoggets are run on Back Block mid November, December, January to the beginning of February.

Annual draft ewes are sold as soon as possible after weaning either privately or at local sales. Lambs not kept are sold prime or at sales.

The calves are weaned and sold at local sales.

Six lucerne paddocks are cut for hay (1-2 cuts depending upon season) producing up to 9000 conventional bale equivalents. In recent seasons extra supplements have been purchased in the form of 30-50 tonne of sheep nuts annually.

5.3 Stock Limitations as per Lease Conditions

The current Pastoral Lease stock limitation at set in October 1984 is for: not more than 4000 sheep including 2900 breeding ewes and 110 cattle including 80 breeding cows.

6. SUMMARY OF BLOCK WORKSHEETS (worksheets attached Appendices 2-5)

The land resources of this property can be divided into the following units:

6.1 Irrigated and Developed Flats and Fans 191 ha (6% of the property)

Larbreck, Sawdon, Dalgety soils on flat to rolling lands and Otematata and Becks soils on rolling to hilly lands.

Well subdivided with areas developed through:

contour irrigation	100 ha
dryland lucerne	100 ha

Irrigated blocks are in improved pastures (ryegrass, white clover), well covered (less than 5% bare ground) and receive fertiliser annually. Stock graze these pastures at 10-15 su/ha/annum.

Lucerne blocks have a higher bare ground component (10-20%) and receive fertiliser every 3 years. These blocks are used for stock grazing and hay production at 5-7 su/ha/annum.

"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

3

4. LEGAL DESCRIPTION / R & LM AREA

CT 2D/450 Pastoral Lease
 Sections 6, 7, 8 Block III Gala SD and
 Part Run 744, Blocks V & VI Benmore SD
 & Blocks II III IV VI & VII Gala SD
 Area 2860.2309 ha

Also block known as Reserve 80 ha, is run as part of the property. This land is administered by DOC.

Total area, including Reserve 2940 ha

Area funded for R & LM 2012 ha

5. MANAGEMENT**5.1 STOCK NUMBERS****5.1.1 Stock Numbers as at June 1992**

Stock	No	su conversion	su
MA Breeding Ewes (Corriedale & Merino)	2800	1.0	2800
Ewe Hoggets	1100	0.7	770
Wethers	150	0.7	105
Rams	70	0.7	49
	4120		3724
Cows	40	6	240
Total stock units			<u>3964</u>
			or 1.35 su/ha

Note: Supplementary feed purchased (section 5.2)

Average Lambing - Corriedales 110-120%
 (ewes to ram - lamb weaned) Merino 95-105%
 Wool weights - average 4.7 kg/hd

5.1.2 Historical

Prior to 1980 2500 ewes were run and all surplus lambs fattened. Cows were increased to 70-100. Ewe numbers increased over the 1980's to 3000 (along with subdivision and cultivation to lucerne) and cattle numbers were dropped back.

1979 (as WCC SWCP)	2550 ewes	Total su	3050
	50 wethers		
	700 ms hgts	Lambing	100%
	65 rams	Calving	90%
	40 cows	Wool weights	3.9 kg/hd
	1 bull		
1991 (as L Reid report)	2700 ewes	Total su	3710
	1000 hoggets		
	100 others		
	40 cows		

This 191 ha, which represents 6% of the property, could account for approximately 45% of the stock grazing.

These areas are LUC Class III, IV and VI land.

6.2 Undeveloped, dryland flats and fans 866 ha (30% of the property)

Larbrück, Sawdon, Cox and Otamatata soils on land, predominantly terraces of the Otamatapaio River, flat to rolling.

Blocks are covered with a mix of silver tussock, grasses, woody weeds and hieracium. Briar is thick in patches especially along the Otamatapaio River. Hieracium is the dominant ground cover on Reserve (>60%). Bare ground is low (5-10%).

These blocks have no fertiliser history and are used for sheep and cattle grazing.

Rabbits have built up to very high numbers on these blocks in the past but generally are considered to be slightly less rabbit prone than hill blocks. Woody weeds provide ideal habitat for rabbits on these blocks.

These areas are LUC Class III, IV and VI lands.

6.3 Hill Country 1253 ha (43% of the property - approx $\frac{2}{3}$ sunny, $\frac{1}{3}$ shady)

Otamatata and Conroy soils on strongly rolling to hill land and Alexandra, Waitaki and Omarama soils on steeplands.

Sunnier faces on these blocks consist of low producing annual vegetation, native grasses and scattered briar. Hieracium is less than 5% ground cover and bare ground 20-30%.

Shady faces and easier slopes have greater percentage of silver tussock, blue tussock and grasses. Hieracium is found in patches at 5-10% ground cover (exceptions being Ridge and Top Knob 80% ground cover and Front Hill 30%) and bare ground around 5%.

These blocks have no fertiliser history (although some aerial seeding of Cocksfoot was carried out in the late 1960's) and are used mainly for sheep grazing.

These areas are LUC Class VI and VII lands.

6.4 Severely Depleted Hill Country 630 ha (21% of the property)

Predominantly Omarama and Waitaki soils on steep to very steep slopes. (Omarama soils on shady lands 38%, Waitaki on sunny 62% of block).

Sunny faces on these blocks consist of annual grasses and weeds (particularly Viper's bugloss) and scabweed. Hieracium is less than 5% but bare ground is high at around 60%. Wind and sheet erosion has occurred leaving these faces in a degraded state.

Shady faces have scattered silver tussock and stronger growing grasses and weeds. Hieracium is still less than 5% and bare ground varies considerably from 20-40%.

These blocks have no fertiliser history and are supposed to be used for grazing of sheep at no more than 0.28 su/ha/annum under the WCC agreement. At times extra stock have been run in contradiction of this agreement.

These areas are LUC Class VI and VII lands.

[Handwritten mark]

"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

- 6.5 By deduction of 6.1 and 6.4 the blocks described in section 6.2 - 6.3 would be carrying in the order of 0.95 su/ha/annum. This would be at the upper level of capacity in their current state of development.

7. RABBIT AND LAND MANAGEMENT PROGRAMME

7.1 PROGRAMME OBJECTIVES

A works programme involving rabbit control, land development and land management has been developed to attempt to meet the objectives as outlined in section 2.1.

Objective 7.1.1 Reducing the frequency of poisoning so as to prevent bait and toxin shy rabbit populations developing by:

- a) Initially using the appropriate primary control operations at the best technical level:

- primary control has been completed on this property:
 - Interim: 600 ha aerial 1080 carrot
710 ha aerial and ground 1080 oats
 - Year 1: 1220 ha aerial 1080 carrot

- b) Following up on successful primary control operations by using a mix of manpowering techniques which will reduce residual rabbit numbers and maintain populations at a low level.

371 man days and 7 helicopter hours have been allocated for follow up work within the five year programme. These days have been allocated to a variety of methods including night and day shooting, gassing, trapping and patch poisoning. It is important that this variety of methods continues to be used and that no single method predominates.

Man powering has been undertaken on this property for a number of years. This was continued following 1990 and 1991 poisons with good results. Continued persistence will be needed to maintain low rabbit population levels. Also proper technical expertise by the people carrying out these operations is essential. The CRC pest personnel are responsible for monitoring these operations.

- c) Subdividing the rabbit prone land into discrete compartments.

1. Primary rabbit control operations have involved poisoning in 2 discrete areas. One north of SH 83 and the other south. To aid stock movements within these units poisons have been split into early and late operations. Lack of poison boundaries have required these poison operations to be coordinated with neighbouring properties.

Where practicable boundary fences will be made rabbit proof through the addition of rabbit netting or through upgrading existing netting. This will allow rabbit populations to be confined within properties giving each property more security in the knowledge that their primary and follow up rabbit control operations are not being compromised through reinfestation from neighbours.

"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

This 191 ha, which represents 6% of the property, could account for approximately 45% of the stock grazing.

These areas are LUC Class III, IV and VI land.

6.2 Undeveloped, dryland flats and fans 866 ha (30% of the property)

Larbreck, Sawdon, Cox and Otamarata soils on land, predominantly terraces of the Otamatapaio River, flat to rolling.

Blocks are covered with a mix of silver tussock, grasses, woody weeds and hieracium. Briar is thick in patches especially along the Otamatapaio River. Hieracium is the dominant ground cover on Reserve (>60%). Bare ground is low (5-10%).

These blocks have no fertiliser history and are used for sheep and cattle grazing.

Rabbits have built up to very high numbers on these blocks in the past but generally are considered to be slightly less rabbit prone than hill blocks. Woody weeds provide ideal habitat for rabbits on these blocks.

These areas are LUC Class III, IV and VI lands.

6.3 Hill Country 1253 ha (43% of the property - approx $\frac{2}{3}$ sunny, $\frac{1}{3}$ shady)

Otamarata and Conroy soils on strongly rolling to hill land and Alexandra, Waitaki and Omarama soils on steeplands.

Sunnier faces on these blocks consist of low producing annual vegetation, native grasses and scattered briar. Hieracium is less than 5% ground cover and bare ground 20-30%.

Shady faces and easier slopes have greater percentage of silver tussock, blue tussock and grasses. Hieracium is found in patches at 5-10% ground cover (exceptions being Ridge and Top Knob 80% ground cover and Front Hill 30%) and bare ground around 5%.

These blocks have no fertiliser history (although some aerial seeding of Cocksfoot was carried out in the late 1960's) and are used mainly for sheep grazing.

These areas are LUC Class VI and VII lands.

6.4 Severely Depleted Hill Country 630 ha (21% of the property)

Predominantly Omarama and Waitaki soils on steep to very steep slopes. (Omarama soils on shady lands 38%, Waitaki on sunny 62% of block).

Sunny faces on these blocks consist of annual grasses and weeds (particularly Vipers bugloss) and scabweed. Hieracium is less than 5% but bare ground is high at around 60%. Wind and sheet erosion has occurred leaving these faces in a degraded state.

Shady faces have scattered silver tussock and stronger growing grasses and weeds. Hieracium is still less than 5% and bare ground varies considerably from 20-40%.

These blocks have no fertiliser history and are supposed to be used for grazing of sheep at no more than 0.28 su/ha/annum under the WCC agreement. At times extra stock have been run in contradiction of this agreement.

These areas are LUC Class VI and VII lands.

[Handwritten mark]

- 7200 m rabbit netting existing boundary fence. Bog Roy/Otamatapaio (The exact line is to be confirmed after agreement between Bog Roy/Otamatapaio/CRC. The most practicable line may involve some netting of internal fences on Otamatapaio to avoid the possibility of flooding. An agreed line will be cost shared as a boundary fence.)
 - 4300 m rabbit netting existing boundary fence Bog Roy/Rostriever
 - boundary netting between Bog Roy and Rostriever on the land between Ahuriri Pass and Lake Benmore is desirable but too difficult a line to net and maintain.
2. Internal rabbit netting has been proposed for Bog Roy in 2 areas:
- i) Otamatata Flat/Otamatata Hill proposed split along new management fence, agreed not necessary at this stage.
 - ii) Front Hill and Hill blocks/Irrigation and lucerne. Proposed netting existing fence of approximately 6000 m to split hill country from developed land.


This is necessary for the following reasons:

- prevent rabbit populations on hill country having access to feed on improved land (lower the breeding potential)
- ensure that feed grown on the improved land goes to feeding stock not to rabbits, especially important if there is any major rabbit explosion.
- provide boundary to work to for primary and follow up control operations. In primary operations would allow stock to be held on improved land whilst hill poisoned with no risk of reinfestation (or without fence, risk of repeated exposure to bait and toxins).
- It is suggested improved land could be worked by follow up methods alone and would not need future poisoning.

Mr Anderson disagrees and makes the following points:

- rabbit netting fences can have a high maintenance requirement and will very seldom be "complete" boundaries.
- the hill country has improved to such an extent that rabbit populations on hill and improved land have very similar reproduction rates (litter sizes).
- separating blocks often encourages neglect of some areas through a false sense of security, blocks get left when they should be worked.
- has been able to feed stock in the past without any problems in 2 units and sees no difference with any future poison operations. (This is complicated by the possibility that future poisons may technically require carrot as bait resulting in longer destocking periods.)
- if rabbit numbers are kept low there would not be a significant impact of feed grown on improved land. Continued follow up and poisoning (when required) at lower levels will keep rabbit numbers low.

As no agreement has been reached regarding internal rabbit netting fences none are proposed. Mr Anderson states he would have no interest in maintaining any



such fences. Without any commitment to maintenance, investment in rabbit netting could be wasted.

- d) Monitoring rabbit population levels through inspection.

All these works a-d will allow some movement towards meeting this objective. The aim is to extend the current 2-4 year poison cycle to 5-8 years. Only real commitment to these works will achieve this aim.

Monitoring alone will not meet this objective but it will enable the need for rabbit control operations to be identified before resource damage occurs. It will also enable earlier identification of any biological problems building up in the rabbit population.

Objective 7.1.2 Reduce the long term cost of rabbit control.

The proposals in this programme will not have a significant effect on reducing the long term cost of rabbit control. In fact the cost to the farmer after year 5 without any taxpayer input may be considerably more than it has been in the past (see section 9). Successful primary control, followup and boundary netting will prevent the development of bait or toxin shy rabbit populations. If such populations developed they would have high costs to the property in terms of repeated poisonings and lost pastoral production through the consequences of land degradation.

Netting fences have a part to play in securing areas from reinfestation after a control operation has taken place and thus could aid in meeting this objective.

Mr Anderson feels that myxomatosis is the only option available to reduce rabbit control costs.

Objective 7.1.3 Improve the vegetative cover on the depleted rabbit prone lands by:

- a) Reducing average rabbit numbers over an extended time.

Reliance primarily on poison has meant rabbit populations have periodically escalated prior to poisoning. This, together with domestic stock grazing, has placed extreme grazing pressure on some blocks.

A comprehensive followup control programme which aims to keep rabbit numbers at low levels will have the effect of reducing the rabbit grazing pressure.

Relating to domestic stock:

- b) i) assessing appropriate grazing levels for severely depleted lands.
- ii) endeavouring to ensure appropriate spelling periods for all land classes on the property.
- the management fence proposed to split Otematata Flat from Otematata Hill will allow better use of these two blocks. The hill block will now be spelled in spring-summer allowing the seeding of vegetation.
 - 3500 m management fence.
- iii) provision of alternative grazing options where these alternatives are sustainable to ease grazing pressure on the more sensitive lands
- past development carried out on this property clearly shows that with correct inputs certain land types can achieve a significant increase in stock carrying

capacity. These developments are sustainable physically and financially provided they are correctly maintained.

- this programme proposes to fence and cultivate an area of approximately 12 ha of land. The increased production from this block will enable a reduction in the grazing level of severely depleted lands.
- 700 m management fence
- 12 ha cultivation to lucerne/wheatgrass
- soil tests for fertiliser and maintenance

c) carrying out fertiliser application trials on selected depleted lands.

The purpose of this trial is to assess the response of dryland environments in their unimproved state to low application rates of sulphur fertilisers. Any response would be assessed in terms of its ground cover and stock feeding potential (see section 7.2.2).

- 38 ha fertiliser application 50% sulphur
- exclosure fencing (control of grazing vs no grazing response)
- soil testing

d) monitoring of the land condition and trend at various key sites on the property (section 8).

Objective 7.1.4 To manage the land in a manner that reduces hieracium infestation and where possible reduces its incidence.

Hieracium is already well established on some areas of the property, particularly on Otematata Flat, Reserve, Dog, Ridge and Top Knob and shady faces on Front Hill (see Appendix 2). In these areas prevention of further spread will be the main priority.

As there are no obvious easy solutions available in the control of hieracium, observation of trends on the property in relation to grazing patterns, timing and stocking rates is needed. Grazing may need to be altered in the future as more information becomes available.


Part of the proposal for cultivation of a block in Ridge Block (7.1.3 d) is also aimed at combating hieracium through the observation that hieracium does not grow in established lucerne blocks.

Mr Anderson is willing to make land available within the Otematata Flat to organisations wishing to demonstrate methods of combating hieracium.

7.2 LAND MANAGEMENT

7.2.1 General

There are no grazing charts available to show grazing levels on various blocks on the property. Stock numbers have increased in the last 10-15 years but in general the policy has been to increase individual stock performance rather than overall stock numbers. (This appears the case, 1979 100% lambing, 3.9 kg/hd wool, 1992 Corriedales 110-120%, wool 4.7 kg/hd.) Mr Anderson states the priority of land development has been to decrease grazing pressure on more "sensitive" lands rather than increase stock numbers.



Mr Anderson feels overall land condition has improved on the property over the period of both his and his father's management.

In recent years dry seasons and high rabbit numbers have had an adverse impact on land condition. Domestic stocking levels have been reduced slightly (max of 3000 ewes) and supplements have been purchased (30-50 t of sheep nuts). Stock numbers have increased this year compared with 1991 (by 250 su).

7.2.2 Depleted Lands - undeveloped lands with greater than 20% bare ground.

Generally sunny lands within the hill blocks which have a fairly weak vegetative cover. Reduction in rabbit numbers on these blocks will result in a significant reduction in grazing pressure which should see a corresponding improvement in land condition.

The management fence splitting Otematata Hill from Otematata Flat is a positive development which will allow more grazing control of both blocks. Otematata Hill block will be spelled from grazing from November to February to allow re-seeding of the existing vegetation. In general this block will be used as autumn grazing and a suggested grazing level is 0.35 su/ha/yr at 410 ha = 144 su eg 1000 ewes for 10 weeks.

The Translator block will be used as a trial area to assess the potential of some of these sunny lands.

No other works are proposed for the sunny lands within these blocks; they need to improve in order to lower the risk of wind, sheet and rill erosion occurring. The vegetation must also be developed so as to encourage a perennial vegetative cover with an associated buildup in organic matter to protect the soil, return nutrients and conserve moisture.

Grazing patterns may need to be addressed in future.

7.2.3 Back Block

This block is a complex of sunny and shady country. The shady faces are severely depleted (20-40% bare ground) and sunny faces very severely depleted (60% bare ground).

It is agreed by Mr Anderson and the CRC that this block is in a condition considered to be less than desirable for this land class. However, Mr Anderson considers that in his association with the property that this block has improved in condition.

Without access to monitoring information it is not possible to assess whether this improvement is real or imagined (it could be that tussock cover has improved slightly presenting an appearance of improvement but that ground cover is no better). Site monitoring is necessary to ascertain land condition trends (Landcorp do have two monitoring sites on this block).

This programme has the objective of improving the vegetative cover on the depleted lands and to this end it would be hoped that a decline in bare ground and a gradual increase in perennial vegetation can be achieved.

There is some disagreement as to the steps necessary for such an improvement to occur. In 1980 when the Erosion Control fence was erected separating this block from Front Hill grazing levels of 0.28 su/ha were set (down from 0.4 su/ha). Recent assessment of the blocks condition indicates this grazing level may have been too high and to get any substantial improvement the block may need to be spelled from all grazing for at least 3 years. However, it is evident from observations and from Mr Anderson's admission that this grazing level has been exceeded on a number of occasions:

eg normal grazing 600 hoggets November to February (this is within the 0.28 su/ha level)

additional stock have been grazed in the area at times of feed shortage ("drought") or when other blocks are unavailable due to poisoning

eg 1992 winter 800 ewes 4 weeks whilst Front Hill pindoned
1991 650 ewes, tupping 5 weeks
occasionally 200-300 ewes lambed

It is suggested that the condition of this block is too critical to continue with "on demand" grazing.

Mr Anderson is opposed to long term spelling of this block. He feels such spelling would be of little use in such an environment and that long term destocking of Pastoral Lease land can put pressures on the tenure of that land. For these reasons he is not willing to destock this block.

It is agreed that improvement or continued improvement of the land condition is necessary and that the minimum acceptable for this to occur is to restrict grazing to the level set by the WCC. It is also considered desirable to spell this block at appropriate periods to allow existing vegetation to seed, thus building up both seed and organic matter on the ground. Grazing November-February is not fully conducive to allowing this seeding to occur although it is conceded that spring growth is early on this site and that most seed may be set by late November. It is therefore desirable to delay grazing in the spring for as long as possible to allow maximum seed set and the development of Ridge Block (see 7.2.4) will assist in this management.

7.2.4 Ridge Block

The creation of this block and development through cultivation into lucerne and wheatgrass has three purposes:

- 1) Combat hieracium through development and maintenance of development. This is based on the observation that hieracium is not present within lucerne stands on this property although it is present along uncultivated edges.
- 2) To develop sustainable areas and use the extra feed grown from this development to reduce grazing on "at risk" blocks, particularly Back Block.
- 3) To use early season growth of lucerne to provide grazing to hoggets in November thus delaying grazing on Back Block for as long as possible to allow maximum seeding on Back Block.


8. LAND USE CONDITIONS AND MONITORING

8.1 DEPLETED LANDS

Grazing to continue at current levels with the exception of:

Otematata Hill - this block is to be spelled from grazing from November to February to allow re-seeding of the existing vegetation.

The general objective of grazing on all blocks should be to leave enough vegetation after grazing to allow a buildup of organic matter within the area.



8.2 BACK BLOCK

- 8.2.1 That the Back Block be grazed at levels up to those agreed with the Waitaki Catchment Commission (ie 0.28 su/ha).
- 8.2.2 This grazing should be for no more than 600 hoggets from November to February.
- 8.2.3 Grazing should be withheld in spring for as long as possible to allow maximum seed set.
- 8.2.4 Feed grown from development of a paddock in Ridge should be used to:
 - delay grazing to later in the season (late November - early December)
 - lower overall stocking rate on the block.
- 8.2.5 Monitoring of this block is to be set up by the Farmer/CRC and the results of this monitoring be used to assess the "safe" grazing capacity of this block. A decline in vegetation condition or increase in bare ground will require grazing levels to be reassessed.

8.3 TRANSLATOR

- 8.3.1 That application of fertiliser on this block be monitored.
- 8.3.2 a small area to be fenced to exclude stock (30 x 30 m) to monitor changes in grazed and ungrazed conditions.
- 8.3.3 An area be left without fertiliser applied (both inside and outside fenced area).
- 8.3.4 Initial fertiliser applications to be confirmed by soil testing.

8.4 RIDGE

- 8.4.1 Extra feed grown on this block be used to reduce grazing pressure on depleted lands, particularly Back Block.
- 8.4.2 Seeding rate to be confirmed.
- 8.4.3 Initial fertiliser application and maintenance fertiliser levels are to be confirmed through soil testing.

8.5 MONITORING

Landcorp has monitoring sites on this property.

8.5.1 Land Condition

The lessee and CRC will establish a number of sites in key locations to monitor the condition and trend of the vegetation.

Sites essential to the programme are:

- Back Block
 - monitor bare ground and vegetation vigour in 2 or more locations
 - photo points, panorama, transect

- Translator - monitor bare ground and vegetation vigour in fertiliser trial
- photopoints, transect

Other possible sites include:

- Ridge - prior to cultivation and after to monitor changes in hieracium levels
- photopoints
- Otematata Hill/Flar - general changes to vegetation including hieracium and woody weeds
- Sunny lands - general changes to vegetation

It is hoped such sites will allow observation of trends in vegetation and ground cover and help identify any appropriate changes to management practices.

8.5.2 Soil condition

Soil testing as outlined in 8.3 and 8.4

8.5.3 Grazing

Domestic stock

- it is accepted that details of historical stock movements are not available as the property is grazed as and where feed permits. It is desirable to build up a picture of stock grazing of blocks in order to make informed decisions as to the reasons for any changes that may occur to the vegetation.
- Mr Anderson has agreed to fill in grazing tables in order to build up a picture of the block grazing in any one season. These records will be provided to CRC periodically.

Rabbits

- MAF nightcount routes can be used as a basis for making some assessment of rabbit grazing pressure on blocks.
- CRC inspections will give more detailed information on population levels and trends.

9. FINANCIAL SUMMARY OF PROGRAMME

The estimated costs of the 5 year programme are as follows:

	Total Cost	Farmer	MAF/CRC
Rabbit Control - Primary Control	69,187	20,757	48,432
- Secondary Control	59,150	17,745	41,405
Fencing - Boundary Netting ½ share	14,160	0	14,160
- Management Fencing	13,650	0	13,650
Cultivation	3,600	1,080	2,520
Fertiliser Trial	1,800	540	1,260
Soil Testing	375	113	263
Totals	161,924	40,234	121,690

"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

This programme exceeds the maximum CRC/MAF cost share by \$27,345, which balanced by extra farmer contribution. Farmer labour on fencing is an extra \$8,990.

The effective grant rate to the farmer (excluding labour on fencing) is 58%
(including labour on fencing) is 55%

Total Programme Cost: \$55.08/ha
 \$11.02/ha/yr at 5 yrs
 \$40.85/su
 8.17/su/yr at 5 yrs

Future Cost of Rabbit Control (see Appendix 7)

Based on past poisoning history and proposed follow up (secondary control) object approximate annual cost of pest control has been calculated.

Costs are based on: Primary Control: 2-4 year cycle to 5-8 year cycle
 Secondary Control: 50 days per year plus 50 ha patch poison
 Fence maintenance: Cost share on boundaries

Average cost per year: \$16,487
 \$5.61/ha
 \$4.16/su

10. LAND IMPROVEMENT AGREEMENT

A Land Improvement Agreement will be registered against the title of the proper formalise the programme between the landholder and Regional Council detailing arrangements, agreed maintenance of works and agreed land management.

The Rabbit and Land Management Programme has endeavoured to outline a 5 y programme. Changes to this programme will be made by mutual consent between involved. An Annual Report, to be completed between November and February will finalise the anticipated works in that year.

11. ACKNOWLEDGMENTS

Plan prepared by: G K Cooper, Land Management Officer, Timaru
 K & D Anderson, Bog Roy

With assistance from: R Bungard, Pest Supervisor, Omarama
 D V Pickens, Landcorp, Alexandra

Worksheets and background information: L Reid (formerly CRC)

樓

[illegible]

APPENDIX 1

RABBI, AND LAND MANAGEMENT PLAN
BOG ROY K J & S R ANDERSON
OMARAMA
6 LAN 006 24/7/92

12/1/92 8:59

DATE	JOB NO.	DETAILS	NO. OF UNIT	UNIT	UNIT	TOTAL	FARMERS	MAF	PEST	MAF/CRC	FARMERS	CRC/MAF	TOTAL
							SHARE	SHARE	SHARE	SHARE	SHARE	SHARE	

INTERIM RUM PLAN

Jan-90	1	AERIAL POISON 1080 CARROT BACK OF BOG ROY	600 HA	28.49 PER HA	17093	5128	11965						
	2	AERIAL & GROUND APPLIED OATS FRONT HILL, TRANSLATOR RIDGE, SHEARING, ROUGH	710 HA	24.71 PER DAY	17546	5264	12282						
May-90		FILM CRC/MAF SUBSIDY @70%											
May-90		TRANSITIONAL RATES											
		TOTALS FOR INTERIM PLAN			\$34,639	\$10,392	\$24,247	\$1,819		\$24,247			

YEAR 1 1990/91 FINANCIAL YEAR

May-91	3	AERIAL POISON 1080 CARROTS STH SIDE OF SH 83 TAFF'S CORNER, MIDDLE BLK, OTEMATATA FLAT & HILL	1220 HA	21.7 PER HA	34550	10365	24185						
Jun-91	4	NET BOUNDARY FENCE OTEMATAPA BOG ROY	4200 METRE	1.2 PER M	5040		5040						
		REGIONAL COUNCIL PEST RATES											
Jun-91		MAF/CRC R & LM CONTRIBUTION											
Jun-91		TOTAL FOR FINANCIAL YEAR 1990/91			\$39,590	\$10,365	\$29,225	\$9,330		\$14,020			
		CREDIT/DEFICIT IN PROPERTY ACCOUNT (INDICATIVE)											
		TO BE PAID JUNE 92 & 93											

YEAR 2 1991/92 FINANCIAL YEAR

Jun-91	5	FOLLOW UP SHOOT/GAS/TRAP JUN-NOV JOB 2 FRONT HILL	36 MIDAYS	150 PER DAY	5400	1620	3780						
	6	PLUS PINDONE FOLLOW UP FOR JOB 3 - ACTUALS											
		SHOOT/GAS/TRAP ON PADDOCKS	30 MIDAYS	150 PER DAY	4500	1350	3150						
Apr-92	7	PINDONE PATCH POISON ON FRONT HILL - TOTAL AREA 446Ha	15 MIDAYS	150 PER DAY	2250	675	1575						
Jun-92	8	NETTING OTAMA TAPAO BOUNDARY	3300 METRE	1.2 PER M	3960	0	3960						
Jun-92	9	HELICOPTER INSPECTIONS SHOOT BACK OF JOB 1	1 HOUR	500 PER HR	500	150	350						
		FARMER CONTRIBUTION											
		PAYMENT OF 50% OF DEFICIT											
Jun-92		MAF/CRC R & LM CONTRIBUTION											
Jun-92		TOTAL FOR FINANCIAL YEAR 1991/92			\$16,610	\$3,795	\$12,815	\$8,599		\$14,020			

"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

FACTORS INFLUENCING LAND MANAGEMENT DECISIONS										Appendix 4
BLOCK NAME	FENCING	PRESENT BLOCK USE	DIRECT DRILLING	IRRIGATION	SOIL	CONSTRAINTS ON FENCING	STOCKING WATER	ACCESS	OTHER	
OTEMATAIA FLAT	GOOD & ADEQUATE	EWES SUPP FED DURING WINTER	SOME AREAS SUITABLE	WATER SHTG IS POSSIBLE	RAINFALL	SOILS CLIMATE	NONE	PLENTY	GOOD	FERTILITY RABBITS
OTEMATAIA HILL	GOOD-NETTED ALONG BDY	VARIOUS	10-15% OF BLOCK POSS		RAINFALL	SOILS CLIMATE	NONE	GOOD	GOOD	SOIL RHCROPS RAINFALL
PADDOCK	GOOD	HAY	SUITABLE	WATER SHTG IS POSSIBLE	RAINFALL	CLIMATE	NONE	?	GOOD	
MIDDLE BLOCK	FLOOD GATE WASHED OUT	VARIOUS	BRIAR & HOLES	BRIAR & HOLES	RAINFALL	SOILS CLIMATE	ONE FENCE NECESSARY	GOOD	GOOD	RIVER
TAFFS CORNER	GOOD	VARIOUS	CULT POSS ON 50% OF HILL	TERRAIN & SOIL WHC	BRIAR	CLIMATE	NOT APPLICABLE	GOOD	GOOD	
RESERVE	GOOD	MINIMAL	TOO BONY	POSSIBLE BUT LAND TENURE NOT SUITABLE	RAINFALL	SOILS CLIMATE	COULD GROW	CONSTRAINTS	LAKE & RIVER	
DOG	ADEQUATE	VARIOUS	HAS BEEN DD	SOME ALREADY IRRIGATED	RAINFALL	CLIMATE	NO CONSTRAINTS	SUFFICIENT	GOOD	
DAVIDS IRRIGATED	ADEQUATE	VARIOUS	NO CONSTRAINTS	IRR ON FLAT			ADEQUATE	GOOD	GOOD	

"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

PEST CONTROL PROGRAMME							Appendix 3
BLOCK NAME	PEST PROBLEM	PRESENT RABBIT INFESTATION LEVELS (KEIR SCALE)	POISONING HISTORY (McLEAN SCALE)	PRESENT POISONING UNIT	POISONING PROGRAMME	OTHER THAN POISONING	CONTROL
					PRIMARY	SECONDARY	
OTEMATA FLAT	HIGH	2 1986 GO	1986 75% GO	1 POISONED 1991	PINDONE PLT	MANPOWER	
					1080 CARROT	SPRING 1991	40 MDAYS/YR INCL OTEM HILL
OTEMATA HILL	EXTREME	2 1986 GO	1988 75% GO	1 POISONED 1991	PINDONE PLT	MANPOWER	
					1080 CARROT	SPRING 1991	40 MDAYS/YR INCL OTEM FLAT
OAT PADDOCK	HIGH	2 LITTLE WORK					
MIDDLE BLOCK	MODERATE	2 1989 GO	1 POISONED 1991	PINDONE PLT	MANPOWER		
					1080 CARROT	SPRING 1991	40 MDAYS/YR INCL OTEM HILL
TAFFS CORNER	MODERATE	2 1987 89 GO	1 POISONED 1991	PINDONE PLT	MANPOWER		
					1080 CARROT	SPRING 1991	40 MDAYS/YR INCL OTEM HILL
RESERVE	HIGH	2 1987 GO	2 POISONED 1980			PT OF AREA	
					1080 OATS	ALLOCATED	30 DAYS/YR
DOG PDK	HIGH	2 1987 89 GO	POISONED 1990			PT OF AREA	
					1080 OATS	ALLOCATED	30 DAYS/YR
DAVIDS A	HIGH	2 1987 89 GO	POISONED 1980				
IRRIGATED			1080 OATS				

"RELEASED UNDER THE OFFICIAL INFORMATION ACT"

BLOCK WORKSHEET FOR BOG ROY

Appendix 2

BLOCK NAME	AREA	RAINFALL	SOILS	TOPO- GRAPHY	VEGETATION DOMINANTS	% HIERACIUM	OTHER PROBLEM WEEDS	% DATE GROUND	LAND USE CAPABILITY DESCRIPTION	FERTILISER HISTORY	PRESENT CARRYING CAPACITY SUHA
OTEMATAI FLAT	679	350-400	LARBRECK	FLAT	SILVER TUSS GRASSES	10-20%	BRIAR DENSE PATCHES	10%	MOSTLY VI SOME IV	NONE	UNKNOWN
			SIMONS, COX								
OTEMATAI HILL	410	350-400	OTEMATAI	ROLLING & STEEP	SILVER TUSS GRASSES	<5% APART	SCATTERED BRIAR ALONG CREEK	SHADY < 5% SUNNY 20-30%	MOSTLY VI SOME VII	AOS CKSFOOT 1968	UNKNOWN
			ALEXANDRA								
			CONROY		BLUE TUSS	PATCHES					
Paddock	20		LARBRECK	FLAT	SOWN OUT IN LUCERNE 1991				III, VI	AOS CKSFOOT 1968	
	7		BECKS								
MIDDLE BLOCK	32	350-400	SAWDON	FLAT	SILVER TUSS GRASSES	5%	BRIAR	<5%	IIIa	NONE	UNKNOWN
					BRIAR						
TAFS CORNER	75	350-400	CX, SW, Oim	FLAT & ROLLING	SILVER TUSS GRASSES	5%	BRIAR	<5%	IV & VI	NONE	UNKNOWN
					BRIAR WCL						
RESERVE 80Ha	80	350-400	La	FLAT	HIERACIUM	>80%		15%	VI	NONE	VLW
DOG	58	350-400	La, Oim Oim H	30% FLAT 70% ROLL	SILVER TUSS GRASSES	THICK IN PATCHES		5%-10%	VI	SOD SEED COCKSFOOT	UNKNOWN
					NATIVE BROOM	5-10% HILL					
DAVIDS & IRRIGATED	50	350-400	OI, La, SW	FLAT & ROLLING	IMPROVED PASTURE	<5%		<5%	VI, III, IV	S/SUPER ANNUALTY	

“RELEASED UNDER THE OFFICIAL INFORMATION ACT”

SUMMARY OF OPERATIONS			
PRIMARY CONTROL OPERATIONS	\$69,189	\$20,757	\$48,432
SECONDARY CONTROL OPERATIONS	\$59,150	\$17,745	\$41,405
FENCING- RABBIT NETTING (BOUNDARY 1/2 SHARE)	\$14,160	\$0	\$14,160
FENCING-MANAGEMENT	\$13,650	\$0	\$13,650
CULTIVATION	\$3,600	\$1,080	\$2,520
FERTILISER TRIAL	\$1,800	\$540	\$1,260
SOIL TESTING	\$375	\$113	\$263
	\$161,924	\$40,234	\$121,690
			100%
			0%
			1%
			2%
			8%
			9%
			37%
			43%