Land Information New Zealand
Toitū te whenua

Crown Pastoral Land Tenure Review

Lease name : KINROSS

Lease number : PO 348

Public Submissions Part 2

These submissions were received as a result of the public advertising of the Preliminary Proposal for Tenure Review.

These submissions are released under the Official Information Act 1982.

Nov 14

FEDERATED MOUNTAIN CLUBS OF NEW ZEALAND (Inc.)
P.O. Box 1604, Wellington.

15 July 2011

The Commissioner of Crown Lands
C/-Darroch Ltd.
PO Box 27
ALEXANDRA

Dear Sir,

Re: Preliminary Proposal for Tenure Review: Kinross Pastoral Lease (Po 348)

I write on behalf of Federated Mountain Clubs of NZ Inc. (FMC) which represents over 11,000 members of tramping, mountaineering, climbing and other outdoor clubs throughout New Zealand. We also indirectly represent the interests and concerns of many thousands of private individuals who may not currently be members of clubs but who enjoy recreation in the back country.

On their behalf, FMC aims to enhance recreation opportunities, to protect natural values, especially landscape and vegetation, as well as historic values and to improve public access to the back country through the tenure review process.

FMC fully supports the objectives of tenure review as set out in the Crown Pastoral Land (CPL) Act 1998, and the Clark (Labour-led) government's stated objectives for the South Island high country especially the following:-

- ** to promote the management of the Crown's high country in a way that is ecologically sustainable.*
- ** to protect significant inherent values of reviewable land by the creation of protective measures; or preferably by restoration of the land concerned to full Crown ownership and control.*
- ** to secure public access to and enjoyment of high country land.*
- *to ensure that conservation outcomes for the high country are consistent with the NZ Biodiversity Strategy.*

[EDC Min (03) 5/3; CAB Min (03) 11/5 refer]

* Note that regardless of the change of government and of government's policy, these objectives are still the law of the land as enshrined in the Crown Pastoral Land Act, 1998.

We recognize that additional (introduced by the Labour-led government) objectives have been reviewed and modified by the current (National-led) government, but we still believe they are fundamental to the future well-being of the South Island high country and should be given appropriate weight in the tenure review process.

FMC appreciates this opportunity to comment on the Preliminary Proposal for the review of Kinross Pastoral Lease.

THE PRELIMINARY PROPOSAL

General description of proposal:

1. 2042ha (approximately) to be designated as land to be disposed of by freehold disposal to the holder under S.35(3) of the CPLA, subject to Part IVA Conservation Act 1987, S.11 of the Crown Minerals Act 1991. This designnation is subject to:

Protective Mechanism:

(a) Conservation Covenants over part of the proposed freehold land under S. 40(1)(b), 40(2)(a) and 40(2)(b) of the CPLA for the purpose of protection of the botanical and landscape values.

Qualified Designation:

(b) An easement in gross under S36(3)(b) CPLA to provide public foot, or on or accompanied by horses and mountain bike and for conservation management access.

Introduction and Submissions

A Report entitled ***"Pastoral Lease Tenure Reviews: Preliminary Reports on Recreation and Public Interest Values: Rock and Pillar/Pigroot Properties"*** was prepared by FMC in March 1997. This included recommendations for the tenure review of Kinross Pastoral Lease.

We are pleased to note that although it is now 14 years since that Report was written, many of its recommendations now appear as designations in the current Preliminary Proposal for Kinross Pastoral Lease. While the current proposals are not identical to the original FMC recommendations they are sufficiently similar to closely correspond with the intentions of the FMC recommendations.

In this submission we intend to reproduce each of the 6 paragraphs in the 1997 Report and discuss the relationships of those paragraphs with the current Preliminary Proposals. The original (1997) paragraphs are indicated in large bold type and our commentary on the relationship with the current Preliminary Proposal is shown in italics.

1. The natural values, landscape and scenic values and recreation opportunities on Kinross are much greater than might be expected on a property which entirely below 1,000m altitude.

*We note that the Preliminary Proposal also recognizes the significance of the recreation values on Kinross where it states..... **"The property is an important part of the wider public access routes in the area.....In terms of values, public access would rate as one of the most significant for this property".** The landscape and botanical values are also recognized in the Proposals.*

FMC SUBMISSION:- FMC is delighted to note that the proposal recognizes the recreational and natural values of the property in its wider Waianakarua context.

2. There is good foot, mountain bike and vehicle access up the track to Conical Peak and onwards towards Bells Saddle. Public access for foot and mountain bike use should be negotiated over this route which will probably include proposed freehold land, and also over the route down to the crossing of the North Branch of the Waianakarua River. Vehicle use of these tracks (with the owner's permission) should also be negotiated.

FMC notes with satisfaction that the Preliminary Proposal includes the designation of an easement as follows: ***"The proposed access route will provide a physical link from*** **[between]** ***the Pigroot and Kakanui Mountains and to the adjacent Waianakarua Scenic Reserve".*** *This easement will provide for foot, horse and mountain bike use over the track from the Pigroot to Conical Peak and thence, via tracks to the north and east, to the crossing of the North Branch Wainakarua River, and onwards towards Bells Saddle on the neighbouring property.*

FMC SUBMISSION:- FMC fully supports and endorses this proposal.

3. There are opportunities for diversification of farm enterprises into horse trekking and 4WD tours.

While diversification of farming enterprises is not included in the terms of reference for tenure review, it could be construed as a component of sustainable land use of the new freehold.

4. Tussock grasslands above about 800 to 900m are in good condition, and have high natural values. It will be necessary to consider carefully where the Freehold/Conservation Land boundary should be drawn.

FMC notes with disappointment that there is no proposal to designate any land for return to full Crown ownership and control as Conservation Area. We do however, recognize that the area proposed as Conservation Covenant CC1 is a large area which includes significant biodiversity, and should provide protection for areas of significant shrublands which include species categorized as "in gradual decline, in serious decline, and as sparse or range restricted".

We also note that some important areas representing the original woody vegetation cover including montane podocarp/broadleaf forest remnants in an area at the eastern end of Kinross land. We believe that much more effective protection for these remnants in Biodiversity Areas 8 and 9 would be achieved if a fence was built from the south boundary of the property at Spot Height 965m down the spur to the North Branch of the Waianakarua River to keep grazing stock out of the area east of this fence. It would be preferable (as stated in the Crown Pastoral Land Act) if this area was to be returned to full Crown ownership and control.

We use the words 'should provide' because the effectiveness of the Covenant in protecting the values will depend upon how rigorously the monitoring is carried out, and whether any changes in conditions are imposed in the event that vegetative decline is recorded. It is therefore important that the monitoring regime is strictly followed.

We also recognize that the considerable landscape values, especially on the spurs and re-entrants leading down to the Waianakarua River, are recognized and protected under the terms of the Covenant.

FMC SUBMISSION:- We are disappointed that no land has been designated for return to full Crown ownership and control as Conservation Area. We recommend that at least the eastern portion of the property (including Biodiversity Covenant Areas 8 and 9 should be fenced off (as described above) and returned to full CFrown ownership and control as a Conservation Area. This is the preferred alternative (as expressed in the CPLA) to the Covenant proposal. We do support the designation of the Landscape Buffer Covenant over the remainder of the proposed Covenant area so long as a defined and low stocking rate is agreed and imposed over this area. We emphasise the importance of rigorously implementing the monitoring regime.

5. There is an extensive area of tussock grassland at higher altitude (900 to 1,000m) which has been burned and is slowly recovering. This area should be protected by transfer to DOC , or at least with no-burning conditions applied to a Special Lease.

We note that this area is included within the proposed Conservation Covenant and that no burning is permitted in either the Landscape Buffer Covenant area or the Biodiversity Covenant areas. This therefore satisfies our alternative recommendation for no burning within a Special Lease, but we would still have preferred, as does the CPLA, to have the area designated for return to full Crown ownership to better protect the recovering tussock grassland.

***FMC SUBMISSION*:- FMC supports the no-burning conditions applying in both the Landscape Buffer and Biodiversity Covenant areas.**

6. The good quality tussock grassland at lower altitude may become freehold and protection mechanisms, such as Covenant, should be negotiated to retain land use as at present, and with conditions to prevent adverse effects of inappropriate developments, tracking and burning.

*We note that the proposed Reserves Act Covenant is designed to protect the values and **"still allow the land to be farmed as part of the holders' wider operation"**. We repeat that it will be important to ensure that the monitoring regime is rigorously implemented and that it does in fact protect the values as intended.*

We also note that the Biodiversity Covenant specifically seeks to prevent stock damage to the vegetation within the shaded areas (1 to 10) on the map. We believe that it will be difficult to ensure that the no-grazing and no-browsing intention of the conditions are fulfilled – this will be heavily dependent on the goodwill of the holder.

FMC SUBMISSION:- FMC remains somewhat sceptical that it will prove possible to fulfil the intentions of the conditions attached to the Covenants and we cannot stress enough how important it will be to ensure the implementation of those conditions. We tentatively support the proposed Covenants and hope that their objectives are achieved.

Further observations and recommendations on the Preliminary Proposal

The above section of this submission related the current proposals to the earlier recommendations made by FMC in 1997. This section relates to other provisions of the Preliminary Proposal .

We recognize that a long term recreational opportunity is a traverse of the Kakanuis starting along the Horse Range. **We recommend that provision for this should be made now by establishing an Easement along the SW boundary of Kinross to connect with a track (on Caithness) and along the crest of the Horse Range.** This recommendation could be further developed when the tenure review of Caithness is conducted.

FMC's main concern with this proposal is with the adequacy of the Covenant conditions to protect the values which have been identified and described in the proposal document. We note with disappointment that there are no specific conditions relating to grazing in any of the Schedules or Appendices attached to the Proposal.

We accept that it is reasonable to allow "*the land to be farmed as part of the holder's wider operation*". We are disappointed that no specific stocking rate or duration of permitted grazing period is defined. We recommend that these should be agreed and implemented in order to achieve the protection objectives of the Covenant. In the Proposal reliance is placed on the holder's goodwill to *"not deliberately stock the biodiversity areas or in any way encourage stock into these areas*". Such goodwill may not be maintained through generations of ownership change.

Because it is clearly not feasible to fence around all the biodiversity areas, we consider it essential that the permitted stocking rate in the surrounding landscape buffer area should be set at a low level. This would be aimed at minimising any adverse effects of grazing and browsing on the vegetation in the biodiversity areas. Any such adverse effects should also be rigorously monitored as proposed, and provision written into the Covenant Conditions to reduce the stocking rate if monitoring indicates that this is necessary.

We do however, believe that fencing is both feasible and necessary to protect Biodiversity Covenant Areas 8 and 9 as indicated above.

Finally. FMC congratulates Darroch Ltd and the Commissioner of Crown Lands on the quality of illustrations in the Preliminary Proposal document and is grateful to both Darroch and the Commissioner for this opportunity to offer our submissions on the Preliminary Proposal for the tenure review of Kinross.

Yours faithfully

pp Phil Glasson
Hon. Secretary, Federated Mountain Clubs of NZ, Inc.

Forest & Bird
GIVING NATURE A VOICE

Central Otago-Lakes Branch
Royal Forest and Bird Protection Society of New Zealand Incorporated.
Denise Bruns – Secretary
4 Stonebrook Drive
WANAKA 9305

15th July 2011

The Commissioner of Crown Lands
C/o Darroch Ltd
PO Box 27
ALEXANDRA

Dear Sir

Kinross – Po 348 – Tenure Review Preliminary Proposal.

We wish to thank you for sending us a copy of this proposal and would be pleased if you would accept this submission on it. This lease situated on the Horse Range and east of the higher inland Kakanui mountains contains many significant inherent values well worthy of protection for conservation. While Part 2 of the Crown Pastoral Act 1998 {24 (b) (i)} allows for these to be protected by *"protective mechanisms"* we have however considerable reservations as to the wording of the covenants and the monitoring being proposed to protect those values in this particular proposal. Any covenants attached to the title will have to be enduring, and managed by many different owners well into the future.

From the overall appearance of the property it appears to have been well managed in the past even though it has been over-sown and top-dressed. We see no reason why it cannot be managed in a manner that is *'ecologically sustainable"* into the future but it will depend entirely on the management strategy adopted, which in turn will depend on the stocking rate.

We submit as follows:

1. It will be important to protect the significant values in Kinross as it is the only low to middle altitude tussock country so close to the sea in Otago. Much biodiversity has been identified in the Conservation Resources Reports on the property.

2. Being situated near the east coast of North Otago it has a climate akin to that area, suffering at times from dry spells, but at the same time it can benefit from low cloud or fog coming in off the sea for days at a time when the wind is in the that direction.

3. There are two pest plants present: wilding conifers and a significant area of broom on the eastern boundary; if there is a will wilding conifers can be managed, but broom is a far bigger and under-estimated problem and must be taken more seriously than it is at present.

4. It is intended to protect the landscape by a covenant to be known as the "Landscape Buffer Covenant" this containing 10 separate "Biodiversity Covenant" areas. These areas to be monitored on a regular 5 yearly basis. We see the dividing line between this over-all

landscape covenant and the unencumbered freehold as being suitable, although the public will be unable to see the covenanted area from the Pigroot Dunback road.

5. The landscape on the Waianakarua side of the Horse Range is a tussock landscape and although having been subject to burning and over-sowing, and thus modified in the past, but it is still relatively intact in appearance.

6. The rocky faces and incised gullies provide refuges for many shrubs and biodiversity that are described as being in "gradual or in serious decline" or as "sparse or range restricted.

7. The two biodiversity areas, 8 and 9, in the east contain remnant podocarp/broad-leaf forest will require more protection than that is proposed if they are to survive and recover.

8. We fully approve of the arrangements being made for public access. Having access from the main road to the top of the Horse Range, thence on towards Bells Saddle is well worthwhile. Having direct access to the north branch of the Waianakarua would be appreciated but the map is not very clear on this point. *In our opinion point G should be at the intersection of the track and the marginal strip.*

9. It is to be hoped that one day through the tenure review process walking access is available from Danseys Pass over the Kakanui Range to finish at the road crossing the Horse Range.

Please refer to theDeed of Covenant:

Background:

C. The parties agree the land **should** be managed so as to preserve the particular values specified in SCHEDULE 1. *We believe that if the covenant is to be effective the word **should**, should read **shall.***

Special Conditions of the Covenant SCHEDULE 2 , Page 10

1) *We would agree that the protection of the biodiversity hinges entirely on the stocking rate on the property.*

2) **The owner must control wilding pines, exotic broom and gorse and must prevent them from seeding**. *While it is possible to manage the wilding pines we cannot see that both gorse and broom can be controlled without the annual use of weed spray as the seed from both species can be viable for at least up to 50 years.*

And, the owner will submit to the Minister an agreed eradication plan for the control of weeds. *The eradication of broom is almost impossible we would suggest "containment" as a better approach. If the two biodiversity areas 8 & 9 containing significant inherent values by way of remnant forests together with the broom on the eastern boundary were to be fenced off and returned to the Crown for protection it would produce a far better result for conservation. Such a fence could start from the south boundary at spot height .965about 1k*

east of Trig D, go down the spur heading north over spot height .832 to join a fence running down to just north of the ford in the river.

4) Feral animals including rabbits, goats and pigs will be controlled to low levels. *We would agree with this but in doing so would point out that pig hunting is part of the culture of the Dunback area.*

"Landscape Buffer Covenant".

7) Areas where seeding broom is present will not be grazed by sheep when there is risk of weed spread. *As sheep can carry seed in their wool here again the only possible method of preventing the spread of broom seed is by fencing off the area and* ***containing*** *the broom.*

"Biodiversity Covenant"

8) The owner must not intentionally stock the "biodiversity covenant" areas or in any way encourage stock into these areas. *If the values in these areas are to be in any way protected it will require continued vigilance on the part of any owner and their dogs to prevent sheep entering these areas when feed is perhaps short; which again also stresses the necessity* ***of a very low stocking rate.***

Draft Description of Monitoring Programme to be Established – SCHEDULE 3, Page11

As this programme is only in (DRAFT) form it s difficult for us to comment in detail, however we would make the following observations:

3. Monitoring Methods. Within the "Biodiversity Covenant" areas will identify detrimental impacts as follows.

- within shrublands will include:
  Obvious fragmentation, tracking, gaps and canopy breakdown.

As there are ten in number of these and they are in no way going to be marked apart from the photographic records inspection will take some considerable time and will be a continuing cost to the owner.

In this connection as over-sowing and top-dressing with fertiliser has in the past been a management tool, and is also going to continue to be in the future, it will be important that there be no top-dressing or over-sowing of these small areas, they should be left in their natural state. This will have to be done with the aid of the Global Positioning Systems – it will also be necessary to leave a gap of say 30 metres between the areas being protected and the farming land being top-dressed.

- within the forest areas will include:
  Observations of stock damage to the understory and ***regeneration*** of the forest.

*To expect **regeneration** of the forest with stock having access to at all times to these areas is going to require considerable vigilance if the conditions of the covenants are to be met as if feed is short stock will inevitably prefer any young vegetation.*

In Conclusion:

If the area we describe above containing the forest remnants – Biodiversity Areas 8 and 9 – and the infestation of broom is returned to the Crown for protection, and the covenants outlined are strictly adhered to it should be possible to protect the values present in this somewhat different, but important area of Otago.

We thank you for the opportunity to comment and await the outcome with interest.

Yours faithfully

Denise Bruns,

Secretary
Central Otago-Lakes Branch
Forest and Bird.

We would like to comment on SCHEDULE 2 and SCHEDULE 3
(page 10 and 11 of the document)

Commissioner of Crown Lands
C/- Darroch Limited
PO Box 27
Alexandra

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Submission on: **Kinross Tenure Review**

Submission from: **Waitaki District Council**

Address: **Private Bag 50058**
Oamaru 9444
c/- David Campbell

Phone: **(03) 433 0300**

Email: **dcampbell@waitaki.govt.nz**

The Waitaki District Council (WDC) generally supports the proposed tenure review of the Kinross Pastoral Lease. WDC are about to embark on a district wide Ecological Study for the purposes of meeting the requirements under the Resource Management Act 1991 as well as the Proposed National Policy Statement on Indigenous Biodiversity. Information contained in the Kinross tenure review will be useful for this study. However, the mechanisms by which indigenous vegetation is assessed and protected under the proposed tenure review may not necessarily end up being the same as those that Council chose after the study has been completed.

The following section of this submission will discuss, where necessary, the concerns WDC has with the preliminary proposal.

1. Schedule 2, Special Conditions
   The Council is concerned that grazing of stock (allowed for under conditions 1) and 8) may detrimentally affect taller vegetation and broadleaf forest remnants. There is no clarity around the stocking rate, as it is '…in the opinion of the Minister…', which is not measurable. Furthermore, it is difficult to see how stock may be discouraged from the biodiversity covenant areas without fencing. By their very nature, stock graze species that are more palatable and generally on sunnier slopes.

2. Schedule 3, Description of the Monitoring Programme to be established
   a) The monitoring methods proposed under item 3 are visual only and do not record loss of species, either extent or total number. The monitoring will only signal any obvious fragmentation of vegetation cover, which is not necessarily a reliable method of measuring changes to indigenous vegetation extent. The WDC would support referenced plot lines through each of the ten biodiversity covenant areas, which would include a comprehensive recording of species along the plot lines.
   b) The monitoring results proposed under item 3 (4?) would be useful for WDC and we would request that these be forwarded to WDC to assist with State of the Environment reporting. This will help WDC meet its monitoring requirements under the Resource Management Act 1991 while reducing the cost to ratepayers.

The Waitaki District Council is happy to be contacted by the Commissioner of Crown Lands to clarify any point raised in this submission

Yours Sincerely

David Campbell
Planning Manager
On behalf of the Waitaki District Council

Department of Botany

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Te Whare Wananga o Otago

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July 11, 2011.

Manager,
Darroch Ltd
PO Box 215,
DUNEDIN 9054..

SUBMISSION ON PROPOSED TENURE REVIEW OF KINROSS PASTORAL LEASE

Dear Sir,

Thank you for sending me a copy of this document and I appreciate the opportunity to comment on it, based on my general knowledge of the area involved. This is a relatively small (2042 ha) and somewhat isolated pastoral lease situated between the Horse Range and Kakanui Mountains, on the eastern edge of the South Island high country, but its ecosystems are an important representation for this region where there are very limited protected areas.

Given the limited size of the property, the important areas of mid-altitude snow tussock grassland, here towards its eastern limit, and the desire to retain an economic farming unit, the proposal appears to be unique in the tenure review programme (and generally unsatisfactory from a conservation perspective), in recommending ten isolated Biodiversity Covenants (to be formalised under the Reserves Act), of varying aspect, landform, size and shape, "comprising the bulk of the run block", that are scattered throughout the property, with only one proposed for stock exclusion with a new fence. Some "grey shrublands" persist on water courses and damper areas.

An impressive number of indigenous plant species (~163) have been recorded on the area proposed for covenanting, including several threatened species in the formal categories of "serious decline" (*Olearia fimbriata*: first Kakanui Mts location), "gradual decline" (*Carmichaelia crassicaulis, Pachycladon cheesemanii*), "sparse" (*Olearia lineata, Pimelea pseudolyallii, Celmisia hookerii*) and "range restricted" (*Gingidia grisea*). There are also several known indigenous "threatened" invertebrate species plus the New Zealand eastern Falcon and possibly several skinks and a gecko, as indicated in the report, which add to the obviously high indigenous biodiversity values of the proposed "Biodiversity Covenants" being proposed.

The only proposed **Covenant** to be fenced **(#10),** near the crest of the Horse Range at the western edge of the property, contains remnant woody vegetation, with variously-sized kowhai as "a dominant treeland" and *Olearia lineata*, and is clearly of high conservation value, justifying the proposed 1km long new fence. With a legal road nearby, a formal easemant for walking access is desirable and is **strongly recommended**, as is this proposal.

I **strongly endorse** the the proposed **Covenants 8 and 9**, located in south-facing mid-slope gullies towards the eastern edge of the property, which contain important mixed forest remnants, with a range of understorey species. Ideally these two covenants should also be fenced so as to exclude stock (both sheep and cattle are provided for with no specified stocking rate(s)). Without the exclusion of stock they will never achieve their full ecological potential. The **photographic monitoring** proposed for this and the other covenants must be sufficiently sensitive to detect future vegetation and floristic trends on which management decisions are to be based.

The **remaining seven Covenants (#1-7)** are not specifically described although the excellent accompanying photographs indicate they are mostly tussock dominant with scattered shrubs and localised mixed shrublands on a range of topography. Their scattered distribution will inevitably make for inadequate

protection from stock grazing, despite the conditions imposed of "a stocking rate that does not, in the opinion of the Minister, adversely impact on the values within the "Landscape Buffer Covenant" and the "Biodiversity Covenant" areas. [and] The owner must not deliberately stock the biodiversity covenant areas or in any way encourage stock into these areas." I **further recommend** an **additional condition** be applied to all **Biodiversity Covenants**: That oversowing and topdressing should be avoided on these covenants and that the bordering Landscape Covenants be used as a buffer in this regard: only the margins of these should be OTD. This should also apply to aerial spraying for weed (gorse) control. Clearly, the proposed monitoring will be crucial in achieving the purpose of these covenants and must be installed with this in mind. I make this statement with considerable experience of permanent photographic monitoring (as proposed), and will append my "Procedure for establishing permanent photo-points on Mid Dome, April, 2008."

The proposed **Landscape Buffer Covenants**, with the associated conditions as outlined, are **endorsed**

The proposed **easements: a-b-c; d-e-f-g and f-h** and associated conditions are also **endorsed**, except that easement "f-g" appears not to extend so as to connect with the marginal strip on the Wainakarua River, although the 4WD track does go all the way: I **recommend** that this apparent omission be corrected: Point g should be located at the junction of the track and marginal strip so as to ensure there is complete legal access. I also **endorse** any additional easement needed to resolve the boundary issue with Shag Valley Station, as described. **Walking access easements** (poled routes) are also **recommended** to at least representative Biodiversity Covenants. The main easemnts (a-g and a-h) provide important recreational oppportunities as well as providing valuable walking access on to the eastern end of the Kakanui Mountains. There should also be legal foot and perhaps horse access along the Wainakarua River, at least to the boundary with the neighbouring Caithness P.L. since this area is known to have 'Significant Inherent Values' (SIVs) and may become conservation land in future. I also recommend formal legal access be established along the southwest boundary of Kinross P.L., along the crest of the Horse Range to its junction with Caithness P.L. which would allow for a potentially highly valuable ridge-toip access in future through the Caithness P.L. on to the Kakanui Range.

I conclude by reiterating my serious reservations with the recommendation for the nine unfenced, scattered, variable sized and shaped Biodiversity Covenants that comprise the "bulk of the run block" as being unlikely to provide a realistic and responsible conservation concept, and wish also to reiterate the importance of the proposed ecological monitoring to be associated with these covenants to determine their adequacy.

I thank you for the opportunity to comment on this proposed tenure review and I assume you will give them your serious consideration. .

Yours sincerely,

Alan F. Mark FRSNZ. Emeritus Professor.

Attached: **Procedure used for establishing permanent photo-points on Mid Dome. April, 2008.**

A procedures standardized for the establishment of permanent photo-points for long-term vegetation monitoring, including spatial analysis of images to quantitatively assess spatio-temporal changes in plant communities Michel et al. 2008), was used at Mid Dome.

The party consisted of Lynne Huggins of DoC and Alan Mark, Pascale Michel and Stefan Porter of Otago Univerity's Botany Department. Materials were on hand to establish 20 sites but, in the time available, 15 were selected to best represent areas on the Conservation land. Clear anti-cyclonic weather was forecast but, in the event, the first day (April 8) was overcast and partly foggy but the fog did not intrude unduly. Ten sites (#s 1-10) along the Jollies Pass – Cupola 4WD road were selected as detailed on the record sheets. The following day was perfect and an additional five sites (#s 11-15) were established along the Nokomai – Mid Dome summit road. In addition to assessing animal faeces, as described below, seeding *Pinus contorta* were also included in the plot counts.

Sites were selected which provided a nearby field of view, preferably with the main field sloping uphill to provide an adequate view to record any changes in vegetation composition and/or height. The more distant landscape was included, where possible, to provide a wider perspective or to record some specific features, particularly areas that had been partly cleared of wildings. Sites were permanently marked with a warratah, painted orange, with an al label attached with wire, and inscribed with: "Mid Dome Perm. Photo Point No 'X'; Do not disturb" The GPS position of the site was recorded. Up to three (five at Site # 15) permanent reference stakes (warratahs pained orange and with Al labels inscribed with: "Do not disturb") were placed within the field of view at a measured angle and distance from the site stake to provide the necessary references for future spatial analysis, if desired (see Michel et al. 2008). Prominent and readily identified landscape features substituted for one or more of these stakes at some sites, as noted on the record sheet.

The camera position was marked with a short round rod ~1.5m from the site stake (its distance and direction noted on the pro-forma record sheet. A metre stake graduated into black and white decimeter sections was placed a set distance (usually 10 m) from the camera position peg (measured with a tape) in a location where future changes in vegetation height are most likely to seen. A small blackboard with details of general location, site number and date entered in chalk, was clamped to a stake and located to one edge of the midfield, so as to be visible but not unduly obstructive. Additional images were taken at some sites to record particular situations, local or distant, with each image separately identified with the image number, on the blackboard and recorded, including the compass direction (°M) of the field centre.

A comprehensive list of plant species, with estimated percentage cover was made of the study site, defined as a circular area of ~10 m radius centered on the graduated metre stake. This information was recorded, together with the other details of the site, on a blank pro forma sheet. Faecal counts, using a method adapted by Geoff Rogers, described below, together with a record of any *P. contorta* regeneration were recorded separately and copied to a new electronic copy of data sheet following completion of the field exercise.

Background. The faecal count method was adapted from that used to monitor changes in the relative abundance of deer (Forsyth 2005) and tahr (Anon. 2002). The principal objective was to maximise the number of sample plots within a 15–20 minute timeframe at each sample site. Long, single-line transects were impractical because of the generally steep terrain interspersed with bluffs, and the relatively high turnover in plant communities within the subalpine and alpine zones. The spatial arrangement of the running-line transects was designed to prevent the sampler obstructing the photographic field of view.

Design

1. Four transects of approximately 30 m length radiated out from a common origin-point 2 m behind the permanent photo-point marker peg (Fig. A).
2. Ten pellet-count plots of $1m^2$ (56 cm radius) are established along each of the four transects at approximately 3 m intervals. The sampler use a compass bearing for direction along the transect and the 3 m intervals are stepped out.
3. Where barriers such as bluffs or tarns are encountered along the transects, two 90° offset angles in the transect are used to bypass the obstacle (Fig. B).
4. Two 112 cm long poles arranged at right-angles about their centres on the plot centre point as delineated by the tip of the sampler's boot are used to guide the estimated circumference of each sample plot.
5. The number of intact pellets within each circular plot are countered and recorded. Pellet groups are dismembered and pellets counted individually.
6. Intact pellets only are counted (Forsyth 2005).
7. Pellets are counted and separated if possible, by species, and also as to 'recent' or 'old'.

Recording of faecal and pine seedling counts, within the 4 transects and 10 quadrats in each. Transects were in no particular order (an oversight) except that Ts 1 & 2 were at right angles to the plot orientation. The 1 sq m circular plots were sample in order from the centre, outwards and the 3m between plots within a transect was paced:

Transects 1 to 4 (T1 – T4); Plots 1 – 10 (-1 to -10); Hare (H); Deer (D); Possom (Po); Pig (P); Faeces old (o) or fresh (f); and Pine seedlings (S).

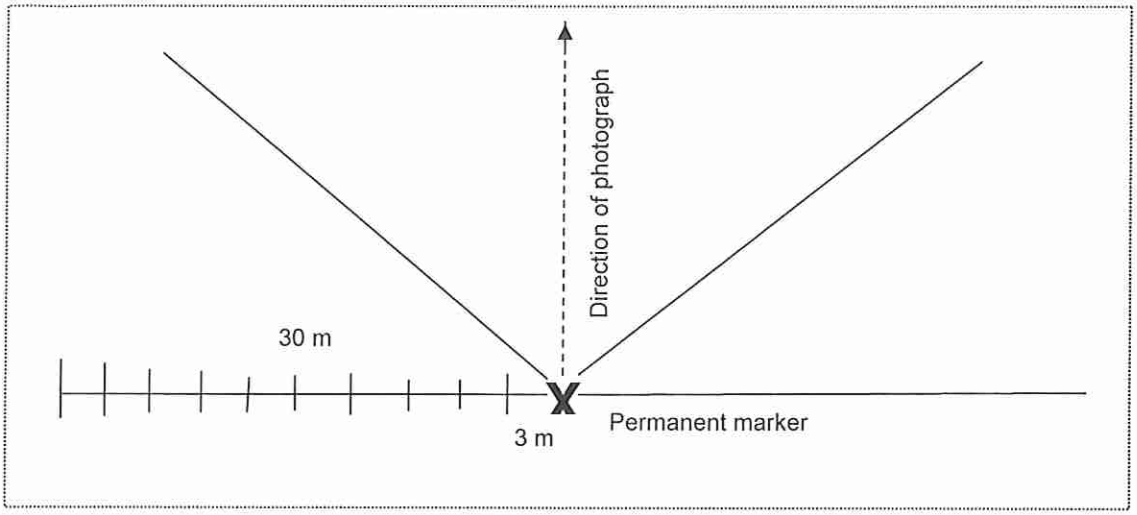

Fig. A. Layout of pellet count plots at 3 m intervals along each of four 30 m transects originating 2 m behind the permanent peg marking each vegetation monitoring plot.

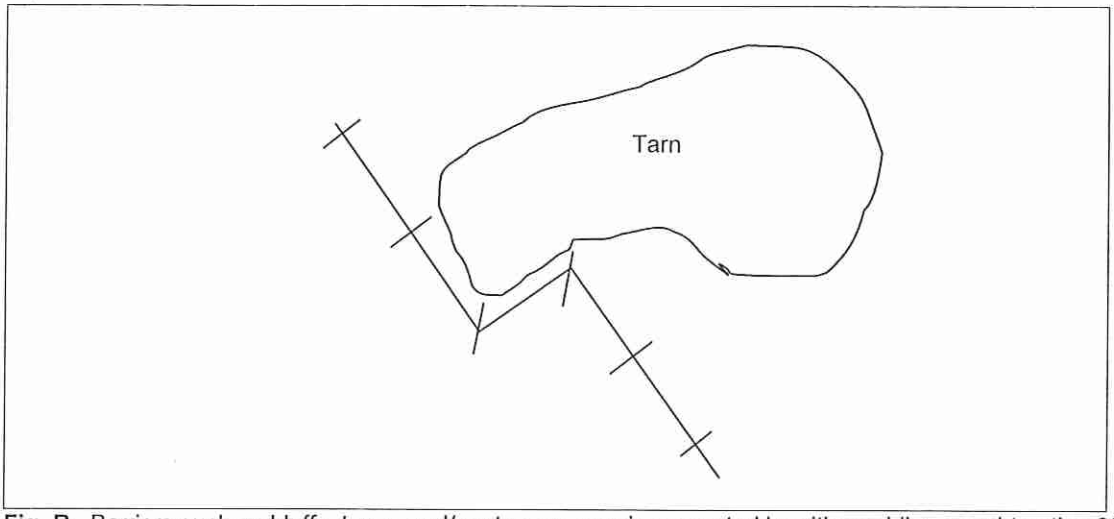

Fig. B. Barriers such as bluffs, tarns, and/or streams are circumvented by either adding or subtracting 90° from the compass bearing and continuing the pellet count plots along the offset transect.

Resurveys, at appropriate intervals (probably ~5yr), should follow the earlier procedure precisely. The GPS record should simplify site relocation and, even if one or more of the tall marker stakes are missing, the small camera-location peg may be adequate, assisted perhaps by topographic features recorded on the image(s). Photocopies of the previous data sheets for each site should be used to update the vegetation and other site information, as well as provide the several essential site details. Electronic copies of the previous data sheets for each site can be updated with the new records and carefully archived, together with the accompanying image(s), both as hard copy and electronically, as necessary.

Additional references:

Mark, A.F. 2007. Report on sixth resurvey and 37 years of monitoring permanent photo points in Mt Aspiring National park. Unpublished report to Otago Conservancy, Department of Conservation. Botany Department, University of Otago. June 2007.19 pp.

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