Land Information New Zealand
Toitū te whenua

Crown Pastoral Land
Review of Other Crown Land

Property name:
Glenlee

Property number:
Om 025

Summary of preliminary proposal outcomes

A Preliminary Proposal has been adopted by the Commissioner of Crown Lands. This summary provides an overview of the designations and the Preliminary Proposal.

The summary supports the designations plan depicting the outcomes of the review at this stage.

May 19

REVIEW OF OTHER CROWN LAND

Om025 GLENLEE

SUMMARY OF PRELIMINARY PROPOSAL

May 2019

SUMMARY OF THE PRELIMINARY PROPOSAL FOR THE REVIEW OF OTHER CROWN LAND GLENLEE OCCUPATION LICENCE UNDER PART 3 OF THE CROWN PASTORAL LAND ACT 1998

INDEX:

1.	Details of land under consideration	2
2.	Background	3
3.	Summary of proposed designations	5
4.	Description of resource	6
5.	Consideration of options	32
6.	Description of the proposed designations	34
7.	Discussion of proposed designations in relation to Part 3 review objects	38

Appendices:

Appendix 1:
Copy of Public Notice

Appendix 2:
Copy of Preliminary Proposal - including proposed designations plan and draft special lease document.

1. Details of land under consideration:

Crown land:

File Ref:	12642 *(Om025)*
Licence Name:	Glenlee
Licensee:	Phillippa Jane Hamilton ($^1/_4$ Share), Robert Cameron Hamilton, Andrew James Hamilton, Bruce Ian Hamilton and Jamie Phillip Eliot Hamilton ($^1/_4$ share jointly), and Phillippa Jane Hamilton and Glenlee Station Trustees Limited ($^1/_2$ Share)
Location:	Upper Awatere Valley, Marlborough
Land Registry Folio Ref:	Previously 129198 (Marlborough Registry)
Legal Description:	Run 109A
Area:	5787.0046 hectares more or less
Local Authorities:	Marlborough District Council
Term of Licence to Occupy:	5 years from 1 July 2017

2. *Background*

The Glenlee Occupation Licence is an unrenewable occupation licence comprising 5,787 hectares run in conjunction with adjoining freehold land. It is located on the northwest side of the Awatere Valley in the Marlborough District.

Section 86(1) of the Crown Pastoral Land Act (CPL Act) requires the Commissioner of Crown Lands (Commissioner) to undertake reviews of all land held under an unrenewable occupation licence within a specified timeframe. Reviews of occupation licences are undertaken pursuant to Part 3 of the CPL Act.

The Commissioner has completed a review of the Glenlee Occupation Licence and has devised a preliminary proposal. In formulating the preliminary proposal the Commissioner has considered the views of the Director General of Conservation, Iwi and Fish and Game.

A review of Crown land under Part 3 of the CPL Act is different to a review under Part 2 of the Act (Tenure Review) reflecting the nature of tenure under unrenewable occupation licences. This is reflected in the objects of Part 3 and the reduced range of designations that can be considered.

The objects of Part 3 CPL Act

When undertaking a review under Part 3 of the CPL Act, the Commissioner must take into account the objects of Part 3:

83 ***Objects of Part 3*** *– the objects of this Part are –*

(a) *To promote the management of Crown land in a way that is ecologically sustainable; and*

(b) *To enable the protection of significant inherent values of Crown land; and*

(c) *Subject to paragraphs (a) and (b), to make easier –*

(i) *the securing of public access to and enjoyment of Crown land; and*

(ii) *the freehold disposal of Crown land capable of economic use.*

An unrenewable occupation licence does not convey any pre-emptive right to the licensee on expiry of the licence. The presumption therefore is, that when undertaking a review of an unrenewable occupation licence under Part 3 of the CPL Act, the land will be in 'full' Crown ownership and control on expiry of the licence.

The objects of Part 3 are therefore considered in this context. While no preference is expressed in section 83(b) for restoration to full Crown ownership and control as a means of protecting significant inherent values, no preference is necessary as the land concerned is already (or will be on expiry of an unrenewable occupation licence) in full Crown ownership and control. The objects of Part 3 are discussed in more detail below.

Object (a) – to promote management of the land in a way that is ecologically sustainable:
Although the term 'ecologically sustainable' is not defined in the CPL Act, 'ecosystem' is defined as a system of interacting living organisms and their environment. Promoting the management of land in a way that is ecologically sustainable is therefore interpreted to mean ensuring (as far as possible) that the land can be managed in a way that enables ecosystems to be maintained or enhanced.

Object (b) – protection of significant inherent values
Protection of significant inherent values (SIVs) is to be given equal weight to the promotion of ecologically sustainable management. 'Significant inherent values' are defined in the CPL Act to

Object (b) – protection of significant inherent values
Protection of significant inherent values (SIVs) is to be given equal weight to the promotion of ecologically sustainable management. 'Significant inherent values' are defined in the CPL Act to mean inherent values of such importance so as to deserve the protection of management under the Reserves Act or Conservation Act.

Object (c)(i) – securing of public access to and enjoyment of the land
The securing of public access to and enjoyment of Crown land is likely to be an outcome of retaining such land in full Crown ownership and control, although it should be noted that object (c) is subject to both objects (a) and (b).

Object (c)(ii) – freehold disposal of land capable of economic use
Designation under object (c) is subject to meeting the requirements of object (a) and (b). This object can therefore only be achieved where to do so would be consistent with objects (a) and (b).

Part 3 Review Designations

Section 86(5) CPL Act requires that land in a Part 3 review be designated as:

(a) Land to be retained in full Crown ownership and control:
- *(i) As conservation area; or*
- *(ii) As a reserve to be held for a purpose specified in the proposal; or*
- *(iii) For some specified Crown purpose; or*

(b) Either or both of the following:
- *(i) Land suitable for disposal by special lease (on terms specified in the proposal).*
- *(ii) Land suitable for disposal in fee simple under the Land Act 1948.*

The designations under Part 3 do not include the granting of concessions or grazing permits over land retained by the Crown. Any future utilisation of land retained as Conservation Area or Reserve under a Part 3 review is at the discretion of the Minister of Conservation.

Inclusion of other land

Part 3 of the CPL Act requires the Commissioner to undertake a review of the land held under an unrenewable occupation licence. The Act does not give the Commissioner the option of including freehold land or neighbouring conservation area or reserve in a Part 3 review This is different to the provisions of a Part 2 review which would allow the inclusion of freehold land (s30) or conservation area and reserve (s31).

Marginal Strips

The Commissioner is required to comply with the requirements of Part 4 of the Conservation Act 1987 in relation to any disposal of land pursuant to the CPL Act including disposals by special lease or fee simple under a Part 3 review. Marginal strips only apply to land identified for disposal.

3. *Summary of proposed designations*

Approximately 5,249 hectares to be retained in full Crown ownership and control as a conservation area pursuant to Section 86(5)(a)(i) CPL Act (shown shaded pink and marked CA1, CA2, CA3, CA4, CA5 and CA6 on the plan included in Appendix 2).

Approximately 480 hectares to be designated as land suitable for disposal by special lease pursuant to Section 86(5)(b)(i) CPL Act (shown shaded blue and marked SL1 on the plan included in Appendix 2). A draft special lease document is included in Appendix 2.

Approximately 58 hectares to be designated as land suitable for suitable for disposal in fee simple under the Land Act 1948 pursuant to Section 86(5)(b)(ii) Crown Pastoral Land Act 1998 (shown shaded green and marked FH1 on the plan included in Appendix 2).

4. *Description of resource (including significant inherent values)*

The Glenlee occupation licence is located on the northwest side of the Awatere Valley, some 80km from Blenheim and some 58km up the Awatere Valley Road. It covers generally broken hill country ranging from approximately 500m altitude to over 1700 metres altitude on the central summits of Glenlee North and Barometer.

The general area is characterized by warm to hot summer temperatures with frequent strong northwest winds, and cool winter temperatures with less frequent but often severe southerly storms. Annual rainfall on the licence area is estimated to range from approximately 750 to 1500 mm plus on the range tops. Snow falls occur periodically over winter and the snow may lie on the ground for several months in the upper altitudes of the area. The area can receive high intensity rainfalls at any time of the year.

In order to review and consider the attributes of the property we have considered the resource information including existing land uses utilising a land systems approach. The property includes a number of defined land systems based largely on the individual catchments. Seven catchments are identified as shown on the plan on the following page. *It is noted that none of the land systems is contained entirely within the Crown land extending onto adjacent freehold and public conservation land.*

The data included in this section is derived from the following sources:

Soils: New Zealand Soil Bureau Bulletin 27.

Land Use Capability: New Zealand land inventory. Details of this approach can be obtained from https://www.landcareresearch.co.nz/__data/assets/pdf_file/0017/50048/luc_handbook.pdf

Cover: Field inspections December 2014 and November 2016.

LENZ: Conservation Resources Report 2016

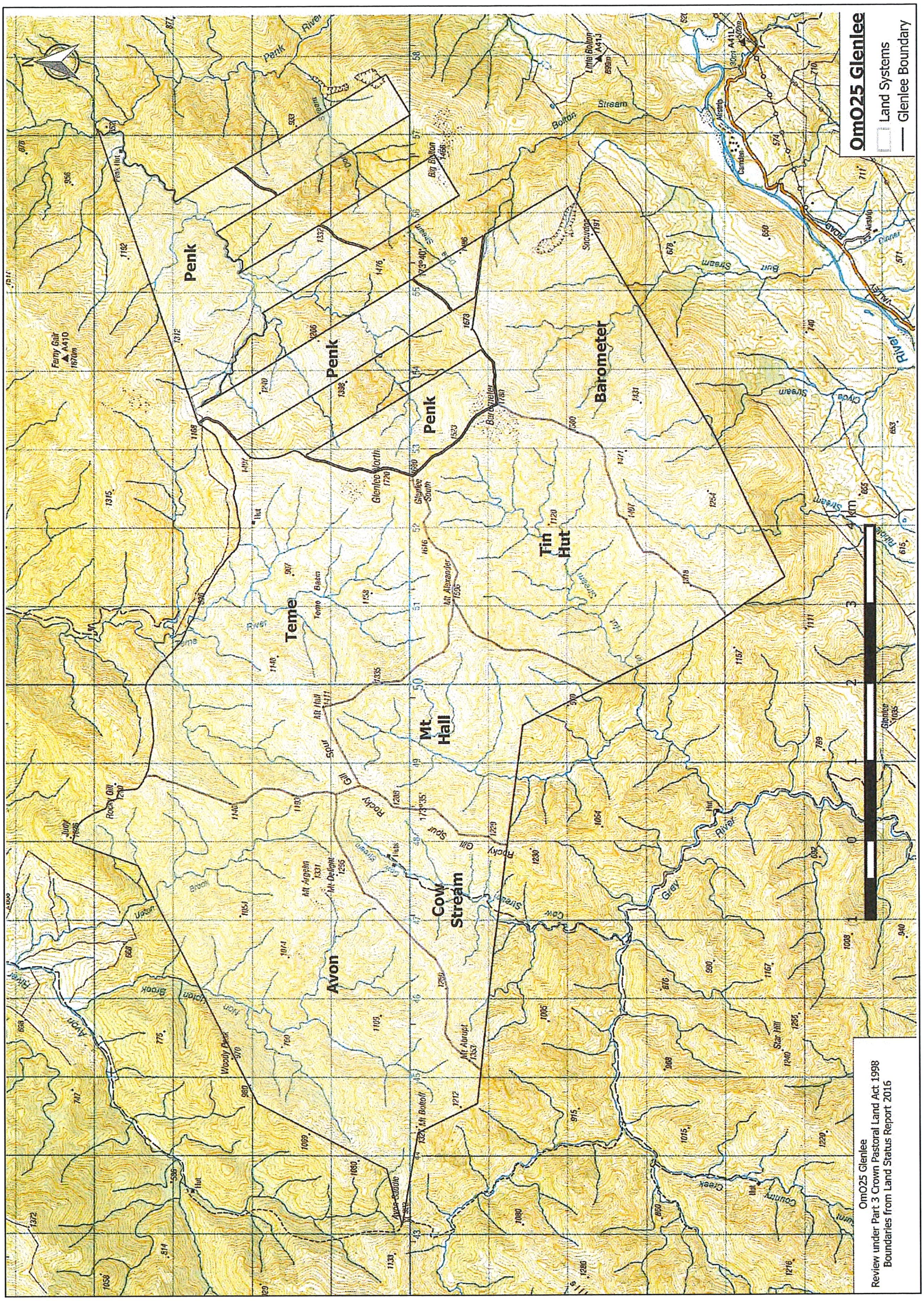
Natural Values and SIVs: Conservation Resources Reports 2006 and 2016.

Economic Use: Rob Hamilton (licensee) December 2014 and November 2016

Public Use: Conservation Resources Reports 2006 and 2016.

On-going consultation with staff of the Department of Conservation and the licensee has assisted in maintaining up to date information for this review.

The data relating to each land system is then analysed to ascertain alternative designations in the context of the objects of Part 3 of the CPL Act *(outlined above)*.


OmO25 Glenlee
Land Systems
Glenlee Boundary
OmO25 Glenlee
Review under Part 3 Crown Pastoral Land Act 1998
Boundaries from Land Status Report 2016
Penk
Penk
Penk
Barometer
Tin Hut
Teme
Mt Hall
Avon
Cow Stream

4.1. Avon Land System

Description: This is part of a larger land system comprising western catchments of the Avon River. Contained within Glenlee are the upper catchments of the Upton Brook and the Non Upton Brook.

Area: 1250ha

Altitude: 480m in the Upton Brook to 1353m at Mt Abrupt

Contour and Aspect: Steep mountain faces with incised valleys lying to the North

Soils: Kaikoura Steepland, very low natural fertility

Land Use Capability: Approximately 15% Class 7e and 85% Class 8.

Cover: Beech forest and kanuka shrublands dominate the lower and mid altitudinal slopes. Above the natural timberline the vegetation becomes sparse with patches of mixed short shrublands and tussock. The balance of the ground cover for the higher altitude land is bare ground, outcrops of bedrock and extensive scree slides.

LENZ: Beech forest areas in the valleys "under protected".
Balance – "no threat" category.

Values:

Landscape: This unit has significant inherent values due to the high natural qualities and integrity of the indigenous component of the unit. The unit possesses an uninterrupted sequence of vegetation types that spans from sparse tussocklands along the ridgelines down to diverse beech forests within the valley floors. The intactness of the native vegetation and lack of "built" elements combine to create a semi wilderness backcountry landscape.

Potential threats to this landscape include the current rigid cadastral boundaries, soil disturbance and vegetation damage through fire, incursion of wilding exotic trees and animal damage (primarily feral).

Botanical: Four distinct communities exist in this land system:

Beech forest in the lower valleys with the forest canopy dominated by mountain beech (*Fuscospora cliffortioides*), with scattered patches of broadleaf (*Griselinia littoralis*) especially on rocky sites. The understorey includes diverse vegetation which is of significance but no threatened or at risk species were noted in the Conservation Resources Report (CRR).

Recent riverbed surfaces in Upton Brook support strongly regenerating mountain beech and kanuka (*Kunzea ericoides)*, with seedlings of most of the species recorded in the forest communities.

Low kanuka forest and scrub on this part of the property ranges from an open-canopied scrub community dominated by kanuka and with few understorey species on dry sites, to a denser and more diverse low-forest community at damper sites. Kanuka forest is present on alluvial sites in this area; one of only two locations in the ecological district where kanuka occurs on such sites.

Ridge crest plant communities on this part of the property are a mosaic of bare rock (20-60% cover), short tussockland and shrubland (40-80%), and bare ground (5-10%), with localised patches of herbfield and grassland.

The significant inherent values relate to the altitudinal sequence of nearly 900m and the diversity of the forest understory.

Fauna: Bird species recorded in the mountain beech-broadleaf forests in this area were South Island rifleman, New Zealand falcon (*Falco novaeseelandiae*) **(Recovering)**, bellbird, brown creeper, grey warbler, silvereye, South Island fantail, South Island robin, South Island tomtit and five naturalised bird species.

Lizards were not seen in this land system.

This land system was not surveyed for fish.

The CRR does not include specific reference to the invertebrate fauna, but in the adjacent Teme Basin a number of moths were recorded including the rarely seen *Asaphodes obarata* **(Threatened - nationally vulnerable)**. An earlier survey recorded the large beetle *Megadromus compressus* **(Relict)** in the Upton Brook catchment.

Historical: The Redwood run in the Avon River, a branch of the Waihopai, and in the Wairau catchment was first taken up by William Adams in 1852.

The Avon Saddle Pack Track a primary natural midpoint route between the Wairau and the Awatere was used as a stock horse and foot route during the second half of the 19th and the early years of the 20th centuries. Both the Awatere and Wairau Roads Boards voted funds and carried out formation work and repairs to their respective sides of the route from at least the 1870's.

The Glenlee Occupation Licence's western extremity just touches on the saddle, otherwise the pack track is outside the Crown land. A benched track formation is visible on the saddle and its approaches.

SIVs:

- Botanical diversity in the forest understory
- An altitudinal sequence of nearly 900m
- New Zealand falcon (*Falco novaeseelandiae*) **(Recovering)**
- The moth *Asaphodes oborata* **(Nationally vulnerable)**
- The long pastoral history
- The historic Avon Saddle Pack Track

Economic Use: Grazing within this land system is limited to an area of approximately 125ha on the western boundary. Due to access difficulties the area is used infrequently. This land system adjoins freehold land to the northwest and Glenlee freehold land in the southwest corner.

Public Use: Limited practical access exists to this land system for recreational activities. This land system adjoins freehold land. Glazebrook Conservation Area meets the boundary at the Avon Saddle and Ferny Gair Conservation Area adjoins for a short distance in the vicinity of Rocky Gill.

The area is known to be used for hunting (pigs, goats, deer and chamois) primarily in the Non Upton Brook and Upton Brook.

There is some use of the Avon River and Avon Saddle by tramping parties.

4.2. Cow Stream Land System

Description: The Cow Stream land system encompasses the catchment of one of the major tributaries of the Grey River. The lower portion of the catchment is within the Glenlee freehold and is steeper and more forested.

Area: 358ha

Altitude: 800m in Cow Stream rising to 1300m on Rocky Gill Spur and 1353m at Mt Abrupt.

Contour and Aspect: Limited area of moderate slopes in the valley floor bounded by steep mountain slopes.

Soils: Kaikoura Steepland, very low natural fertility

Land Use Capability: Approximately 10% Class 6e, 85% Class 7e and approximately 5% Class 8.

Cover: The main ridgelines and Rocky Gill Spur are bare ground, bedrock outcrops and scree slides with patches of tussockland and stunted shrublands. The vegetation is dictated by slope and aspect with the steeper graded west facing slopes being widely covered in beech forest and kanuka shrublands while the corresponding more moderate slopes are clad in occasional patches of kanuka, rock fields and mixed grasslands. Introduced grasses have become established in clearings in the beech forest along the track by Cow Stream.

LENZ: The entire land system has a "no threat" category.

Values:

Landscape: This unit conveys moderately high inherent landscape values with natural patterns and processes still dominating over small modified areas of human intervention. It is part of a broader landscape type that reinforces the natural characteristics of the district's rangelands that feature broken terrain, parched and bare ground and a patchwork of vegetation types.

Potential threats to this landscape include the current rigid cadastral boundaries, soil disturbance and vegetation damage through fire, incursion of wilding exotic trees and animal damage (primarily feral).

Botanical: The lower valleys include forest patches dominated by mountain beech with occasional broadleaf and mountain ribbonwood (*Hoheria lyallii*). These are supported by a varied understorey. Clearings in the beech forest have an abundance of exotic grasses.

The beech forest is frequently flanked by low kanuka forest and scrub which ranges from an open-canopied scrub community dominated by kanuka and with few understorey species on dry sites, to a denser and more diverse low-forest community at damper sites.

Rocky outcrops support sparse but diverse vegetation, typically a mix of grasses, herbs and shrubs such as celmisia (*Celmisia insignis)* **(At risk - naturally uncommon)**.

Fauna: Birds recorded from this forest habitat were the New Zealand falcon (*Falco novaeseelandiae*) **(Recovering),** South Island tomtit, silvereye, bellbird and South Island robin.

Two lizard species were recorded in this land system: the common skink and the Marlborough mini gecko. Individuals of these species were found on the western ridge.

This land system was not surveyed for fish.

Invertebrate fauna included a range of moths including two forest litter feeding moths *Tingena* spp and case moth *Grypotheca* sp. were collected. The moth *Meterana diatmeta* has caterpillars on understorey shrubs. Moths in open shrubland included *Graphania phricas* on matagouri and *Meterana exquisita* **(relict)** on *Olearia odorata.* Grassland inhabiting moths included the widespread owlet moths *Graphania omoplaca, Persectania aversa, Tmetolophota unica* and others. The ground beetle *Mecodema rugiceps* was also noted in the forest.

Historical: Cow Stream Slab Hut: This old hut preceded the current hut as the top mustering hut in Cow Stream and is at the terminus of the vehicle track up the stream from its junction with the Grey River. It is situated on the valley floor on the true right of Cow Stream more or less opposite the 'new' hut. The hut is framed in pole beech and is clad with axe-dressed beech slabs set vertically over tar paper. The roof is also clad with butted slabs which have been covered with tar paper and corrugated iron. The hut has been built with diagonal bracing in the wall framing and had five bunks also fabricated from beech poles.

The hut is now in a derelict state and partially collapsed. Half the front (east) wall and two thirds of the back wall is missing. It has a fireplace in the south end and two small windows; one in the north end and another in the east side next to the door. The door is of tongue and groove with three ledges and diagonal braces on the inside. Although no reference to the hut has been found it has been built in the first half of the 20th century possibly the 1930s or 40s. It is not shown on the February 1943 edition of NZMS1 S35 but is shown on the 1968 edition.

Old Fence, Rocky Gill Spur: This fence appears to come from the saddle at the head of Cow Stream and sidles around point 1288 on Rocky Gill Spur to the flat on the spur which is effectively the saddle between the Upton Brook and the west branch of Tin Hut Stream. It is a six wire fence primarily on flat standards although there are several small T-iron posts where the fence deviates into the head of Tin Hut Stream. One of the T-irons has the maker's DL, & Co, M BRO embossed on it. Information on this manufacturer has not been found however the fence appears to date from the early 20th century based on the thinner type of standard used. It is not shown on any of the NZMSI editions.

SIVs:

- Diverse vegetation pattern including beech forest, kanuka shrubland, low forest communities, tussockland, herbfield and valley floor wetlands
- New Zealand falcon (*Falco novaeseelandiae*) **(Recovering)**
- *Celmisia insignis* **(At risk – declining)**
- The moth *Meterana exquisita* **(relict)**
- The historic Cow Stream Hut
- The historic fence on Rocky Gill Spur

Economic Use: The Cow Stream catchment offers grazing adjacent to the huts and on the western side of the stream. Field investigations indicate that the level of grazing may be declining as woody vegetation takes over. The portion of Cow Stream that lies within the Glenlee Occupation Licence cannot be separated from the lower reaches of Cow Stream within the Glenlee freehold. Stocking of the adjacent freehold is limited as this is restricted by extensive bush areas. Stock drift from the freehold to the land is therefore likely to be limited. The upper portions of this area rise to altitudes in excess of 1,300 metres making this area on the edge of ecological sustainability for ongoing grazing.

Public Use: As the Cow Stream land system can only be accessed via the Glenlee freehold we are not aware of any current public use. Limited hunting would be available in this area and at this point is managed by the former holder.

4.3. Mt Hall Land System

Description: The land system includes the western branch of Tin Hut Stream with Mt Hall at the head of the valley. Due to aspect it is considered distinct to the Tin Hut Stream land system. The land system extends into the Glenlee freehold.

Area: 480ha

Altitude: 750m in the Tin Hut Stream tributary to 1411m at Mt Hall and 1596m at Mt Alexander.

Contour and Aspect: Steep mountain faces with the valley lying to the south.

Soils: Kaikoura Steepland, very low natural fertility

Land Use Capability: Approximately 15% Class 6e, 65% Class 7e and 20% Class 8

Cover: Covering the main ridgelines and Rocky Gill Spur is bare ground, bedrock outcropping and scree slides with patches of tussockland and stunted shrublands. The steeper graded west facing slopes are covered in beech forest and kanuka shrublands while the corresponding more moderate slopes are clad in occasional patches of kanuka, rock fields and mixed grasslands.

LENZ: Other than a very small area in the lower valley which is an "under protected" environment the majority of the area has a "no threat' category.

Values:

Landscape: This unit conveys moderately high inherent landscape values with natural patterns and processes still dominating over small modified areas of human intervention. It is part of a broader landscape type that reinforces the natural characteristics of the district's rangelands that feature broken terrain, parched and bare ground and a patchwork of vegetation types.

Potential threats to this landscape include the current rigid cadastral boundaries, soil disturbance and vegetation damage through fire, incursion of wilding exotic trees and animal damage (primarily feral).

Botanical: Forest patches are dominated by mountain beech with occasional broadleaf and mountain ribbonwood with a diverse understorey

The beech forest is flanked by low kanuka forest and scrub which ranges from an open-canopied scrub community dominated by kanuka and with few understorey species on dry sites, to a denser and more diverse low-forest community at damper sites.

Rocky outcrops support sparse but diverse vegetation, typically a mix of grasses, herbs and shrubs such as *Celmisia insignis* **(At risk - naturally uncommon)**. Near Mt Hall a population of ewartia (*Ewartiothamnus sinclarii*) **(At risk - naturally uncommon)** occurs on the bluffs on the ridge crest. Igneous bluffs and rocklands on the ridgeline south-south east of Mt Hall support a herb field.

Wetland turfs and seeps in the head of the true right branch of Tin Hut Stream are a mixture of low turfs and taller stature communities depending on slope and drainage. The lower stature areas contain the herb *Euchiton paludosus* **(At risk - naturally uncommon)**, creeping cudweed (*E. ensifer*) **(Threatened - nationally endangered)**, and the herb *Lagenophora barkerii* **(At risk - naturally uncommon)**.

Fauna: Birds observed here were the New Zealand pipit (*Anthus novaeseelandiae*) **(Declining)**, silvereye, grey warbler and four naturalised bird species.

Two lizard species were recorded: common skink and Marlborough mini gecko. Individuals of these species were found under stones on Rocky Gill Spur near Mt Hall.

This land system was not surveyed for fish.

The CRR does not provide specific reference to invertebrates in this land system but notes that a number of species referred to in relation to Glenlee North and the Teme Basin are also found at the higher altitudes around Rocky Gill Spur and Mt Hall.

Historical: Old Fence, Rocky Gill Spur: This fence appears to come from the saddle at the head of Cow Stream and sidles around point 1288 on Rocky Gill Spur to the flat on the spur which is effectively the saddle between Upton Brook and the west branch of Tin Hut Stream. *(See previous reference.)*

Trig Mt Hall: There is a rock cairn on the western side of the top of Mt Hall. This is presumed to mark a trig. The cairn is approximately 1 metre diameter at the base and 50 centimetres high. The cairn is partly collapsed on one side.

SIVs:

- Four "At risk" and one "Threatened" plant species
- *Celmisia insignis* **(At risk – naturally uncommon)**
- Ewartia (*Ewartiothamnus sinclarii*) **(At risk – naturally uncommon)**
- *Euticon paludosus* **(At risk – naturally uncommon)**
- Creeping cudweed (*Euchiton ensifer*) **(Threatened – nationally endangered)**
- *Lagenophora barkerii* **(At risk – naturally uncommon)**
- New Zealand pipit (*Anthus novaeseelandiae*) **(declining)**

- The historic old fence on Rock Gill Spur
- The historic Trig on Mt Hall

Economic Use: The Mt Hall land system within the Glenlee Occupation Licence is unfenced and inseparable from the adjacent Glenlee freehold. Stock graze throughout this land system incidental with the adjacent freehold and specific numbers have not been advised. We estimate in the vicinity of 100 stock units on an annual basis. The current low levels of grazing within this area do not appear to be having an adverse affect on the land or identified SIVs.

Public Use: As this catchment can only be accessed via the Glenlee freehold we understand that there is very little public use of the area at present. Potential public uses may include limited hunting and possible access to Mt Hall as a climbing opportunity.

4.4. Tin Hut Stream Land System

Description: This land system is the second major tributary of the Grey River extending from within the Glenlee freehold to two of the highest peaks on the property. It is also the intergrade to the igneous rock zones associated with Barometer.

Area: 755ha

Altitude: 700m in Tin Hut Stream rising to 1780m at Barometer and 1690m at Glenlee South

Contour and Aspect: Steep mountain slopes lying generally to the south west.

Soils: Kaikoura Steepland, very low natural fertility

Land Use Capability: Approximately 15% Class 6e, 55% Class 7e and 35% Class 8

Cover: The Tin Hut Stream basin features complex and fractured topography with angulated outcropping of bedrock, scree slides and eroding chutes and displaced watercourses often resulting in tumbling waterfalls.

The barren slopes within the Tin Hut Stream basin reflect eroding and parched-like traits commonly being covered in a wide scattering of kanuka and tauhinu. Along the ridgelines strips of tussock cling onto the more stable ground. Cladding the smaller catchments is regenerating kanuka shrublands

LENZ: The lower valley contains an "under protected" environment with the majority of the area having "no threat' category.

Values:

Landscape: The Tin Hut Stream basin possesses significant inherent landscape values owing to diverse array of natural features and elements within the unit. The legibility of the underlying formative processes, especially in relation to natural weathering, is clearly demonstrated in the angulated bedrock formations, scree slides, eroding gravel chutes and the large expanses of wind swept bare ground. The unit is also significant because it contains some of Marlborough's highest peaks outside the

Inland Kaikoura Range with Barometer being a standout landmark within the Awatere Valley.

Potential threats to this landscape include the current rigid cadastral boundaries, intervention in the natural regeneration processes, soil disturbance and the incursion of wilding exotic trees.

Botanical:

There are two distinct geologies in this land system, greywacke and igneous. The igneous rocks stem from a swarm of basic dykes which are exposed on the surface on the upper part of the ridge. This area of dykes represents the largest area of igneous outcrop within the Waihopai Ecological District. Vegetation communities are quite distinct on each of the geologies.
The vegetation on all the igneous rock was very patchy and sparse. On the more stable portions of scree are tussock-herbfield communities established in patches consisting of bristle tussock (*Rytidosperma setifolium*), patotara (*Leucopogon fraseri)* and cotton daisy (*Celmisia spectabilis).*

On the igneous bluffs and outcrops there is a sparse community dominated by speargrass (*Aciphylla monroi*), blue tussock (*Poa colensoi*) and bristle tussock. Other species include bitter cress (*Cardamine bilobata*) **(At risk - naturally uncommon)** and pin cushion (*Colobanthus brevisepalus*) **(At risk - naturally uncommon)**.

Greywacke substrates support denser vegetation coverage of tussock-tauhinu shrubland. In this community the dominant tussocks are bristle tussock and blue fescue (*Festuca matthewsii*) with the occasional mid-ribbed snow tussock (*Chionochloa pallens*) and pin cushion (*Colobanthus brevisepalus*) **(At risk - naturally uncommon)**.

On the mobile screes of both geologies there is a distinctive scree community of bristle tussock, willow herb (*Epilobium pycnostachyum*), forget me not (*Myosotis traversii),* penwiper (*Notothlaspi rosulatum),* scree poa (*Poa buchananii),* scree chickweed (*Stellaria roughii*) and scree harebell (*Wahlenbergia cartilaginea)* **(At risk - naturally uncommon)**. Large populations of Forbe's willowherb (*Epilobium forbesii*) **(At risk - naturally uncommon)** also occur on these screes.

The east (true left) of the Tin Hut Stream is generally rocky and bare. Mountain beech tree land extends almost to the ridge at lower altitudes; otherwise the sparse vegetation comprises regenerating kanuka and tauhinu (*Ozothamus leptophyus)* shrubland, fescue tussockland and cotton daisy herbfield. Along the stream is a large population of pink broom (*Carmichaelia australis*) **(Threatened - nationally critical)**, extending from adjoining freehold land onto the property.

Fauna:

Bird species recorded here were New Zealand falcon **(Recovering)**, bellbird, grey warbler, silvereye, South Island fantail, New Zealand pipit **(Declining)**, welcome swallow, South Island tomtit and six naturalised bird species.

Lizards were not seen in this land system.

Canterbury galaxias (Northern) (*Galaxias vulgaris)* **(declining)** was the only fish species recorded.

The CRR does not provide specific reference to invertebrates in this land system but notes that the area *retains a richness of upland and alpine invertebrates.*

Historical: No sites of historic significance are known.

SIVs:

- One threated and four at risk plant species
- Pink Broom (*Carmichaelia australis*) **(Threatened – nationally critical)**
- Bitter cress (*Cardamine bilobata*) **(At risk – naturally uncommon)**
- Pin cushion (*Colobanthus brevisepalus*) **(At risk – naturally uncommon)**
- Scree harebell (*Wahlenbergia cartilaginea*) **(At risk – naturally uncommon)**
- Forbe's willowherb *Epilobium forbesii*) **(At risk – naturally uncommon)**
- New Zealand falcon **(Recovering)**
- New Zealand pipit **(Declining)**
- Canterbury galaxias **(Declining)**

Economic Use: The Tin Hut catchment currently offers limited grazing due to extensive scrub vegetation and upper altitude slopes. Stock graze to the south western boundary however due to contour and vegetation we understand there to be little stock movement across this boundary into the Tin Hut catchment other than below a fence in the southern corner. Due to the extensive areas of manuka the catchment offers potential for the production of honey.

Public Use: As with the previous land systems, public use of this area is limited due to access being gained solely through the adjacent Glenlee freehold. We are advised that there has been some historic interest in climbing Barometer (1,780 metres) and the other high peaks to the north and west. Potential uses include further access to the high peaks for recreational climbing and possibly some hunting.

4.5. Barometer Land System

Description: This land system lies above a major fault line in the Awatere Valley (located on Glenlee freehold) and extends to the high point of Barometer incorporating three sub catchments. The distinctive geology of greywacke and igneous rocks is a feature.

Area: 847ha

Altitude: 800m on portions of the south eastern boundary rising to 1780m at Barometer

Contour and Aspect: Steep mountain faces lying to the south east.

Soils: Kaikoura Steepland, very low natural fertility

Land Use Capability: Approximately 25% Class 7e and 75% Class 8

Cover: Along the ridgelines strips of tussock cling onto the more stable ground. Cladding the smaller catchments is regenerating kanuka shrublands.

LENZ: Other than a very limited area of the land system having an "under protected" category the overwhelming majority of the land system has a "no threat" category.

Values:

Landscape: The catchments south of Barometer contain a series of high-shouldered spur lines that descend rapidly towards the property's southeast front country with deeply dissected gullies dividing the spur lines.

The unit is significant because it contains some of Marlborough's highest peaks outside the Inland Kaikoura Range with Barometer being a standout landmark within the Awatere Valley. The series of smaller catchments south of Barometer have relevance providing the foreground and setting to the high peaks.

Potential threats to this landscape include the current rigid cadastral boundaries, intervention in the natural regeneration processes, soil disturbance and the incursion of wilding exotic trees.

Botanical: There are two distinct geologies in this land system, greywacke and igneous. The igneous rocks stem from a swarm of basic dykes which are exposed on the surface on the upper part of the ridge. This area of dykes represents the largest area of igneous outcrop within the Waihopai Ecological District. Vegetation communities are quite distinct on each of the geologies.
The vegetation on all the igneous rock was very patchy and sparse. On the more stable portions of scree are tussock-herbfield communities established in patches consisting of bristle tussock, patotara and cotton daisy (*Celmisia spectabilis)*.

On the igneous bluffs and outcrops there is a sparse community dominated by speargrass, blue tussock (*Poa colensoi*) and bristle tussock. Other species include bitter cress **(At Risk - Naturally Uncommon)** and pin cushion **(At Risk - Naturally Uncommon)**.

Greywacke substrates support denser vegetation coverage of tussock-tauhinu shrubland. In this community the dominant tussocks are bristle tussock and blue fescue (*Festuca matthewsii*) with the occasional mid-ribbed snow tussock (*Chionochloa pallens*) and pin cushion **(At Risk - Naturally Uncommon)**.

On the exposed and stable talus/scree there is a sparse tussock-herbfield. Greywacke bluffs support a sparse herbfield-shrubland. Several of the bluffs in the headwaters of Burr and Clyde stream support populations of cress (*Pachycladon fastigiata*) and at least one population of Cockayne's mountain daisy (*Celmisia cockayneana*) **(At Risk - Naturally Uncommon)**.

On the mobile screes of both geologies there is a distinctive scree community of bristle tussock, willow herb, forget me not, penwiper, scree poa, scree chickweed and scree harebell **(At Risk - Naturally Uncommon)**. Large populations of Forbe's willowherb **(At Risk - Naturally Uncommon)** also occur on these screes.

Many of the faces south east of Barometer are steep with numerous bluffs and a large proportion of exposed rock and bare ground, particularly in the head of Burr Stream. At lower altitudes, kanuka scrub and small areas of regenerating beech forest are present. Bitter cress **(At Risk - Naturally Uncommon)** is frequently found in the more open rocky areas between the tussocks.

The riparian bluffs in the head of Clyde Stream support a sparse herbfield that includes populations of bitter cress **(At Risk - Naturally Uncommon)** and *Celmisia insignis* **(At Risk - Naturally Uncommon)**

Fauna: The only bird species observed in this area was the New Zealand pipit **(Declining)**.

Lizards were not seen in this land system.

This land system was not surveyed for fish.

The CRR does not provide specific reference to invertebrates in this land system but notes that the ridges and catchments surrounding Barometer still retain a richness of upland and alpine invertebrates.

Historical: No sites of historic significance are known.

SIVs:

- Six at risk plant species
- Bitter cress (*Cardamine bilobata*) **(At risk – naturally uncommon)**
- Pin cushion (*Colobanthus brevisepalus*) **(At risk – naturally uncommon)**
- Cockayne's mountain daisy (*Celmisia cockayneana*) **(At risk – naturally uncommon)**
- Scree harebell (*Wahlenbergia cartilaginea*) **(At risk – naturally uncommon)**
- Forbe's willowherb *Epilobium forbesii*) **(At risk – naturally uncommon)**
- *Celmisia insignis* **(At risk – naturally uncommon)**
- New Zealand pipit **(Declining)**

Economic Use: This area is inseparable from the adjacent Glenlee freehold. Currently the adjacent freehold receives little grazing and therefore stock drift into this land system is limited. The catchment is also largely at higher altitude.

Public Use: Other than limited climbing on Barometer and possibly Snowden we are not aware of public use of this area at present. Access is via the adjacent freehold land and although legal roads are shown on the plans these do not provide feasible access.

Future uses may include some recreational hunting and a continuation of the climbing of the higher peaks. Access to this area will remain difficult although we do note that the Big Bolton Conservation Area adjoins the eastern end of this land system. Access to the Big Bolton is gained via the Penk River. Access into the basin will however remain difficult as crossing into the Burt and Clyde Streams will not be easy.

4.6. Penk Land System

Description: This land system incorporates the south branch of the Penk River and the secondary catchment of Dore Stream.

Area: 993ha

Altitude: 600m in the Penk River to 1780m at Barometer

Contour and Aspect: Generally steep mountain faces to very steep adjacent to Barometer. Areas of upland basins. Aspect generally North East

Soils: Kaikoura Steepland, very low natural fertility

Land Use Capability: Approximately 15% Class 6e, 50% Class 7e and 35% Class 8

Cover: The vegetative cover is varied with the upper sections of both the Penk River catchment and the smaller Dore Stream catchment covered primarily in depleted tussock. The mid slopes of the Penk River catchment comprise a mixture of kanuka shrublands and remnants of beech forest. Beech forest is also present in the mid and lower slopes of the Dore Stream catchment, especially on the darker slopes, while the opposite drier and sunnier faces are covered extensively in kanuka.

LENZ: The lower portions of the Penk River and Dore Stream valley's contain an "under" protected environment balance having "no threat" category.

Values:

Landscape: This unit conveys significant inherent landscape values owing to the high natural qualities and integrity of the indigenous component of the unit. An important feature is the high natural character of the upper Penk River and its tributaries. This unit forms a link between Ferny Gair Conservation Area in the north and Big Bolton Conservation Area in the south. Both of these protected areas express the same inherent traits as the property.

Threats to this unit include; earth disturbances across upper slopes and ridgelines, intervention in the natural regeneration of shrublands back to beech forest

(especially through burn-offs and unsustainable grazing), and the adoption of the existing legal boundaries that follow straight survey lines.

Botanical: This area supports a mosaic of tussockland, shrubland and bluff communities. There is an increasing proportion of woody vegetation at lower altitudes, mostly comprising kanuka and manuka (*Leptospermum scoparium*) shrubland. On the south side of the ridge pockets of mountain beech forest extend to the ridge crest.

Mixed herbfield-shrubland is present on greywacke bluffs. Prominent plants in this sparse community are bristle tussock, Cockayne's mountain daisy **(At risk - naturally uncommon)**, *Celmisia insignis* **(At risk - naturally uncommon)** and, on talus Forbe's willowherb **(At risk - naturally uncommon)**.

The mixed herbfield-tussockland-shrubland on greywacke hill slopes is dominated by blue tussock, bristle tussock and cotton daisy. Other plants include pin cushion **(At risk - naturally uncommon)**.

Shrublands lower down the ridge are dominated by kanuka and manuka.

Vegetation in the Penk River valley near Penk Hut is dominated by low kanuka forest. The hut sits in a grassy clearing with a range of native species that include the occasional parsley fern (*Botrychium australe*) **(At risk - naturally uncommon)** and bristle grass (*Rytidosperma merum*) **(Threatened - nationally vulnerable)**.

Beech forest is present on hill slopes in Dore Stream. The forest canopy is predominantly mountain beech with occasional broadleaf and kanuka.

The ridge at knob 1673 east of Barometer, at the head of the Dore Stream is predominantly a gravel and rock field with a sparse vegetation component. A small population of pimelea (*Pimelea sericeovillosa* subspecies *sericeovillosa*) **(At risk - declining)** is present.

Plant communities in the upper Penk catchment are in varying stages of recovery from historic burning events. While exotic pasture species are present, ecological processes are leading to the reinstatement of indigenous scrub and forest. Shoulder slopes and ridge crests are relatively unmodified and the vegetation communities are dominated by indigenous species. Shrub-herbfields dominated by cotton daisy, snow berry (*Gaultheria depressa*) and tauhinu are common.

Bluff communities below ridgelines are typically sparsely vegetated, primarily by blue tussock and *Helichrysum coralloides*. These bluff communities provide habitat for bitter cress **(At risk - naturally uncommon)**, *Celmisia insignis* **(At risk - naturally uncommon)** and mahoe (*Melicytus* aff. *crassifolius* 'cliff') **(Threatened - nationally critical)**.

Higher in the catchment beneath Glenlee North there is a mosaic of bare screes and pockets of mixed tussock.

Riparian turf communities associated with the north western-most headwater tributary of the Penk River include traversia (*Traversia baccaroides*) **(At risk – declining)**.

Fauna: Birds recorded here were New Zealand falcon **(Recovering)**, bellbird, grey warbler, silvereye, South Island fantail, South Island tomtit, South Island robin, New Zealand pipit **(Declining)** and five naturalised bird species.

Lizards were not seen in this land system.

The Canterbury galaxias (Northern) **(Declining)** was the only fish species recorded.

Other than the very upper reaches of the land system adjacent to Barometer and Glenlee North this land system was not particularly noted for invertebrates. The species in the upper catchment are reflected in the description for the Teme land system.

Historical: Boundary Fence: This fence is shown on the 1968 edition of NZMS1 S35 running along ridgelines from the Avon, over Rocky Gill, crossing the upper Teme, along the ridge behind Teme Basin Hut across the saddle behind the hut and down into the head of the Penk River. It is assumed that this fence dates from the separation of Glenlee from Avondale in 1907. It remains the back boundary to the Glenlee ex POL and has been maintained and portions renewed.

SIVs:

- Two threatened and nine at risk plant species
- Mahoe (*Melicytus* aff. *crassifolius* 'cliff') **(Threatened – nationally critical)**
- Bristle grass (*Rytidosperma merum*) **(Threatened – nationally vulnerable)**
- *Pimelea sericeovillosa* subspecies *sericeovillosa* **(At risk – declining)**
- *Traversia baccaroides* **(At risk – declining)**
- Parsley fern (*Botrychium australe*) **(At risk – naturally uncommon)**
- Bitter cress (*Cardamine bilobata*) **(At risk – naturally uncommon)**
- Pin cushion (*Colobanthus brevisepalus*) **(At risk – naturally uncommon)**
- Cockayne's mountain daisy (*Celmisia cockayneana*) **(At risk – naturally uncommon)**
- Scree harebell (*Wahlenbergia cartilaginea*) **(At risk – naturally uncommon)**
- Forbe's willowherb *Epilobium forbesii*) **(At risk – naturally uncommon)**
- *Celmisia insignis* **(At risk – naturally uncommon)**
- New Zealand pipit **(Declining)**
- New Zealand falcon **(Recovering)**
- Canterbury galaxias (Northern) (*Galaxias vulgaris)* **(Declining)**
- Historic boundary fence

Economic Use: There are four distinct zones within the Penk land system in relation to grazing. At this time there is no grazing within the Dore Stream catchment albeit that this catchment is divided into sections of Crown Land and freehold belonging to Glenlee Station. The freehold sections can only be accessed via the Crown Land.

The south side of the Penk River receives limited grazing incidental with the other grazing in the headwaters and the Teme Basin. The north side of the Penk River receives little or no grazing due largely to heavy scrub cover.

The headwaters of the Penk River provide a number of healthy tussock basins providing good grazing. This area is utilised in conjunction with the associated freehold and the Teme Basin to the west and in combination carries some 1,000 adult wethers during December to June period and between 450 and 650 adult wethers during the winter period.

The Licensee undertakes an extensive programme of weed and pest control. Feral goats are a particular issue in this area and are actively controlled at significant cost. In 2016 nearly 1,400 goats were culled from the back country including the Teme and Penk. There is also an active programme of wilding pine and conifer control within the area.

Portions of the upper Penk land system are freehold land held by Glenlee Station with no ability to delineate between Crown land and freehold land in terms of stock management.

Public Use: The Big Bolton Conservation Area adjoins this land system to the south and the Ferny Gair Conservation Area adjoins this system to the north. There areas are popular for hunting and it is likely that some interest in hunting would extend into the Penk River and Dore Stream areas. We are not aware of current public use of this area.

4.7. Teme Land System

Description: This is a large upland basin in the headwaters of the Teme River, a major tributary of the Avon River and extends into conservation land to the north.

Area: 1103ha

Altitude: 600m in the lower Teme to 1720m at Glenlee North

Contour and Aspect: Rolling basins in the lower area rising to very steep mountain slopes. Lies predominantly to the north.

Soils: Kaikoura Steepland, very low natural fertility

Land Use Capability: Approximately 65% Class 7e and 35% Class 8

Cover: Modification of the original ground cover is evident by a wide scattering of standing burnt beech trunks. Natural reversion is taking place with extensive tracts of kanuka shrublands and bracken fernland now occupying the basin. Ground cover within the high altitude section is sparse with the occasional area being occupied by fescue tussock supplemented by tauhinu. At a mid and lower altitude there are signs of reversion with taller tiered shrubs over topping both exotic grasses and lower tiered native species. Adjacent to the northern boundary exotic grasslands are a common feature.

LENZ: The lower valley contains an "under protected" environment with the majority of the area having "no threat" category.

Values:

Landscape: A large proportion of this unit possesses moderately high inherent landscape values attributable to the fact that natural landscape patterns and ecological processes are progressively replacing signs of human intervention. These dynamic processes are strikingly apparent with the reestablishment of beech seedlings over previously modified areas. This unit links the other key basins and valleys that radiate out from the core rangelands on the property.

Threats to this unit include; earth disturbances across upper slopes and ridgelines, intervention in the natural regeneration of shrublands back to beech forest (especially through burn-offs and unsustainable grazing).

Botanical:

Although it appears heavily modified by fire, the Teme Basin still supports a relatively diverse range of indigenous plant communities, including forest, shrubland, tussockland, herbfield, rock land, scree and seepage vegetation.

A range of trees, shrubs and herbs occur on the riparian bluffs depending on their accessibility to browsing animals. In one location, on an inaccessible bluff, a large white mistletoe (*Tupeia antarctica*) **(At risk - declining)** occurs on a marbleleaf (*Carpodetus serratus*) tree.

The more active channels of the streams are generally gravel beds with scattered silver tussock and tauhinu.

There are wetland turfs associated with watercourses and seeps, and these are characterised by mixed herbfields containing the herb *Lagenophora barkerii* **(At risk - naturally uncommon)** and mountain myrrh **(Threatened - nationally critical)** was found in high turf on a ridge in the Teme Basin running north from Glenlee North.

Carex wetlands are scattered on toe slopes and within the valley floors. These wetlands typically contain *Carex dipsaceaa, C. flagellifera,* rushes (*Juncus australis*), pukio (*C. secta*) and toetoe (*Cortaderia richardii).* Under this canopy and in the wetter areas such as the margins of the flowing water there are turfs of *Euchiton paludosus* **(At risk - naturally uncommon)** and *Lagenophora barkerii* **(At risk - naturally uncommon)**.

The wetland turf adjacent to (and partly occurring within) the Teme Basin yards near the saddle contains a diverse mix of indigenous wetland species. The turf is dominated by *Epilobium minutiflorum,* mouse-ear hawkweed, rushes, sweet vernal and several species of *Euchiton* including *E. audax, E. ensifer* **(Threatened - nationally endangered)**, *E. limosus and E. traversii.* Other species include mountain myrrh (*Chaerophyllum colensoi* var. *delicatulum*) **(Threatened - nationally critical)** occurs in the turf community.

The bluffs and rocklands on the Glenlee ridge north of Glenlee North support a sparse mix of herbs and shrubs which increase in diversity as altitude decreases. This community frequently includes *Celmisia insignis* **(At risk - naturally uncommon)**.

A sparse herbfield occurs on screes near the Glenlee north ridge supporting *Epilobium pycnostachyum, E. forbesii* **(At risk - naturally uncommon)**. At lower altitude along the ridge there are a number of low gradient igneous gravel fields. These areas are predominantly bare rock and cobble but are characterised by large scabweed (*Raoulia australis*) mats.

An area of greywacke scree beneath Glenlee North in the head of the Basin supports a community of *Epilobium pycnostachyum, E. melanocaulon and Lignocarpa diversifolia* **(At risk - naturally uncommon)**. In the vicinity of these boulders bitter cress **(At Risk - naturally uncommon)** and *Oxalis* "scree" **(At risk - naturally uncommon)** occur.

Mid altitude parts of the basin support relatively extensive areas of grassland, with scattered fescue tussock, silver tussock and tauhinu. Stream sides, rocky areas and seepages within the grassland-short tussockland support a greater diversity of indigenous species. These areas have been heavily modified with a significant exotic grass component. The gentler areas of the ridge (such as the tops of knobs) north of Glenlee North support short tussock grassland dominated by silver, blue and bristle tussock with cotton daisy a common component.

A mixed tussock and shrubland is scattered over a boulderfield that extends along the bottom of the screes where the angle of slope changes to form a "bench". In one area, above a seepage zone, *Epilobium pictum* **(Threatened - nationally critical)** is creeping through the herbs around the base of a boulder and large tussocks. Away from the boulderfield the vegetation cover becomes denser with tauhinu and silver tussock becoming dominant canopy species.

A series of seeps occur on this "bench" feeding the streams draining through the basin. These seeps are generally a mix of turfs consisting of species such as *Lagenophora barkerii* **(At risk - naturally uncommon)**. The herb *Chaerophyllum colensoi* var. *delicatulum* **(Threatened - nationally critical)** is locally common throughout these seeps.

Higher altitude parts of the Teme Basin are dominated by rock land, scree, tall tussockland and shrubland. The ridge crest between Mt Hall and Mt Alexander supports an open rockland-tussockland plant community similar to that described for the northeast part of the property. Additional species recorded here included the daisy *Leptinella atrata* subspecies *luteola* **(At risk - naturally uncommon)**.

Fauna:

Indigenous birds recorded from forest and scrub habitats were bellbird, grey warbler, silvereye and South Island fantail. Birds recorded in other habitat in the area were Australasian harrier, New Zealand pipit **(Declining)**, welcome swallow and seven naturalised species.

Two lizard species were recorded in this land system: the common skink and the Marlborough mini gecko. Individuals of these species were found under stones on terraces alongside the Teme River and on Rocky Gill Spur near Mt Hall.

Canterbury galaxias (Northern) (*Galaxias vulgaris)* **(declining)** was the only fish species recorded.

Some of the most active screes in the region are under Glenlee North and Mt Alexander in the Teme Basin. The vivid orange hindwing moth *Paranotoreas brephosata* was common as were grasshoppers *Paprides nitidus*. On less active scree one early season example of black ringlet butterfly *Percnodaimon pluto* was recorded. On stable rock talus here and elsewhere is habitat for grasshopper *Brachaspis nivalis*. The crevices of rock bluffs also above bushline here and elsewhere shelter an un-named cave weta species. A specialist alpine moth *Asterivora tillyardi* has larvae on vegetable sheep. Also only noted at 1700m was the moth *Dichromodes* cf. *cynica* whose larvae inhabit lichens.

In the Teme Basin at the toe of the Glenlee North screes (1400-1300 m asl.) a complex of shrubland, stable rock talus, springing streams and deeper soils have examples of insects to match, including chirping cicada *Amphipsalta strepitans.*

Boulder butterflies *Lycaena* sp. cf. *tama* (Canterbury alpine boulder) bask on the talus while larvae eat creeping pohuehue.

Below 1300m in the basin, rocky spurs, bluffs and river bed are a matrix of grassland and scattered shrublands. Over 70 species of moths were noted here occupying a good range of habitats. Moths from wet areas include *Glaucocharis lepidella, Orocrambus apicellus, O. ramosellus* and *Elachista gerasmia*. On bluffs and rocky sites below natural bushline, six moths were noted, their larvae eating mosses or lichens. This indicates the cryptic and delicate *Dichromodes sphaseriata* on rock faces. The moth *Aletia* s.l. *virescens* has caterpillars feeding at night on river bed and slip scar willow-herbs.

Many moths and other insects of open or sparse vegetation were noted below natural bushline. 17 (out of 24 total species) of moth in the Crabidae family of day active moths were recorded.

A mixed shrubland fauna is also present including the endangered and rarely recorded moth *Asaphodes obarata* **(Nationally vulnerable)**. In a rocky shrubland site with kanuka, fern, hardwood trees, 14 species of micro-snail were collected from leaf litter which have persisted from the formerly more extensive shrub and forest cover.

Historical:

Boundary Fence: This fence is shown on the 1968 edition of NZMS1 S35 running along ridgelines from the Avon, over Rocky Gill, crossing the upper Teme, along the ridge behind Teme Basin Hut across the saddle behind the hut and down into the head of the Penk River. It is assumed that this fence dates from the separation of Glenlee from Avondale in 1907. It remains the back boundary to the Glenlee ex POL and has been maintained and renewed.

Yards/Holding Paddocks, Teme Basin: There is a large holding paddock in the saddle up the hill from the Teme Basin Hut. This paddock is rectangular and measures approximately 180 by 110 metres and encloses almost 2 hectares. There is a smaller paddock at its centre. The outer paddock appears to be earlier and is fenced with a T-iron and standard 6 wire fence. At the northern end it butts on to the boundary fence. There is a gate in the south east corner.

The T-irons are from various manufacturers including: Lanarkshire Steel Co, Scotland; Frodingham, England; Dorman Long and Co, Middlesborough; and MISCO. All these companies date back into the 19th century and continued into the 20th. The date of these posts is not known but they are steel and likely to be either late 19th or early 20th century. The internal paddock is enclosed with a four wire with barb fence supported on timber post and standards. It is also old. The original timber posts are rotted and supported by later steel posts. These paddocks clearly pre-date the present Teme Basin Hut.

SIVs:

- Three threatened and ten at risk plant species
- Mountain myrrh (*Chaerophyllum colensoi* var. *delicatulum*) **(Threatened - nationally critical)**
- *Epilobium pictum* **(Threatened - nationally critical)**
- *Euchiton ensifer* **(Threatened - nationally endangered)**
- White mistletoe (*Tupeia antarctica*) **(At risk - declining)**
- *Pimelea sericeovillosa* subspecies *sericeovillosa* **(At risk – declining)**

- *Euchiton paludosus* **(At risk - naturally uncommon)**
- *Lagenophora barkerii* **(At risk - naturally uncommon)**
- Bitter cress (*Cardamine bilobata*) **(At risk – naturally uncommon)**
- Forbe's willowherb *Epilobium forbesii*) **(At risk – naturally uncommon)**
- *Celmisia insignis* **(At risk – naturally uncommon)**
- *Lignocarpa diversifolia* **(At risk - naturally uncommon)**
- *Oxalis* "scree" **(At risk - naturally uncommon)**
- *Leptinella atrata* subspecies *luteola* **(At risk - naturally uncommon)**
- New Zealand pipit **(Declining)**
- Canterbury galaxias (Northern) (*Galaxias vulgaris)* **(Declining)**
- The rarely recorded moth *Asaphodes obarata* **(Nationally vulnerable)**
- Historic boundary fence
- Historic yards

Economic Use: The Teme Basin is the most used portion of the Glenlee Occupation Licence. It is grazed in conjunction with the Mt Hall and Penk land systems. The basin and associated lands currently carry some 1,000 adult wethers during the December to June period and up to 650 adult wethers during the winter period. Field inspections indicate that these numbers are compatible with the environment and no adverse effects on the indigenous vegetation have been identified.

Public Use: The Teme Basin adjoins the Ferny Gair Conservation Area to the north. To a degree it is a natural extension of the existing conservation area providing the headwater basins and also access to the high peaks of Glenlee South, Glenlee North, Mt Alexander and Mt Hall. Public use within the basin is not actively encouraged at this point and any public use would be incidental.

4.8 General SIVs:

Geology:

The underlying geology of Glenlee licence consists of sediments of the New Zealand Geosyncline, mapped as massive greywacke with 'cannonball' concretions (Lensen, 1962 – in DoC CRR). Rare conglomerate and limestone bands elsewhere associated with this geology were apparently not noted to be present on the property. Through the eastern half of the property, around and north of Barometer, are extensive igneous bands, interpreted by Lensen (1962) as interbedded spilitic pillow lavas. These are altered basaltic lavas thought to have originated from underwater volcanoes. The Awatere Fault, which is a prominent feature in the Awatere valley, runs parallel with the southeast boundary of the property.

Identified SIVs include:

- the largest exposure of the igneous rock type in the ecological district.

Landform:

The Glenlee licence area covers steep broken country spanning the headwaters of several tributaries of the Awatere and Wairau river systems. Extensive areas of bare rock are present at higher altitudes. The bare summits of Mt Boltoff, Mt Abrupt, Mt Argelin, Mt Hall, Mt Alexander, Glenlee North, Glenlee South, and Barometer, are prominent, reaching altitudes of between 1300 and 1800 m. The higher altitude ridges have broad crests; other ridges and spurs are narrower and more dissected. Between these high summits and ridges are steep and broken upper catchments of the small headwater streams. There is very little gentle lower altitude country on the licence area, other than some valley floors and small areas in the Teme Basin and very small areas in some other catchments (e.g. Cow Stream).

Identified SIVs include:

- bare broken country typical of the dry mountains of inland Marlborough,
- the bare rocky upper slopes and ridges, steep mid-slopes and the narrow deeply-incised stream gullies illustrating the effects of tectonic activity along the Awatere Fault, recent erosion and deposition.

5. Consideration of Options:

Promoting the management of the land in a way that is ecologically sustainable is the first object. Indications are that the current low levels of grazing undertaken on the property are sustainable. Therefore designations that would enable continued grazing on existing areas would not be inconsistent with this object. However the areas that are currently grazed cannot be separated from higher altitude areas which would be sensitive to grazing thereby meaning that uncontrolled freehold ownership of these areas without fencing would generally not be appropriate.

As this is a Part 3 review there is no opportunity to include other freehold or conservation land in the review. Ideally agreement would have been sought to include freehold land in the review and thereby do a redistribution of the land in recognition of the geographical boundaries and ecologically sustainable grazing.

As to the second object under section 83(b) the protection of significant inherent values, significant inherent values are present over much of the area. An assessment of the risk to these values from on-going low level grazing by sheep has not been obtained. However the presence of these values after a long history of grazing indicates that they are able to exist in parallel with current grazing activity. However the underlying presumption with a Part 3 review that areas with significant inherent values should be retained in full Crown ownership and control precludes consideration of other options for the protection of those values.

The Avon land system lends itself to being retained in full Crown ownership. This land system offers limited grazing and while containing only modest inherent values would lend itself to retention by the Crown.

The Cow Stream land system provides a degree of grazing but in effect is separate to the associated freehold by virtue of the geography. There are indications that the degree of shrubland in this catchment is increasing and a number of significant inherent values have been identified in this areas meaning the freehold disposal would not be consistent with the objects of part 3. Consideration was given to disposing of the land on special lease as the area could be considered as an extension of the adjacent freehold. This outcome was not supported due to the significance of the inherent values and that the area was not subject to stock drift from the adjacent freehold.

The Mt Hall land system is virtually fully grazed under the current regime with the exception of the higher altitudes. This area has modest SIVs but is unable to be separated from the adjacent freehold land. From a pragmatic point of view this land could be considered for either freehold disposal or a special lease. The presence of SIV tends to support the latter to ensure appropriate management.

The Tin Hut land system is essentially not grazed at the present time and has a range of significant inherent values. While unable to be separated from the adjacent freehold this land system with the exception of a smaller area of land fenced with the freehold adjacent to spot height 1318 lends itself to being retained in Crown ownership. The area contained within the existing fence lends itself to being disposed of by freehold title to the adjacent freehold owner.

The Barometer land system comprises the upper catchments of three streams. It is noted that while this land cannot be separated from the adjacent freehold, in fact the freehold land adjacent to the boundary is not currently grazed. There is a fence that approximately follows a fault line further down the slope with only limited grazing offered above this fence. There is limited grazing contained in the western side of Ribble Stream and no specific SIVs have been identified in this area. The majority of the Barometer catchment lends itself to being retained in full Crown ownership and possible consideration given to some agreement with the adjacent land owner to incorporate the lower portions of the catchments. The exception being the area contained within the fence that adjoins spot height 1318, possibly extending into the faces above Ribble Stream. These areas could be considered for freehold disposal.

The Penk land system is the most complex given the gridiron effect and the inability to separate the freehold areas and Crown land from one another. It is apparent that the Dore Stream does not offer grazing and that the lower portion of this catchment is an area of "under protected" forest vegetation. This catchment lends itself to being retained in full Crown ownership.

The main Penk catchment is more complex with significant grazing occurring in the headwater basins. A significant portion of this grazing is on freehold land within the gridiron area with a split of approximately 50/50 between the freehold and the Crown land. The land north of the Penk River in the lower catchment is currently not utilised and adjoins the Ferny Gair Conservation Area. Retention of this area by the Crown is a sensible outcome.

This would leave the upper catchment however it is isolated and unless considered in conjunction with the Teme Basin to the north proves an anomaly. This issue is not easily resolved due to the mixed tenure in this area. Possible outcomes for this area is for areas of Crown land in the upper catchment be disposed of as freehold to be associated with the existing freehold, however this does pose a concern in that the high point of this area is at Glenlee North at 1,720 metres. Another alternative that was considered was for one strip of the Crown land between two areas of freehold be disposed of by freehold title as this is generally at a lower altitude. This would leave the upper most area extending onto Glenlee North and Barometer to be retained by the Crown.

The Teme Basin is the most difficult area to deal with as this provides the most extensive area of sustainable grazing. Options for this area do not include freehold disposal due to the significant inherent values present however an appropriately managed special lease could accommodate grazing in the basin whilst protecting the significant inherent values. A special lease would not need to include the western branch of the Teme River as this area is separate from the main basin and is heavily vegetated providing little opportunity for grazing. In accordance with Part 3 of the CPL Act this option is unlikely to meet the objects in relation to the protection of SIVs. Therefore the objects can be best achieved by retaining the land in full Crown ownership and control.

6. *Description of proposed designations:*

6.1 ***Approximately 5,249 hectares to be retained in full Crown ownership and control as a conservation area pursuant to Section 86(5)(a)(i) Crown Pastoral Land Act 1998 (shown shaded pink and labelled CA1, CA2, CA3, CA4, CA5 and CA6 on the plan included in Appendix 2).***

CA1 (approximately 1250ha) comprises the Avon land System fully described in Section 4.1. The area includes the headwaters of the Non Upton Brook and the Upton Brook, tributaries of the Avon River within the Wairau catchment.

Significant inherent values include:

- Botanical diversity in the forest understory
- An altitudinal sequence of nearly 900m
- New Zealand falcon (*Falco Novaeseelandiae*) **(Recovering)**
- The moth *Asaphodes oborata* **(Nationally vulnerable)**
- The long pastoral history
- The historic Avon Saddle Pack Track

The area offers little grazing.

Public access is available at the Avon Saddle and from the Ferny Gair Conservation Area. The area is also contiguous with CA5 and CA6.

CA2 (approximately 721ha) comprises the majority of the Tin Hut Stream land system fully described in Section 4.4. The area includes the upper catchment of the eastern branch of Tin Hut Stream, a tributary of the Grey River in the Awatere catchment.

Significant inherent values include:

- One threated and four at risk plant species
- Pink Broom (*Carmichaelia australis*) **(Threatened – nationally critical)**
- Bitter cress (*Cardamine bilobata*) **(At risk – naturally uncommon)**
- Pin cushion (*Colobanthus brevisepalus*) **(At risk – naturally uncommon)**
- Scree harebell (*Wahlenbergia cartilaginea*) **(At risk – naturally uncommon)**
- Forbe's willowherb *(Epilobium forbesii*) **(At risk – naturally uncommon)**
- New Zealand falcon (*Falco novaeseelandiae*) **(Recovering)**
- New Zealand pipit (*Anthus novaeseelandiae*) **(Declining)**
- Canterbury galaxias (Northern) *(Galaxias vulgaris)* **(Declining)**

The catchment is fenced on the lower margins, but this fence does not follow the legal boundary. *(See further comment in Section 10.3 below.)* The area offers little grazing above this fence.

There is no public access direct to this area and the area will be difficult to access from the contiguous areas in CA3, CA4 and CA5 meaning that the area will offer limited public use.

CA3 (approximately 824ha) comprises the majority of the Barometer land system fully described in Section 4.5. The area includes the headwaters of the Ribble, Clyde and Burr Streams which are tributaries of the Awatere River.

Significant inherent values include:

- Six at risk plant species
- Bitter cress (*Cardamine bilobata*) **(At risk – naturally uncommon)**
- Pin cushion (*Colobanthus brevisepalus*) **(At risk – naturally uncommon)**
- Cockayne's mountain daisy (*Celmisia cockayneana*) **(At risk – naturally uncommon)**
- Scree harebell (*Wahlenbergia cartilaginea*) **(At risk – naturally uncommon)**
- Forbe's willowherb *Epilobium forbesii*) **(At risk – naturally uncommon)**
- *Celmisia insignis* **(At risk – naturally uncommon)**
- New Zealand pipit (*Anthus novaeseelandiae*) **(Declining)**

The catchment is unfenced from the adjacent freehold land.

While one legal road extends to the lower boundary and the Big Bolton Conservation area adjoins the eastern boundary, there is no practical public access direct to this area. The area will also be difficult to access from CA2 and CA4 meaning that the area will offer limited public use.

CA4 (approximately 994ha) lies in the Penk land system that is fully described in Section 5.6. The area includes portions of the headwaters of the Penk River including the Dore Stream tributary. The Penk River is a tributary of the Awatere River.

The balance of the land system is freehold land with the Crown land and freehold interspersed on a "gridiron" pattern making effective management of either in isolation from the other difficult.

Significant inherent values include:

- Two threatened and nine at risk plant species
- Mahoe (*Melicytus* aff. *crassifolius* 'cliff') **(Threatened – nationally critical)**
- Bristle grass (*Rytidosperma merum*) **(Threatened – nationally vulnerable)**
- *Pimelea sericeovillosa* subspecies *sericeovillosa* **(At risk – declining)**
- *Traversia baccaroides* **(At risk – declining)**
- Parsley fern (*Botrychium australe*) **(At risk – naturally uncommon)**
- Bitter cress (*Cardamine bilobata*) **(At risk – naturally uncommon)**
- Pin cushion (*Colobanthus brevisepalus*) **(At risk – naturally uncommon)**
- Cockayne's mountain daisy (*Celmisia cockayneana*) **(At risk – naturally uncommon)**
- Scree harebell (*Wahlenbergia cartilaginea*) **(At risk – naturally uncommon)**
- Forbe's willowherb *Epilobium forbesii*) **(At risk – naturally uncommon)**
- *Celmisia insignis* **(At risk – naturally uncommon)**
- New Zealand pipit (*Anthus novaeseelandiae*) **(Declining)**
- New Zealand falcon (*Falco novaeseelandiae*) **(Recovering)**
- Canterbury galaxias (Northern) (*Galaxias vulgaris)* **(Declining)**
- Historic boundary fence

The headwaters of the Penk River currently provide significant grazing. Should this designation be adopted arrangements for future access to adjacent Glenlee freehold will be need to be considered outside of the review process.

Public access is available to this area via the Big Bolton Conservation Area and also the Penk River. A Department of Conservation hut is located on the Crown land near the Penk River forks. The area is contiguous with the proposed CA5 with good access between the two. While contiguous with the

Ferny Gair Conservation Area and the proposed CA2 and CA3 access to and from these areas is very difficult.

CA5 (approximately 1,103ha) comprises the Teme land system that is fully described in Section 4.7. The area is known as the Teme Basin and includes the headwaters of both branches of the Teme River.

Significant inherent values include:

- Three threatened and ten at risk plant species
- Mountain myrrh (*Chaerophyllum colensoi* var. *delicatulum*) **(Threatened - nationally critical)**
- *Epilobium pictum* **(Threatened - nationally critical)**
- *Euchiton ensifer* **(Threatened - nationally endangered)**
- White mistletoe (*Tupeia antarctica*) **(At risk - declining)**
- *Pimelea sericeovillosa* subspecies *sericeovillosa* **(At risk – declining)**
- *Euchiton paludosus* **(At risk - naturally uncommon)**
- *Lagenophora barkerii* **(At risk - naturally uncommon)**
- Bitter cress (*Cardamine bilobata*) **(At risk – naturally uncommon)**
- Forbe's willowherb *Epilobium forbesii*) **(At risk – naturally uncommon)**
- *Celmisia insignis* **(At risk – naturally uncommon)**
- *Lignocarpa diversifolia* **(At risk - naturally uncommon)**
- *Oxalis* "scree" **(At risk - naturally uncommon)**
- *Leptinella atrata* subspecies *luteola* **(At risk - naturally uncommon)**
- New Zealand pipit (*Anthus novaeseelandiae*) **(Declining)**
- Canterbury galaxias (Northern) (*Galaxias vulgaris)* **(Declining)**
- The rarely recorded moth *Asaphodes obarata* **(Nationally vulnerable)**
- Historic boundary fence
- Historic yards

The Teme Basin currently provides the bulk of the grazing undertaken on the Crown land. This contribution is very important to the viability of the Licnesee's overall farming operation.

The proposed CA5 adjoins the Ferny Gair Conservation Area to the north with good public access. The area is contiguous with the proposed CA1, CA4 and CA6 with access available between these areas. While the proposed CA2 is also contiguous access from/to this area is difficult. A station hut is located in the Teme Basin.

CA6 (approximately 358ha) comprises the Cow Stream land system that is fully described in Section 4.2. The area includes the headwaters of Cow Stream.

Significant inherent values include:

- Diverse vegetation pattern including beech forest, kanuka shrubland, low forest communities, tussockland, herbfield and valley floor wetlands
- New Zealand falcon (*Falco novaeseelandiae*) **(Recovering)**
- *Celmisia insignis* **(At risk – declining)**
- The moth *Meterana exquisita* **(relict)**
- The historic Cow Stream Hut
- The historic fence on Rocky Gill Spur

The Cow Stream area offers grazing bush clearings and above the bush line as well as providing access to the Teme Basin. Indications are that the extent of the shrubland is expanding thereby reducing grazing. This area cannot be fenced from the adjacent freehold.

There is no public access available from the south. Limited access will be available from CA5 which is contiguous to the north. While the area is also contiguous with the proposed CA1 access between the two will be difficult.

6.2 Approximately 480 hectares to be designated as land suitable for disposal by special lease pursuant to Section 86(5)(b)(i) Crown Pastoral Land Act 1998 (shown shaded blue on the plan included in Appendix 2). A draft special lease document is included in Appendix 2.

The proposed special lease (SL1) is over the Mt Hall land system that is fully described in Section 4.3. The area comprises the headwaters of the west branch of Tin Hut Stream.

Significant inherent values include:

- Four "At risk" and one "Threatened" plant species
- *Celmisia insignis* **(At risk – naturally uncommon)**
- Ewartia (*Ewartiothamnus sinclarii*) **(At risk – naturally uncommon)**
- *Euticon paludosus* **(At risk – naturally uncommon)**
- Creeping cudweed (*Euchiton ensifer*) **(Threatened – nationally endangered)**
- *Lagenophora barkerii* **(At risk – naturally uncommon)**
- New Zealand pipit (*Anthus novaeseelandiae*) **(declining)**
- The historic old fence on Rock Gill Spur
- The historic Trig on Mt Hall

The Mt Hall land system is unfenced and inseparable from the adjacent Glenlee freehold. Stock graze throughout this catchment incidental with the adjacent freehold and specific numbers have not been advised. We estimate in the vicinity of 100 stock units on an annual basis.

Public access is not currently available to this area other than through the adjacent freehold. It is likely that a marginal strip will apply to this area.

The proposed special lease would be for a term of 20 years allowing grazing of up to 100 stock units of sheep or cattle incidental with the adjacent freehold. The lessee would be responsible for containing the stock on the land, ensuring that there was sufficient feed on the land to discourage stock from grazing other land and not overgrazing. The lessee would be required to undertake vegetation monitoring.

6.3 Approximately 58 hectares to be designated as land suitable for suitable for disposal in fee simple under the Land Act 1948 pursuant to Section 86(5)(b)(ii) Crown Pastoral Land Act 1998 (shown shaded green on the plan included in Appendix 2).

The area proposed for freehold disposal is a small area of the Crown land that has previously been fenced with the adjacent land in order to achieve a practical boundary. There are no identified significant inherent values within this area and the area is not accessible by the public.

The plan on the following page places the proposed designations in the context of the surrounding land.

7. *Discussion of proposed designations in relation to the objects of Part 3 CPL Act:*

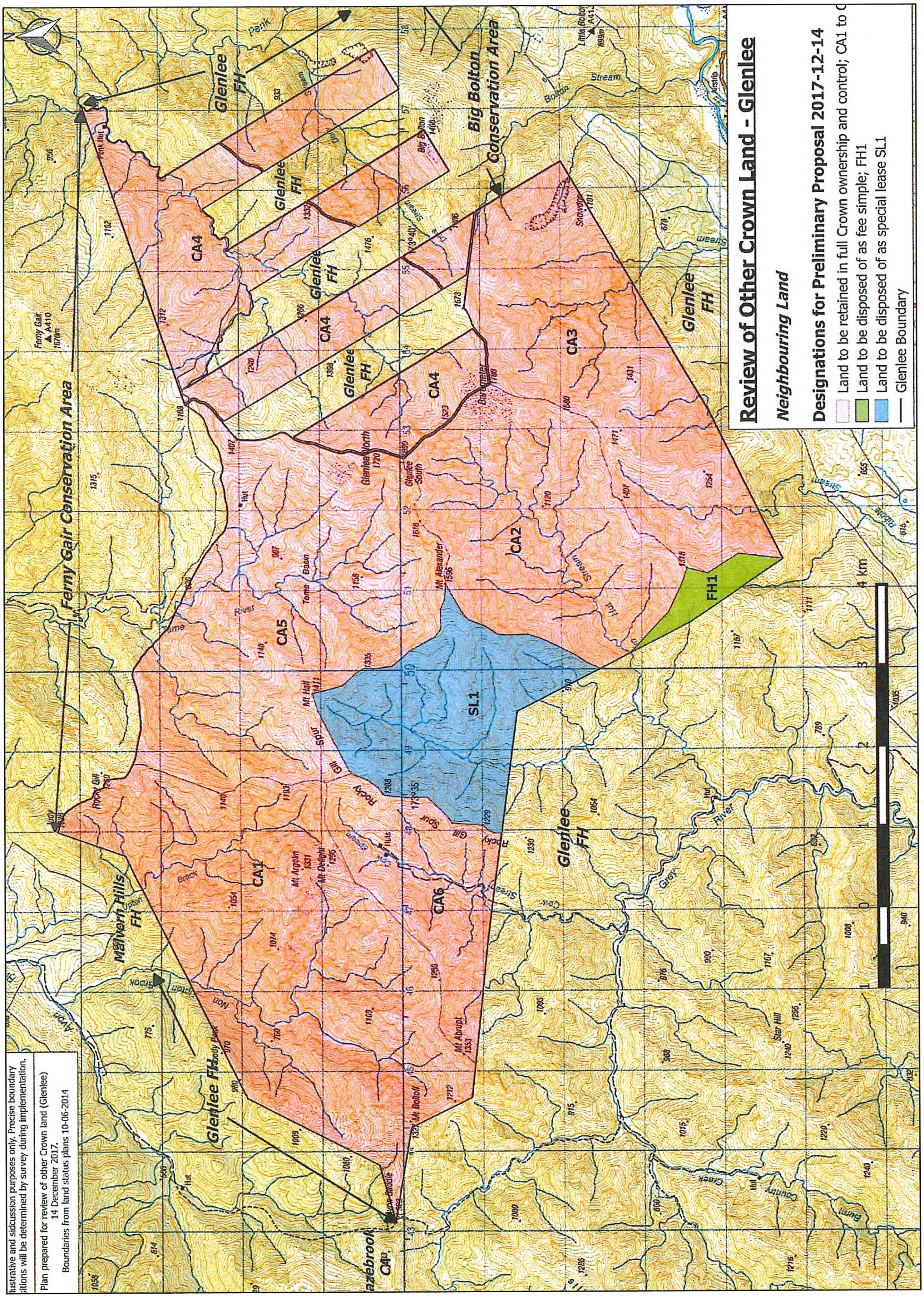
The objects of Part 3 of the CPL Act are set out in section 83 of the Act. The proposed designations are consider to meet these objects for the following reasons:

Object (a) – to promote management of the land in a way that is ecologically sustainable:
The retention of the majority of the land in full Crown ownership is considered to promote the management of the land in a way that is ecologically sustainable, however this will be dependent on the ability of the Crown to maintain weed and pest control to the levels currently achieved by the licensee. The limited grazing within the proposed special lease is also considered to promote the management of the land in a way that is ecologically sustainable with monitoring to inform the Commissioner whether this is being achieved.

Object (b) – protection of significant inherent values
All identified significant inherent values will be protected either through full Crown ownership or the restrictive special lease. Weed and pest control will however be essential to ensure that this objective is met.

Object (c)(i) – securing of public access to and enjoyment of the land
The securing of public access to and enjoyment of Crown land is likely to be an outcome of retaining the majority of the land in full Crown ownership and control, although it should be noted that the land is generally isolated and some future arrangements with the neighbouring landholders will be necessary to fully utilise the opportunities.

Object (c)(ii) – freehold disposal of land capable of economic use
Designation under object (c) is subject to meeting the requirements of object (a) and (b). This object can therefore only be achieved where to do so would be consistent with objects (a) and (b). In this case significant areas of the land proposed for retention in full Crown ownership are capable of economic use however the preference for the previous objects precludes this.


Review of Other Crown Land - Glenlee
Neighbouring Land
Designations for Preliminary Proposal 2017-12-14
Land to be retained in full Crown ownership and control; CA1 to C
Land to be disposed of as fee simple; FH1
Land to be disposed of as special lease SL1
Glenlee Boundary
Plan prepared for review of other Crown land (Glenlee)
14 December 2017.
Boundaries from land status plans 10-06-2014
Ferny Gair Conservation Area
Big Bolton Conservation Area
Glenlee FH
Malvern Hills FH
CA1
CA2
CA3
CA4
CA5
CA6
SL1
FH1
4 km

APPENDIX 1: Copy of public notice

APPENDIX 2: Preliminary Proposal - including proposed designations plan and draft special lease document